



**2012**  
**SPECIFICATIONS &**  
**DRAWINGS**

**OVERHEAD**



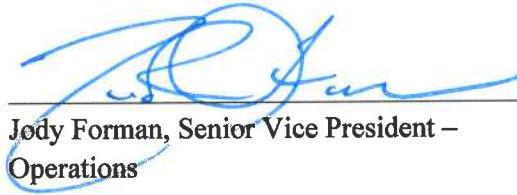
**CERTIFICATE REGARDING SPECIFICATIONS & DRAWINGS**

The undersigned, in their indicated capacities with Denton County Electric Cooperative, Inc., d/b/a CoServ Electric (“CoServ Electric”), do hereby certify that attached hereto is a true and correct copy of CoServ Electric’s Specifications & Drawings for 14.4/24.9 kV Overhead & Underground Electric Distribution, which are in effect as of the date shown below.

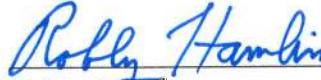
EXECUTED this 11<sup>TH</sup> day of September, 2012.



Curtis Trivitt, Senior Vice President –  
Energy Services



Jody Forman, Senior Vice President –  
Operations



Robby Hamlin, Director of Engineering Services



## **2012 SPECIFICATIONS & DRAWINGS**

### **OVERHEAD**

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HENDRIX	HENDRIX PRIMARY POLE TOP ASSEMBLY UNITS



# **Tab SPECIFICATIONS**

# **Tab SPECIFICATIONS**

# SPECIFICATIONS FOR CONSTRUCTION

## 1. General

All construction work shall be done in accordance with the staking sheets, plans and specifications, and the construction drawings.

The 1981 or latest edition of the National Electric Safety Code (NESC), ANSI C2, shall be followed except where local regulations are more stringent, in which case the local regulation shall govern.

## 2. Distribution of Poles

In distributing the poles, large, choice, dense poles shall be used at transformer, dead-end, angle and corner locations.

## 3. Pole Setting

The minimum depth for setting poles shall be as follows:

<u>Length of Pole (Feet)</u>	<u>Setting in Soil (Feet)</u>	<u>Setting in Solid Rock (Feet)</u>
20	4.0	3.0
25	5.0	3.5
30	5.5	4.0
35	6.0	4.0
40	6.0	4.0
45	6.5	4.5
50	7.0	4.5
55	7.5	5.0
60	7.5	5.0
65	8.0	5.0

“Setting in Soil” depths shall apply:

- a) Where poles are to be set in soil.
- b) Where there is a layer of soil more than two (2) feet in depth over solid rock.
- c) Where the hole in solid rock is not substantially vertical or the diameter of the hole at the surface of the rock exceeds approximately twice the diameter of the pole at the same level.

“Setting in All Solid Rock” depths shall apply where poles are to be set in solid rock and where the hole is substantially vertical, approximately uniform in diameter and large enough to permit the use of tamping bars the full depth of the hole.

Where there is a layer of soil two (2) feet or less in depth over solid rock, the depth of the hole shall be the depth of the soil in addition to the depth specified under “Setting in All Solid Rock” provided, however, that such depth shall not exceed the depth specified under “Setting in Soil”.

On sloping ground, the depth of the hole shall be measured from the low side of the hole.

Poles shall be set so that alternate crossarm gains face in opposite directions, except at terminals and dead ends where the gains of the last two (2) poles shall be one the side facing the terminal or dead end. On unusually long spans, the poles shall be set so that the crossarm is located on the side of the pole away from the long span. Where pole top insulator brackets or pole top pins are used, they shall be located at the opposite side of the pole from the gain.

Poles shall be set in alignment and plumb, except at corners, terminal, angles, junctions, or other points of strain, where they shall be set and raked against the strain so that the conductors are in line.

Poles shall be raked against the conductor strain not less than 1 inch for each 10 feet of pole length, nor more than 2 inches for each 10 feet of pole length, after conductors are installed at the required tension.

Pole backfill shall be thoroughly tamped in full depth. Excess dirt shall be banked around the pole.

Poles which have been in storage for more than 1 year from the date of treatment shall be ground line treated when installed.

#### 4. Grading of Line

When using high poles to clear obstacles such as buildings, foreign wire crossings, railroads, etc., there shall be no up-strain on pin-type or post-type insulators in grading the line each way to lower poles.

#### 5. Guys and Anchors

Guys shall be placed before the conductors are strung and shall be attached to the pole as shown in the construction drawings.

All Anchors and rods shall be in line with the strain and shall be installed so that approximately 6 inches of the rod remain out of the ground. In cultivated fields or other locations, as deemed necessary, the projection of the anchor rod above earth may be increased to a maximum of 12 inches to prevent burial of the rod eye. The backfill of all anchor holes must be thoroughly tamped the full depth.

After a cone anchor has been set in place, the hole shall be backfilled with coarse crushed rock for 2 feet above the anchor tamping during the filling. The remainder of the hole shall be backfilled and tamped with dirt.

## **6. Locknuts**

A locknut shall be installed with each nut, eye-nut or other fastener on all bolts or threaded hardware such as insulator pins and studs, upset bolts, double arming bolts, etc.

## **7. Conductors**

Conductors must be handled with care. Conductors shall neither be trampled on nor run over by vehicles. Each reel shall be examined and the wire shall be inspected for cuts, kinks, or other injuries. Injured portions shall be cut out and the conductor spliced. The conductors shall be pulled over suitable rollers or stinging blocks properly mounted on the pole or crossarm in necessary to prevent binding while stringing.

The neutral conductor should be maintained on one side of the pole (preferably the road side) for tangent construction and for angles not exceeding 20°.

With pin-type or post-type insulators, the conductors shall be tied in the top groove of the insulator on tangent poles and on the side of the insulator away from the strain at angles. Pin-type and post-type insulators shall be tight on the pins and brackets, respectively, and the top groove must be in line with the conductor after tying.

For line angles of 0° to 5° in locations known to be subject to considerable conductor vibration, insulated brackets (material item da) may be substituted for the single and double upset bolts used for supporting the neutral and secondary conductors.

All conductors shall be cleaned thoroughly by wire-brushing before splicing connectors or clamps. A suitable inhibitor shall be used before splicing or applying connectors over aluminum conductor.

## **8. Splices and Dead Ends**

Conductors shall be spliced and dead-ended as shown on the construction drawings. There shall not be more than one splice per conductor in any span and splices shall be located at least 10 feet away from the conductor support. No splices shall be located in Grade B crossing spans and preferably not in the adjacent spans. Splices shall be installed in accordance with the manufacture's recommendations.

## **9. Taps and Jumpers**

Jumpers and other leads connected to line conductors shall have sufficient slack to allow free movement of the conductors. Where slack is not shown on the construction drawings, it will be provided by at least two (2) bends in a vertical plane, or one (1) in a horizontal plane, or the equivalent. In areas where aeolian vibration occurs, special measures to minimize the effects of jumper breaks shall be used as specified.

## 10. Hot Line Clamps and Connectors

Connectors and hot-line clamps suitable for the purpose shall be installed as shown on the guide drawings. On all hot-line clamp installation, the clamp and jumper shall be installed so that they are permanently bonded to the load side of the line, allowing the jumper to be de-energized when the clamp is disconnected.

## 11. Surge Arrester Gap Settings

The external gap electrodes of surge arresters, combination arrester cutout units, and transformer mounted arresters shall be adjusted to the manufacture's recommended spacing. Care shall be taken that the adjusted gap is not disturbed when the equipment is installed.

## 12. Conductor Ties

Hand-formed ties shall be in accordance with the construction drawings. Factory-formed ties shall be installed in accordance with the manufacture's recommendations.

## 13. Sagging of Conductors

Conductors shall be sagged in accordance with the conductor manufacture's recommendations. All conductors shall be sagged evenly. The air temperature at the time and place of sagging shall be determined by a certified thermometer.

The sag of all conductors after stringing shall be in accordance with the engineer's instructions.

## 14. Secondary and Service Drops

Secondary conductors may be bare or covered wires or multi-conductor service cable. The conductors shall be sagged in accordance with the manufacture's recommendations.

Conductors for secondary under-build on primary lines will normally be bare, except in those instances where prevailing conditions may limit primary span lengths to the extent that covered wires or service cables may be used. Service drops shall be covered wire or service cable.

Secondary and service drops shall be so installed as not to obstruct climbing space. There shall not be more than one splice per conductor in any span, and splices shall be located at least 10 feet from the conductor support. Where the same covered conductors or service cable are to be used for the secondary and service drop, they may be installed in one continuous run.

## 15. Grounds

Ground rods shall be driven full length in undisturbed earth in accordance with the construction drawings. The top shall be at least 12 inches below the surface of the earth. The ground wire shall be attached to the rod with a clamp and shall be secured to the pole with staples. The staples on the ground wire shall be spaced 2 feet apart, except for a distance of 8 feet above the ground and 8 feet down from the top of the pole where they shall be 6 inches apart.

All equipment shall have at least two (2) connections from the frame, case or tank to the multi-grounded neutral conductor.

The equipment ground, neutral wires, and surge-protection equipment shall be interconnected and attached to a common ground wire.

## 16. Clearing Right-of-Way

The right-of-way shall be prepared by removing trees, clearing underbrush, and trimming trees so that the right-of-way is cleared close to the ground and is the width specified, except that low growing shrubs which will not interfere with the operation or maintenance of the line shall be left undisturbed as so directed by the owner. Slash may be chipped and blown on the right-of-way. Trees fronting each side of the right-of-way shall be trimmed symmetrically unless otherwise specified. Dead trees beyond the right-of-way which would strike the line in falling shall be removed. Leaning trees beyond the right-of-way which would strike the line in falling and which would require topping if not removed, shall either be removed or topped, except that shade, fruit, or other ornamental trees shall be trimmed and not removed, unless otherwise authorized.

## 17. Structures Exceeding 200 Feet in Height and Structures in the Vicinity of Airports

The Federal Aviation Administration (FAA) requires (14 CFR 77) that in cases where structures or conductors will exceed a height of 200 feet, or are within 20,000 feet of an airport, the nearest regional or area office of the FAA will be contacted and FAA Form 7460-1 will be filed if necessary.

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TRANSFORMER FUSE SIZES TYPE 200 ONLY		
XFMR SIZE	7.2 KV	14.4 KV
3	1	1
5	1	1
10	2	1
15	3	2
25	5	3
37.5	7	5
50	10	5
75	15	7
100	20	10
150	30	15
167	30	15
200	40	20
250	50	25
333	65	30
500	100	50

CAPACITOR FUSES TYPE 200 ONLY		
1 PHASE	7.2 KV	14.4 KV
50	10	10
100	20	10
150	25	15
200	40	20
BANK SIZE	7.2 KV	14.4 KV
150	10	10
300	20	10
450	25	15
600	40	20
900	50	25
1200	65	40
1800	100	50

Single Phase NOVA Down Line / TYPE 200 ONLY	
OCR SIZE	Nova
25	
35	
50	15
70	15
100	20
140	30
180	40
200	40

UF=2.65X	KVAR	KV SQUARED	
FARAD VALUES OF CAPACITORS			
7.2KV	SIZE	MIN.	MAX.
	50	2.56	2.94
	100	5.12	5.89
	150	7.68	8.83
	200	10.2	11.71
	300	15.4	17.71
14.4KV	SIZE	MIN.	MAX.
	100	1.28	1.47
	200	2.56	2.94
	300	3.83	4.41
	400	5.12	5.89

Form 6 Triple Single TYPE 200 ONLY	
OCR SIZE	Fuse Size
70TS	15
100TS	20
140TS	30
160TS	30
200TS	40
220TS	50
240TS	65
260TS	65
280TS	80
will coordinate with smaller fuses	

LINE FUSES Down Line / TYPE 200 ONLY		
OCR SIZE	Type E	Type 4E
25	15	15
35	15	15
50	20	20
70	30	30
100	40	40
140		50
200		

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# **Tab VA**

# **Tab VA**

**INDEX VA****SINGLE-PHASE PRIMARY POLE TOP ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
VA1	SINGLE SUPPORT – TANGENT (SMALL ANGLE 0° TO 5°)
VA1-1	DOUBLE SUPPORT – TANGENT (SMALL ANGLE 0° TO 5°)
VA2	DOUBLE SUPPORT – MEDIUM ANGLE 5° TO 30°
VA3	SUSPENSION - LARGE ANGLE 30° TO 60°
VA3S	REDUCED TENSION
VA4	DEADEND – ANGLE 60° TO 90°
VA5	SINGLE DEADEND – VERTICAL
VA5-1	1Ø TAP ASSEMBLY WITH TENSION FROM 1Ø TANGENT LINE
VA5-2	1Ø TAP ASSEMBLY WITH TENSION FROM 3Ø TANGENT LINE
VA5-2N	1Ø TAP ASSEMBLY WITH TENSION FROM 3Ø NARROW PROFILE
VA5-2S	1Ø TAP ASSEMBLY WITH REDUCED TENSION FROM 3Ø TANGENT LINE
VA5-4	1Ø TAP ASSEMBLY WITH TENSION FROM 1Ø SINGLE DEADEND
VA6	DOUBLE DEADEND – VERTICAL
VA7	SINGLE DEADEND – DOUBLE SUPPORT CROSSARM
VA7-1-R	SINGLE DEADEND – THREE SUPPORT CROSSARM (RETIREMENT ONLY)
VA7A-R	SINGLE DEADEND – HUGHES CROSSARM (RETIREMENT ONLY)
VA7S	SINGLE DEADEND – REDUCED TENSION SINGLE SUPPORT CROSSARM
VA7X	1Ø TAKE OFF FROM 1Ø DEADEND WITH TENSION
VA7XS	1Ø TAKE OFF FROM 1Ø DEADEND WITH REDUCED TENSION

**INDEX VA (cont.)**

**SINGLE-PHASE PRIMARY POLE TOP ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
VA8	DOUBLE DEADEND – DOUBLE SUPPORT CROSSARM
VA8A-R	DOUBLE DEADEND – DOUBLE SUPPORT CROSSARM (RETIREMENT ONLY)
VA9	DOUBLE SUPPORT CROSSARM – TANGENT (SMALL ANGLE 0° TO 5°)
VA9-1	SINGLE SUPPORT CROSSARM – TANGENT (SMALL ANGLE 0° TO 5°)

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ITM.	QTY.	MAT.CODE No	MATERIAL
a1	1	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	1	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
b1	1	4561-23-20	Pin, pole top 14.4
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
d1	5	7102-04-91	Washers, square, 5/8"
ek1	4	4290-70-63	Locknuts 5/8"

NOTES:

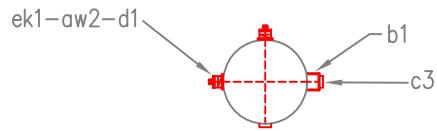
1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



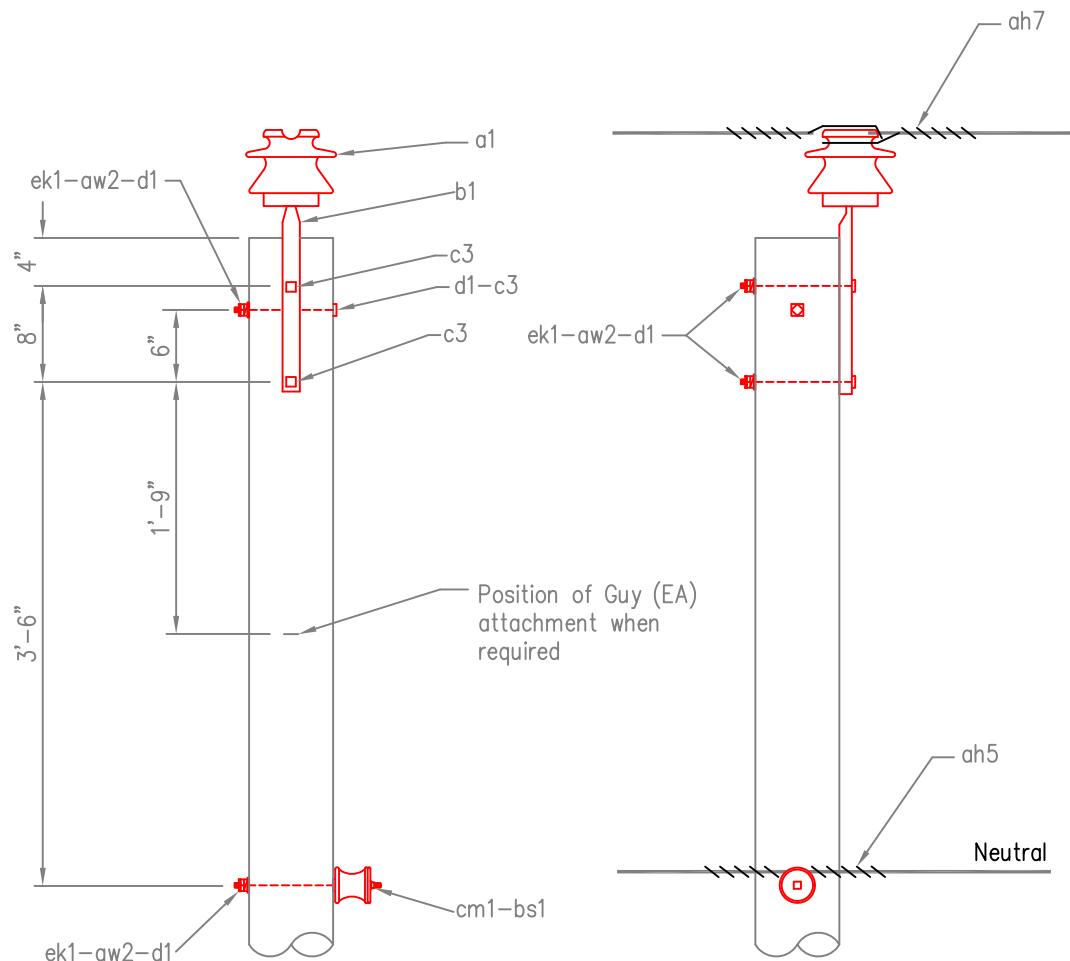
DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
SINGLE PRIMARY SUPPORT  
0° TO 5 ° ANGLE

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	V A1



POLE TOP PIN ASSEMBLY



DATE	REVISION

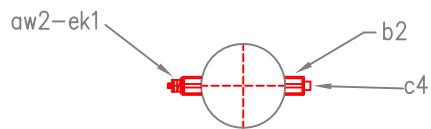
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	2	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	1	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
b2	2	4561-33-21	Pin, offset pole top 14.4
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
cm1	1	3426-20-12	Insulator, 3" spool
d1	3	7102-04-91	Washers, square, 5/8"
ek1	4	4290-70-63	Locknuts 5/8"

NOTES:

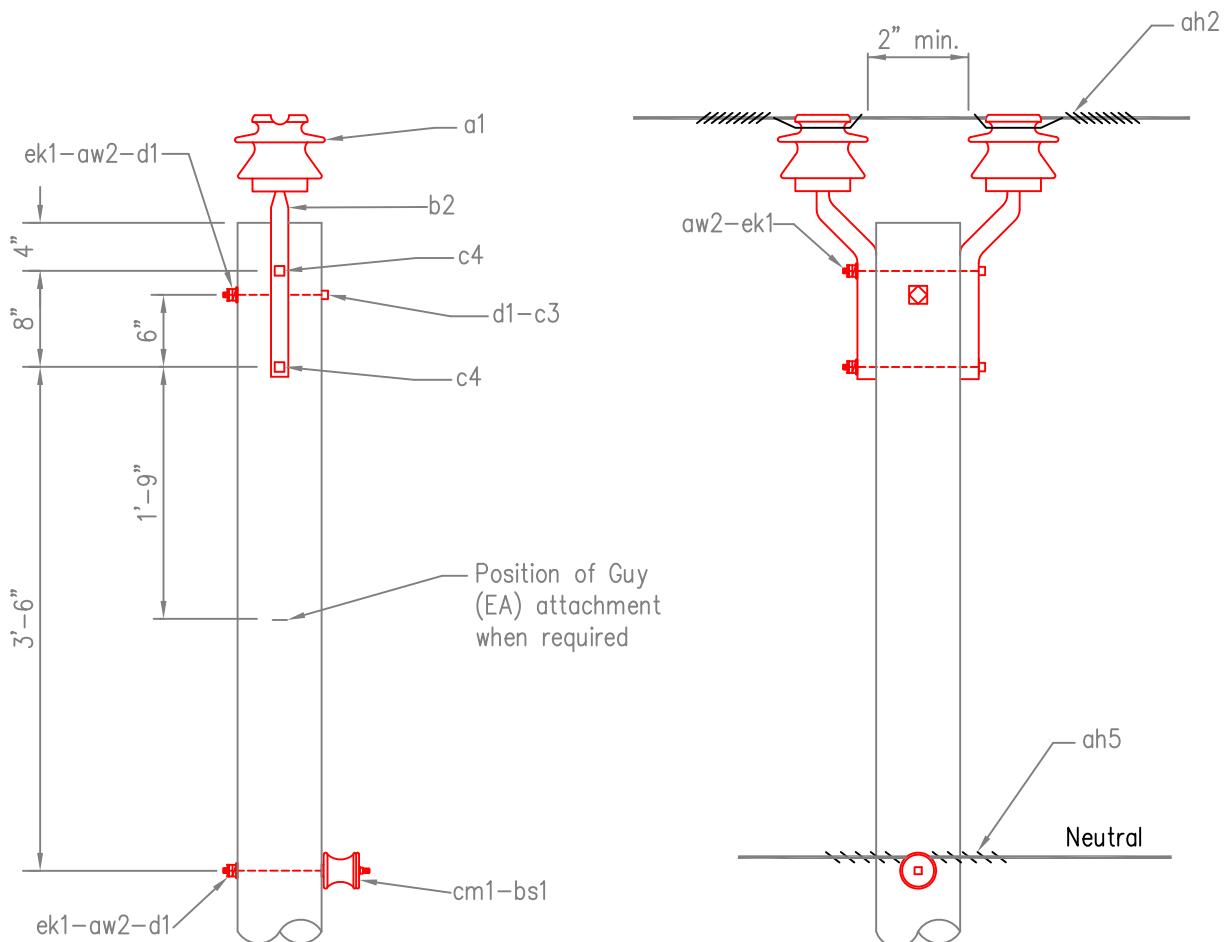
1. Maximum transverse load: 500 lbs. per conductor
2. Maximum line angle within load limits: 5°
3. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
4. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 KV, SINGLE PHASE DOUBLE PRIMARY SUPPORT 0° TO 5 ° ANGLE	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VA1-1



POLE TOP OFFSET PIN ASSEMBLY



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
DOUBLE PRIMARY SUPPORT  
0° TO 5 ° ANGLE

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VA1-1

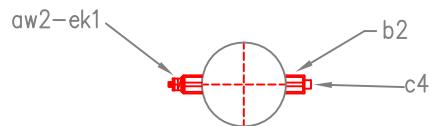
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	2	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah1	1	6790-XX-22	Double side tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
b2	2	4561-33-21	Pin, offset pole top 14.4
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
cm1	1	3426-20-12	Insulator, 3" spool
d1	3	7102-04-91	Washers, square, 5/8"
ek1	4	4290-70-63	Locknuts 5/8"
sr	1	1230-17-01	Clevis, rigid (D-bracket)

NOTES:

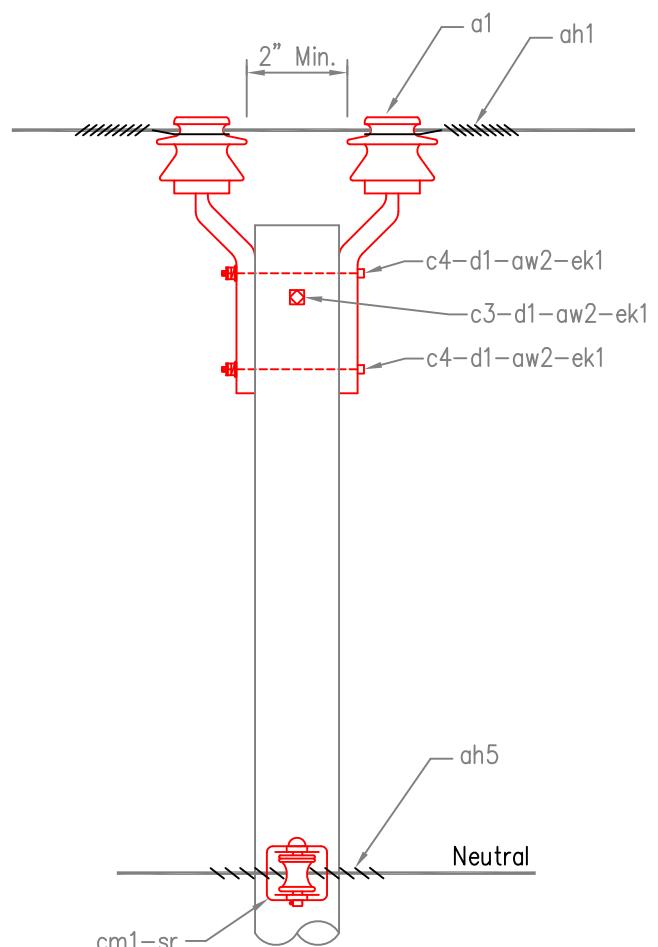
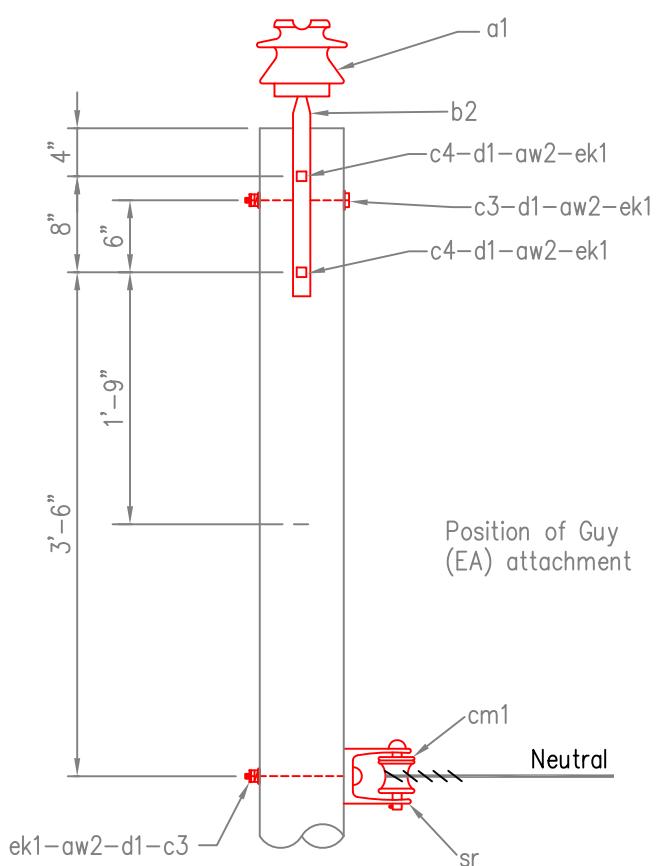
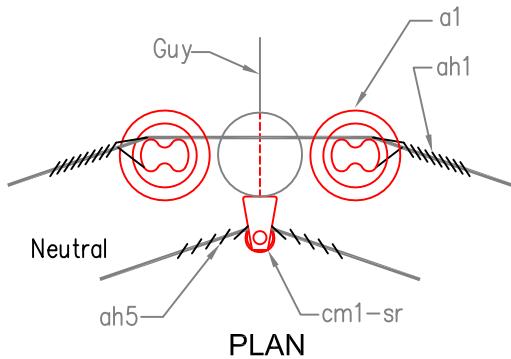
1. Maximum transverse load: 1000 lbs. per conductor
2. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, SINGLE PHASE MEDIUM ANGLE STRUCTURE DOUBLE PRIMARY SUPPORT 5° TO 30° ANGLE	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VA2



POLE TOP OFFSET PIN ASSEMBLY



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
MEDIUM ANGLE STRUCTURE  
DOUBLE PRIMARY SUPPORT  
5° TO 30° ANGLE

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VA2

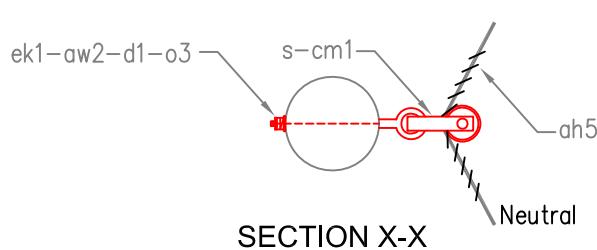
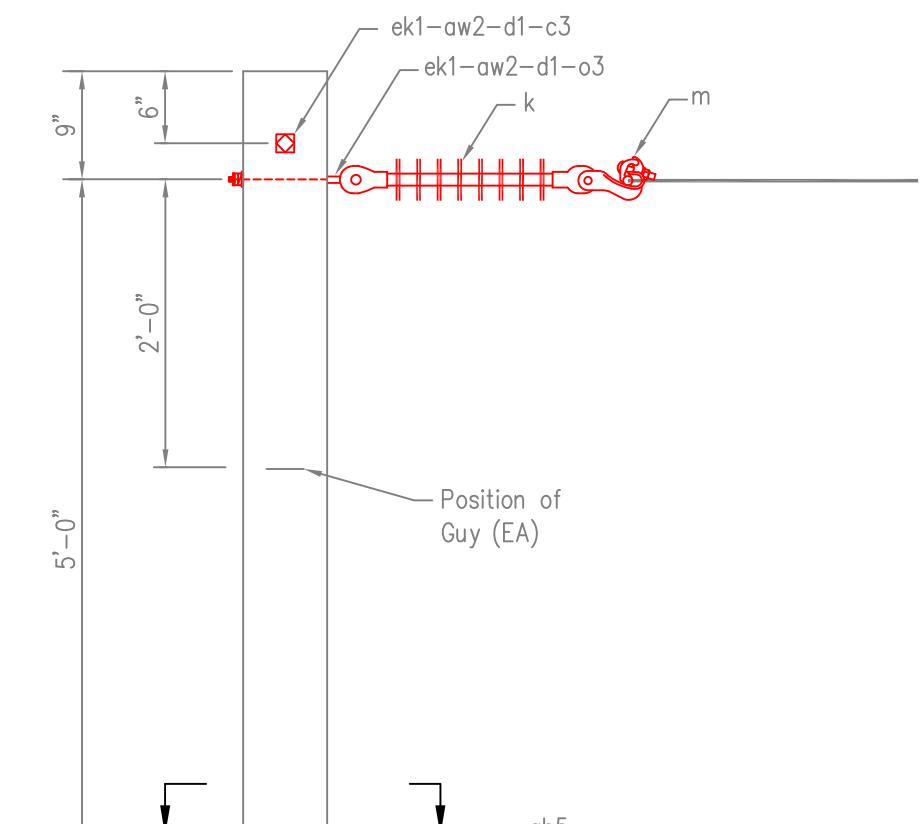
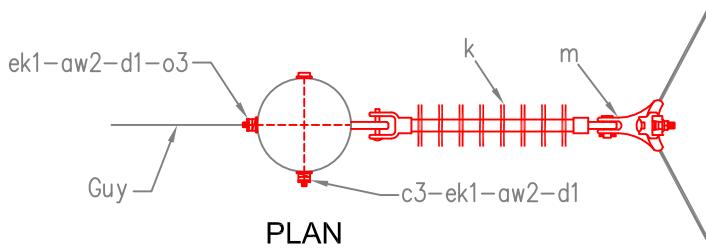
ITM.	QTY.	MAT.CODE No	MATERIAL
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
d1	4	7102-04-91	Washers, square, 5/8"
ek1	3	4290-70-63	Locknuts 5/8"
k	1	3428-60-60	Insulator, polymer suspension
m	1	1174-12-XX	Shoe, angle, (Specify conductor size)
o3	2	0636-15-12	Bolts, ovaleye 5/8" x 12"
s	1	1230-19-01	Clevis, swinging (J-6)

NOTES:

1. Maximum transverse load: 4000 lbs. per conductor
2. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, SINGLE PHASE VERTICAL CONSTRUCTION LARGE ANGLE STRUCTURE 30° TO 60° ANGLE	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				V A3



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
VERTICAL CONSTRUCTION  
LARGE ANGLE STRUCTURE  
30° TO 60° ANGLE

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VA3

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	1	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	1	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
c3	4	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
d1	5	7102-04-91	Washers, square, 5/8"
ek1	4	4290-70-63	Locknuts 5/8"
eq2	1	0780-47-01	Bracket, vertical pin insulator, Fiberglass, 1Ø
sr	1	1230-17-01	Clevis, rigid (D-bracket)

NOTES:

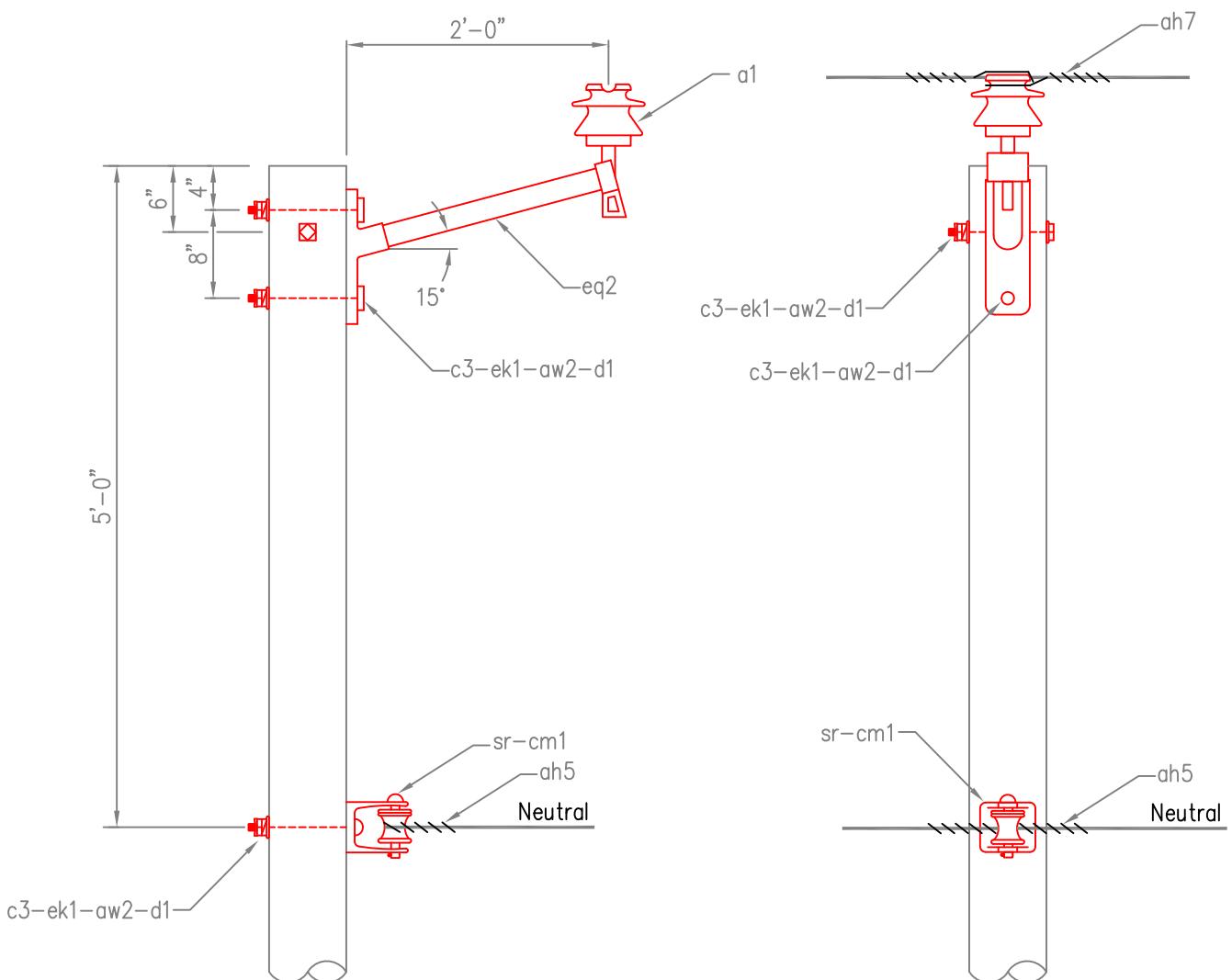
1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
VERTICAL CONSTRUCTION  
SINGLE PRIMARY SUPPORT  
REDUCED TENSION

ISSUED	9/20/2006
REVISED	10/01/2007
STANDARD NUMBER	
VA3S	



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
VERTICAL CONSTRUCTION  
SINGLE PRIMARY SUPPORT  
REDUCED TENSION

ISSUED	9/20/2006
REVISED	10/01/2007
STANDARD NUMBER	VA3S

ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
d1	4	7102-04-91	Washers, square, 5/8"
ek1	4	4290-70-63	Locknuts 5/8"
k	2	3428-60-60	Insulator, polymer suspension
l	4	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o3	4	0636-15-12	Bolts, ovaleye 5/8" x 12"

NOTES:

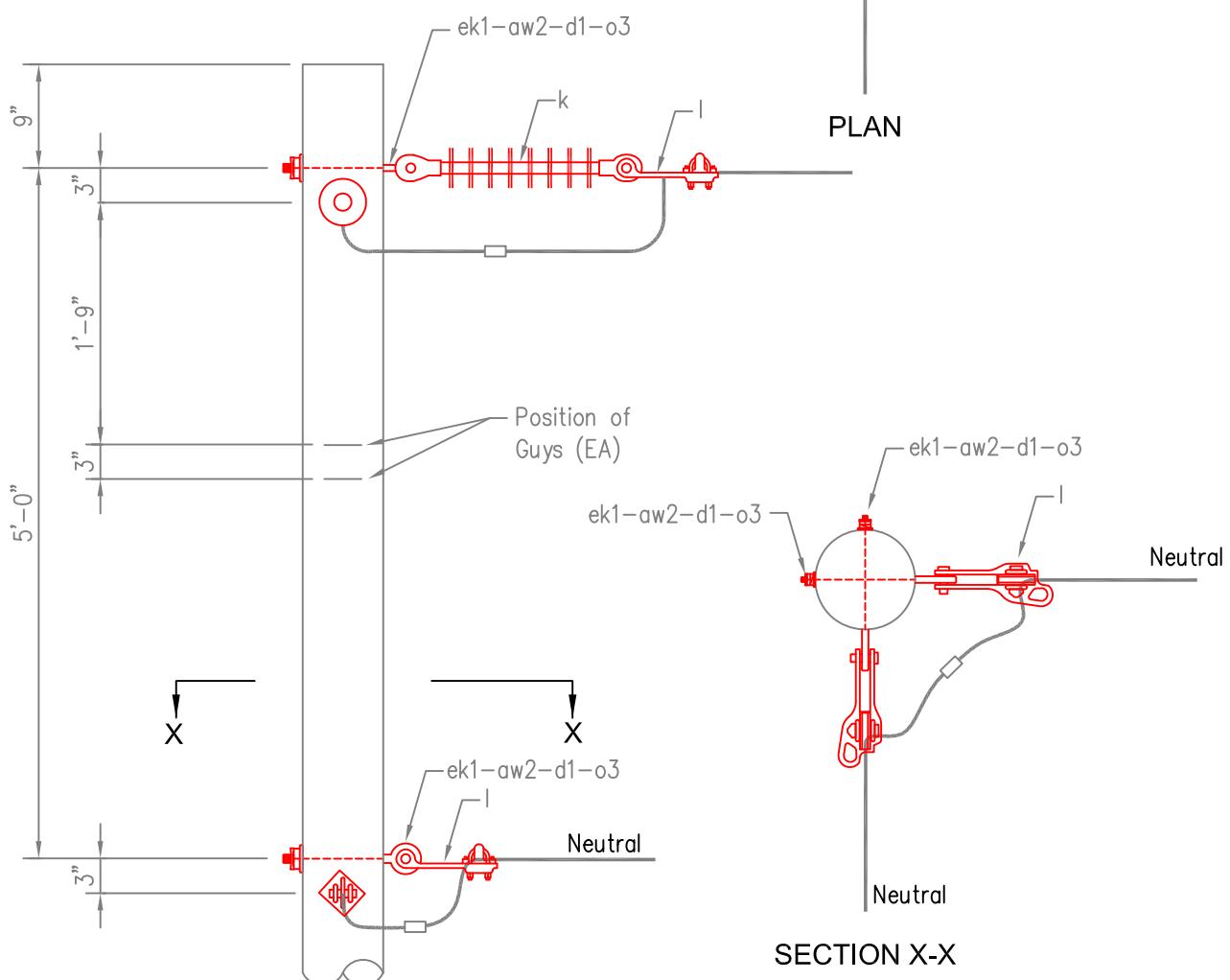
1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine  $\frac{3}{4}$ ".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

14.4/24.9 KV, SINGLE PHASE  
VERTICAL CONSTRUCTION  
DEADEND ANGLE STRUCTURE  
60° TO 90° ANGLE

ISSUED	2/04/2008
REVISED	8/11/2011
STANDARD NUMBER	VA4



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
VERTICAL CONSTRUCTION  
DEADEND ANGLE STRUCTURE  
60° TO 90° ANGLE

ISSUED	2/04/2008
REVISED	8/11/2011
STANDARD NUMBER	VA4

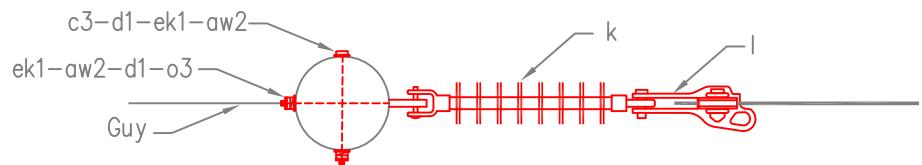
ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
d1	4	7102-04-91	Washers, square, 5/8"
ek1	3	4290-70-63	Locknuts 5/8"
k	1	3428-60-60	Insulator, polymer suspension
l	2	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o3	2	0636-15-12	Bolts, ovaleye 5/8" x 12"

NOTES:

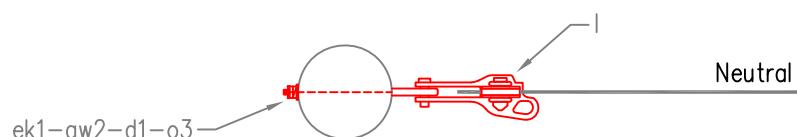
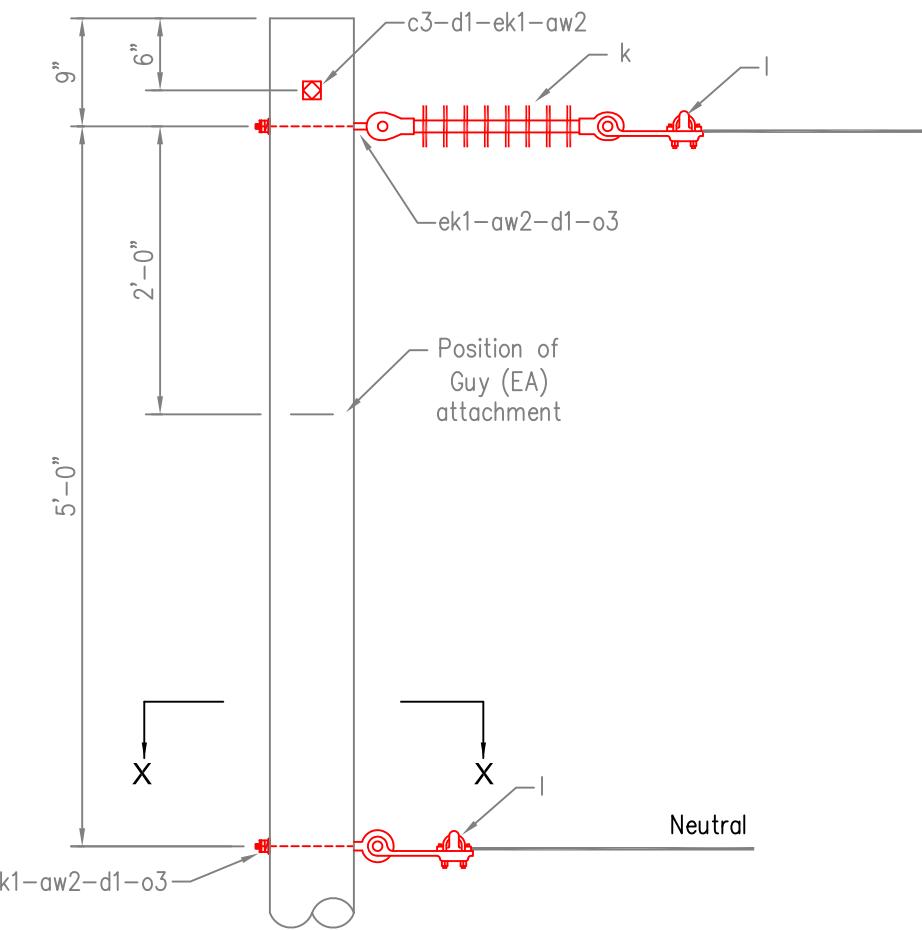
1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, SINGLE PHASE VERTICAL CONSTRUCTION DEADEND STRUCTURE (SINGLE DEADEND)	ISSUED	2/04/2008
			REVISED	8/11/2011
			STANDARD NUMBER	
				V4A5



PLAN



SECTION X-X



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
VERTICAL CONSTRUCTION  
DEADEND STRUCTURE  
(SINGLE DEADEND)

ISSUED	2/04/2008
REVISED	8/11/2011
STANDARD NUMBER	VA5

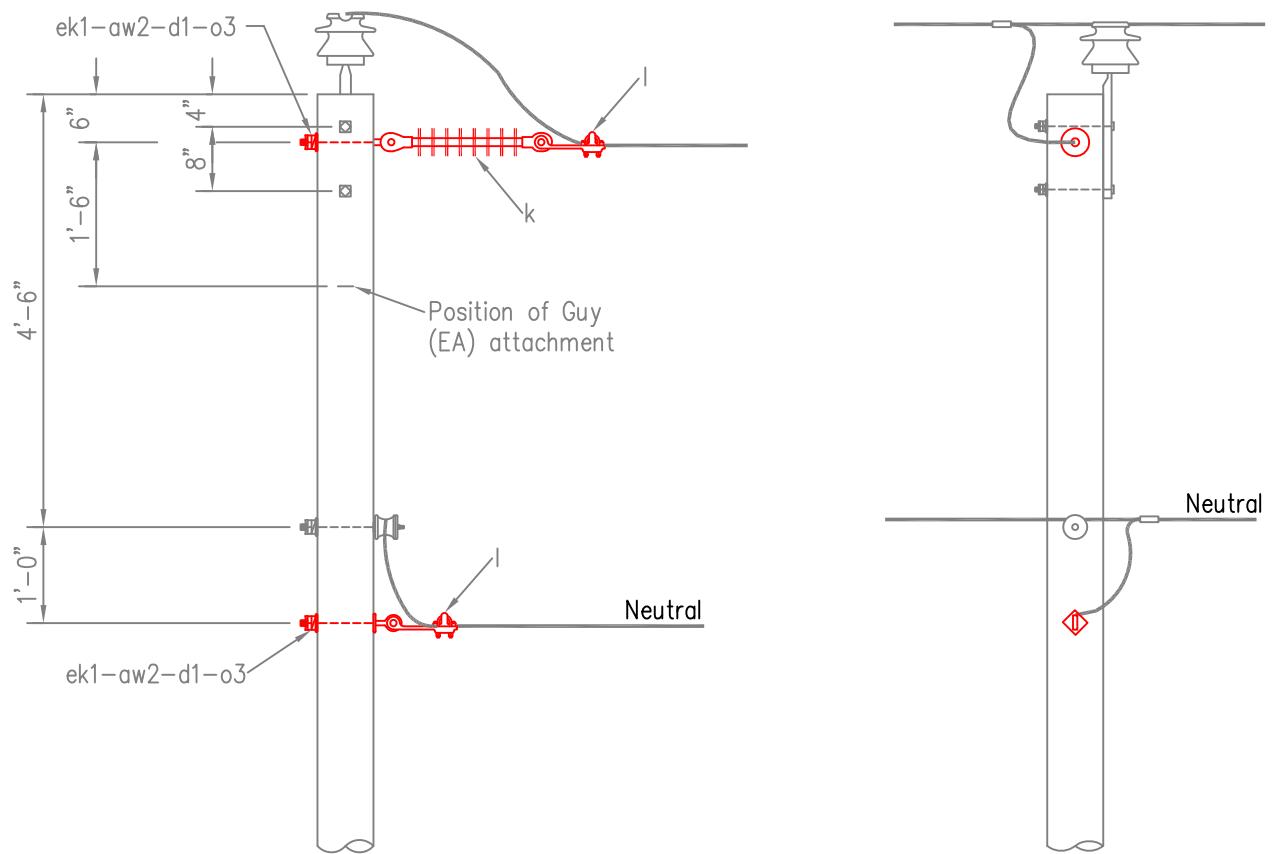
ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
d1	2	7102-04-91	Washers, square, 5/8"
ek1	2	4290-70-63	Locknuts 5/8"
k	1	3428-60-60	Insulator, polymer suspension
l	2	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o3	2	0636-15-12	Bolts, ovaleye 5/8" x 12"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine  $\frac{3}{4}$ ".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 KV, SINGLE PHASE TAP ASSEMBLY WITH TENSION FROM 1Ø LINE	ISSUED	2/04/2008
			REVISED	8/11/2011
			STANDARD NUMBER	VA5-1



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
TAP ASSEMBLY WITH TENSION  
FROM 1Ø LINE

ISSUED	2/04/2008
REVISED	8/11/2011
STANDARD NUMBER	VA5-1

ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
d1	2	7102-04-91	Washers, square, 5/8"
ek1	2	4290-70-63	Locknuts 5/8"
eu	1	3427-70-30	Link, F.G. primary extension, clevis-eye, 12"
k	1	3428-60-60	Insulator, polymer suspension
l	2	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o2	2	0636-15-14	Bolts, ovaleye 5/8" x 14"

NOTES:

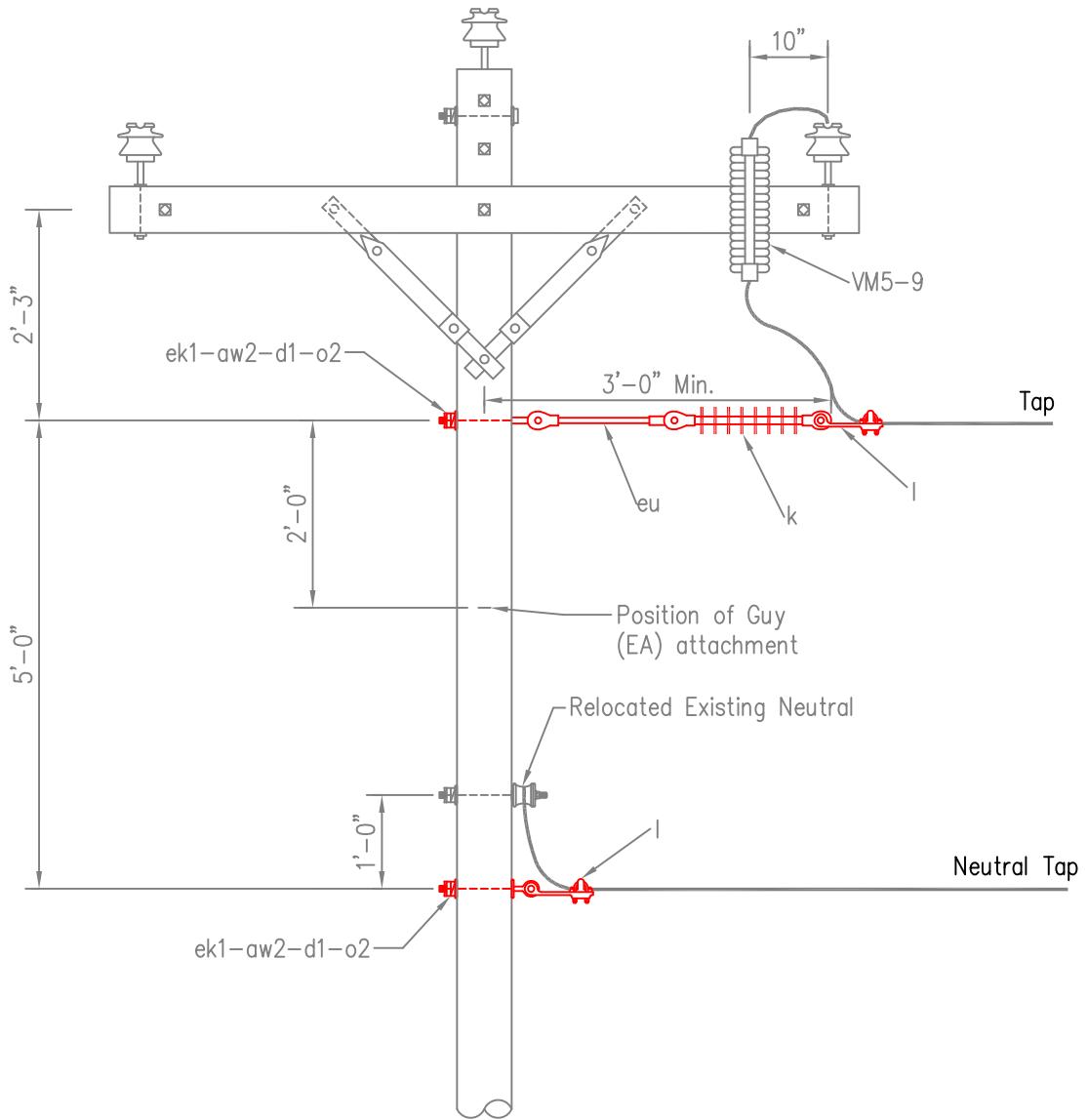
1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine  $\frac{3}{4}$ ".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
TAP ASSEMBLY WITH TENSION  
FROM 3Ø LINE

ISSUED	2/04/2008
REVISED	5/11/2011
STANDARD NUMBER	VA5-2



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
TAP ASSEMBLY WITH TENSION  
FROM 3Ø LINE

ISSUED	2/04/2008
REVISED	5/11/2011
STANDARD NUMBER	VA5-2

ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
d1	2	7102-04-91	Washers, square, 5/8"
ek1	2	4290-70-63	Locknuts 5/8"
eu	1	3427-70-30	Link, F.G. primary extension, clevis-eye, 12"
k	1	3428-60-60	Insulator, polymer suspension
l	2	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o4	2	0636-15-14	Bolts, ovaleye 5/8" x 14"

NOTES:

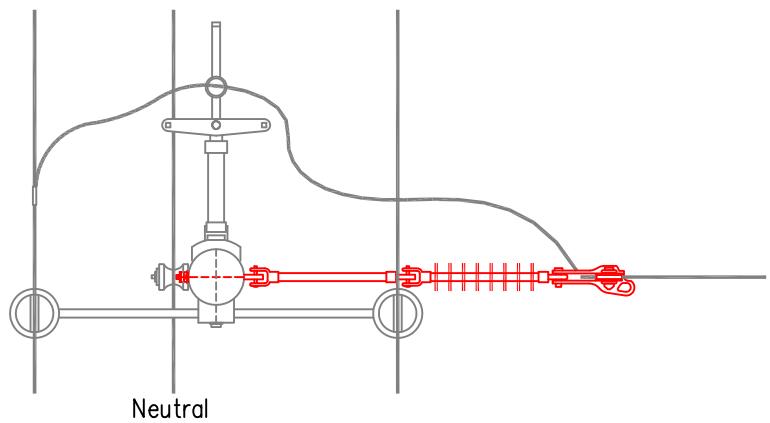
1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine  $\frac{3}{4}$ ".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



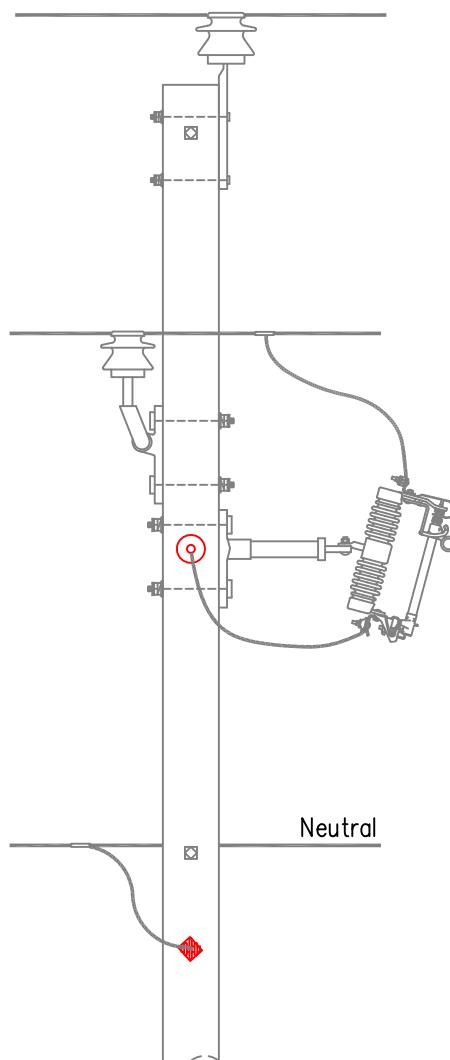
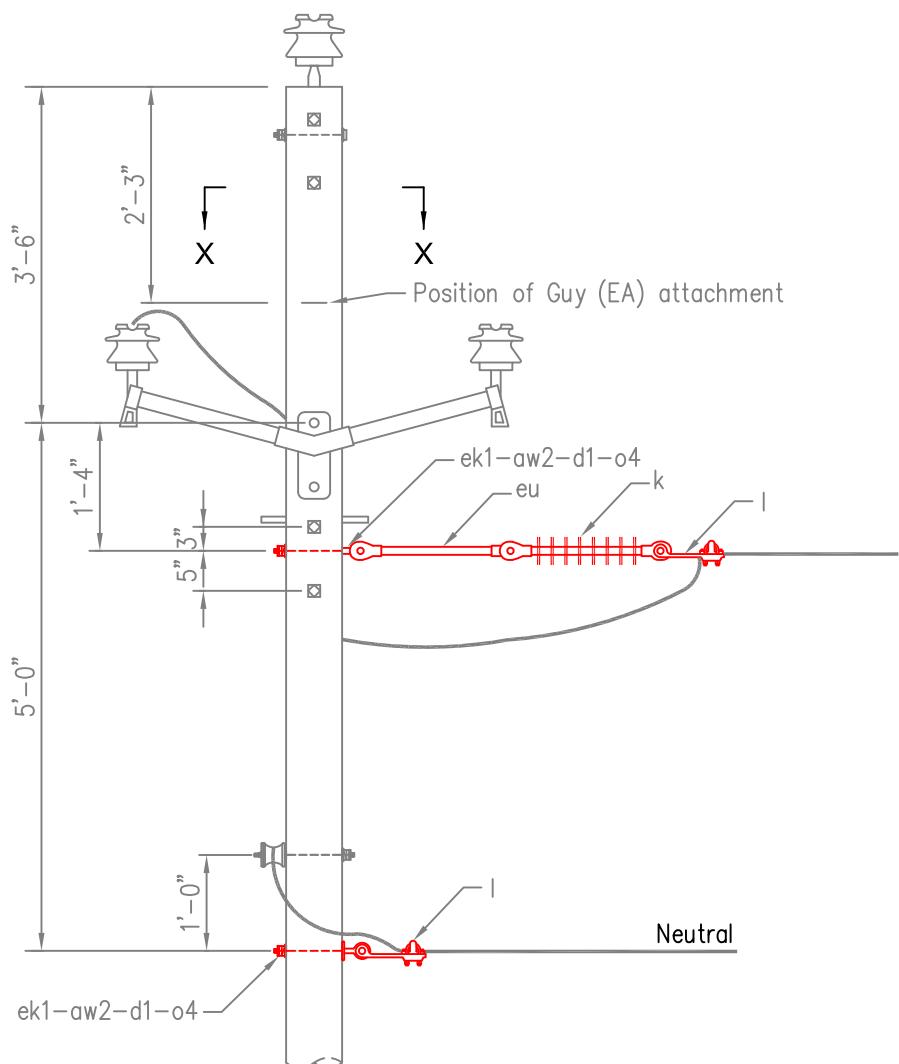
DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
TAP ASSEMBLY WITH TENSION  
FROM 3Ø NARROW PROFILE

ISSUED	2/04/2008
REVISED	5/11/2011
STANDARD NUMBER	VA5-2N



Section X-X



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
TAP ASSEMBLY WITH TENSION  
FROM 3Ø NARROW PROFILE

ISSUED	2/04/2008
REVISED	5/11/2011
STANDARD NUMBER	VA5-2N

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	1	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah9	1	6790-XX-88	Slack span deadend tie, (Specify conductor size)
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
d1	3	7102-04-91	Washers, square, 5/8"
ek1	3	4290-70-63	Locknuts 5/8"
eq2	1	0780-47-01	Bracket, vertical pin insulator, Fiberglass, 1Ø
I	1	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o4	1	0636-15-14	Bolts, ovaleye 5/8" x 14"

NOTES:

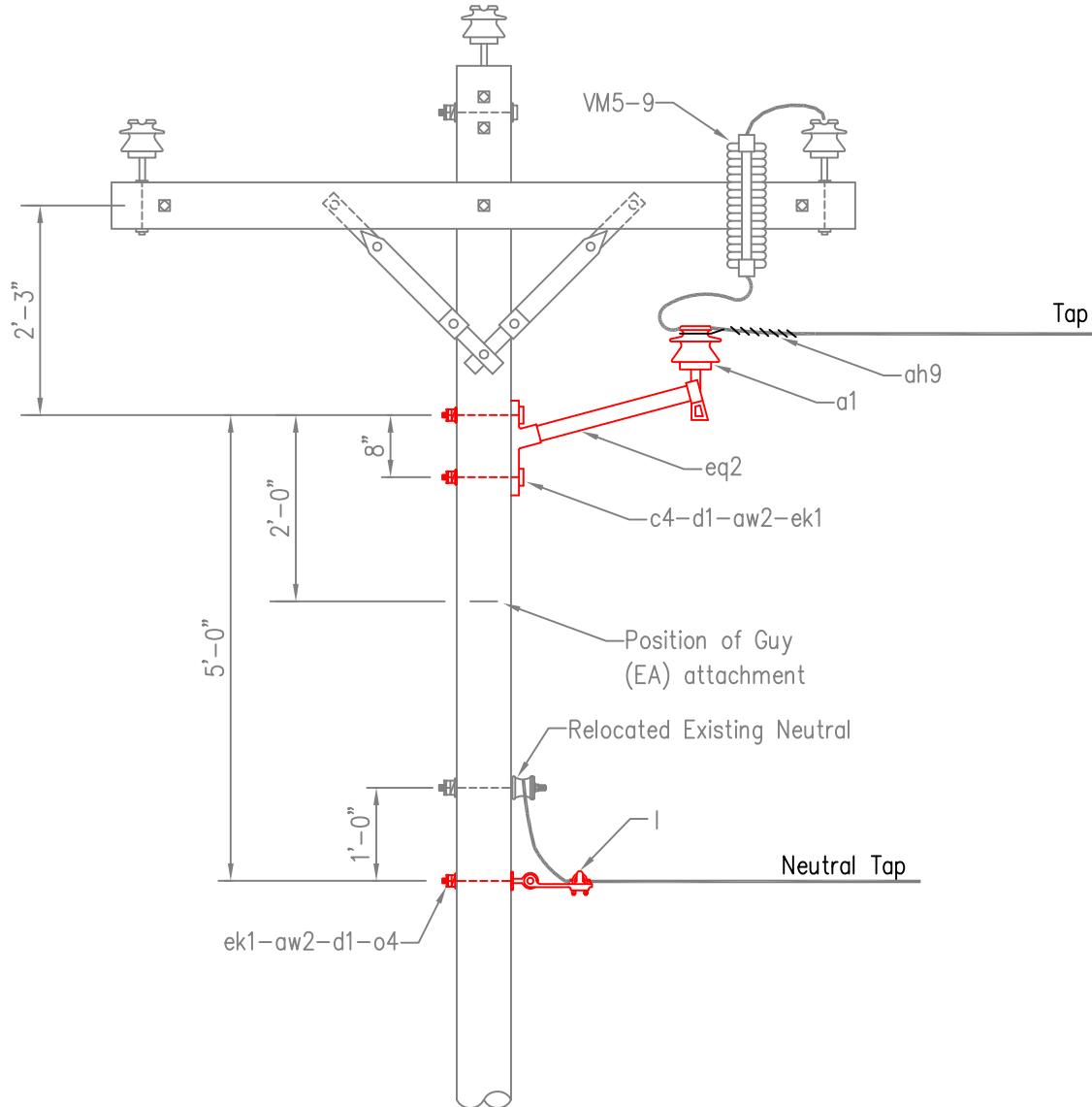
1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
TAP ASSEMBLY WITH REDUCED  
TENSION FROM 3Ø LINE

ISSUED	2/04/2008
REVISED	5/11/2011
STANDARD NUMBER	VA5-2S



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
TAP ASSEMBLY WITH REDUCED  
TENSION FROM 3Ø LINE

ISSUED	2/04/2008
REVISED	5/11/2011
STANDARD NUMBER	VA5-2S

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	1	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
aa	2	4290-40-63	Nuts, ovaleye 5/8"
ah7	1	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
b1	1	4561-23-20	Pin, pole top 14.4
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
d1	2	7102-04-91	Washers, square, 5/8"
ek1	4	4290-70-63	Locknuts 5/8"
k	1	3428-60-60	Insulator, polymer suspension
l	2	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

NOTES:

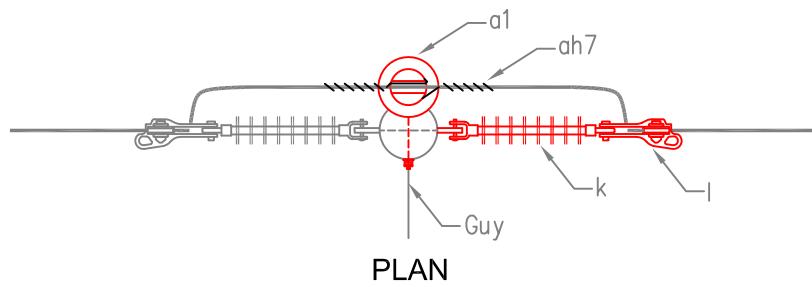
1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



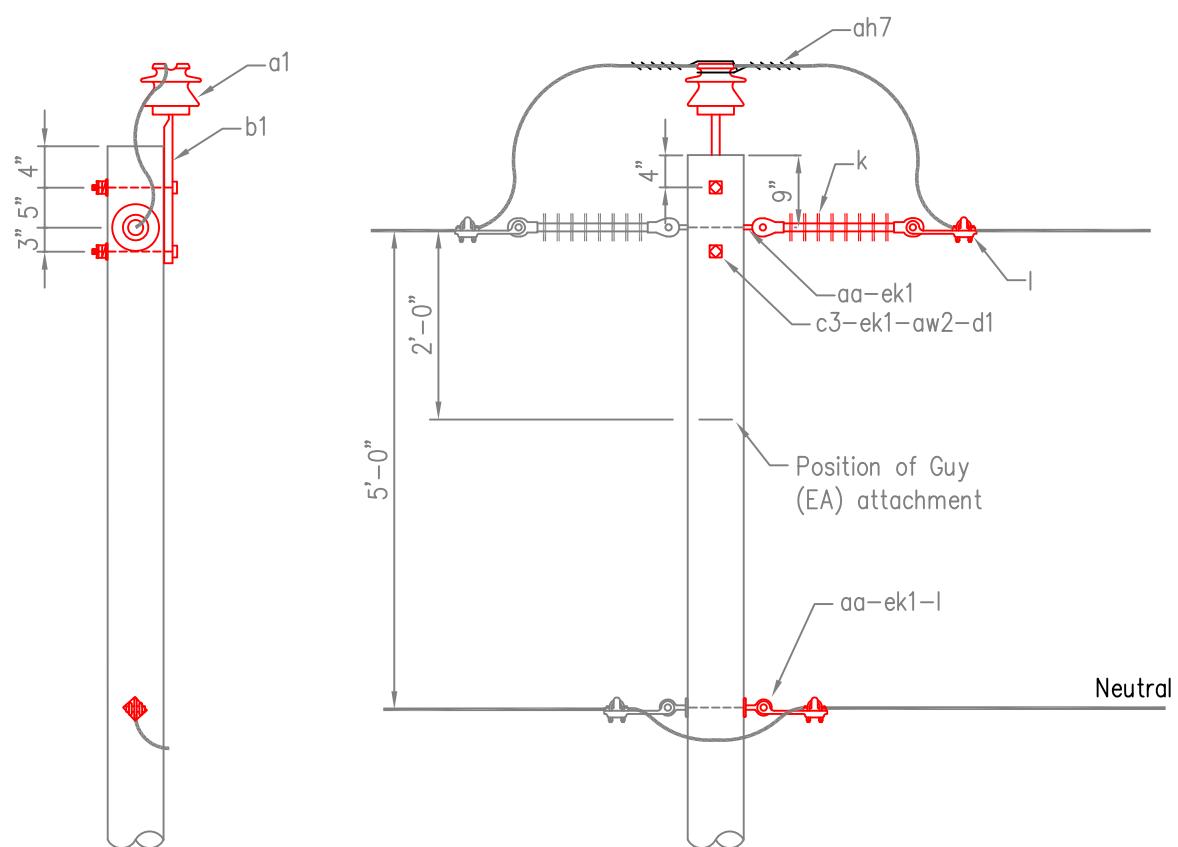
DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
TAP ASSEMBLY WITH TENSION  
FROM 1Ø SINGLE DEADEND

ISSUED	2/04/2008
REVISED	8/11/2011
STANDARD NUMBER	VA5-4



PLAN



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
TAP ASSEMBLY WITH TENSION  
FROM 1Ø SINGLE DEADEND

ISSUED	2/04/2008
REVISED	8/11/2011
STANDARD NUMBER	VA5-4

ITM.	QTY.	MAT.CODE No	MATERIAL
aa	2	4290-40-63	Nuts, ovaleye 5/8"
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
d1	2	7102-04-91	Washers, square, 5/8"
ek1	4	4290-70-63	Locknuts 5/8"
k	2	3428-60-60	Insulator, polymer suspension
l	4	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o3	2	0636-15-12	Bolts, ovaleye 5/8" x 12"

NOTES:

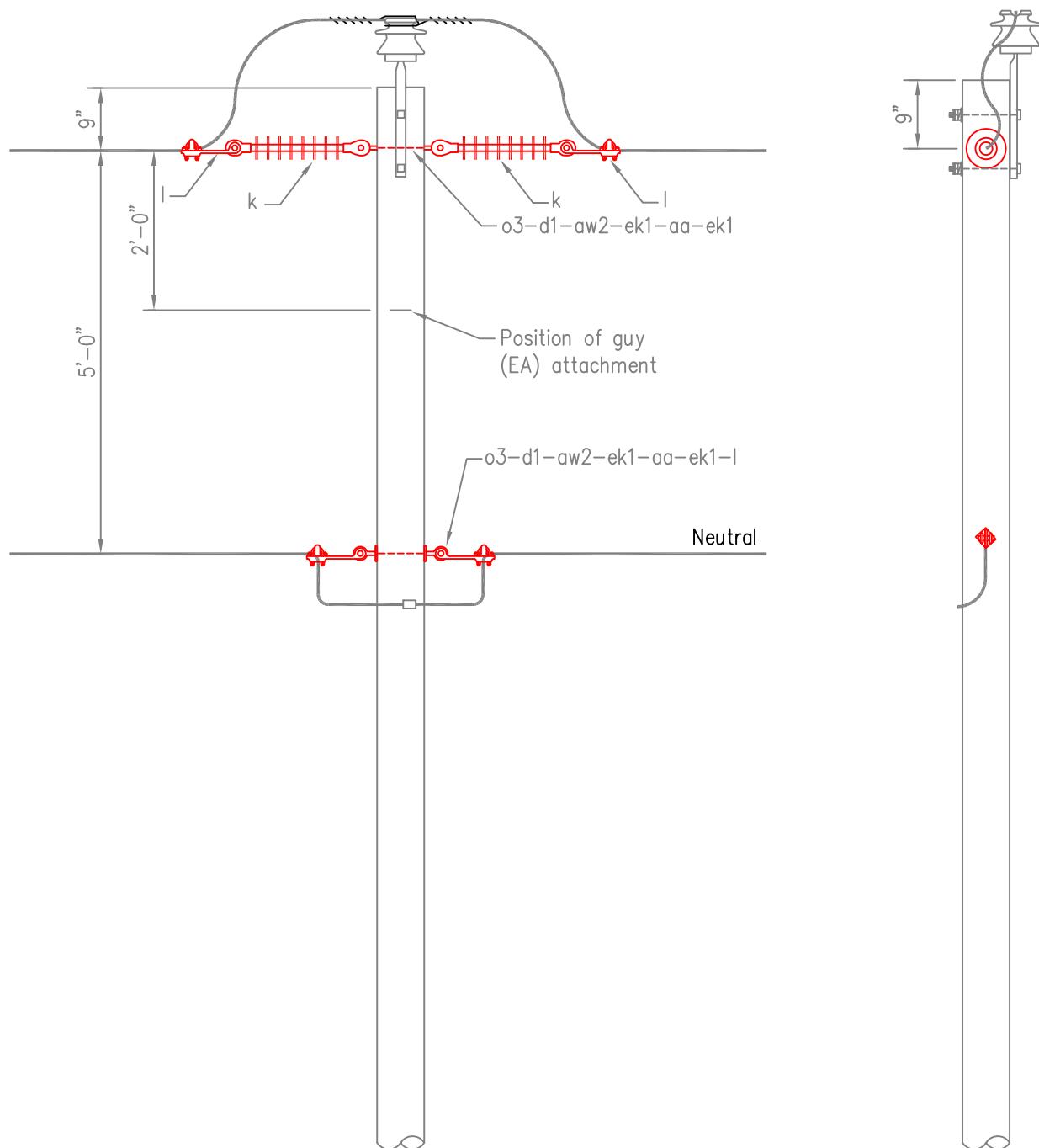
1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine  $\frac{3}{4}$ ".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
VERTICAL DEADEND STRUCTURE  
(DOUBLE DEADEND)

ISSUED	2/04/2008
REVISED	8/11/2011
STANDARD NUMBER	V4A6



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
VERTICAL DEADEND STRUCTURE  
(DOUBLE DEADEND)

ISSUED	2/04/2008
REVISED	8/11/2011
STANDARD NUMBER	VA6

ITM.	QTY.	MAT.CODE No	MATERIAL
aa	2	4290-40-63	Nuts, oval eye 5/8"
aw2	7	7108-99-41	Washers, double spring lock, 5/8"
az	2	4260-21-04	CN Metal Tags
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	12	7102-04-91	Washers, square, 5/8"
ek1	13	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
g	2	1809-01-01	Crossarm, Wood 8'
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
k	1	3428-60-60	Insulator, polymer suspension
l	2	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

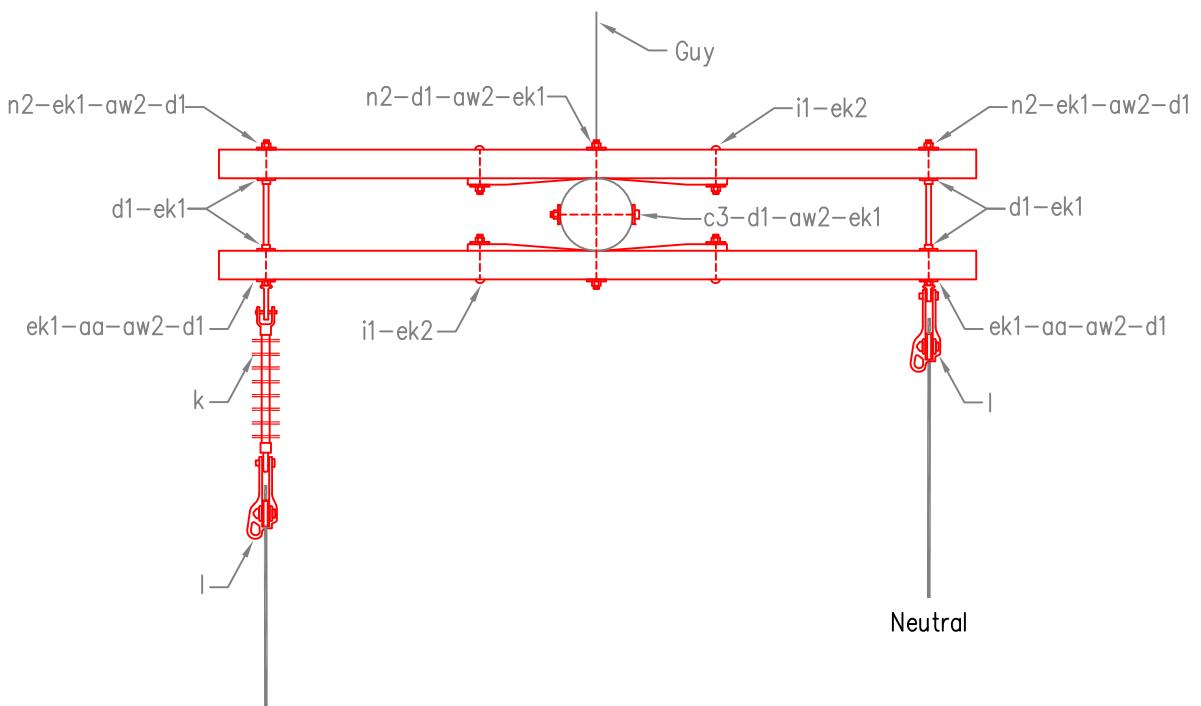
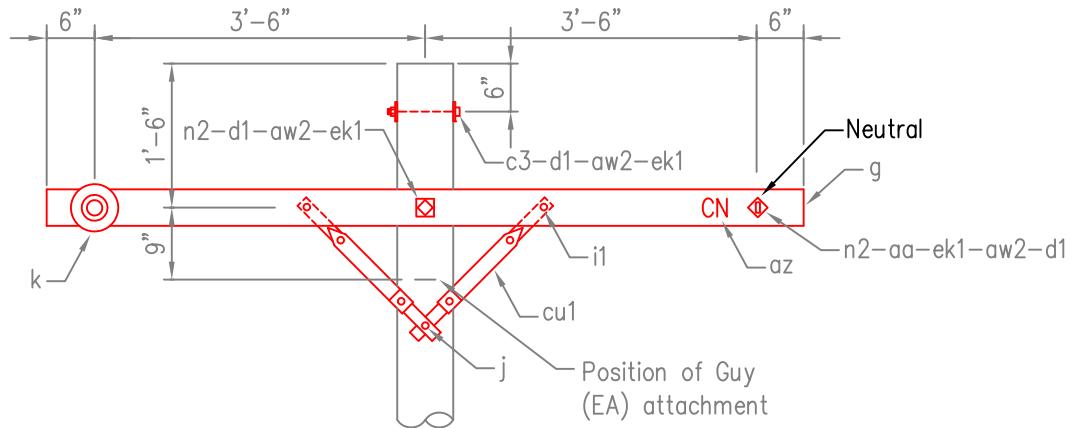
1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
CROSSARM CONSTRUCTION  
DEADEND STRUCTURE  
(SINGLE DEADEND)

ISSUED	2/04/2008
REVISED	8/11/2011
STANDARD NUMBER	V4A7



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
CROSSARM CONSTRUCTION  
DEADEND STRUCTURE  
(SINGLE DEADEND)

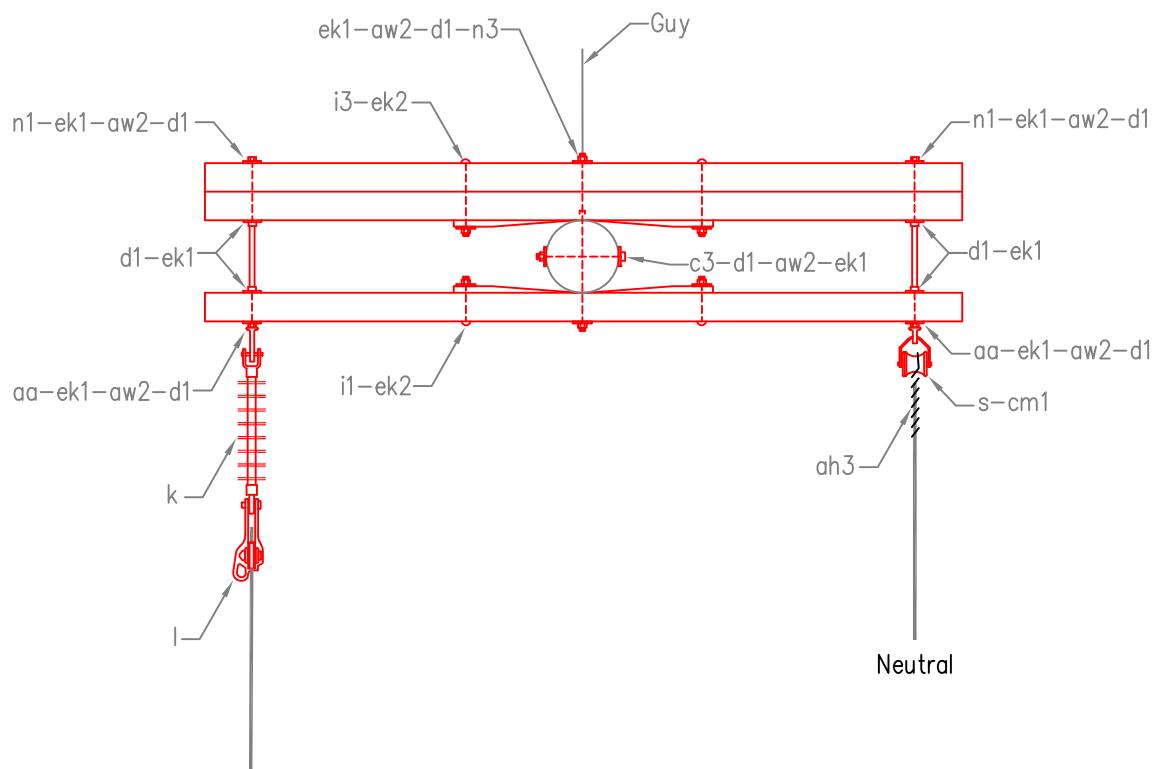
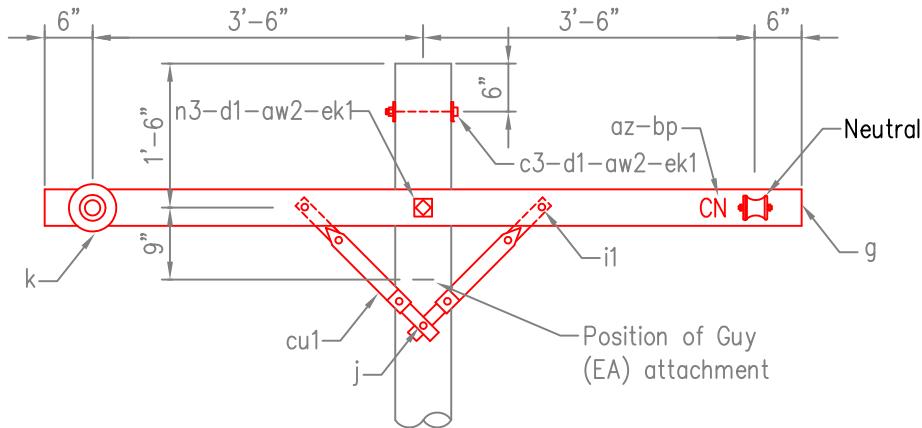
ISSUED	2/04/2008
REVISED	8/11/2011
STANDARD NUMBER	VA7

ITM.	QTY.	MAT.CODE No	MATERIAL
aa	2	4290-40-63	Nuts, oval eye 5/8"
ah3	1	6790-XX-44	Neutral deadend tie, (Specify conductor size)
aw2	8	7108-99-41	Washers, double spring lock, 5/8"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	13	7102-04-91	Washers, square, 5/8"
ek1	14	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
g	3	1809-01-01	Crossarm, Wood 8'
i1	2	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
i3	2	0630-03-09	Bolts, carriage 3/8" x 9"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
k	1	3428-60-60	Insulator, polymer suspension
l	1	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
n3	3	0633-05-24	Bolts, DA 5/8" x 24"
s	1	1230-19-01	Clevis, swinging

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir. RETIREMENT ONLY

	DATE	REVISION	14.4/24.9 kV, SINGLE PHASE THREE CROSSARM CONSTRUCTION (SINGLE DEADEND)	ISSUED	10/29/2009
				REVISED	
				STANDARD NUMBER	
					VA7-1-R



**RETIREMENT ONLY**



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
THREE CROSSARM CONSTRUCTION  
(SINGLE DEADEND)

ISSUED 10/29/2009

REVISED

STANDARD NUMBER

VA7-1-R

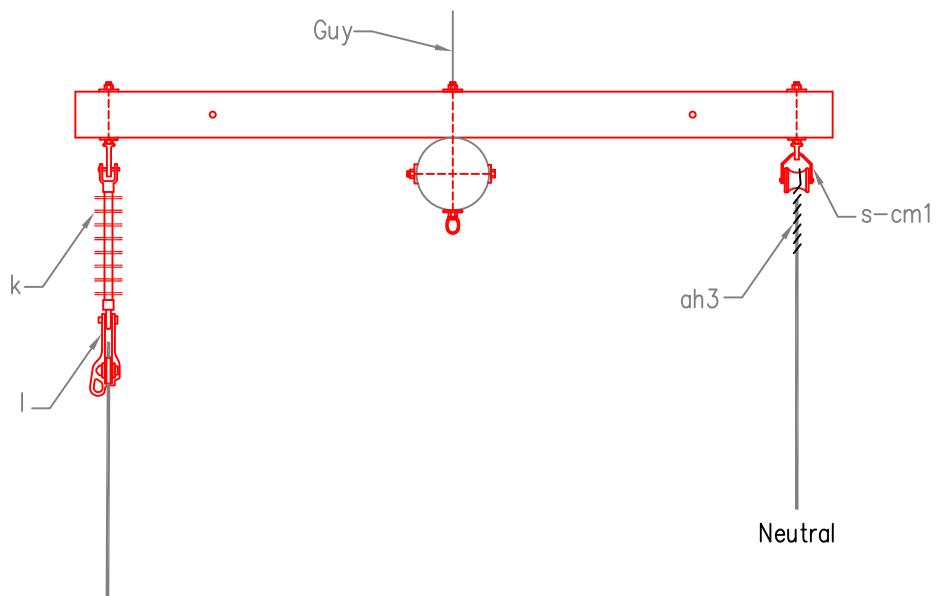
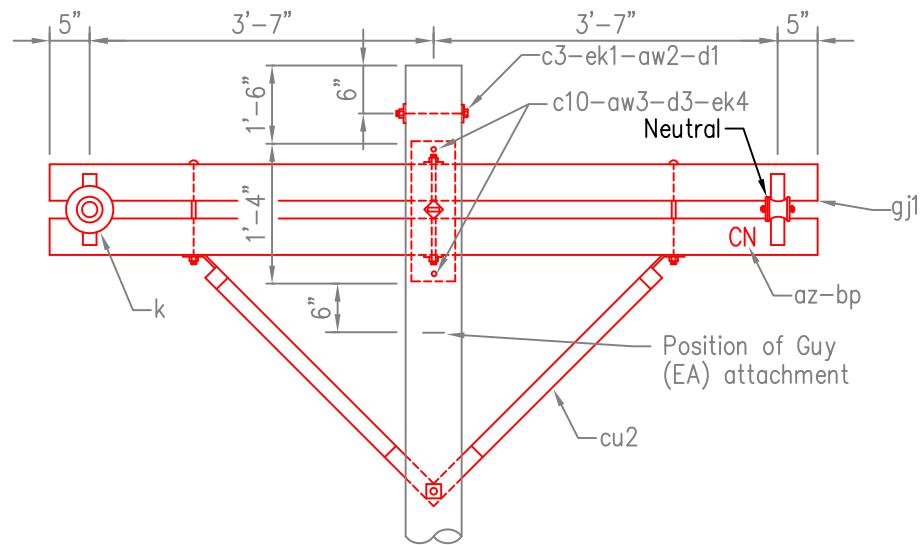
ITM.	QTY.	MAT.CODE No	MATERIAL
ah3	1	6790-XX-44	Neutral deadend tie, (Specify conductor size)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
az	2	4260-21-04	CN Metal Tags
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cm1	1	3426-20-12	Insulator, 3" spool
cu2	1	0753-51-68	Brace, crossarm 60" span 18" drop (pair)
d1	3	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	2	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
gj1	1	1808-12-03	Hughes regular crossarm, 8' (2890-B)
k	1	3428-60-60	Insulator, polymer suspension
l	1	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
s	1	1230-19-01	Clevis, swinging

NOTES:

- For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
  - Crossarm braces and mounting hardware are included in the crossarm package.
  - Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.
- FOR RETIREMENT ONLY**



DATE	REVISION	14.4/24.9 kV, SINGLE PHASE CROSSARM CONSTRUCTION DEADEND STRUCTURE (SINGLE DEADEND)	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	



**FOR RETIREMENT ONLY**



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
CROSSARM CONSTRUCTION  
DEADEND STRUCTURE  
(SINGLE DEADEND)

ISSUED 2/04/2008

REVISED

STANDARD NUMBER

VA7A-R

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	1	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
a2	1	3422-40-10	Insulator, 7.2 pin, white, 1" internal thread
ah	1	6790-XX-76	Slack span deadend tie F/C neck
ah9	1	6790-XX-88	Slack span deadend tie, (Specify conductor size) J neck
aw3	6	7108-99-51	Washers, double spring lock, 3/4"
az	2	4285-10-01	CN Stick-on Tags
c7	2	0638-06-06	Bolts, machine 3/4" x 6"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	6	7102-04-51	Washers, square, 3/4"
ek4	6	4290-70-75	Locknuts 3/4"
fm	1	4541-22-32	Pin, crossarm 7.2, 3/4" shank, neutral
fr	1	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gk	1	1809-09-14	Crossarm, Fiberglass 8' TB 3000-96

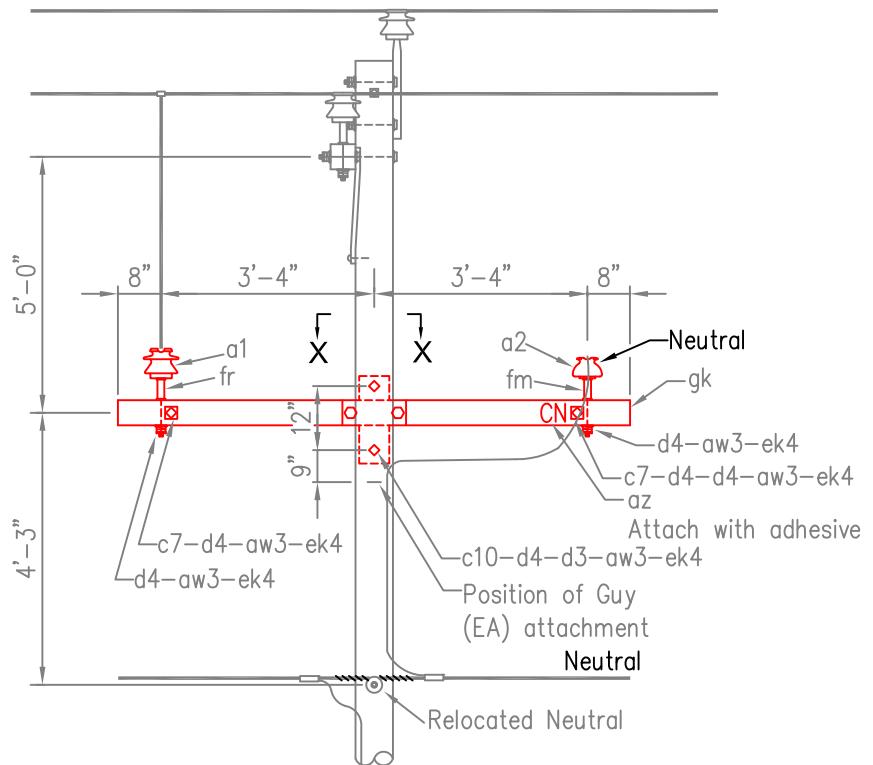
NOTES:

1. Maximum transverse load: 500 lbs. per conductor.
2. Maximum line angle within load limits: 5°.
3. Bolt lengths will be determined by the pole diameter at the position of the crossarm, the braces, & guy attachment.
4. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

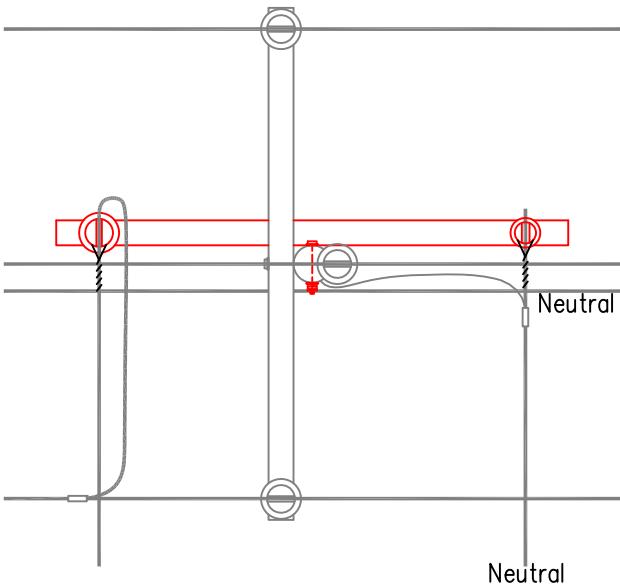


DATE	REVISION	14.4/24.9 kV, SINGLE PHASE CROSSARM CONSTRUCTION 1Ø TAP TAKEOFF FOR REDUCED TENSION DEADEND	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VA7S

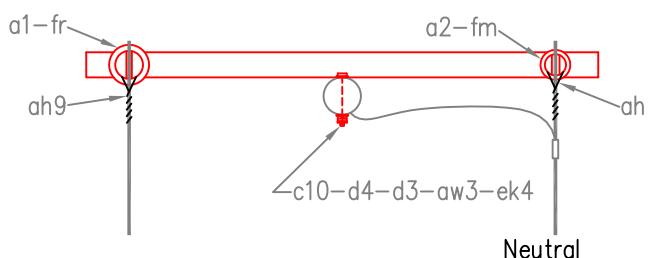
SIDE VIEW



PLAN VIEW



VIEW X-X



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
CROSSARM CONSTRUCTION  
1Ø TAP TAKEOFF FOR  
REDUCED TENSION DEADEND

ISSUED	2/04/2008
REVISED	8/11/2011
STANDARD NUMBER	VA7S

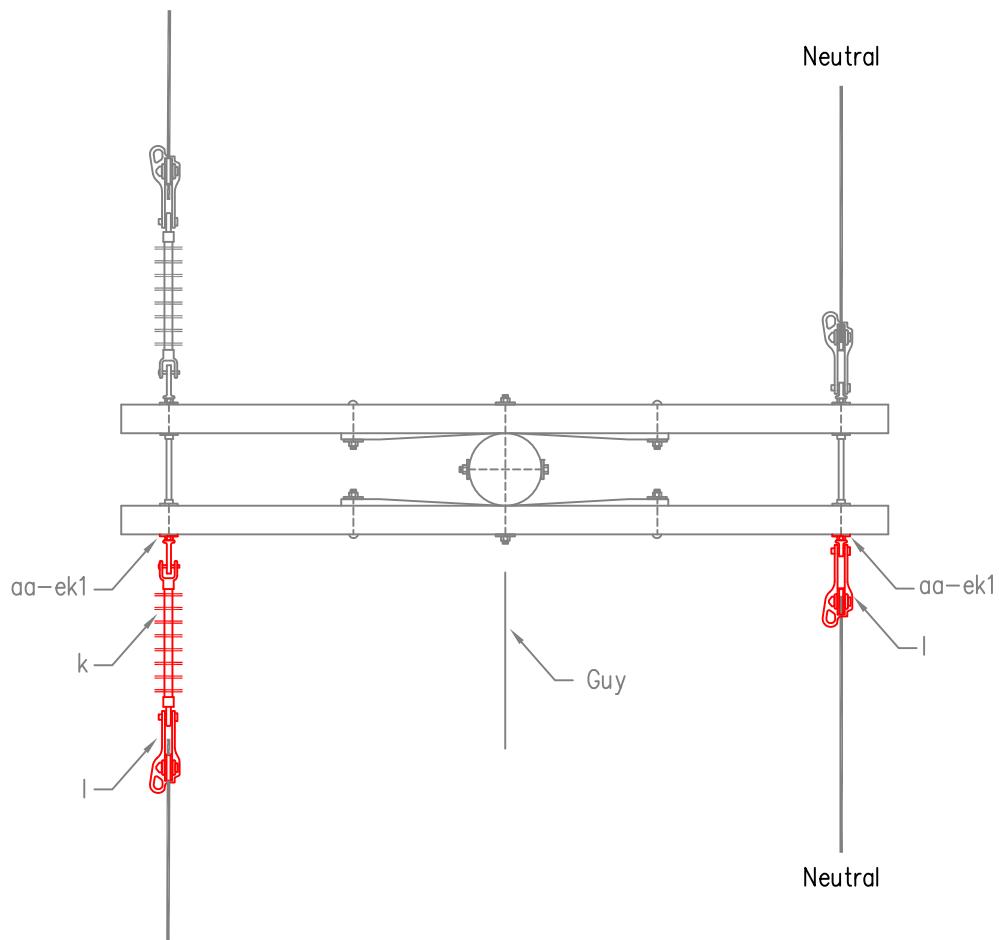
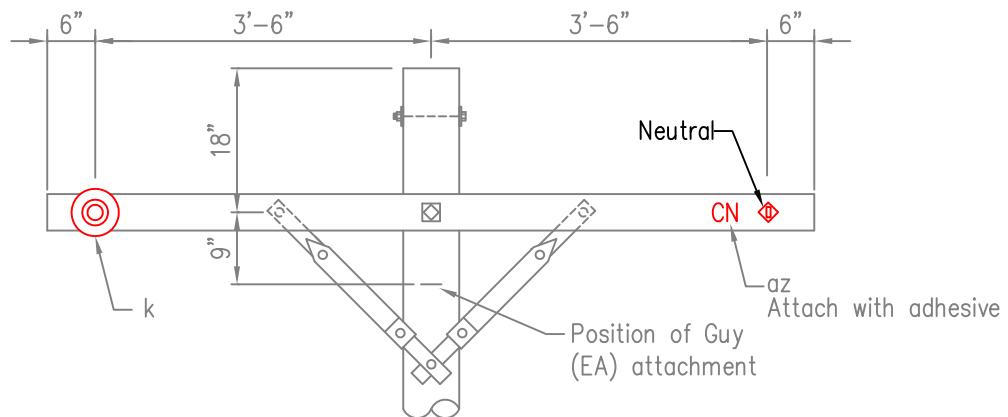
ITM.	QTY.	MAT.CODE No	MATERIAL
aa	2	4290-40-63	Nuts, oval eye 5/8"
az	1	4285-10-01	CN Stick-on Tags
ek1	2	4290-70-63	Locknuts 5/8"
k	1	3428-60-60	Insulator, polymer suspension
l	2	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine  $\frac{3}{4}$ ".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, SINGLE PHASE CROSSARM CONSTRUCTION DEADEND TAKEOFF FOR SPAN WITH TENSION	ISSUED	2/04/2008
			REVISED	8/11/2011
			STANDARD NUMBER	VA7X



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
CROSSARM CONSTRUCTION  
DEADEND TAKEOFF FOR  
SPAN WITH TENSION

ISSUED	2/04/2008
REVISED	8/11/2011
STANDARD NUMBER	VA7X

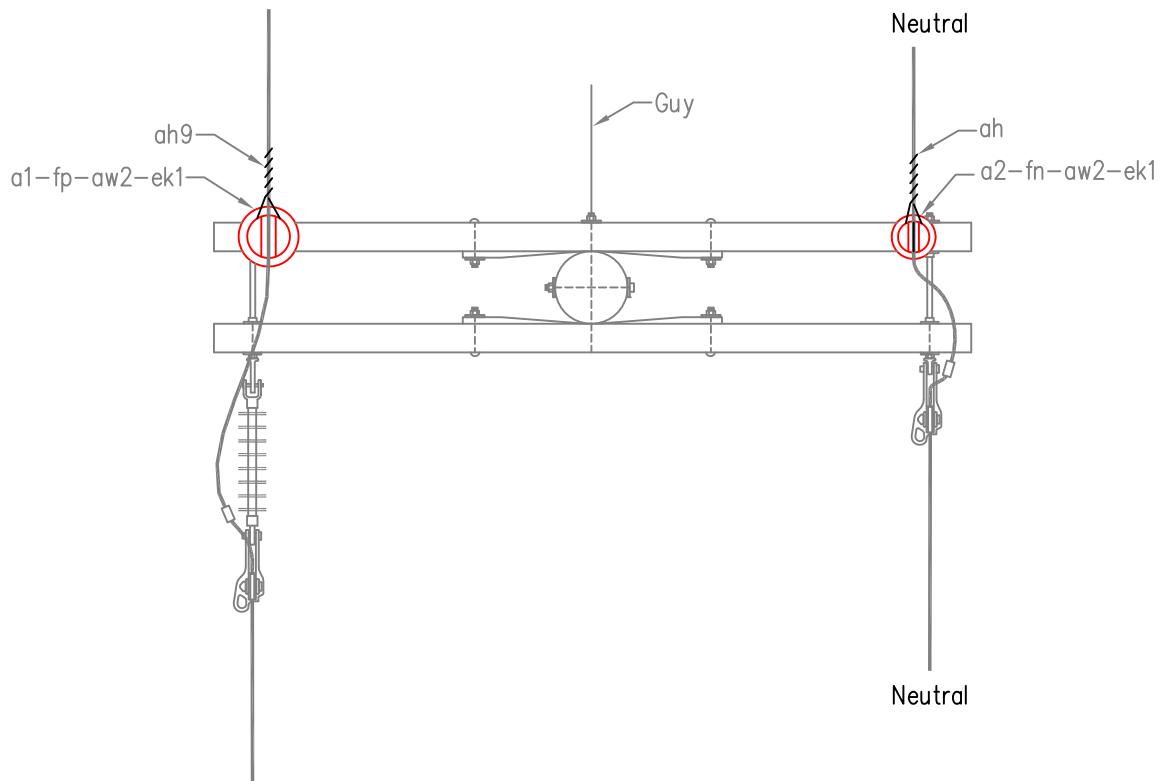
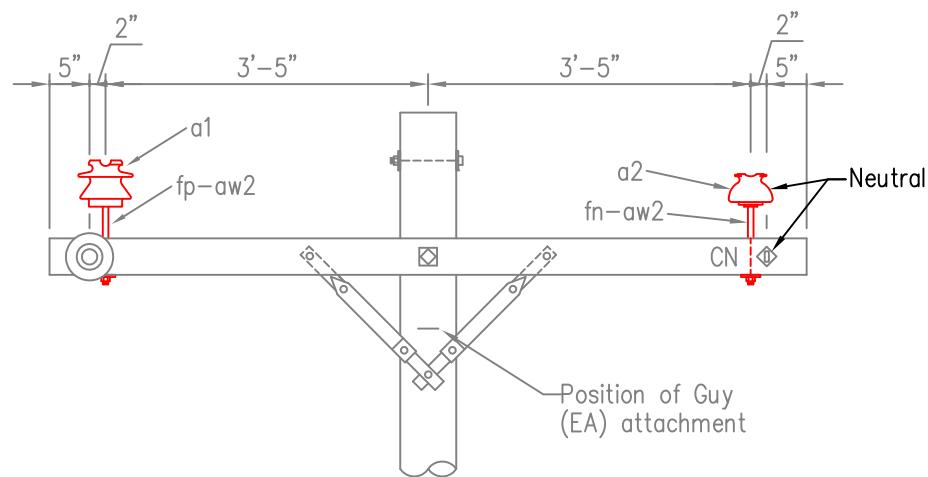
ITEM.	QTY.	MAT.CODE No	MATERIAL
a1	1	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
a2	1	3422-40-10	Insulator, 7.2 pin, white, 1" internal thread
ah	1	6790-XX-76	Slack span deadend tie, F/C neck
dh9	1	6790-XX-88	Slack span deadend tie, (Specify conductor size)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
az	2	4260-21-04	CN Metal Tags
d1	2	7102-04-91	Washers, square, 5/8"
ek1	2	4290-70-63	Locknuts 5/8"
fn	1	4541-24-11	Pin, crossarm 7.2, neutral, 5/8"
fp	1	4541-23-13	Pin, crossarm 14.4, phase, 5/8"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine  $\frac{3}{4}$ ".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, SINGLE PHASE CROSSARM CONSTRUCTION DEADEND TAKEOFF FOR SPAN WITH REDUCED TENSION	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VA7XS



DATE

REVISION

14.4/24.9 kV, SINGLE PHASE  
CROSSARM CONSTRUCTION  
DEADEND TAKEOFF FOR  
SPAN WITH REDUCED TENSION

ISSUED

2/04/2008

REVISED

STANDARD NUMBER

VA7XS

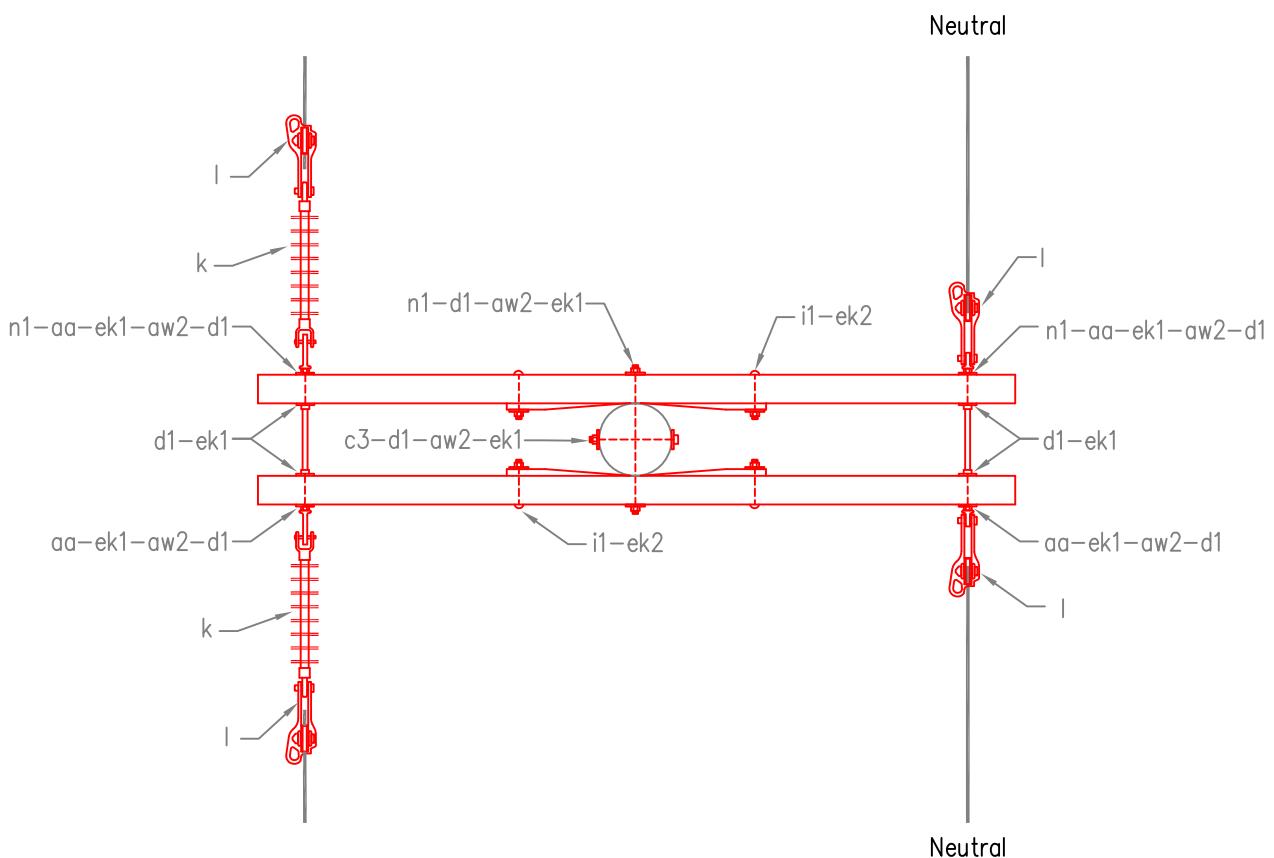
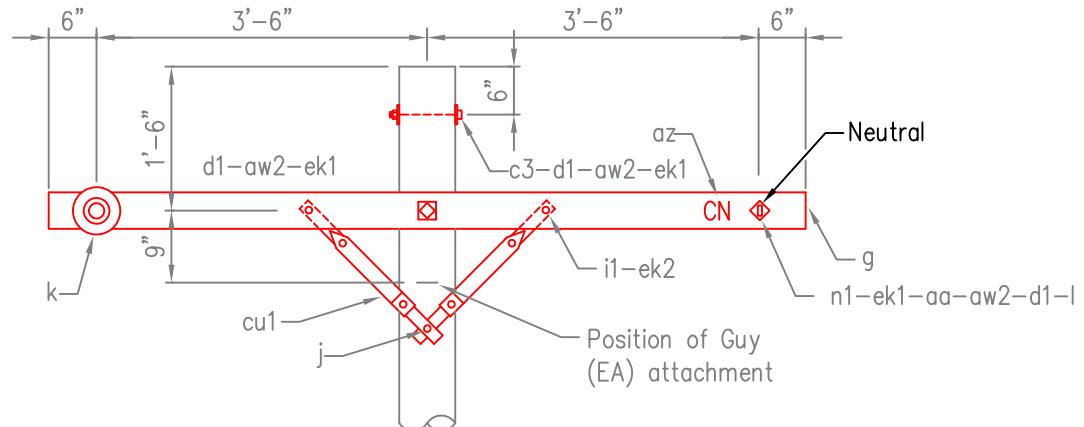
ITM.	QTY.	MAT.CODE No	MATERIAL
aa	4	4290-40-63	Nuts, oval eye 5/8"
aw2	7	7108-99-41	Washers, double spring lock, 5/8"
az	2	4260-21-04	CN Metal Tags
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	12	7102-04-91	Washers, square, 5/8"
ek1	15	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
g	2	1809-01-01	Crossarm, Wood 8'
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
k	2	3428-60-60	Insulator, polymer suspension
l	4	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
n1	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine  $\frac{3}{4}$ ".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, SINGLE PHASE CROSSARM CONSTRUCTION DEADEND STRUCTURE (DOUBLE DEADEND)	ISSUED	2/04/2008
			REVISED	8/11/2011
			STANDARD NUMBER	
				VA8



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
CROSSARM CONSTRUCTION  
DEADEND STRUCTURE  
(DOUBLE DEADEND)

ISSUED	2/04/2008
REVISED	8/11/2011
STANDARD NUMBER	VA8

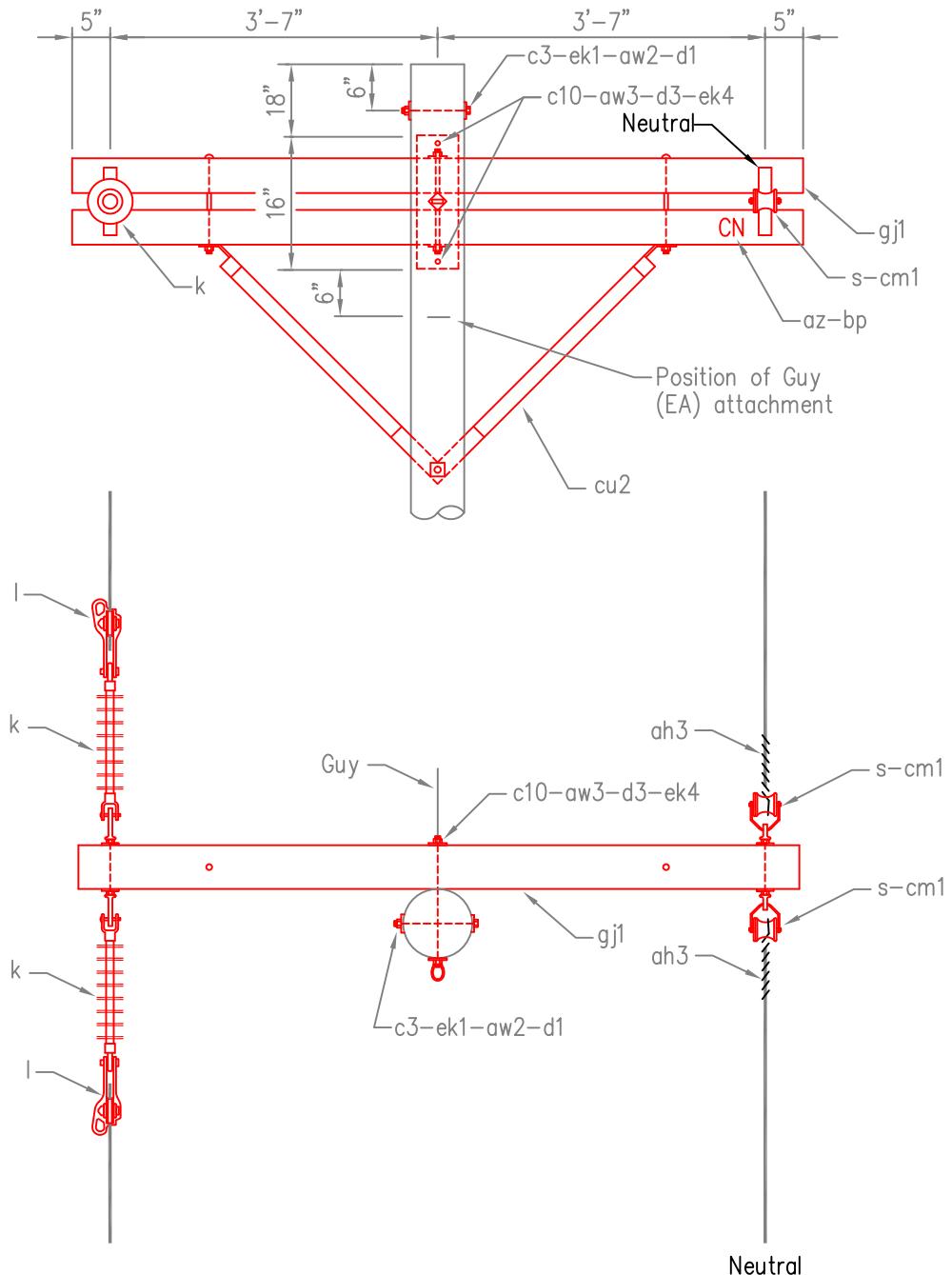
ITM.	QTY.	MAT.CODE No	MATERIAL
ah3	2	6790-XX-44	Neutral deadend tie, (Specify conductor size)
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
az	2	4260-21-04	CN Metal Tags
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cm1	2	3426-20-12	Insulator, 3" spool
cu2	1	0753-51-68	Brace, crossarm 60" span 18" drop (pair)
d1	2	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	1	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
gj1	1	1808-12-03	Hughes regular crossarm, 8' (2890-B)
k	2	3428-60-60	Insulator, polymer suspension
l	2	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
s	2	1230-19-01	Clevis, swinging

NOTES:

- For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
- Crossarm braces and mounting hardware are included in the crossarm package.
- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir. FOR RETIREMENT ONLY



DATE	REVISION	14.4/24.9 kV, SINGLE PHASE CROSSARM CONSTRUCTION DEADEND STRUCTURE (DOUBLE DEADEND)	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VA8A-R



**FOR RETIREMENT ONLY**



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
CROSSARM CONSTRUCTION  
DEADEND STRUCTURE  
(DOUBLE DEADEND)

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VA8A-R

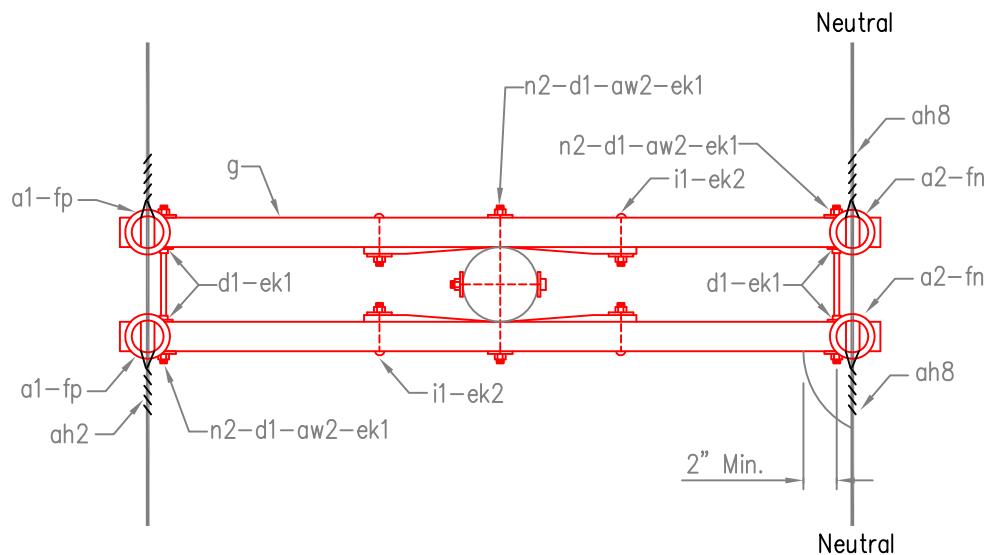
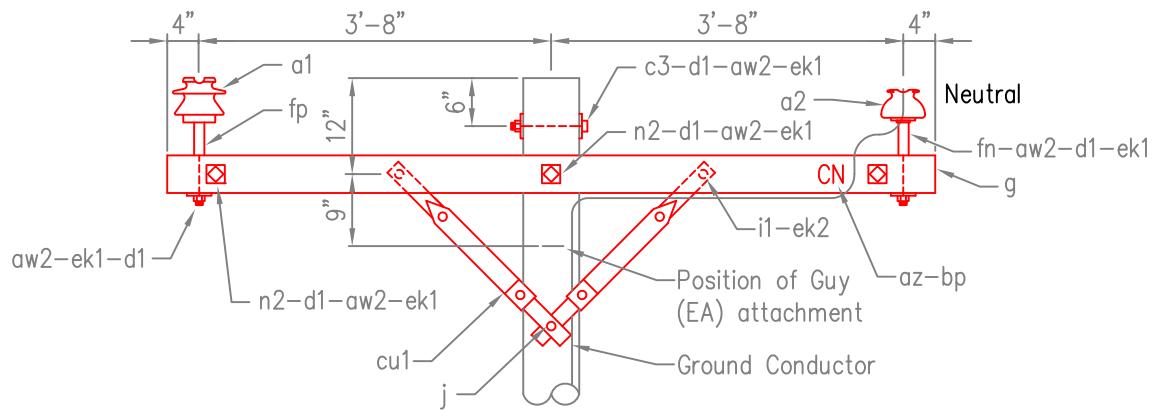
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	2	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
a2	2	3422-40-10	Insulator, 7.2 pin, white, 1" internal thread
ah2	1	6790-XX-33	Double support tie, (Specify conductor size)
ah8	1	6790-XX-78	C/F double neck double support (Specify conductor size)
aw2	11	7108-99-41	Washers, double spring lock, 5/8"
az	2	4260-21-04	CN Metal Tags
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	16	7102-04-91	Washers, square, 5/8"
ek1	15	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
fn	2	4541-24-11	Pin, crossarm 7.2, neutral, 5/8"
fp	2	4541-23-13	Pin, crossarm 14.4, phase, 5/8"
g	2	1809-01-01	Crossarm, Wood 8'
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. Maximum transverse load: 1000 lbs. per conductor.
2. Maximum line angle within load limits: 20°.
3. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
4. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, SINGLE PHASE CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VA9



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VA9

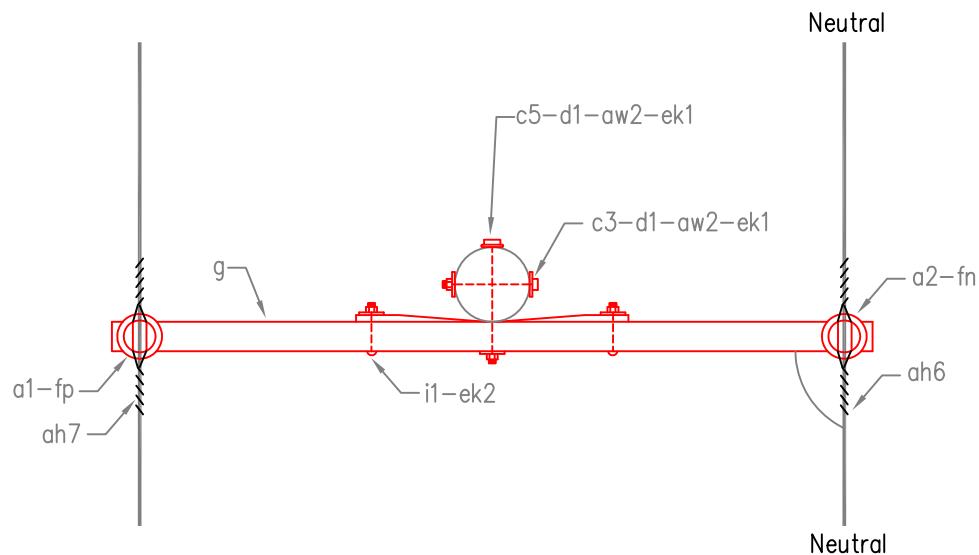
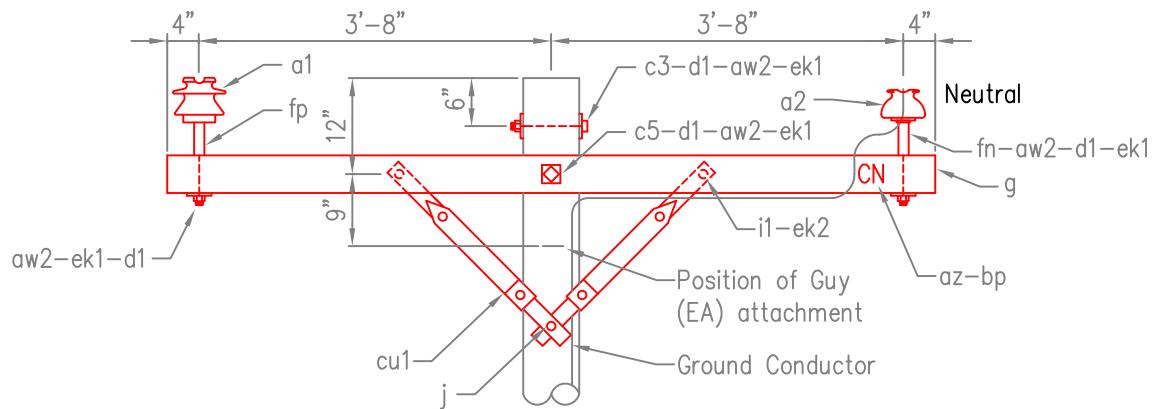
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	1	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
a2	1	3422-40-10	Insulator, 7.2 pin, white, 1" internal thread
ah6	1	6790-XX-76	C/F neck wrap lock tie, (Specify conductor size)
ah7	1	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
az	2	4260-21-04	CN Metal Tags
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c5	1	0638-05-16	Bolts, machine 5/8" x 16"
cu1	1	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	6	7102-04-91	Washers, square, 5/8"
ek1	4	4290-70-63	Locknuts 5/8"
ek2	2	4290-70-38	Locknuts 3/8"
fn	1	4541-24-11	Pin, crossarm 7.2, neutral, 5/8"
fp	1	4541-23-13	Pin, crossarm 14.4, phase, 5/8"
g	1	1809-01-01	Crossarm, Wood 8'
i1	2	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	1	5550-44-40	Screw, lag 1/2 "x 4"

NOTES:

1. Maximum transverse load: 500 lbs. per conductor.
2. Maximum line angle within load limits: 5°.
3. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
4. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, SINGLE PHASE CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VA9-1



DATE	REVISION

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# **Tab VB**

# **Tab VB**

**INDEX VB****TWO-PHASE PRIMARY POLE TOP ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
VB1	SINGLE SUPPORT – TANGENT
VB1-LN	SINGLE SUPPORT – LESS NEUTRAL TANGENT
VB1-10	SINGLE SUPPORT – TANGENT – 10' CROSSARM
VB1-10-LN	SINGLE SUPPORT – TANGENT – 10' CROSSARM LESS NEUTRAL
VB1N	SINGLE SUPPORT – NARROW PROFILE TANGENT
VB1-1	DOUBLE SUPPORT – TANGENT
VB1-1-LN	DOUBLE SUPPORT – TANGENT – LESS NEUTRAL
VB1-1-10	DOUBLE SUPPORT – TANGENT – 10' CROSSARM
VB1-1-10-LN	DOUBLE SUPPORT – TANGENT – 10' CROSSARM LESS NEUTRAL
VB1-2	SINGLE SUPPORT – TANGENT LARGE CONDUCTOR
VB1-2-LN	SINGLE SUPPORT – TANGENT LARGE CONDUCTOR – LESS NEUTRAL
VB1-2-10	SINGLE SUPPORT – TANGENT LARGE CONDUCTOR – 10' CROSSARM
VB1-2-10-LN	SINGLE SUPPORT – TANGENT LARGE CONDUCTOR – 10' CROSSARM LESS NEUTRAL
VB1-3	DOUBLE SUPPORT – TANGENT LARGE CONDUCTOR
VB1-3-LN	DOUBLE SUPPORT – TANGENT LARGE CONDUCTOR – LESS NEUTRAL
VB1-3-10	DOUBLE SUPPORT – TANGENT LARGE CONDUCTOR – 10' CROSSARM
VB1-3-10-LN	DOUBLE SUPPORT – TANGENT LARGE CONDUCTOR – 10' CROSSARM LESS NEUTRAL
VB2	DOUBLE SUPPORT – MEDIUM ANGLE 5° TO 30°
VB2-LN	DOUBLE SUPPORT – MEDIUM ANGLE 5° TO 30° – LESS NEUTRAL

**INDEX VB (cont.)****TWO-PHASE PRIMARY POLE TOP ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
VB2-10	DOUBLE SUPPORT – MEDIUM ANGLE 5° TO 30° – 10' CROSSARM
VB2-10-LN	DOUBLE SUPPORT – MEDIUM ANGLE 5° TO 30° – 10' CROSSARM LESS NEUTRAL
VB3	SUSPENSION ANGLE – LARGE 30° TO 60°
VB3S	REDUCED TENSION
VB4-1	DEADEND ANGLE – 60° TO 90°
VB5	DEADEND VERTICAL
VB7	SINGLE DEADEND
VB7-LN	SINGLE DEADEND – LESS NEUTRAL
VB7-1-R	SINGLE DEADEND – TRIPLE CROSSARMS (RETIREMENT ONLY)
VB7A-R	SINGLE DEADEND – HUGHES CROSSARM (RETIREMENT ONLY)
VB7A-LN-R	SINGLE DEADEND – HUGHES CROSSARM LESS NEUTRAL (RETIREMENT ONLY)
VB7X	2Ø TAKE OFF FROM 2Ø DEADEND WITH TENSION
VB7X-LN	2Ø TAKE OFF FROM 2Ø DEADEND WITH TENSION – LESS NEUTRAL
VB7XS	2Ø TAKE OFF FROM 2Ø DEADEND WITH REDUCED TENSION
VB7XS-LN	2Ø TAKE OFF FROM 2Ø DEADEND WITH REDUCED TENSION – LESS NEUTRAL
VB9	DOUBLE SUPPORT CROSSARM – TANGENT NEUTRAL ON CROSSARM (ENGINEERING APPROVAL ONLY)
VB9-1	SINGLE SUPPORT CROSSARM – TANGENT NEUTRAL ON CROSSARM (ENGINEERING APPROVAL ONLY)

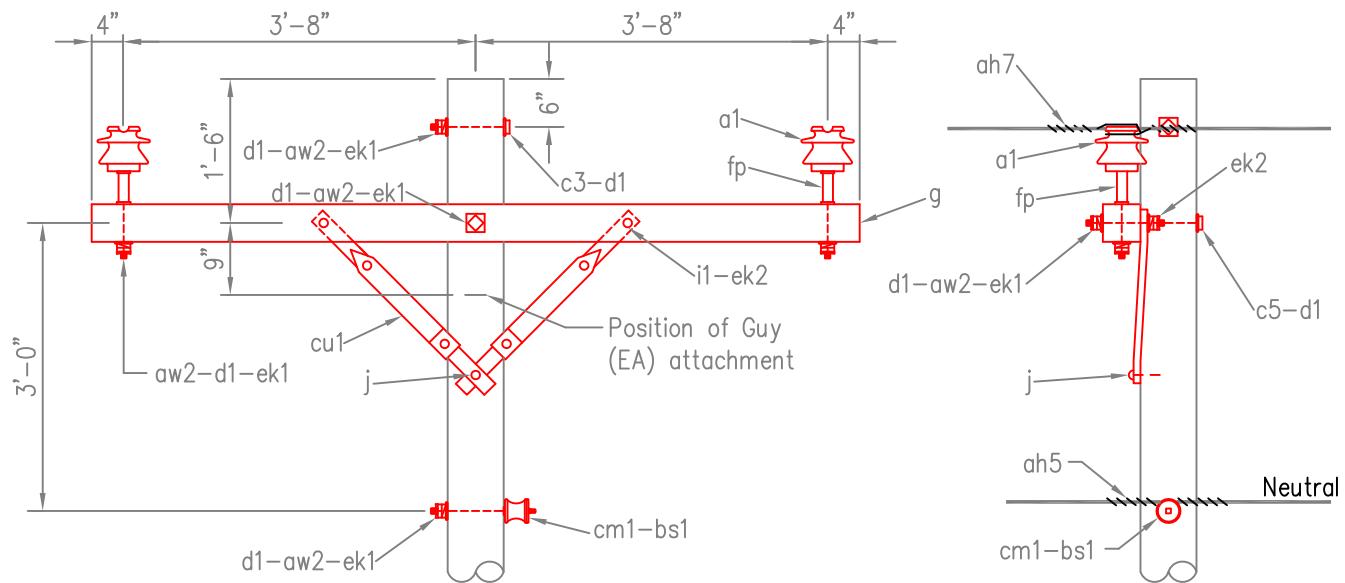
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ITM.	QTY.	MAT.CODE No	MATERIAL
a1	2	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	2	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	5	7108-99-41	Washers, double spring lock, 5/8"
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c5	1	0638-05-16	Bolts, machine 5/8" x 16"
cm1	1	3426-20-12	Insulator, 3" spool
cu1	1	0753-51-26	Brace, crossarm 38" Span 18" Drop (Pair)
d1	7	7102-04-91	Washers, square, 5/8"
ek1	5	4290-70-63	Locknuts 5/8"
ek2	2	4290-70-38	Locknuts 3/8"
fp	2	4541-23-13	Pin, crossarm 14.4, phase
g	1	1809-01-01	Crossarm, Wood 8'
i1	2	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	1	5550-44-40	Screw, lag 1/2 "x 4"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION 0° TO 5° ANGLE SINGLE PRIMARY SUPPORT	ISSUED	2/04/2008
				REVISED	
					STANDARD NUMBER
					VB1



DATE	REVISION

14.4/24.9 kV, TWO PHASE  
CROSSARM CONSTRUCTION  
0° TO 5° ANGLE  
SINGLE PRIMARY SUPPORT

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VB1

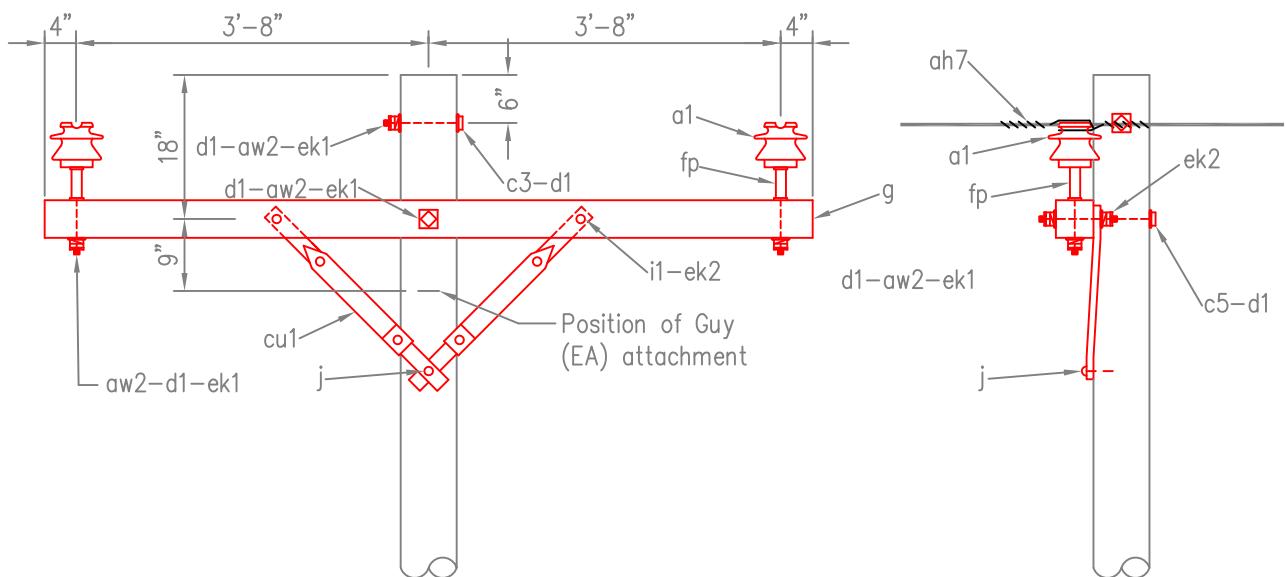
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	2	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah7	2	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c5	1	0638-05-16	Bolts, machine 5/8" x 16"
cu1	1	0753-51-26	Brace, crossarm 38" Span 18" Drop (Pair)
d1	6	7102-04-91	Washers, square, 5/8"
ek1	4	4290-70-63	Locknuts 5/8"
ek2	2	4290-70-38	Locknuts 3/8"
fp	2	4541-23-13	Pin, crossarm 14.4, phase
g	1	1809-01-01	Crossarm, Wood 8'
i1	2	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	1	5550-44-40	Screw, lag 1/2 "x 4"

NOTES:

1. Used for converting single phase line to three phase.
2. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION 0° TO 5° ANGLE SINGLE PRIMARY SUPPORT LESS NEUTRAL	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VB1-LN



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
CROSSARM CONSTRUCTION  
0° TO 5° ANGLE  
SINGLE PRIMARY SUPPORT  
LESS NEUTRAL

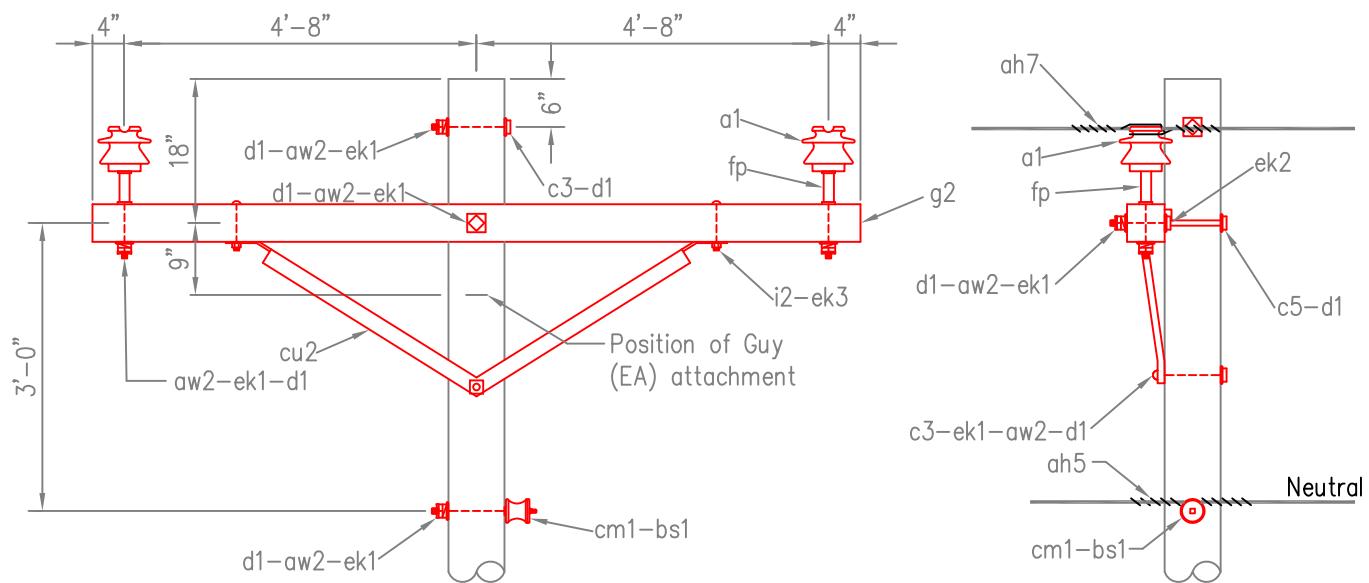
ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VB1-LN

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	2	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	2	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	6	7108-99-41	Washers, double spring lock, 5/8"
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c5	1	0638-05-16	Bolts, machine 5/8" x 16"
cm1	1	3426-20-12	Insulator, 3" spool
cu2	1	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	8	7102-04-91	Washers, square, 5/8"
ek1	6	4290-70-63	Locknuts 5/8"
ek3	2	4290-70-50	Locknuts 1/2"
fp	2	4541-23-13	Pin, crossarm 14.4, phase
g2	1	1809-01-03	Crossarm, Wood 10'
i2	2	0631-04-06	Bolts, carriage 1/2" x 6"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION 0° TO 5° ANGLE 10' SINGLE PRIMARY SUPPORT	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VB1-10



DATE	REVISION

14.4/24.9 kV, TWO PHASE  
CROSSARM CONSTRUCTION  
0° TO 5° ANGLE  
10' SINGLE PRIMARY SUPPORT

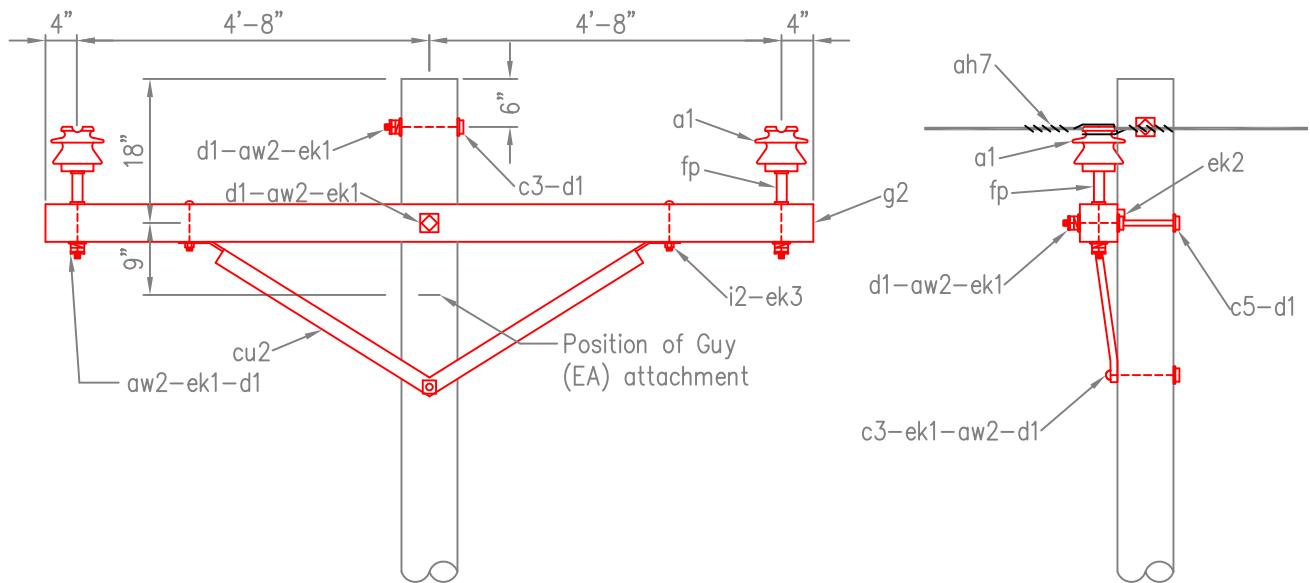
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VB1-10

ITEM.	QTY.	MAT.CODE No	MATERIAL
a1	2	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah7	2	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	5	7108-99-41	Washers, double spring lock, 5/8"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c5	1	0638-05-16	Bolts, machine 5/8" x 16"
cu2	1	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	7	7102-04-91	Washers, square, 5/8"
ek1	5	4290-70-63	Locknuts 5/8"
ek3	2	4290-70-50	Locknuts 1/2"
fp	2	4541-23-13	Pin, crossarm 14.4, phase
g2	1	1809-01-03	Crossarm, Wood 10'
i2	2	0631-03-06	Bolts, carriage 1/2" x 6"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION 0° TO 5° ANGLE 10' SINGLE PRIMARY SUPPORT LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VB1-10-LN	



DATE

REVISION

14.4/24.9 kV, TWO PHASE  
CROSSARM CONSTRUCTION  
0° TO 5° ANGLE  
10' SINGLE PRIMARY SUPPORT  
LESS NEUTRAL

ISSUED

2/04/2008

REVISED

STANDARD NUMBER

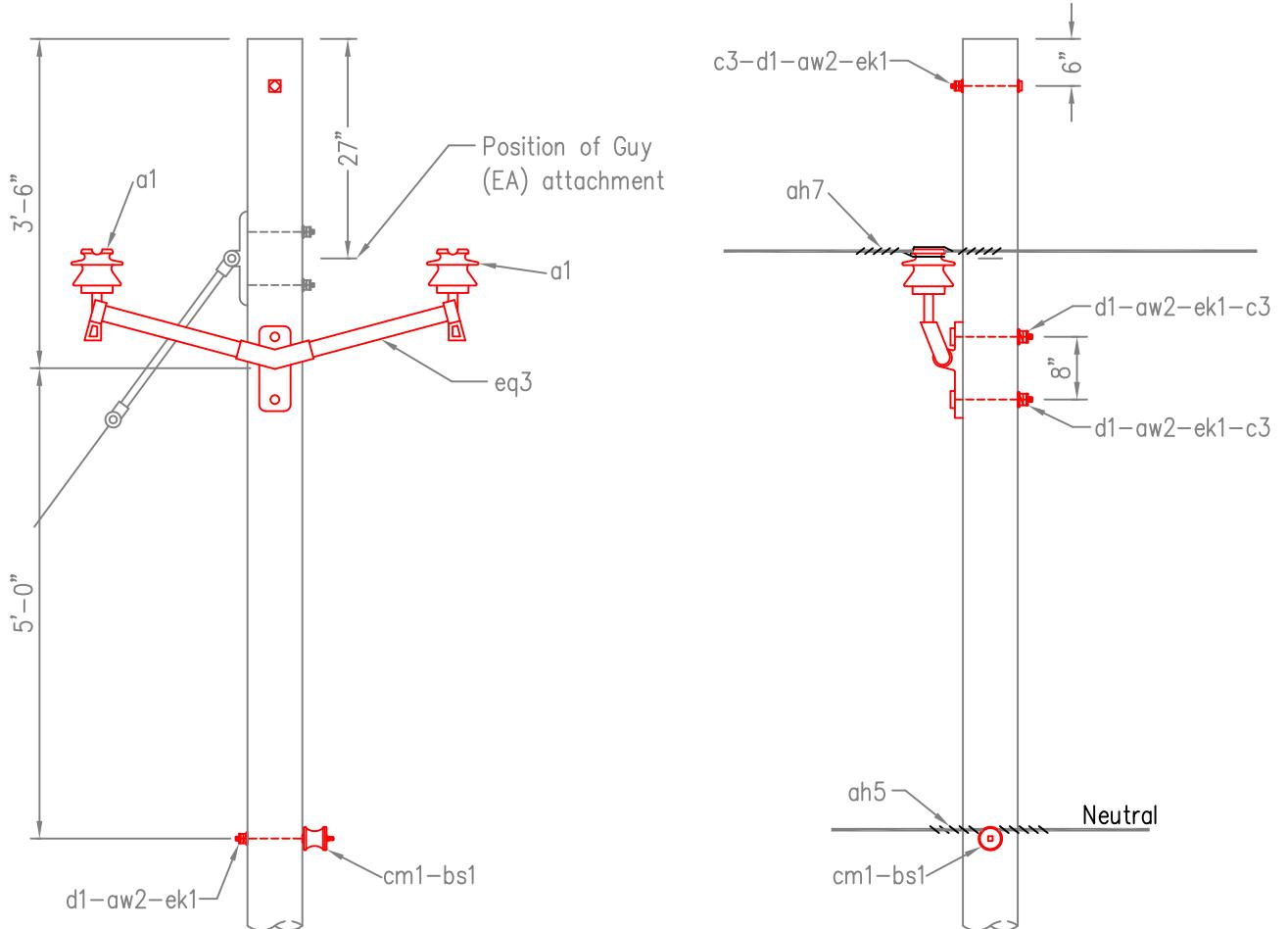
VB1-10-LN

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	2	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	2	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
d1	5	7102-04-91	Washers, square, 5/8"
ek1	4	4290-70-63	Locknuts 5/8"
eq3	1	0780-47-03	Bracket, vertical pin insulator, Fiberglass, VØ

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE NARROW PROFILE SINGLE PRIMARY SUPPORT	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VB1N



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
NARROW PROFILE  
SINGLE PRIMARY SUPPORT

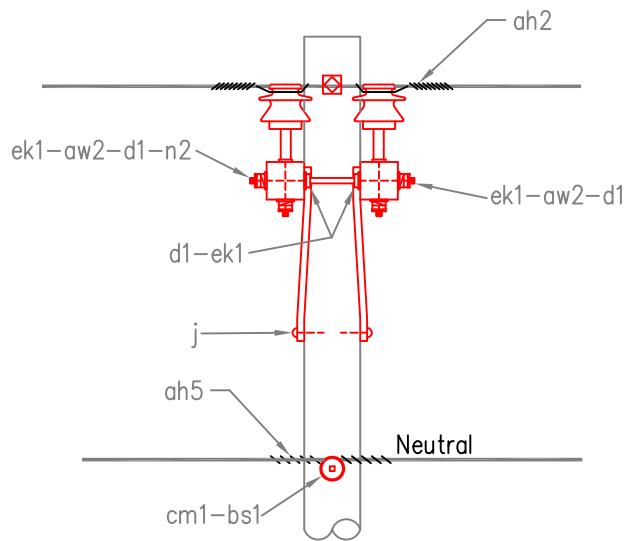
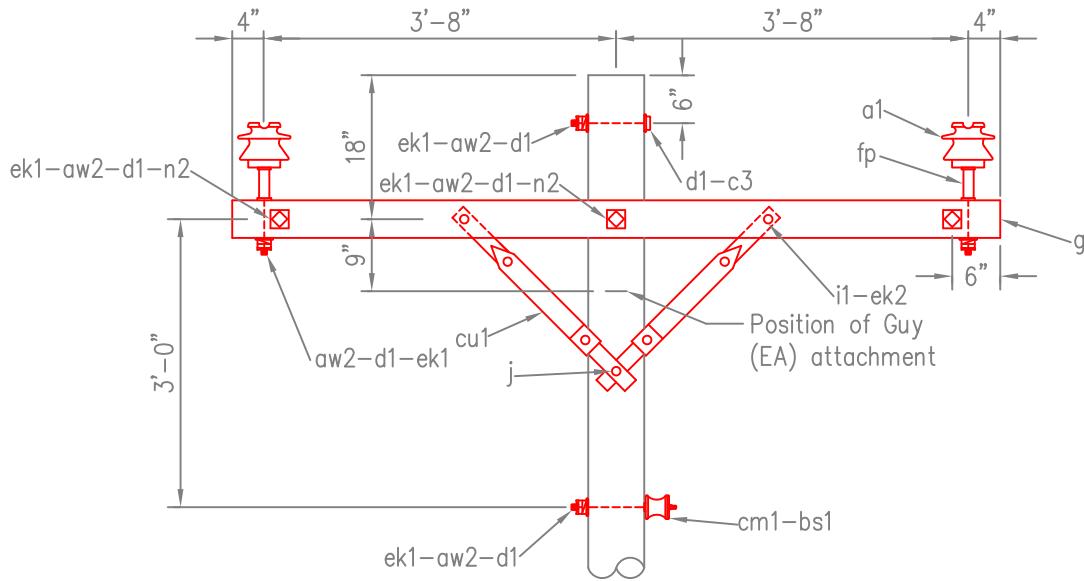
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VB1N

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	4	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	2	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	12	7108-99-41	Washers, double spring lock, 5/8"
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (Pair)
d1	17	7102-04-91	Washers, square, 5/8"
ek1	16	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
fp	4	4541-23-13	Pin, crossarm 14.4, phase
g	2	1809-01-01	Crossarm, Wood 8'
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION 0° TO 5° ANGLE DOUBLE PRIMARY SUPPORT	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VB1-1



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
CROSSARM CONSTRUCTION  
0° TO 5° ANGLE  
DOUBLE PRIMARY SUPPORT

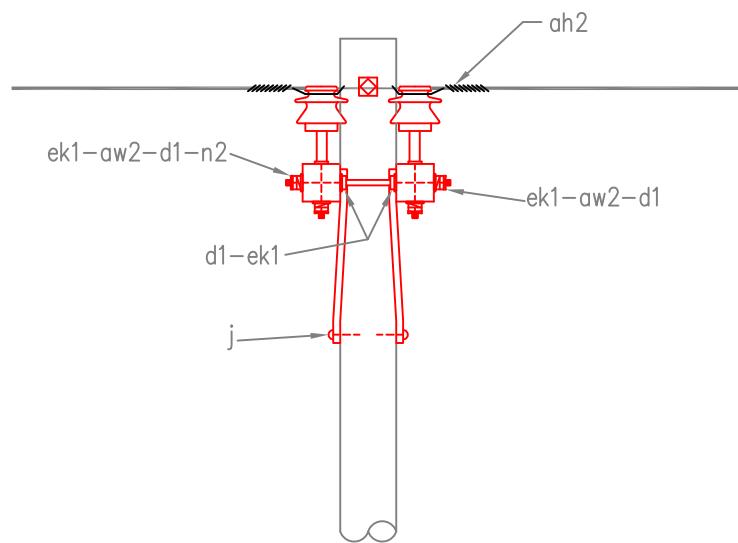
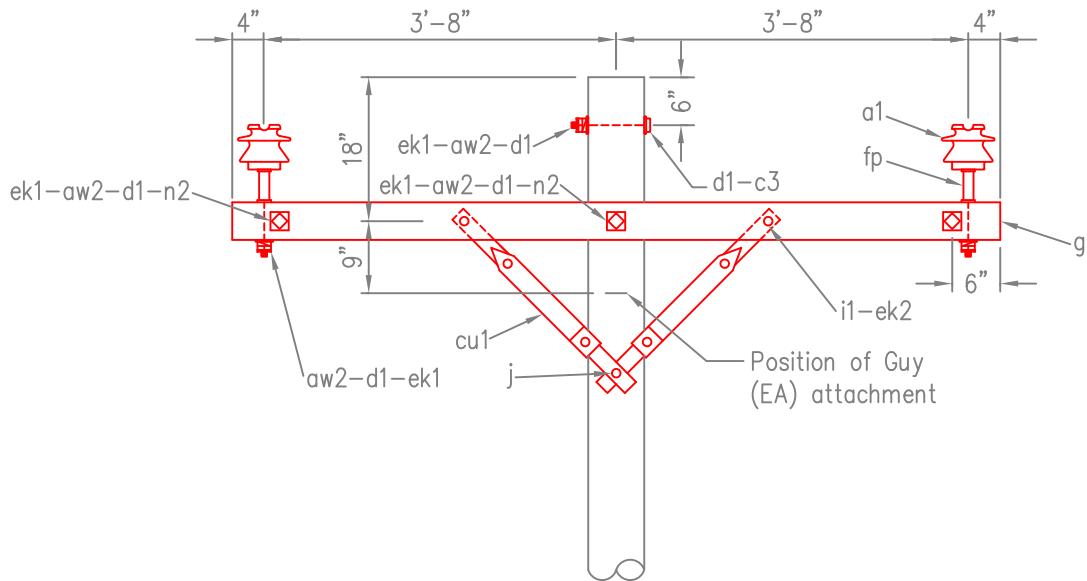
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VB1-1

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	4	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	2	6790-XX-33	Double support tie, (Specify conductor size)
aw2	11	7108-99-41	Washers, double spring lock, 5/8"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Dop (Pair)
d1	16	7102-04-91	Washers, square, 5/8"
ek1	15	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
fp	4	4541-23-13	Pin, crossarm 14.4, phase
g	2	1809-01-01	Crossarm, Wood 8'
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION 0° TO 5° ANGLE DOUBLE PRIMARY SUPPORT LESS NEUTRAL	ISSUED	10/27/09
				REVISED	
				STANDARD NUMBER	
				VB1-1-LN	



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
CROSSARM CONSTRUCTION  
0° TO 5° ANGLE  
DOUBLE PRIMARY SUPPORT  
LESS NEUTRAL

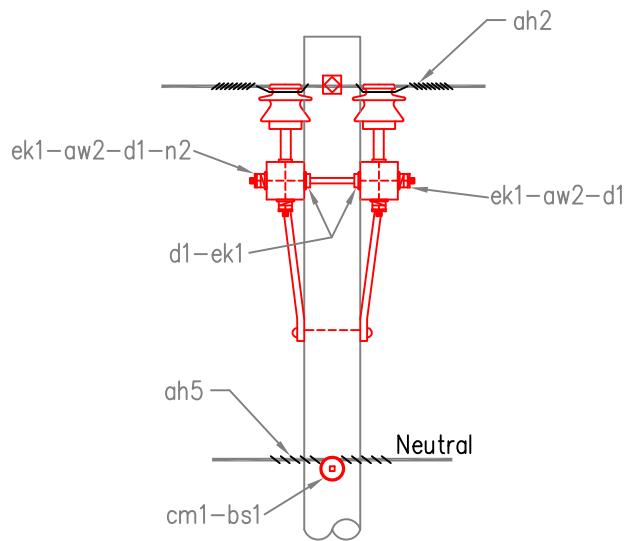
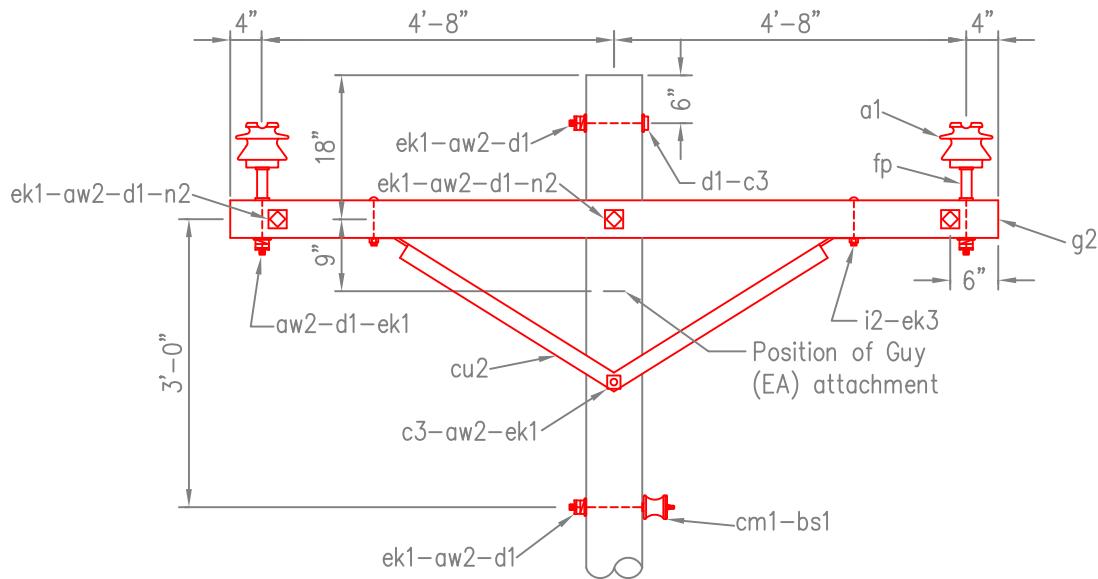
ISSUED	10/27/09
REVISED	
STANDARD NUMBER	VB1-1-LN

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	4	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	2	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	13	7108-99-41	Washers, double spring lock, 5/8"
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
cu2	2	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	17	7102-04-91	Washers, square, 5/8"
ek1	17	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
fp	4	4541-23-13	Pin, crossarm 14.4, phase
g2	2	1809-01-03	Crossarm, Wood 10'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION 0° TO 5° ANGLE 10' DOUBLE PRIMARY SUPPORT	ISSUED	10/27/09
				REVISED	
				STANDARD NUMBER	
				VB1-1-10	



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
CROSSARM CONSTRUCTION  
0° TO 5° ANGLE  
10' DOUBLE PRIMARY SUPPORT

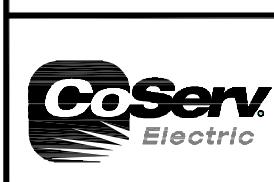
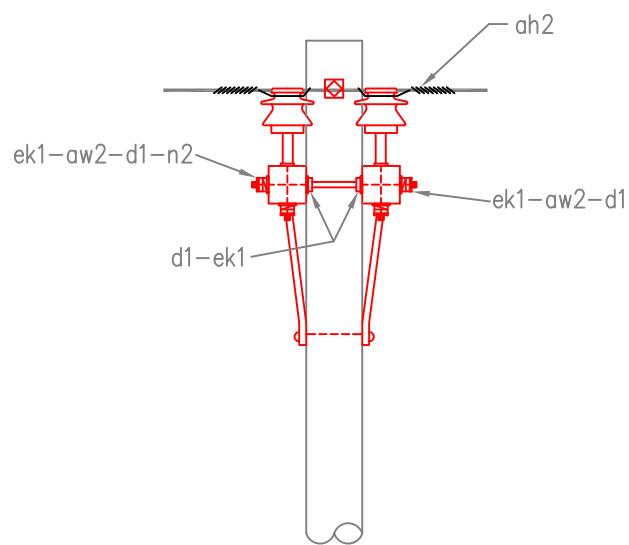
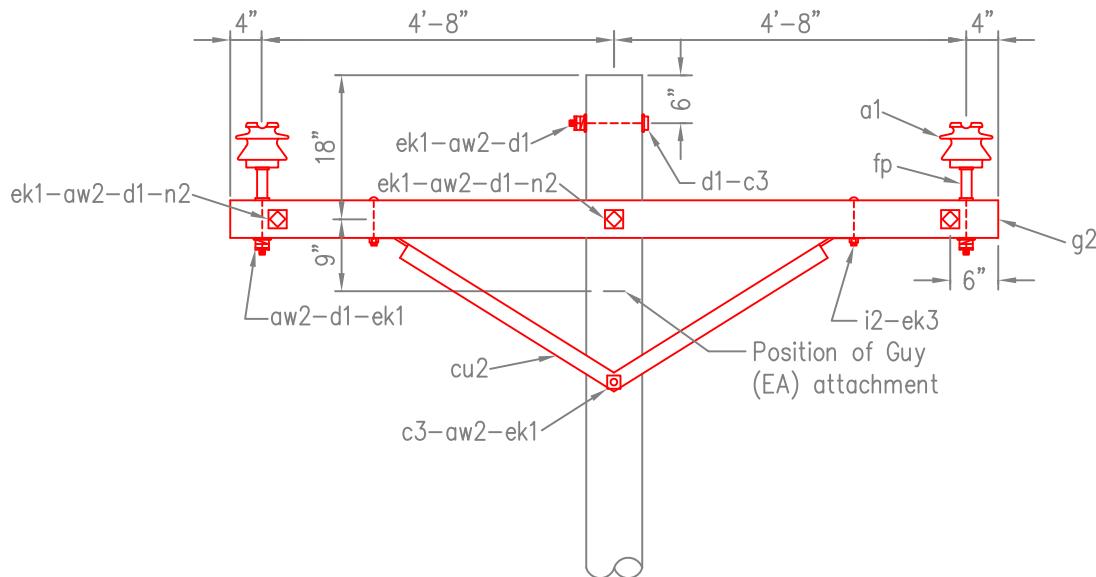
ISSUED	10/27/09
REVISED	
STANDARD NUMBER	VB1-1-10

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	4	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	2	6790-XX-33	Double support tie, (Specify conductor size)
aw2	12	7108-99-41	Washers, double spring lock, 5/8"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cu2	2	0753-51-68	Brace, crossarm 60" Span 18" Drop (Pair)
d1	16	7102-04-91	Washers, square, 5/8"
ek1	16	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
fp	4	4541-23-13	Pin, crossarm 14.4, phase
g2	2	1809-01-03	Crossarm, Wood 10'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION 0° TO 5° ANGLE 10' DOUBLE PRIMARY SUPPORT LESS NEUTRAL	ISSUED
				REVISED
				STANDARD NUMBER
				VB1-1-10-LN



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
CROSSARM CONSTRUCTION  
0° TO 5° ANGLE  
10' DOUBLE PRIMARY SUPPORT  
LESS NEUTRAL

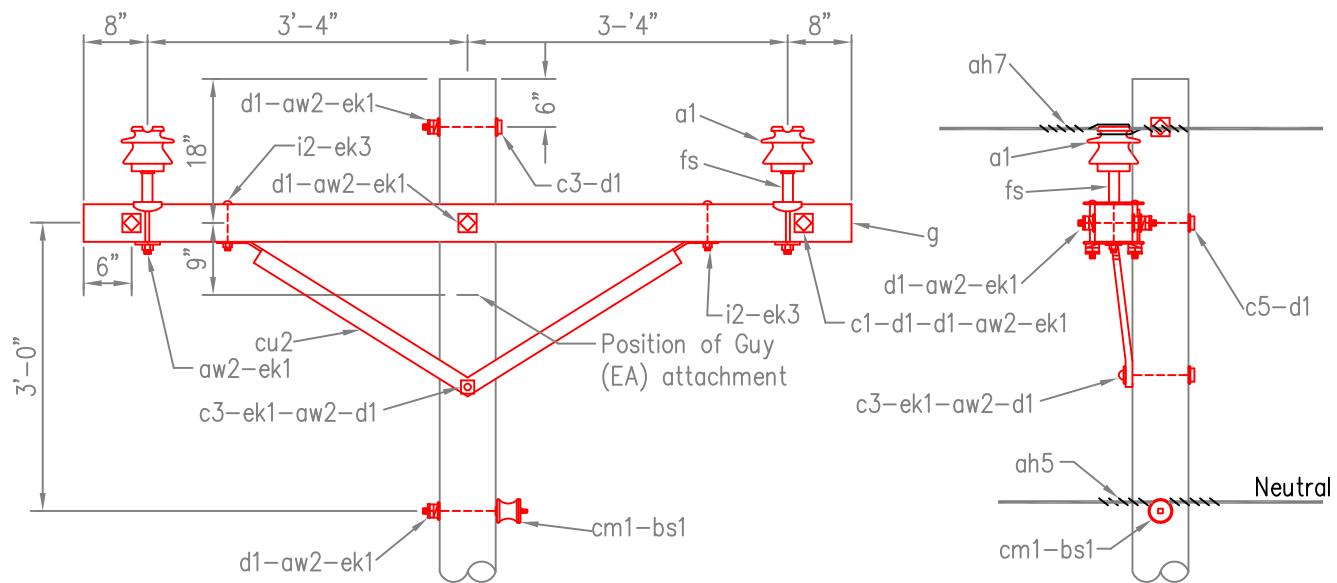
ISSUED 10/27/2009  
REVISED  
STANDARD NUMBER  
VB1-1-10-LN

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	2	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	2	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	10	7108-99-41	Washers, double spring lock, 5/8"
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c1	2	0638-05-06	Bolts, machine 5/8" x 6"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c5	1	0638-05-16	Bolts, machine 5/8" x 16"
cm1	1	3426-20-12	Insulator, 3" spool
cu2	1	0753-51-68	Brace, crossarm 60" Span 18" Drop (Pair)
d1	10	7102-04-91	Washers, square, 5/8"
ek1	10	4290-70-63	Locknuts 5/8"
ek3	2	4290-70-50	Locknuts 1/2"
fs	2	4541-11-13	Pin, saddle crossarm 14.4, phase
g	1	1809-01-01	Crossarm, Wood 8'
i2	2	0631-04-06	Bolts, carriage 1/2" x 6"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION 0° TO 5° ANGLE SINGLE PRIMARY SUPPORT LARGE CONDUCTORS	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VB1-2



DATE	REVISION

14.4/24.9 kV, TWO PHASE  
CROSSARM CONSTRUCTION  
0° TO 5° ANGLE  
SINGLE PRIMARY SUPPORT  
LARGE CONDUCTORS

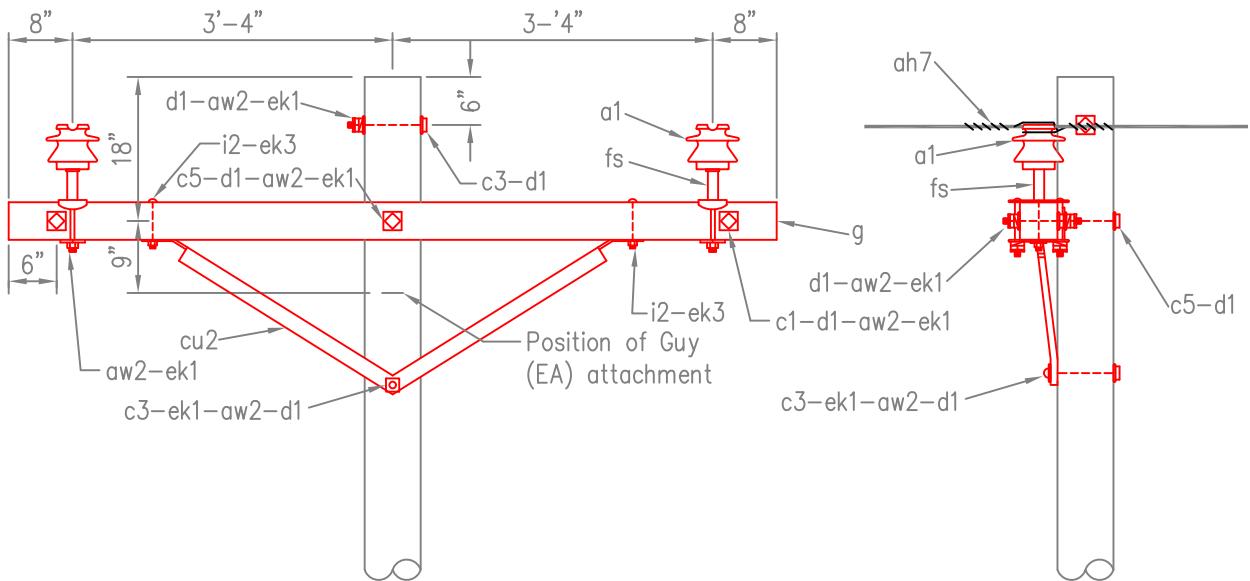
ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VB1-2

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	2	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah7	2	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	9	7108-99-41	Washers, double spring lock, 5/8"
c1	2	0638-05-06	Bolts, machine 5/8" x 6"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c5	1	0638-05-16	Bolts, machine 5/8" x 16"
cu2	1	0753-51-68	Brace, crossarm 60" Span 18" Drop (Pair)
d1	9	7102-04-91	Washers, square, 5/8"
ek1	9	4290-70-63	Locknuts 5/8"
ek3	2	4290-70-50	Locknuts 1/2"
fs	2	4541-11-13	Pin, saddle crossarm 14.4, phase
g	1	1809-01-01	Crossarm, Wood 8'
i2	2	0631-04-06	Bolts, carriage 1/2" x 6"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION 0° TO 5° ANGLE SINGLE PRIMARY SUPPORT LARGE CONDUCTORS-LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VB1-2-LN



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
CROSSARM CONSTRUCTION  
0° TO 5° ANGLE  
SINGLE PRIMARY SUPPORT  
LARGE CONDUCTORS-LESS NEUTRAL

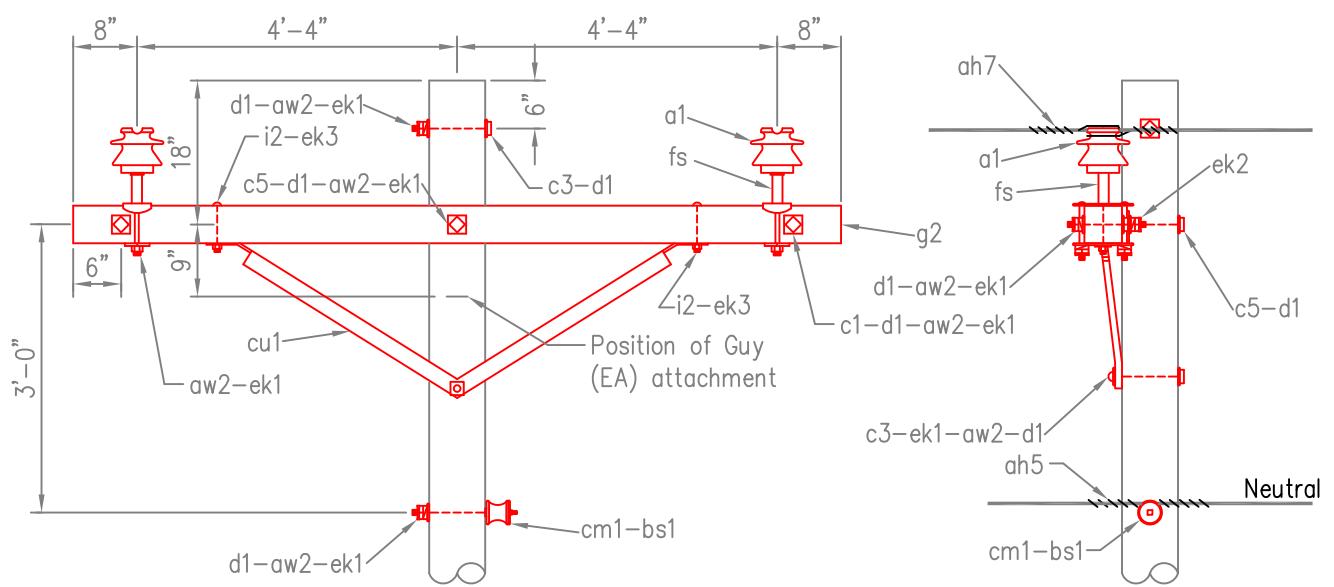
ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VB1-2-LN

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	2	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	2	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	10	7108-99-41	Washers, double spring lock, 5/8"
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c1	2	0638-05-06	Bolts, machine 5/8" x 6"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c5	1	0638-05-16	Bolts, machine 5/8" x 16"
cm1	1	3426-20-12	Insulator, 3" Spool
cu2	1	0753-51-68	Brace, crossarm 60" Span 18" Drop (Pair)
d1	10	7102-04-91	Washers, square, 5/8"
ek1	10	4290-70-63	Locknuts 5/8"
ek3	2	4290-70-50	Locknuts 1/2"
fs	2	4541-11-13	Pin, saddle crossarm 14.4, phase
g2	1	1809-01-03	Crossarm, Wood 10'
i2	2	0631-04-06	Bolts, carriage 1/2" x 6"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION 0° TO 5° ANGLE 10' SINGLE PRIMARY SUPPORT LARGE CONDUCTORS	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VB1-2-10	



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
CROSSARM CONSTRUCTION  
0° TO 5° ANGLE  
10' SINGLE PRIMARY SUPPORT  
LARGE CONDUCTORS

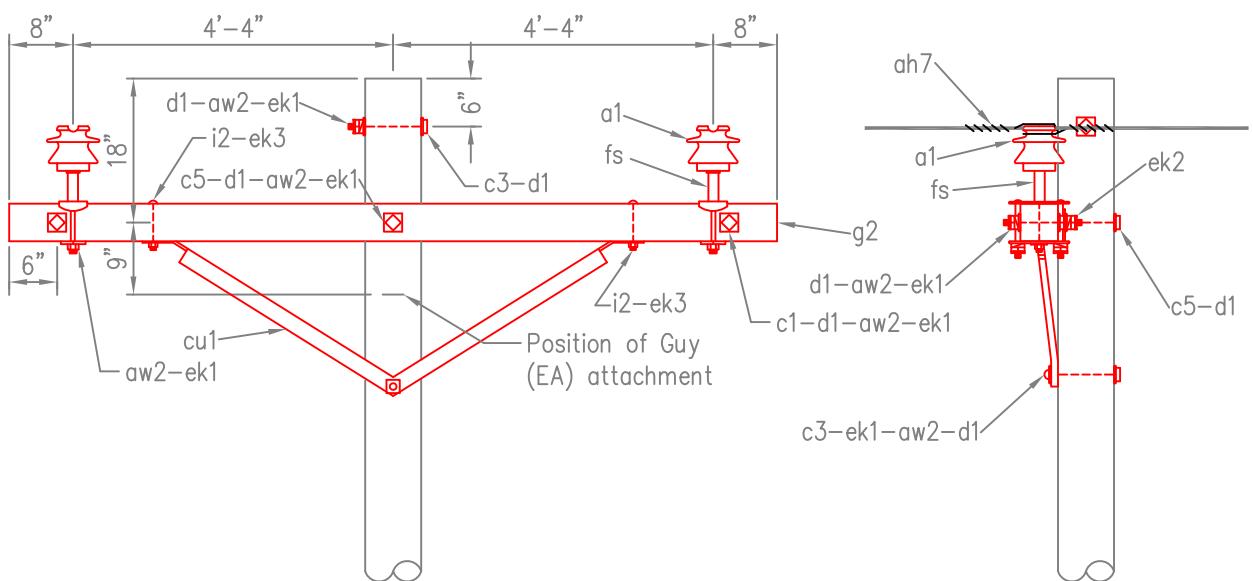
ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VB1-2-10

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	2	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah7	2	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	9	7108-99-41	Washers, double spring lock, 5/8"
c1	2	0638-05-06	Bolts, machine 5/8" x 6"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c5	1	0638-05-16	Bolts, machine 5/8" x 16"
cu2	1	0753-51-68	Brace, crossarm 60" Span 18" Drop (Pair)
d1	9	7102-04-91	Washers, square, 5/8"
ek1	9	4290-70-63	Locknuts 5/8"
ek3	2	4290-70-50	Locknuts 1/2"
fs	2	4541-11-13	Pin, saddle crossarm 14.4, phase
g2	1	1809-01-03	Crossarm, Wood 10'
i2	2	0631-04-06	Bolts, carriage 1/2" x 6"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION 0° TO 5° ANGLE 10' SINGLE PRIMARY SUPPORT LARGE CONDUCTORS-LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VB1-2-10-LN	



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
CROSSARM CONSTRUCTION  
0° TO 5° ANGLE  
10' SINGLE PRIMARY SUPPORT  
LARGE CONDUCTORS-LESS NEUTRAL

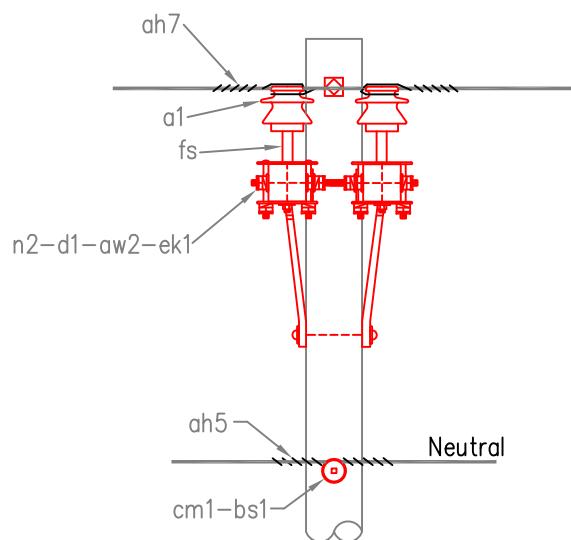
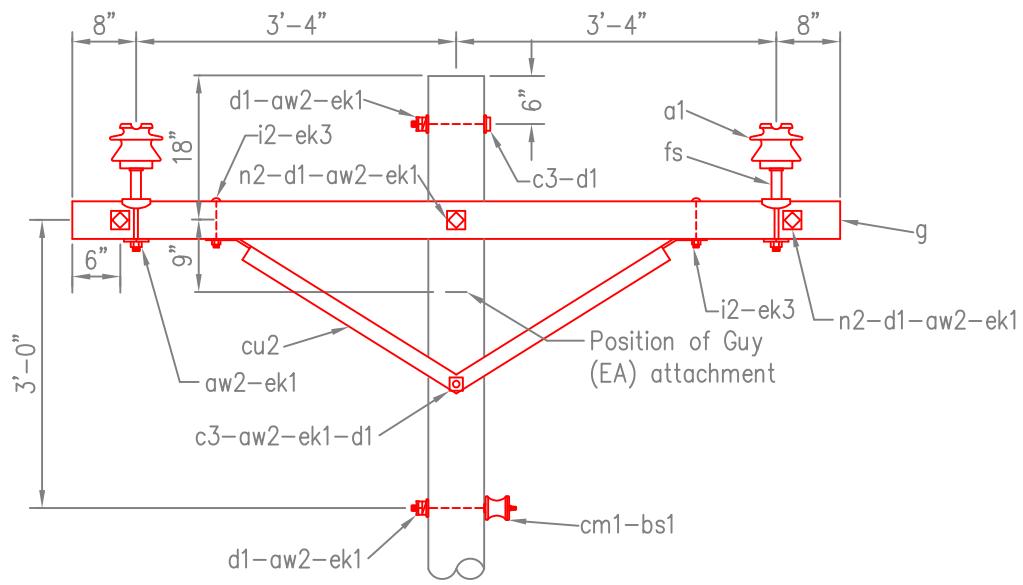
ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VB1-2-10-LN

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	4	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	2	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	17	7108-99-41	Washers, double spring lock, 5/8"
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
cu2	2	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	13	7102-04-91	Washers, square, 5/8"
ek1	21	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
fs	4	4541-11-13	Pin, Saddle crossarm 14.4, phase
g	2	1809-01-01	Crossarm, Wood 8'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION 0° TO 5° ANGLE DOUBLE PRIMARY SUPPORT LARGE CONDUCTOR	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VB1-3



DATE	REVISION

14.4/24.9 kV, TWO PHASE  
CROSSARM CONSTRUCTION  
0° TO 5° ANGLE  
DOUBLE PRIMARY SUPPORT  
LARGE CONDUCTOR

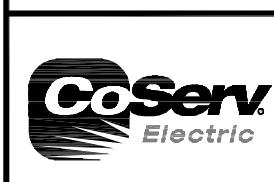
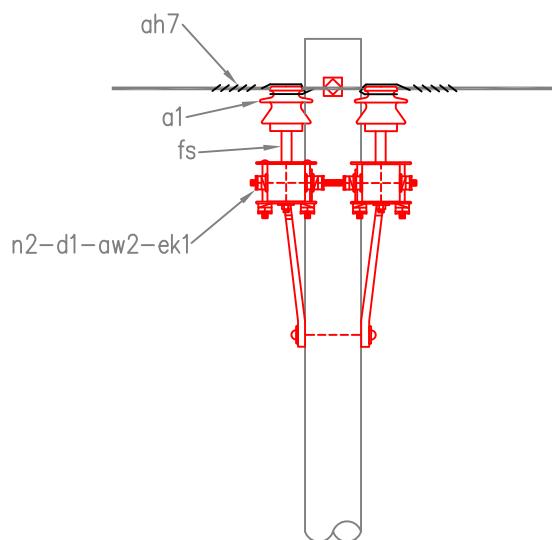
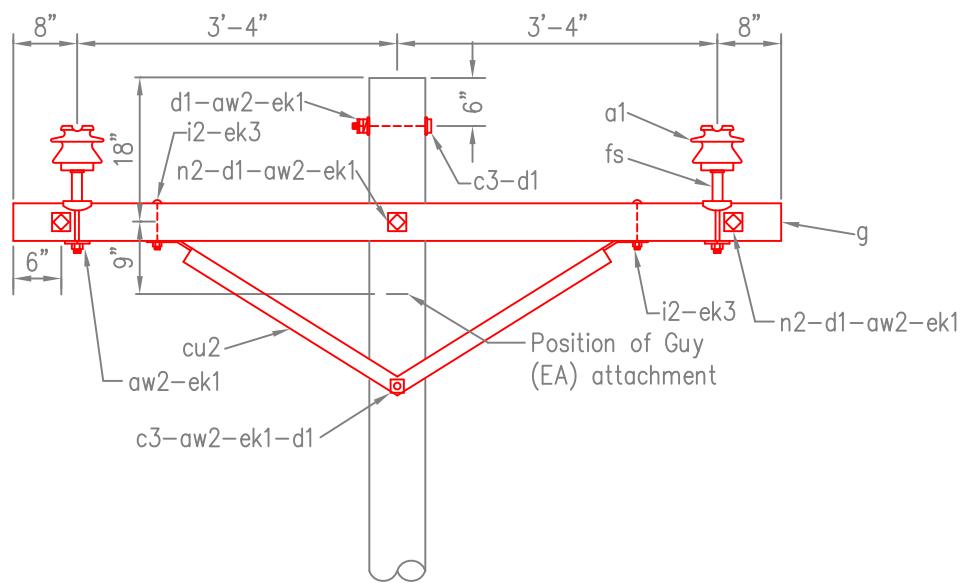
ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VB1-3

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	4	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	2	6790-XX-33	Double support tie, (Specify conductor size)
aw2	16	7108-99-41	Washers, double spring lock, 5/8"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cu2	2	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	12	7102-04-91	Washers, square, 5/8"
ek1	20	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
fs	4	4541-11-13	Pin, Saddle crossarm 14.4, phase
g	2	1809-01-01	Crossarm, Wood 8'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION 0° TO 5° ANGLE DOUBLE PRIMARY SUPPORT LARGE CONDUCTOR-LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VB1-3-LN	



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
CROSSARM CONSTRUCTION  
0° TO 5° ANGLE  
DOUBLE PRIMARY SUPPORT  
LARGE CONDUCTOR-LESS NEUTRAL

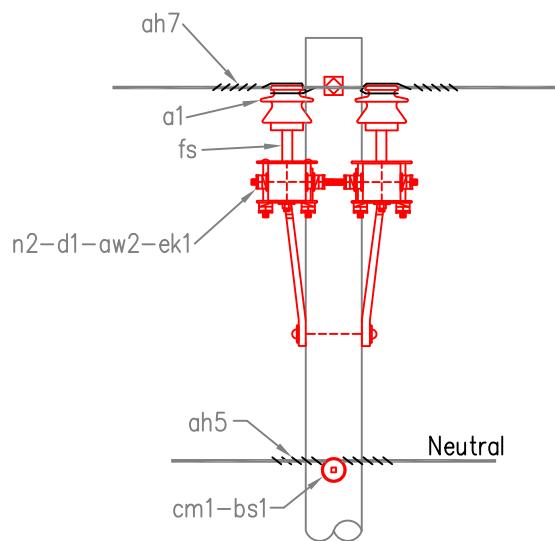
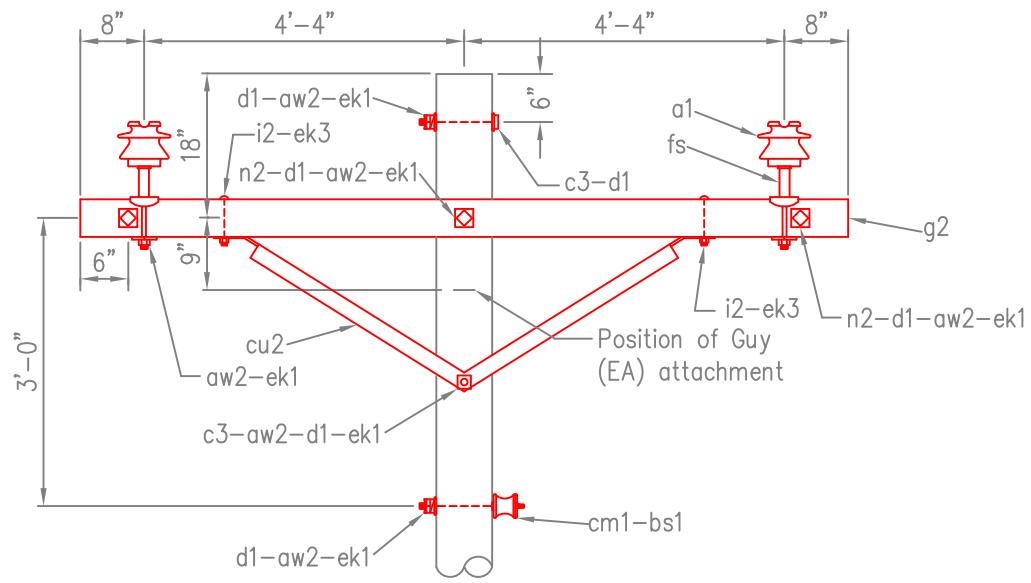
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VB1-3-LN

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	4	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	2	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	17	7108-99-41	Washers, double spring lock, 5/8"
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
cu2	2	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	13	7102-04-91	Washers, square, 5/8"
ek1	21	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
fs	4	4541-11-13	Pin, saddle crossarm 14.4, phase
g2	2	1809-01-03	Crossarm, Wood 10'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION 0° TO 5° ANGLE 10' DOUBLE PRIMARY SUPPORT LARGE CONDUCTOR	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VB1-3-10	



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
CROSSARM CONSTRUCTION  
0° TO 5° ANGLE  
10' DOUBLE PRIMARY SUPPORT  
LARGE CONDUCTOR

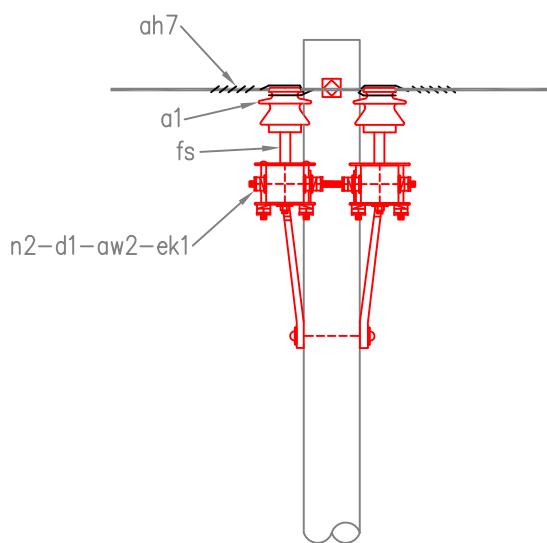
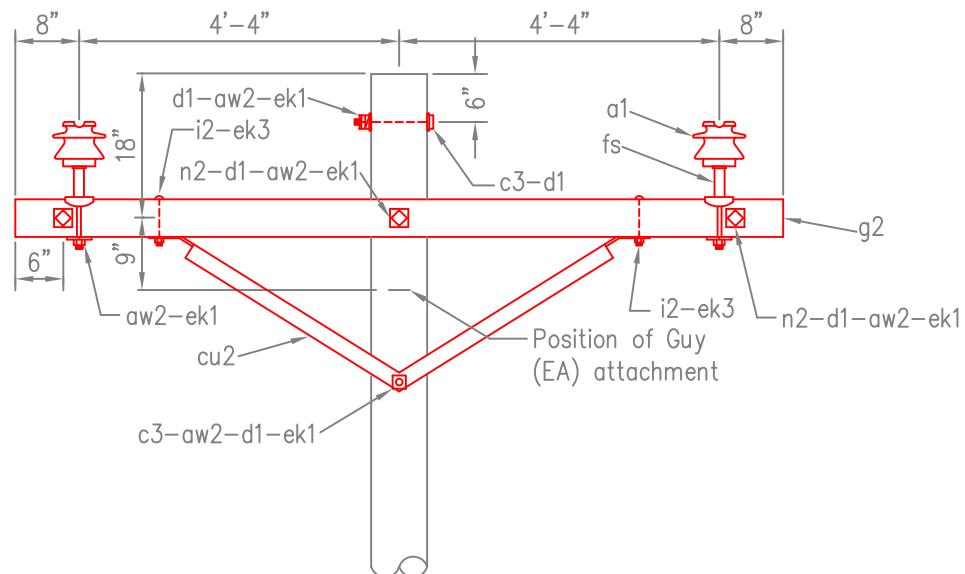
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VB1-3-10

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	4	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	2	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	16	7108-99-41	Washers, double spring lock, 5/8"
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
cu2	2	0753-51-68	Brace, crossarm 60" Span 18" drop (pair)
d1	12	7102-04-91	Washers, square, 5/8"
ek1	20	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
fs	4	4541-11-13	Pin, saddle crossarm 14.4, phase
g2	2	1809-01-03	Crossarm, Wood 10'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION 0° TO 5° ANGLE 10' DOUBLE PRIMARY SUPPORT LARGE CONDUCTOR-LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VB1-3-10-LN	



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
CROSSARM CONSTRUCTION  
0° TO 5° ANGLE  
10' DOUBLE PRIMARY SUPPORT  
LARGE CONDUCTOR-LESS NEUTRAL

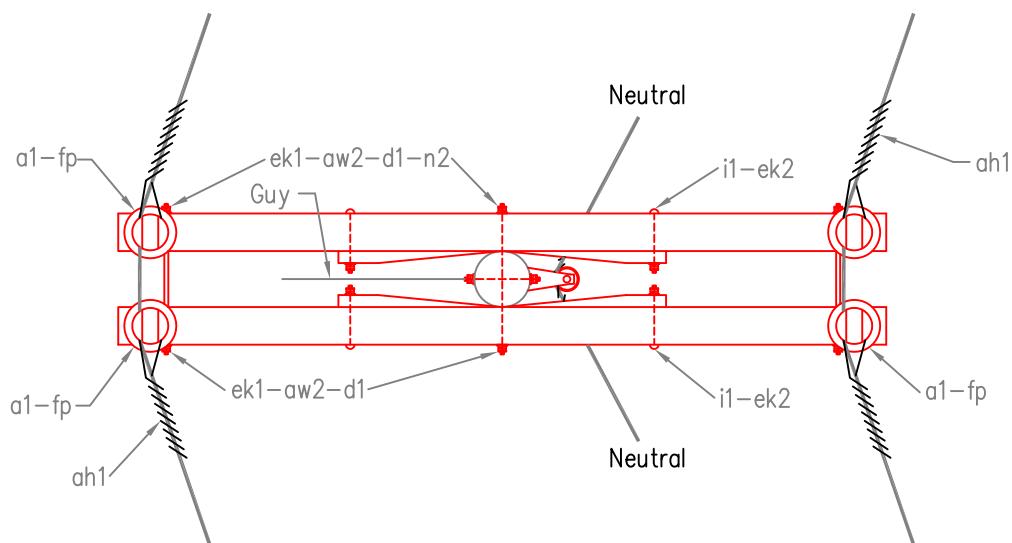
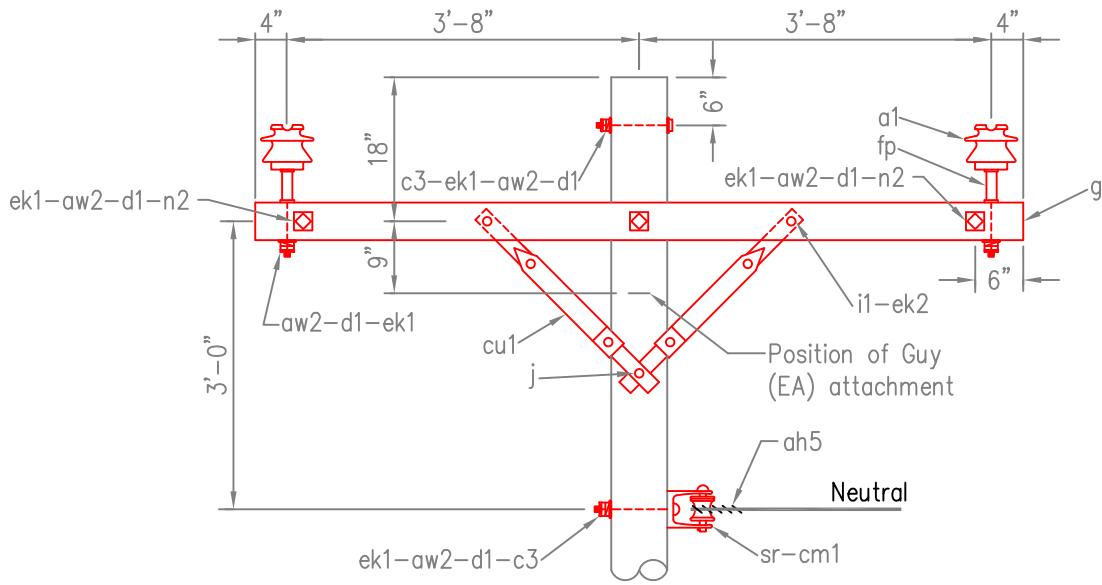
ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VB1-3-10-LN

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	4	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah1	2	6790-XX-22	Double side tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	12	7108-99-41	Washers, double spring lock, 5/8"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	17	7102-04-91	Washers, square, 5/8"
ek1	16	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
fp	4	4541-23-13	Pin, crossarm 14.4, phase
g	2	1809-01-01	Crossarm, Wood 8'
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"
sr	1	1230-17-01	Clevis, rigid (D-bracket)

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT MAX. TRANSVERSE LOADING 750 LBS./PIN 5° TO 30° MAX. LINE ANGLE	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VB2



DATE	REVISION

14.4/24.9 kV, TWO PHASE  
CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT  
MAX. TRANSVERSE LOADING 750 LBS./PIN  
5° TO 30° MAX. LINE ANGLE

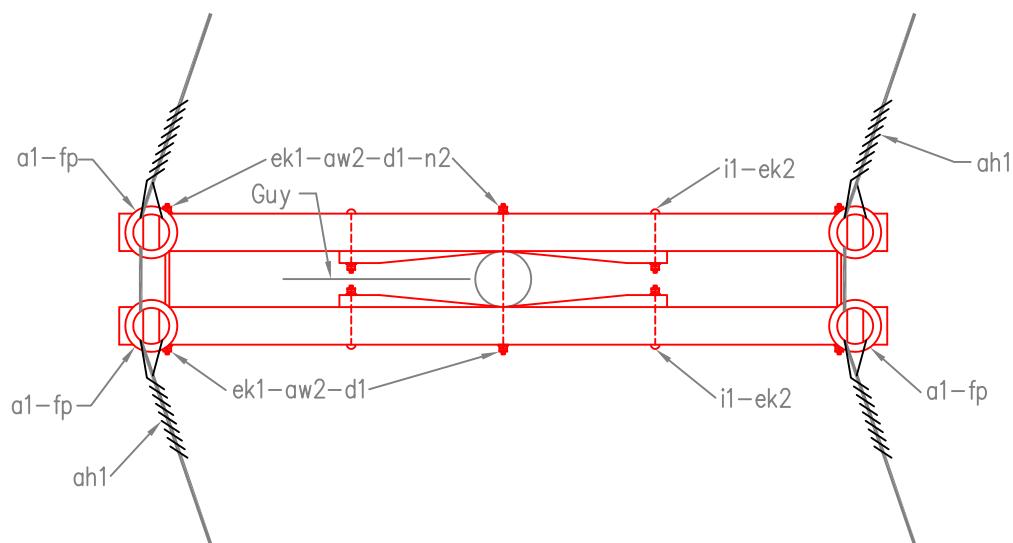
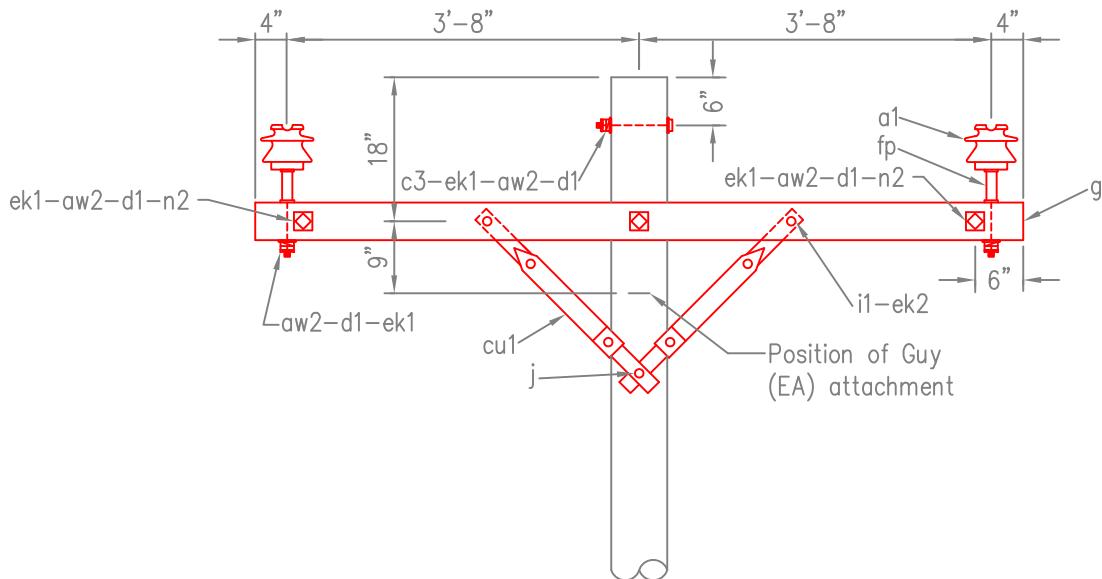
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VB2

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	4	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah1	2	6790-XX-22	Double side tie, (Specify conductor size)
aw2	11	7108-99-41	Washers, double spring lock, 5/8"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	16	7102-04-91	Washers, square, 5/8"
ek1	15	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
fp	4	4541-23-13	Pin, crossarm 14.4, phase
g	2	1809-01-01	Crossarm, Wood 8'
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT MAX. TRANSVERSE LOADING 750 LBS./PIN 5° TO 30° MAX. LINE ANGLE LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	VB2-LN



DATE	REVISION

14.4/24.9 kV, TWO PHASE  
CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT  
MAX. TRANSVERSE LOADING 750 LBS./PIN  
5° TO 30° MAX. LINE ANGLE  
LESS NEUTRAL

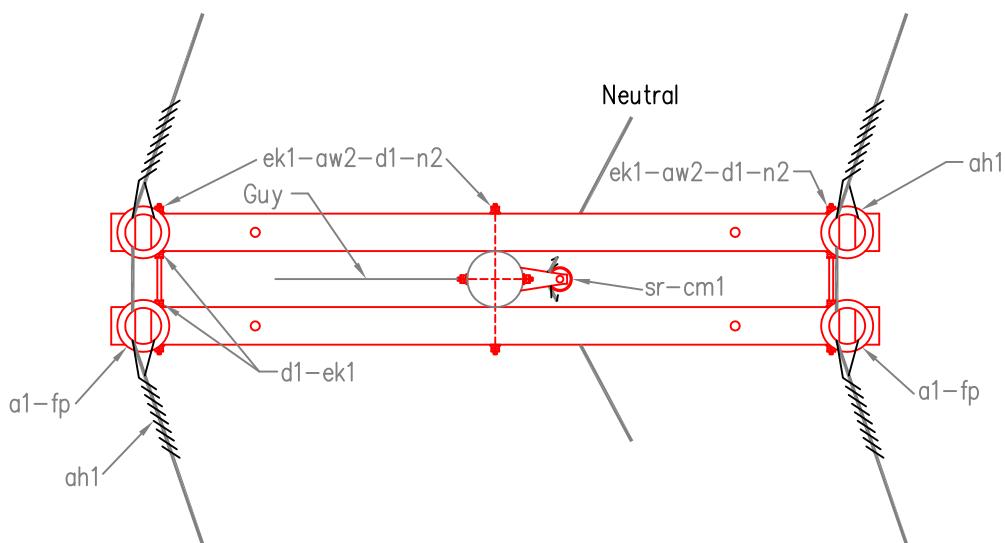
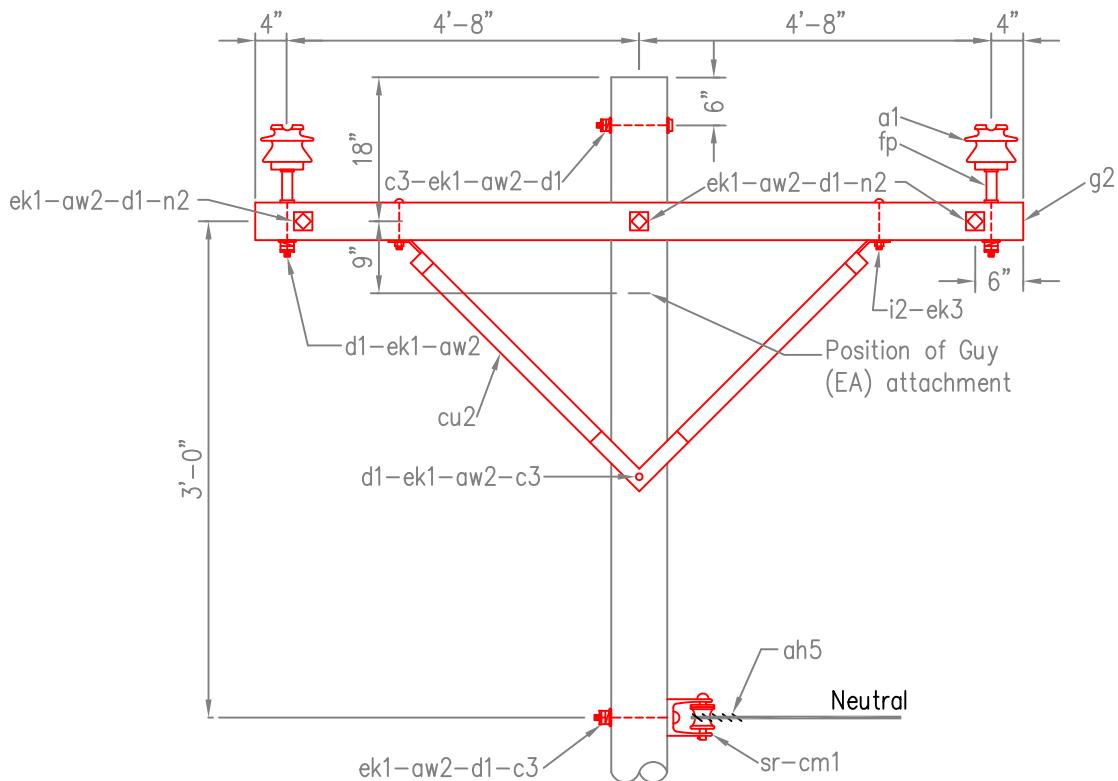
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VB2-LN

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	4	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah1	2	6790-XX-22	Double side tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	13	7108-99-41	Washers, double spring lock, 5/8"
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
cu2	2	0753-51-68	Brace, crossarm 60" Span 18" Drop (Pair)
d1	17	7102-04-91	Washers, square, 5/8"
ek1	17	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
fp	4	4541-23-13	Pin, crossarm 14.4, phase
g2	2	1809-01-03	Crossarm, Wood 10'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"
sr	1	1230-17-01	Clevis, rigid (D-bracket)

NOTES:

- For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION 10' DOUBLE PRIMARY SUPPORT MAX. TRANSVERSE LOADING 750 LBS./PIN 5° TO 30° MAX. LINE ANGLE	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VB2-10

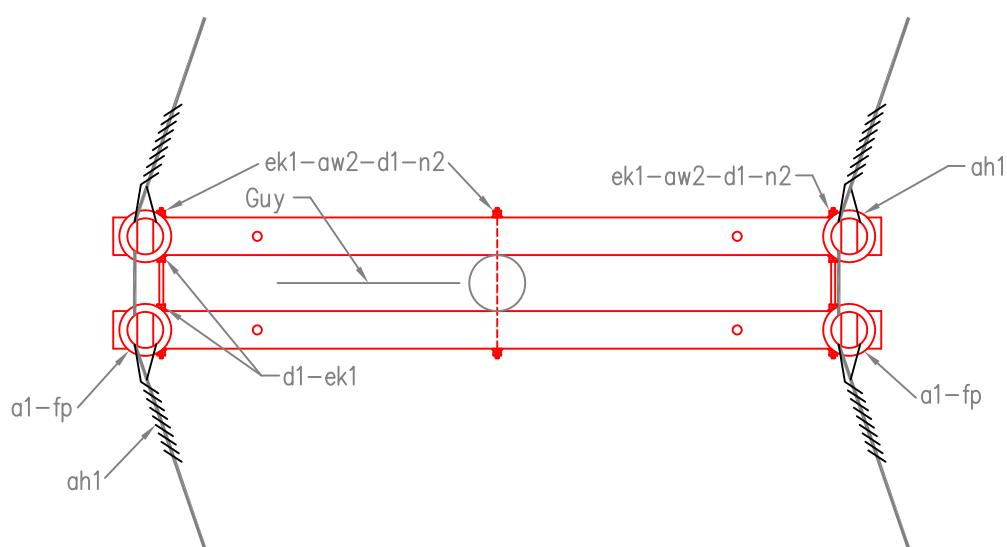
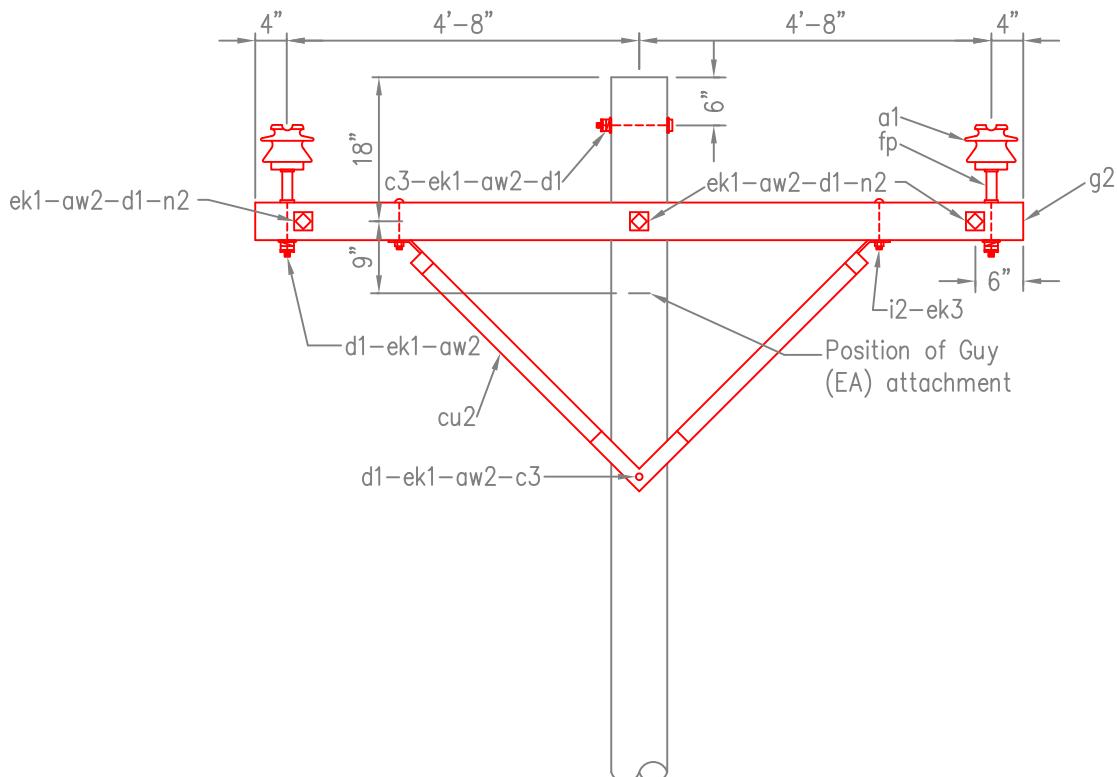


ITM.	QTY.	MAT.CODE No	MATERIAL
a1	4	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah1	2	6790-XX-22	Double side tie, (Specify conductor size)
aw2	12	7108-99-41	Washers, double spring lock, 5/8"
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
cu2	2	0753-51-68	Brace, crossarm 60" Span 18" Drop (Pair)
d1	16	7102-04-91	Washers, square, 5/8"
ek1	16	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
fp	4	4541-23-13	Pin, crossarm 14.4, phase
g2	2	1809-01-03	Crossarm, Wood 10'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 KV, TWO PHASE CROSSARM CONSTRUCTION 10' DOUBLE PRIMARY SUPPORT MAX. TRANSVERSE LOADING 750 LBS./PIN 5° TO 30° MAX. LINE ANGLE LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	VB2-10-LN



DATE	REVISION

14.4/24.9 kV, TWO PHASE  
CROSSARM CONSTRUCTION  
10' DOUBLE PRIMARY SUPPORT  
MAX. TRANSVERSE LOADING 750 LBS./PIN  
5° TO 30° MAX. LINE ANGLE  
LESS NEUTRAL

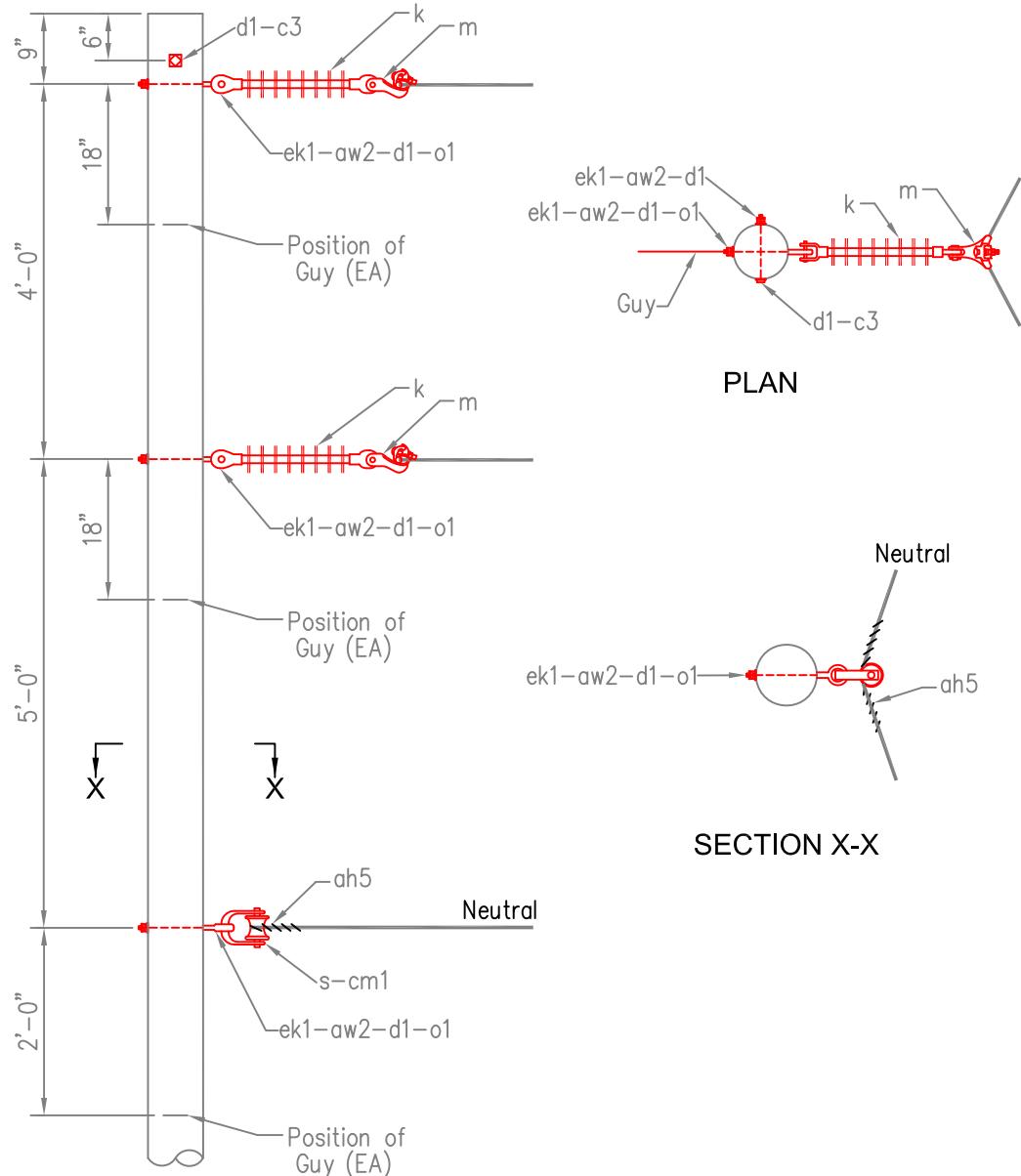
ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VB2-10-LN

ITM.	QTY.	MAT.CODE No	MATERIAL
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
d1	5	7102-04-91	Washers, square, 5/8"
ek1	4	4290-70-63	Locknuts 5/8"
k	2	3428-60-60	Insulator, polymer suspension
m	2	1174-12-XX	Shoe, angle, (Specify conductor size)
o1	3	0636-15-12	Bolts, ovaleye 5/8" x 12"
s	1	1230-19-01	Clevis, swinging (J-6)

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE VERTICAL CONSTRUCTION LARGE ANGLE STRUCTURE 30° TO 60° ANGLE	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VB3



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
VERTICAL CONSTRUCTION  
LARGE ANGLE STRUCTURE  
30° TO 60° ANGLE

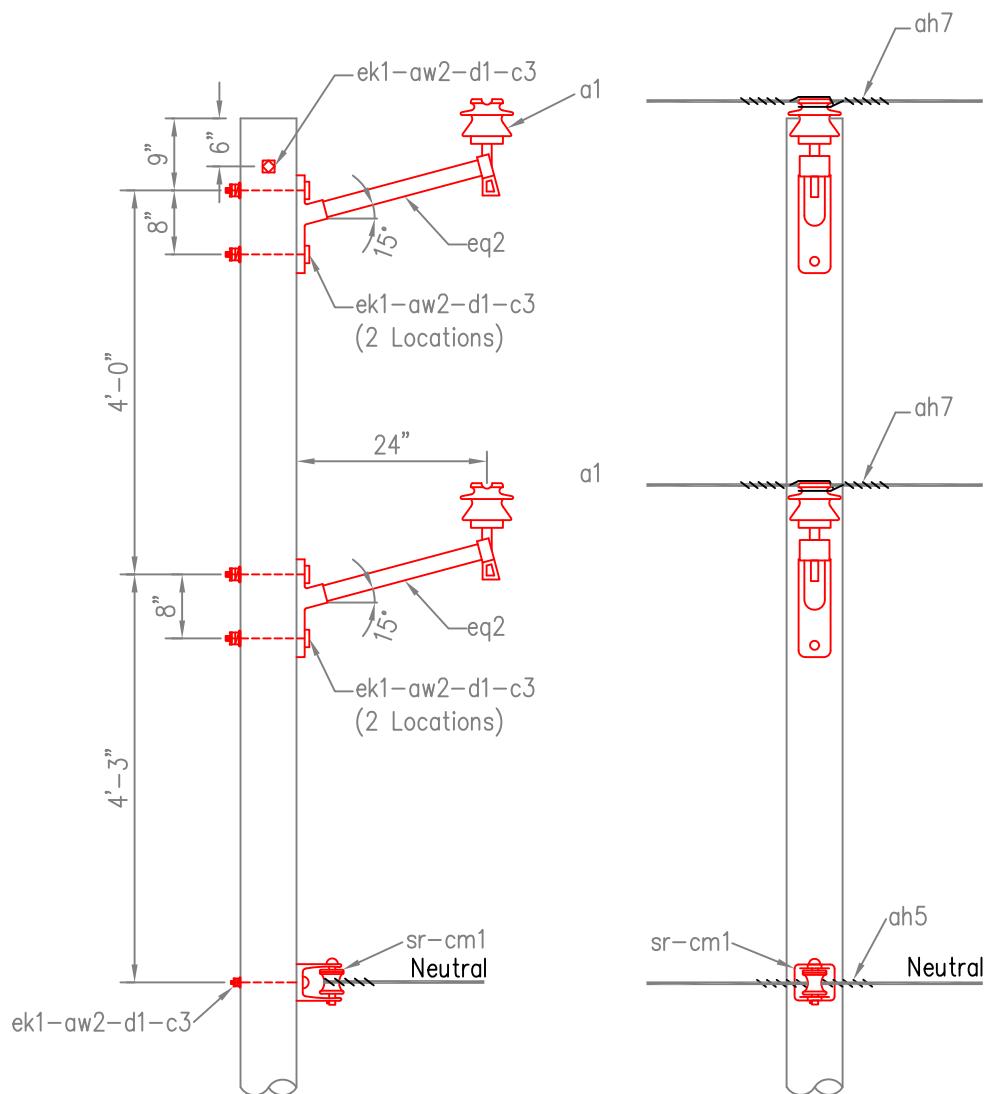
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VB3

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	2	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	2	6790-XX-55	Single side tie, (Specify conductor size)
aw2	6	7108-99-41	Washers, double spring lock, 5/8"
c3	6	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
d1	7	7102-04-91	Washers, square, 5/8"
ek1	6	4290-70-63	Locknuts 5/8"
eq2	2	0780-47-01	Bracket, vertical pin insulator, Fiberglass, 1Ø
sr	1	1230-17-01	Clevis, rigid (D-bracket)

NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE VERTICAL CONSTRUCTION SINGLE PRIMARY SUPPORT REDUCED TENSION	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VB3S



DATE	REVISION

14.4/24.9 kV, TWO PHASE  
VERTICAL CONSTRUCTION  
SINGLE PRIMARY SUPPORT  
REDUCED TENSION

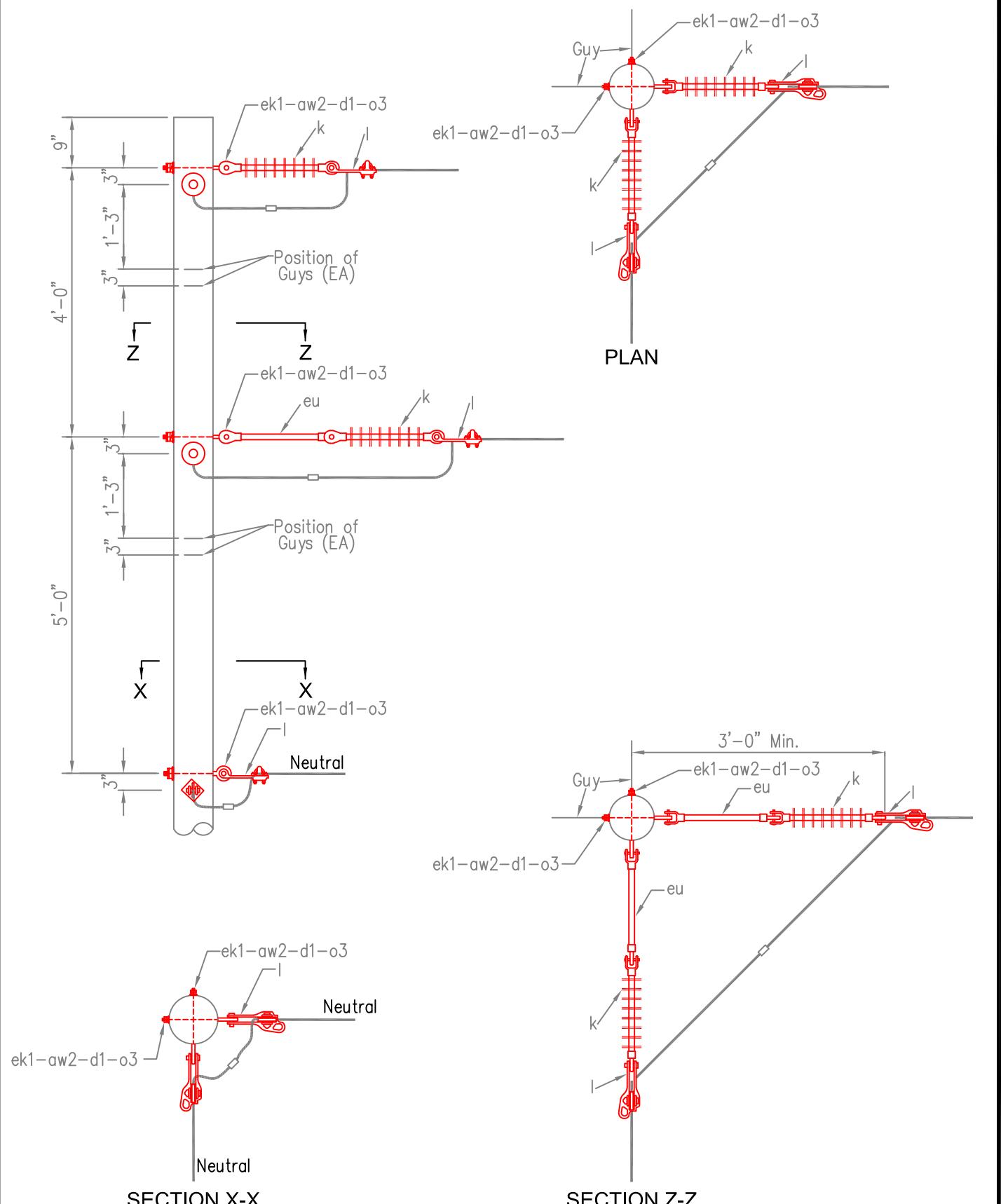
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VB3S

ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	6	7108-99-41	Washers, double spring lock, 5/8"
d1	6	7102-04-91	Washers, square, 5/8"
ek1	6	4290-70-63	Locknuts 5/8"
eu	2	3427-70-30	Link, F.G. primary extension, clevis-eye, 12"
k	4	3428-60-60	Insulator, polymer suspension
l	6	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o3	6	0636-15-12	Bolts, ovaleye 5/8" x 12"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine  $\frac{3}{4}$ ".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE VERTICAL CONSTRUCTION DEADEND ANGLE STRUCTURE 60° TO 90° ANGLE	ISSUED	2/04/2008
				REVISED	8/12/2011
				STANDARD NUMBER	
					VB4-1



**14.4/24.9 kV, TWO PHASE  
VERTICAL CONSTRUCTION  
DEADEND ANGLE STRUCTURE  
60° TO 90° ANGLE**

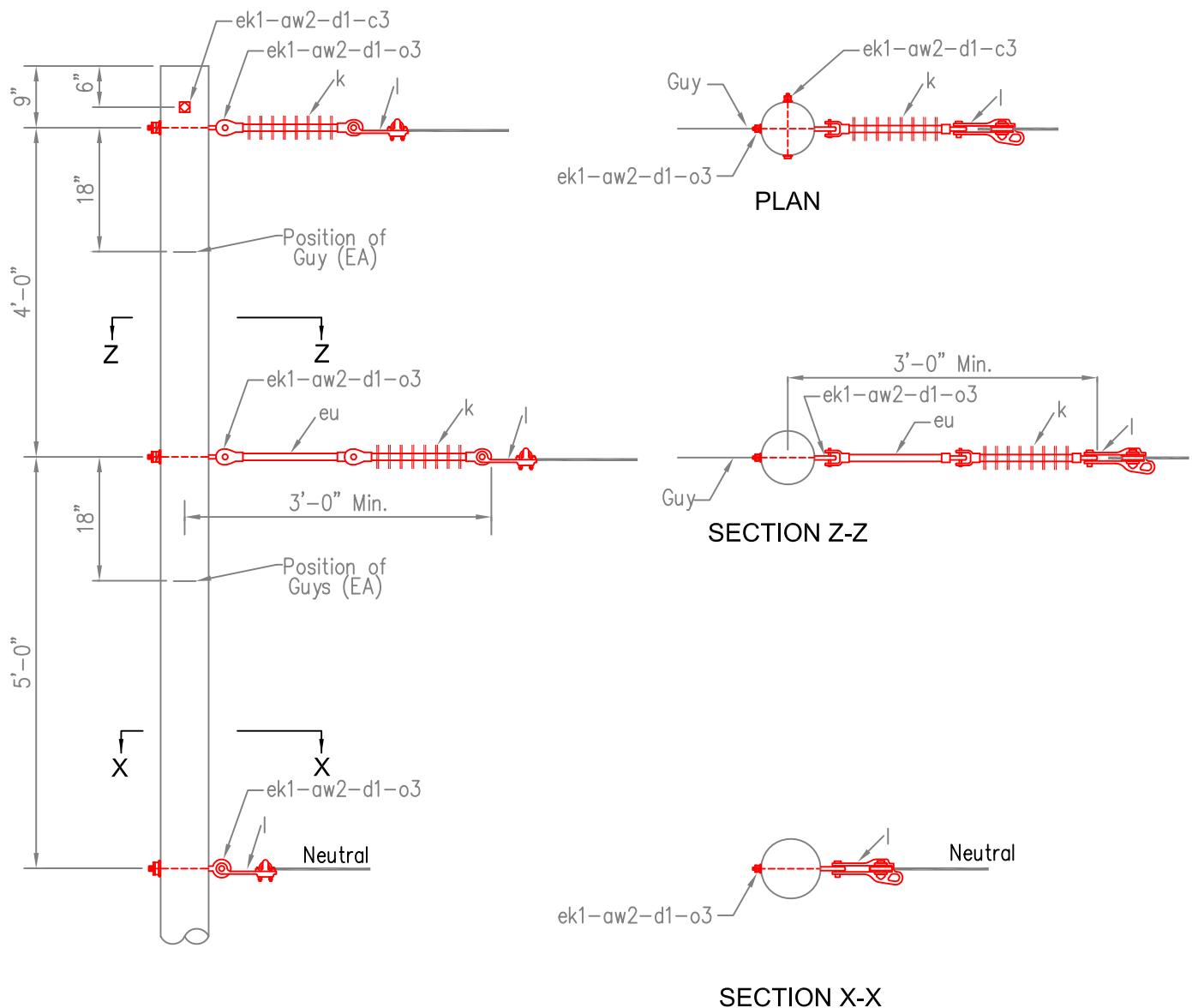
ISSUED	2/04/2008
REVISED	8/12/2011
STANDARD NUMBER	
VB4-1	

ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
d1	5	7102-04-91	Washers, square, 5/8"
ek1	4	4290-70-63	Locknuts 5/8"
eu	1	3427-70-30	Link, F.G. primary extension, clevis-eye, 12"
k	2	3428-60-60	Insulator, polymer suspension
l	3	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o3	3	0636-15-12	Bolts, ovaleye 5/8" x 12"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE VERTICAL CONSTRUCTION DEADEND STRUCTURE (SINGLE DEADEND)	ISSUED	2/04/2008
				REVISED	8/12/2011
				STANDARD NUMBER	
				VB5	



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
VERTICAL CONSTRUCTION  
DEADEND STRUCTURE  
(SINGLE DEADEND)

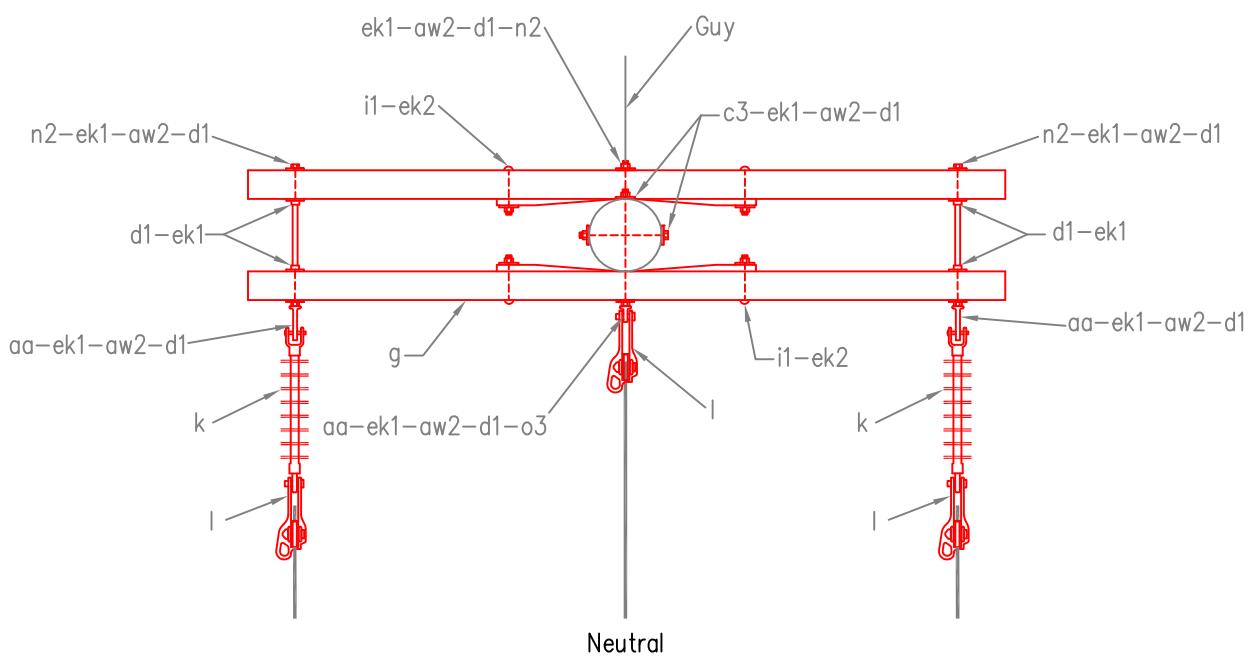
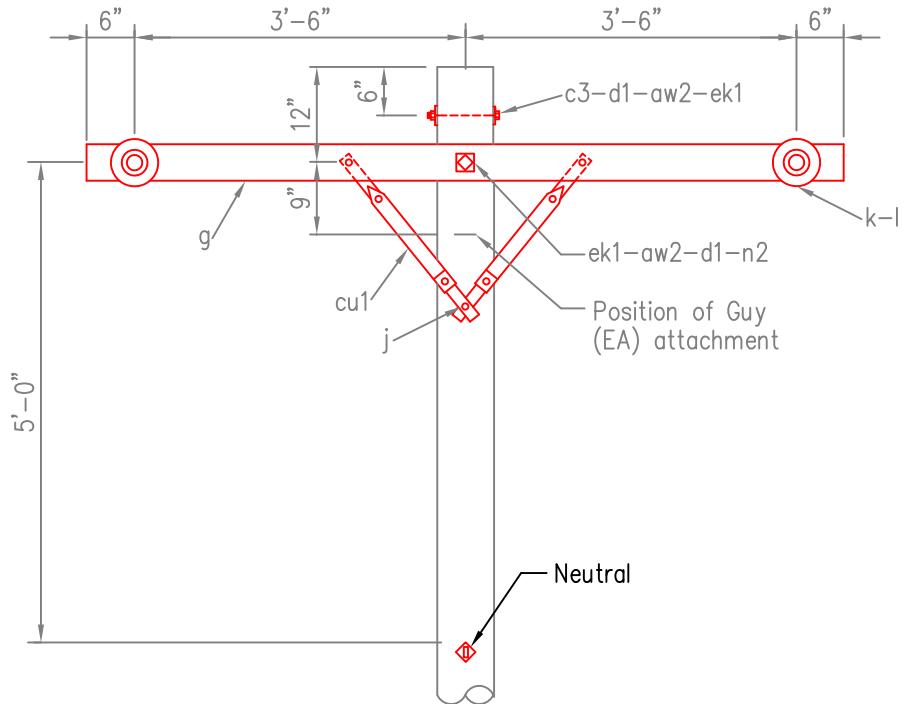
ISSUED	2/04/2008
REVISED	8/12/2011
STANDARD NUMBER	VB5

ITM.	QTY.	MAT.CODE No	MATERIAL
aa	2	4290-40-63	Nuts, ovaleye 5/8"
aw2	8	7108-99-41	Washers, double spring lock, 5/8"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	13	7102-04-91	Washers, square, 5/8"
ek1	14	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
g	2	1809-01-01	Crossarm, Wood 8'
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
k	2	3428-60-60	Insulator, polymer suspension
l	3	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
n2	3	0633-05-22	Bolts, DA 5/8" x 22"
o3	1	0636-15-12	Bolts, ovaleye 5/8" x 12"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION DEADEND STRUCTURE (SINGLE DEADEND)	ISSUED	2/04/2008
				REVISED	8/11/2011
				STANDARD NUMBER	
				VB7	



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
CROSSARM CONSTRUCTION  
DEADEND STRUCTURE  
(SINGLE DEADEND)

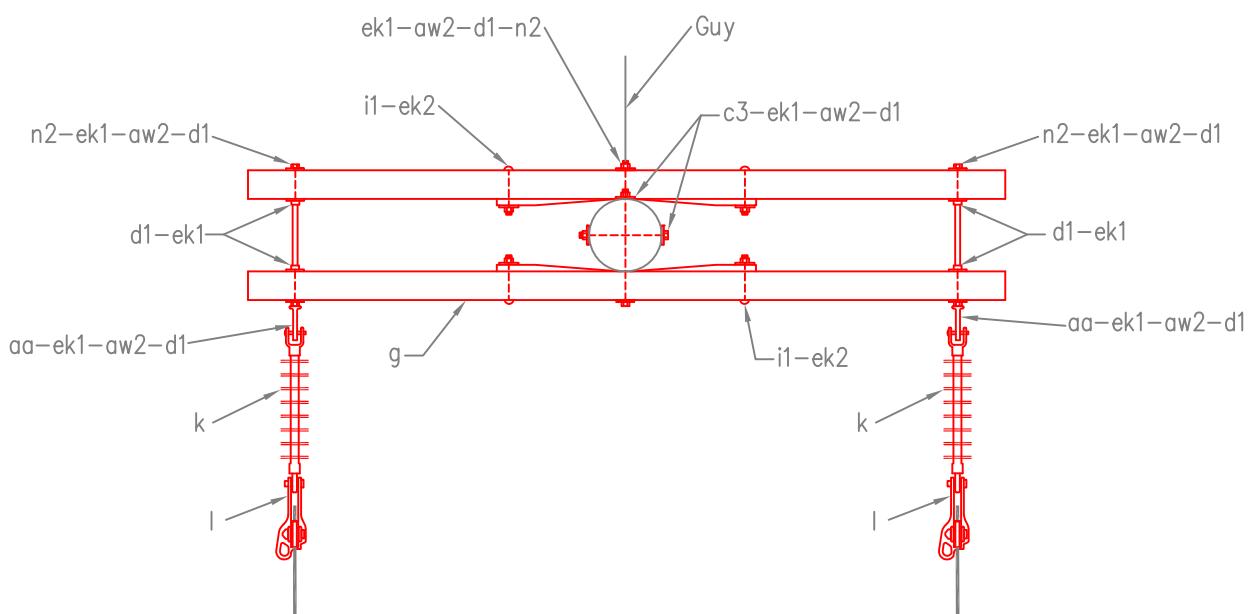
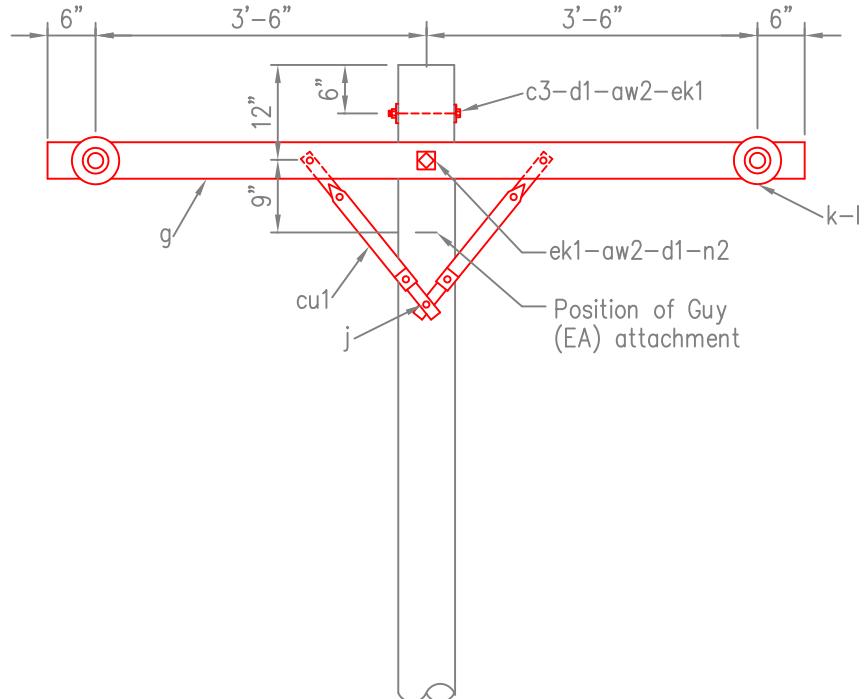
ISSUED	2/04/2008
REVISED	8/11/2011
STANDARD NUMBER	VB7

ITM.	QTY.	MAT.CODE No	MATERIAL
aa	2	4290-40-63	Nuts, ovaleye 5/8"
aw2	7	7108-99-41	Washers, double spring lock, 5/8"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	12	7102-04-91	Washers, square, 5/8"
ek1	13	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
g	2	1809-01-01	Crossarm, Wood 8'
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
k	2	3428-60-60	Insulator, polymer suspension
l	2	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION DEADEND STRUCTURE (SINGLE DEADEND) LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VB7-LN



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
CROSSARM CONSTRUCTION  
DEADEND STRUCTURE  
(SINGLE DEADEND)  
LESS NEUTRAL

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VB7-LN

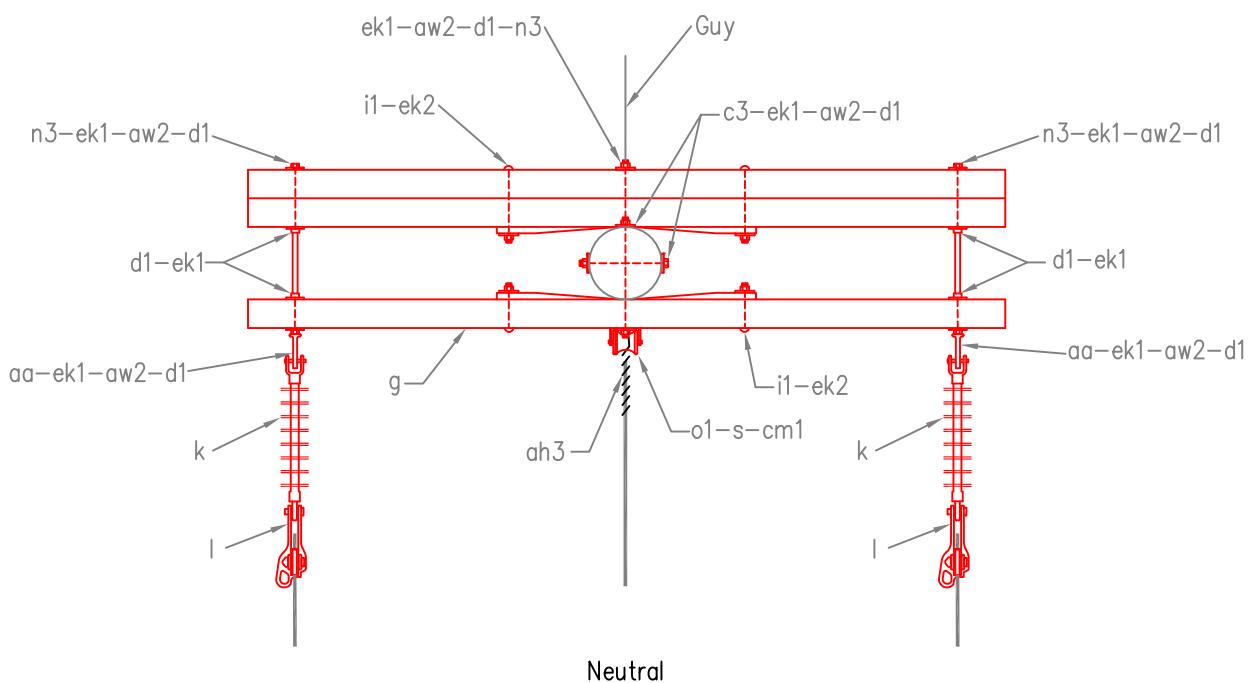
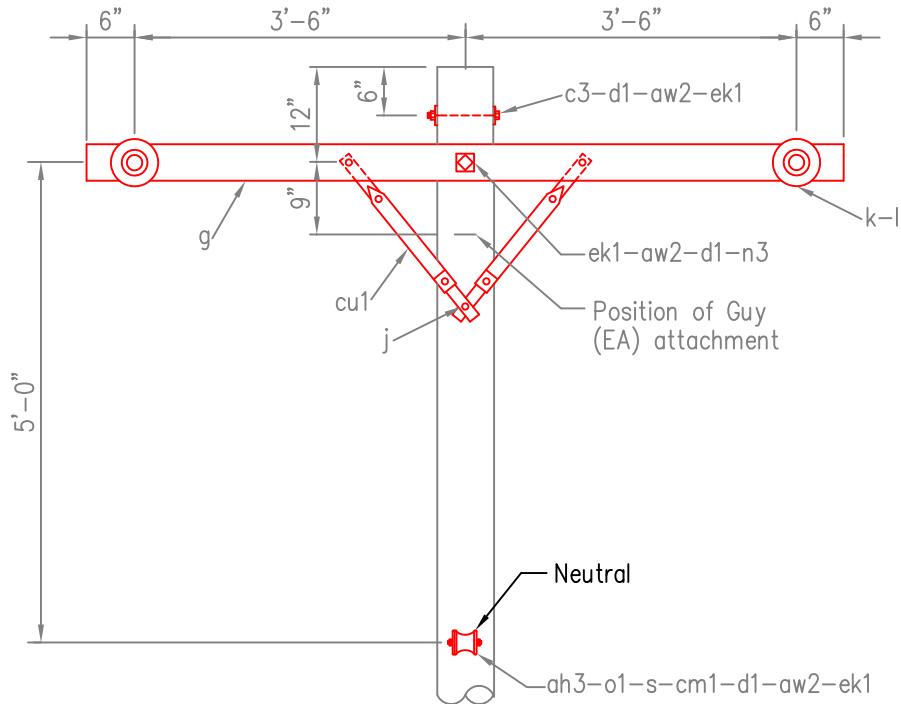
ITM.	QTY.	MAT.CODE No	MATERIAL
aa	2	4290-40-63	Nuts, ovaleye 5/8"
ah3	1	6790-XX-44	Neutral deadend tie, (Specify conductor size)
aw2	8	7108-99-41	Washers, double spring lock, 5/8"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	13	7102-04-91	Washers, square, 5/8"
ek1	14	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
g	3	1809-01-01	Crossarm, Wood 8'
i1	2	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
i3	2	0631-03-09	Bolts, carriage 3/8" x 9"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
k	2	3428-60-60	Insulator, polymer suspension
l	2	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
n3	3	0633-05-24	Bolts, DA 5/8" x 24"
o1	1	0636-15-12	Bolts, ovaleye 5/8" x 12"
s	1	1230-19-01	Clevis, swinging (J-6)

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

FOR RETIREMENT ONLY

	DATE	REVISION	14.4/24.9 kV, TWO PHASE THREE CROSSARM CONSTRUCTION DEADEND STRUCTURE (SINGLE DEADEND)	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VB7-1-R



FOR RETIREMENT ONLY



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
THREE CROSSARM CONSTRUCTION  
DEADEND STRUCTURE  
(SINGLE DEADEND)

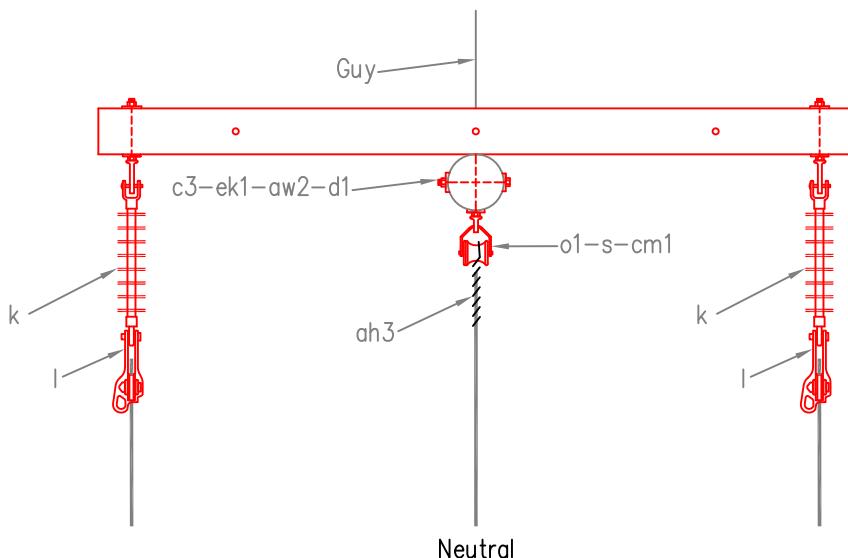
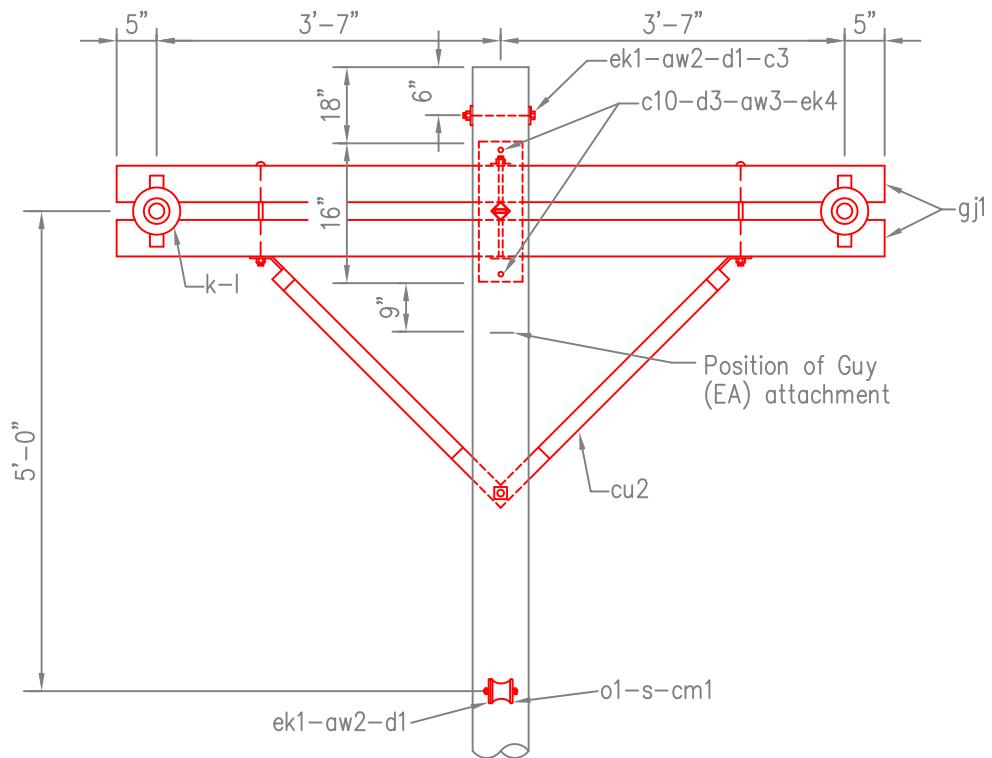
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VB7-1-R

ITM.	QTY.	MAT.CODE No	MATERIAL
ah3	1	6790-XX-44	Neutral deadend tie, (Specify conductor size)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cm1	1	3426-20-12	Insulator, 3" spool
cu2	1	0753-51-68	Brace, crossarm 60" span 18" drop (pair)
d1	3	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	2	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
gj1	1	1808-12-03	Hughes regular crossarm, 8' (2890-B)
k	2	3428-60-60	Insulator, polymer suspension
l	2	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o1	1	0636-15-12	Bolts, ovaleye 5/8" x 12"
s	1	1230-19-01	Clevis, swinging

NOTES:

1. Crossarm braces and mounting hardware are included in the crossarm package.
  2. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
  3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.
- FOR RETIREMENT ONLY**

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION DEADEND STRUCTURE (SINGLE DEADEND)	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VB7A-R



**FOR RETIREMENT ONLY**



DATE	REVISION

**14.4/24.9 KV, TWO PHASE  
CROSSARM CONSTRUCTION  
DEADEND STRUCTURE  
(SINGLE DEADEND)**

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VB7A-R

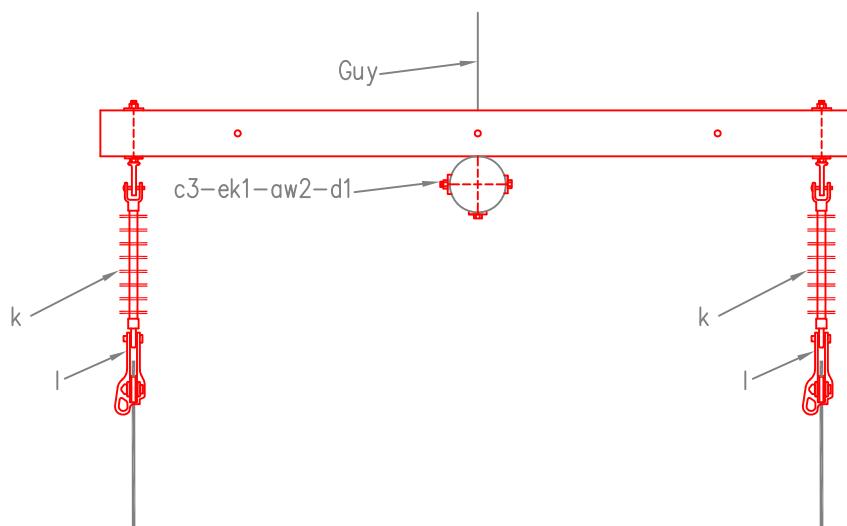
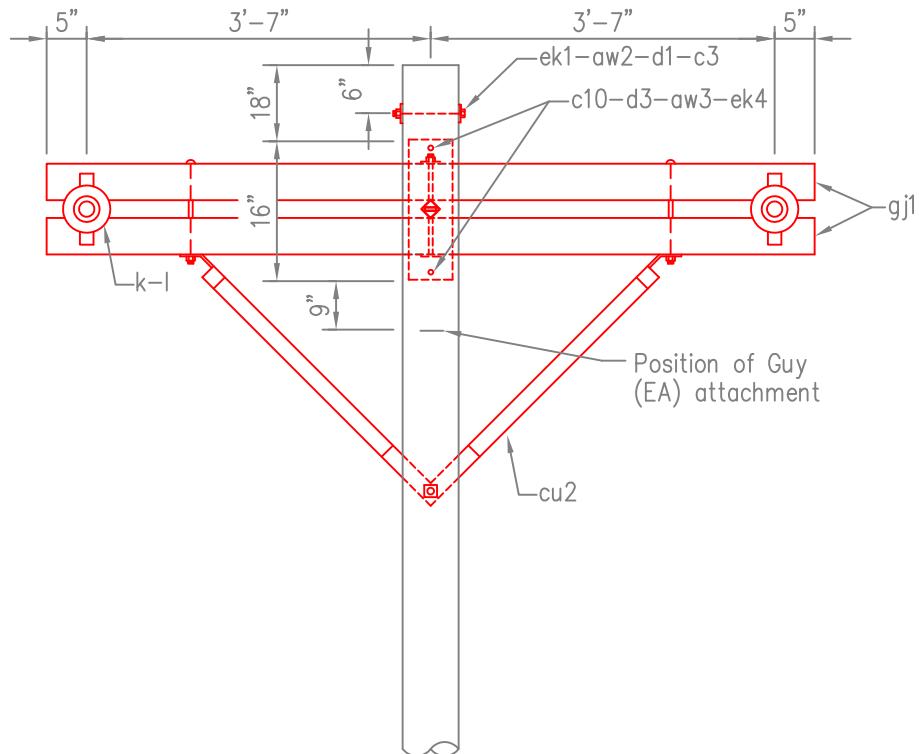
ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cu2	1	0753-51-68	Brace, crossarm 60" span 18" drop (pair)
d1	2	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	1	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
gj1	1	1808-12-03	Hughes regular crossarm, 8' (2890-B)
k	2	3428-60-60	Insulator, polymer suspension
l	2	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

NOTES:

1. Used for converting single phase deadends to three phase.
2. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
3. Crossarm braces and mounting hardware are included in the crossarm package.
4. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

FOR RETIREMENT ONLY

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION SINGLE DEADEND STRUCTURE LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VB7A-LN-R	



FOR RETIREMENT ONLY



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
CROSSARM CONSTRUCTION  
SINGLE DEADEND STRUCTURE  
LESS NEUTRAL

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VB7A-LN-R

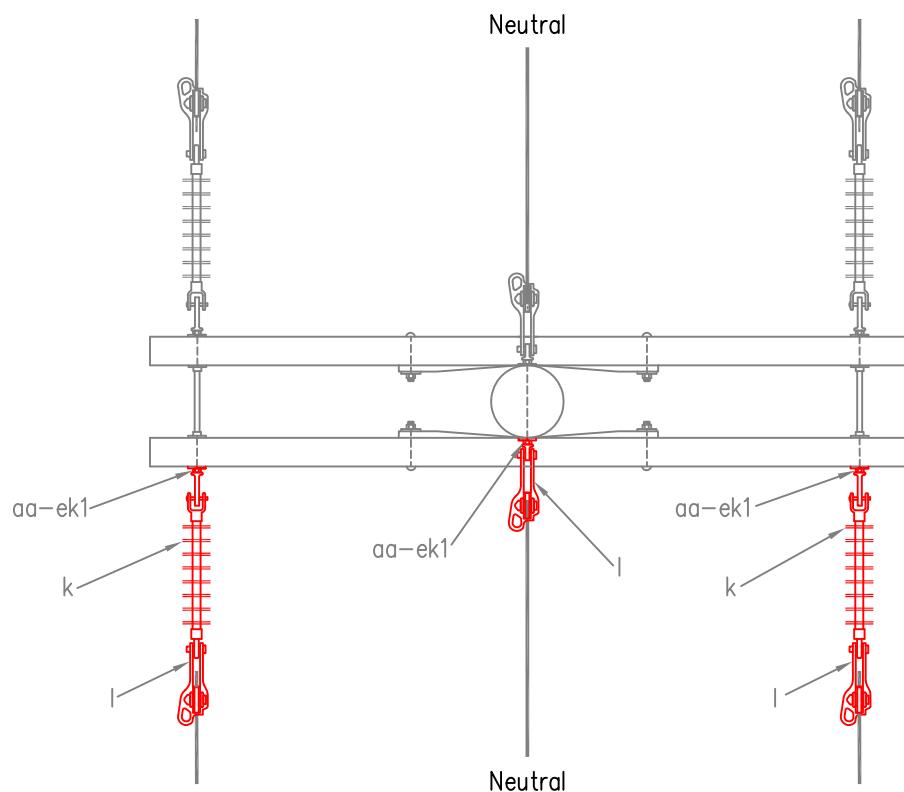
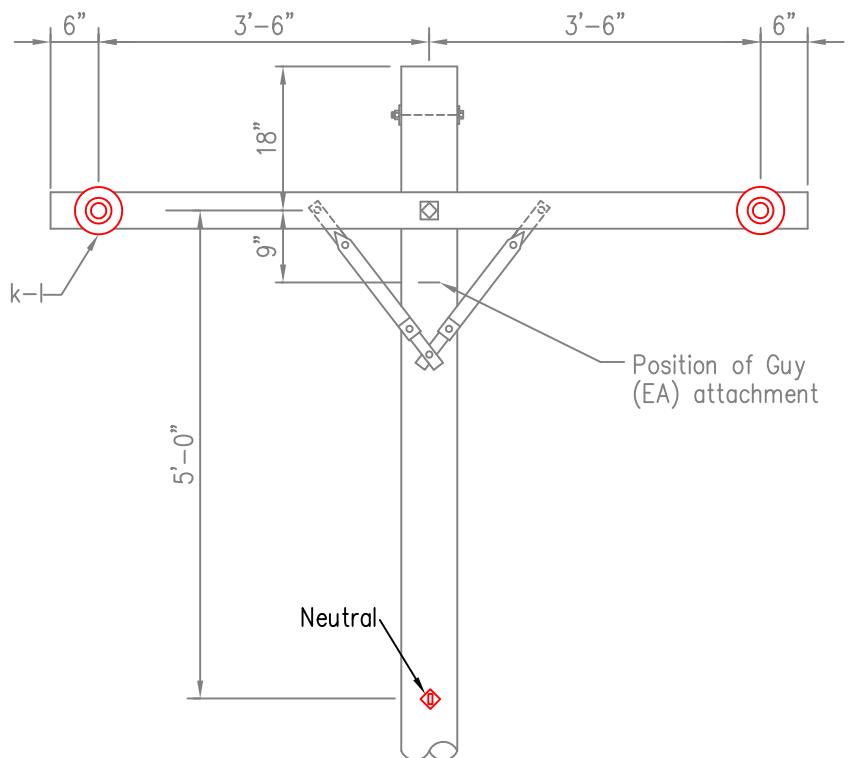
ITM.	QTY.	MAT.CODE No	MATERIAL
aa	3	4290-40-63	Nuts, oval eye 5/8"
ek1	4	4290-70-63	Locknuts 5/8"
k	2	3428-60-60	Insulator, polymer suspension
l	3	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

NOTES:

1. Switch or insulators for jumpers must be called separately.
2. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine  $\frac{3}{4}$ ".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION DEADEND TAKEOFF FOR SPAN WITH TENSION	ISSUED	2/04/2008
			REVISED	8/12/2011
			STANDARD NUMBER	
				VB7X



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
CROSSARM CONSTRUCTION  
DEADEND TAKEOFF FOR  
SPAN WITH TENSION

ISSUED	2/04/2008
REVISED	8/12/2011
STANDARD NUMBER	VB7X

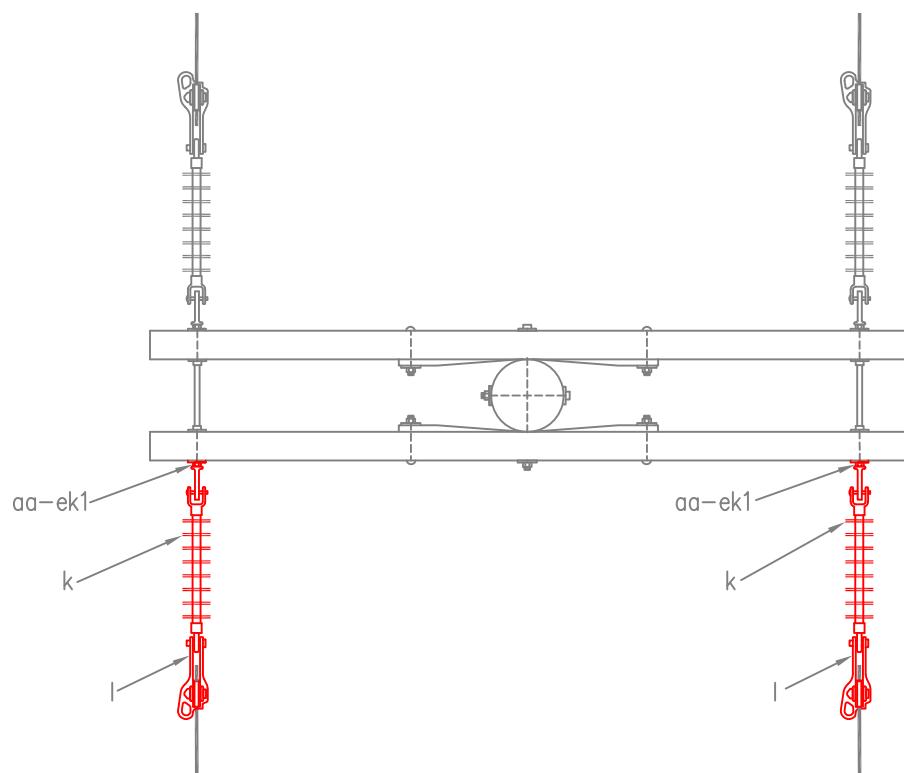
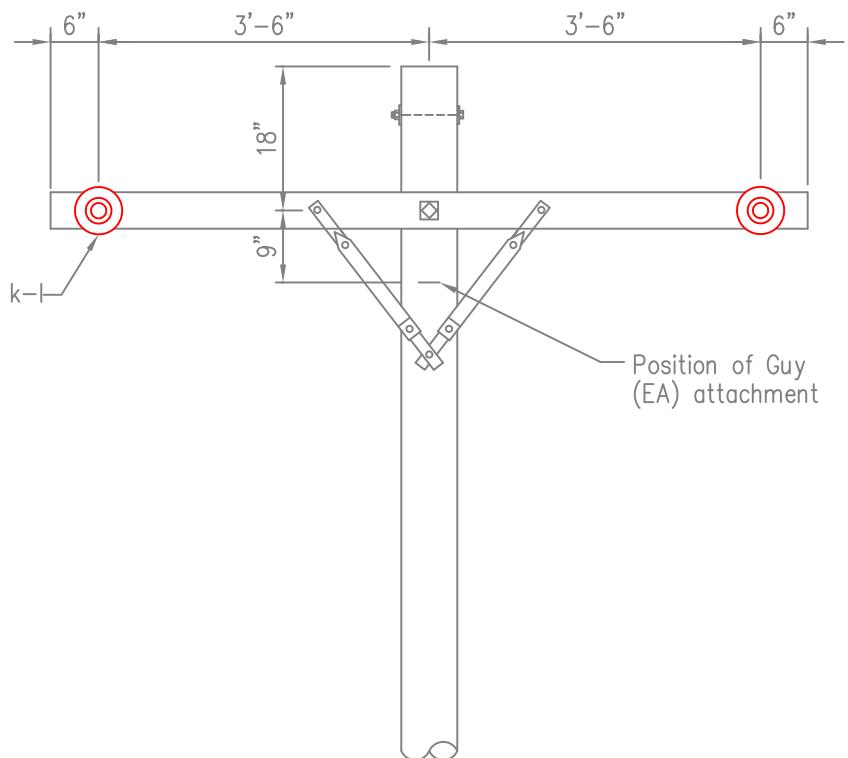
ITM.	QTY.	MAT.CODE No	MATERIAL
aa	2	4290-40-63	Nuts, oval eye 5/8"
ek1	3	4290-70-63	Locknuts 5/8"
k	2	3428-60-60	Insulator, polymer suspension
l	2	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

NOTES:

1. Switch or insulators for jumpers must be called separately.
2. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine  $\frac{3}{4}$ ".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION DEADEND TAKEOFF FOR SPAN WITH TENSION LESS NEUTRAL	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VB7X-LN



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
CROSSARM CONSTRUCTION  
DEADEND TAKEOFF FOR  
SPAN WITH TENSION  
LESS NEUTRAL

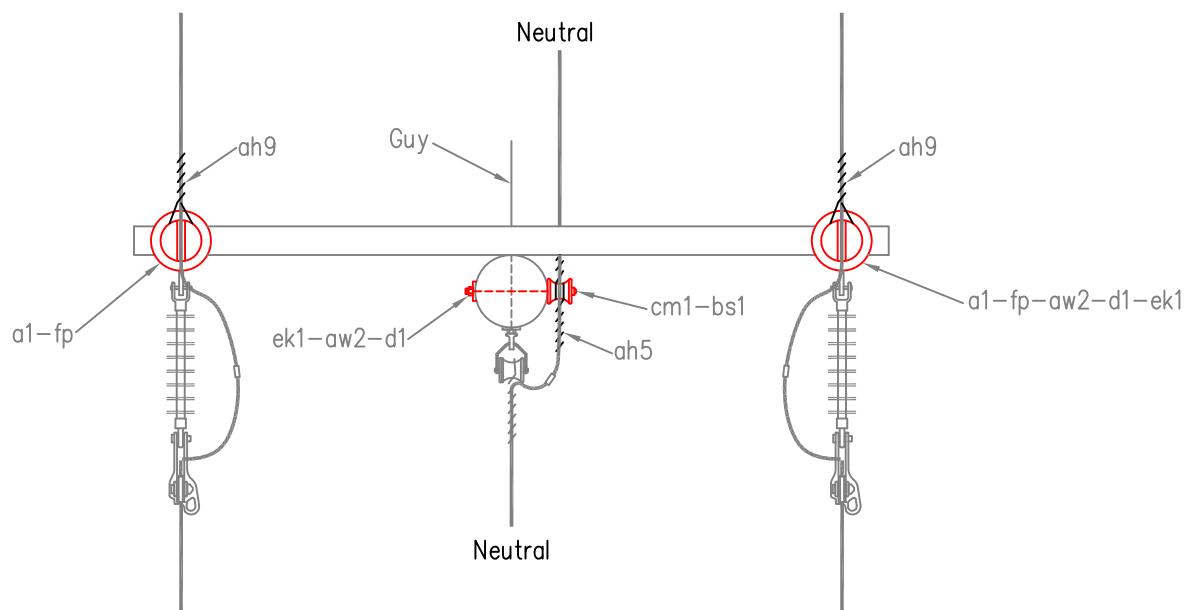
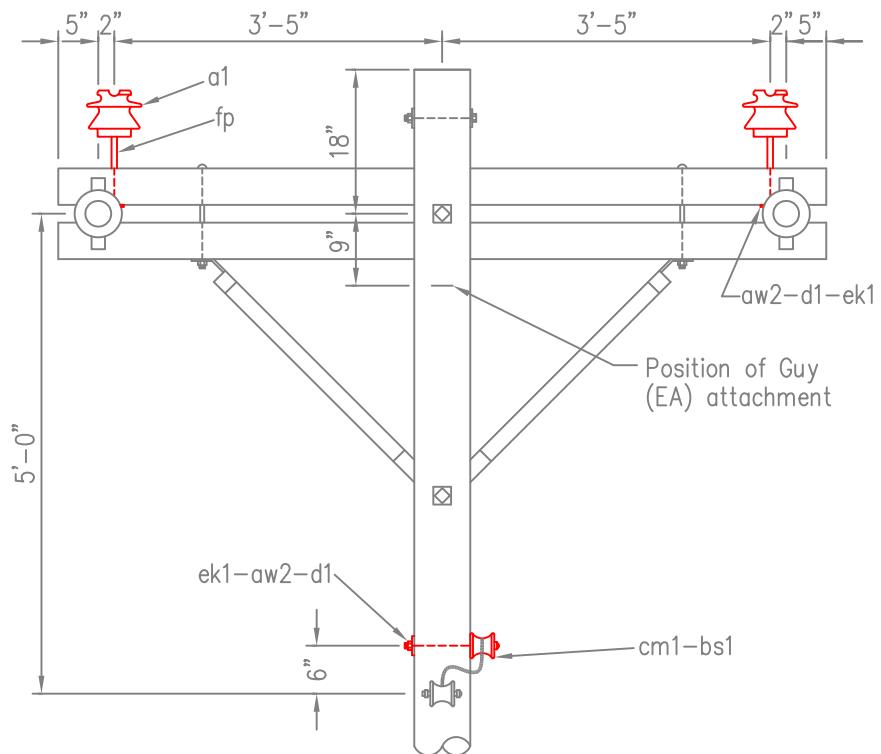
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VB7X-LN

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	2	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah9	2	6790-XX-88	Slack span deadend tie, (Specify conductor size)
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
d1	3	7102-04-91	Washers, square, 5/8"
ek1	3	4290-70-63	Locknuts 5/8"
fp	2	4541-23-13	Pin, crossarm 14.4, phase

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine  $\frac{3}{4}$ ".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION DEADEND TAKEOFF FOR SPAN WITH REDUCED TENSION	ISSUED	2/04/2008
				REVISED	
					STANDARD NUMBER
					VB7XS



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
CROSSARM CONSTRUCTION  
DEADEND TAKEOFF FOR  
SPAN WITH REDUCED TENSION

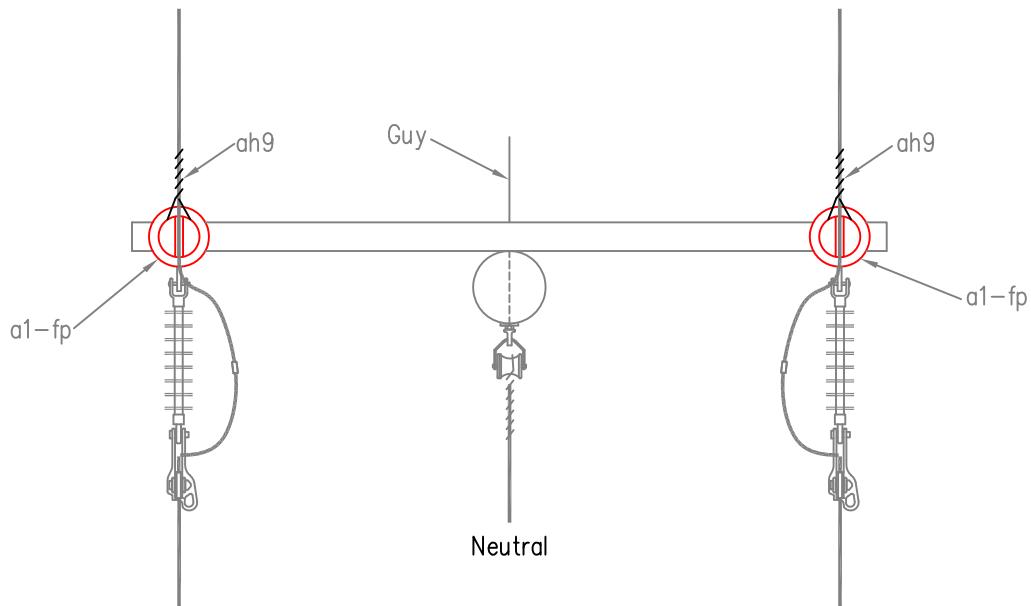
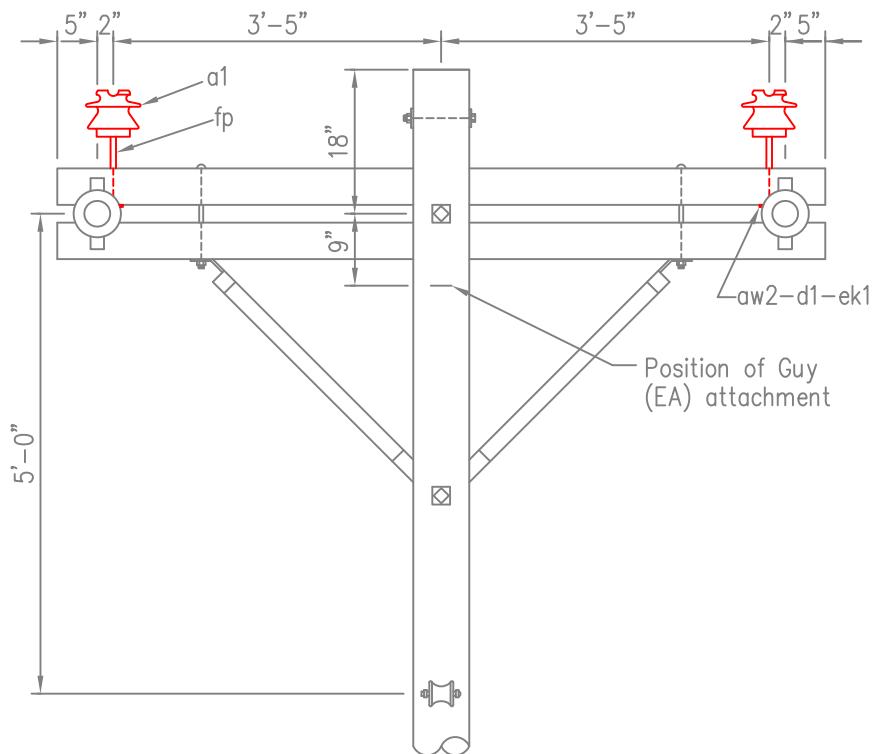
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VB7XS

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	2	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah9	2	6790-XX-88	Slack span deadend tie, (Specify conductor size)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
d1	2	7102-04-91	Washers, square, 5/8"
ek1	2	4290-70-63	Locknuts 5/8"
fp	2	4541-23-13	Pin, crossarm 14.4, phase

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine  $\frac{3}{4}$ ".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION DEADEND TAKEOFF FOR SPAN WITH REDUCED TENSION LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VB7XS-LN	



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
CROSSARM CONSTRUCTION  
DEADEND TAKEOFF FOR  
SPAN WITH REDUCED TENSION  
LESS NEUTRAL

ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VB7XS-LN

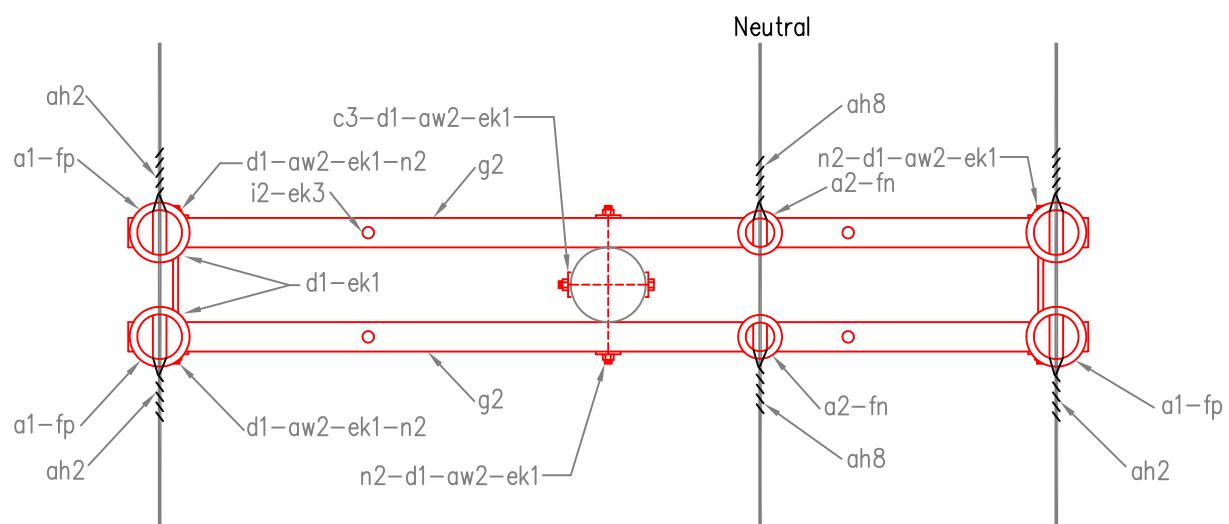
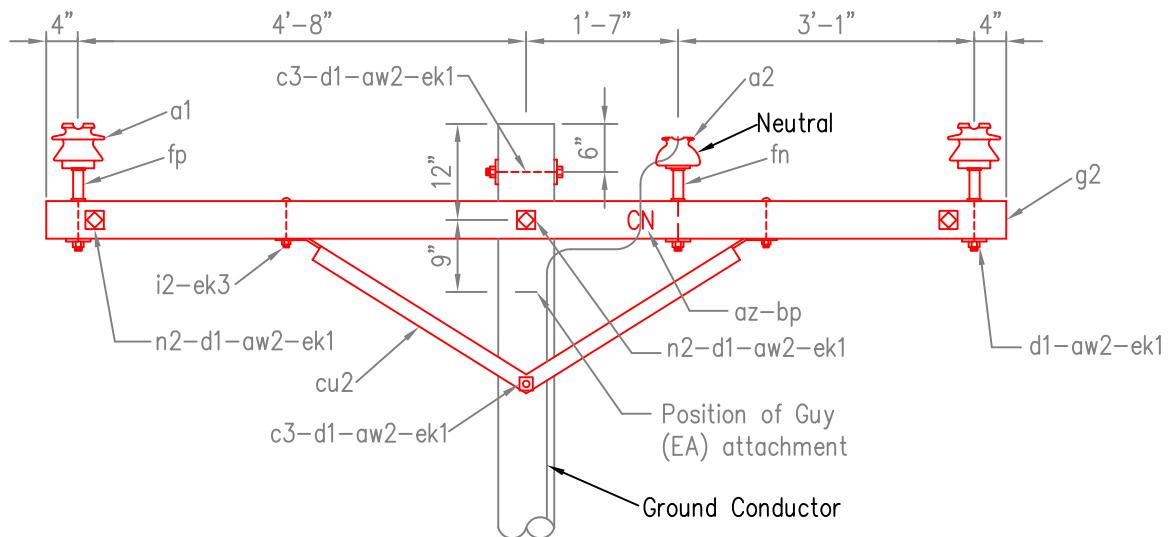
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	4	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
a2	2	3422-40-10	Insulator, 7.2 pin, white, 1" internal thread
ah2	2	6790-XX-33	Double support tie, (Specify conductor size)
dh8	1	6790-XX-78	C/F neck double support tie, (Specify conductor size)
aw2	14	7108-99-41	Washers, double spring lock, 5/8"
az	2	4260-21-04	CN Metal Tags
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cu2	2	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	18	7102-04-91	Washers, square, 5/8"
ek1	18	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
fn	2	4541-24-11	Pin, crossarm 7.2, neutral
fp	4	4541-23-13	Pin, crossarm 14.4, phase
g2	2	1809-01-03	Crossarm, Wood 10'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. Maximum transverse load: 1000 lbs. per conductor.
2. Maximum line angle within load limits: 20°.
3. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
4. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

ENGINEERING APPROVAL ONLY

	DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT	ISSUED	2/04/2008
				REVISED	9/1/2011
				STANDARD NUMBER	
				VB9	



ENGINEERING APPROVAL ONLY



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT

ISSUED	2/04/2008
REVISED	9/1/2011
STANDARD NUMBER	VB9

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	2	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
a2	1	3422-40-10	Insulator, 7.2 pin, white, 1" internal thread
ah6	1	6790-XX-76	C/F neck wrap lock tie, (Specify conductor size)
ah7	2	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	6	7108-99-41	Washers, double spring lock, 5/8"
az	2	4260-21-04	CN Metal Tags
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c5	1	0638-05-16	Bolts, machine 5/8" x 16"
cu2	1	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	7	7102-04-91	Washers, square, 5/8"
ek1	6	4290-70-63	Locknuts 5/8"
ek3	2	4290-70-50	Locknuts 1/2"
fn	1	4541-24-11	Pin, crossarm 7.2, neutral
fp	2	4541-23-13	Pin, crossarm 14.4, phase
g2	1	1809-01-03	Crossarm, Wood 10'
i2	2	0631-04-06	Bolts, carriage 1/2" x 6"

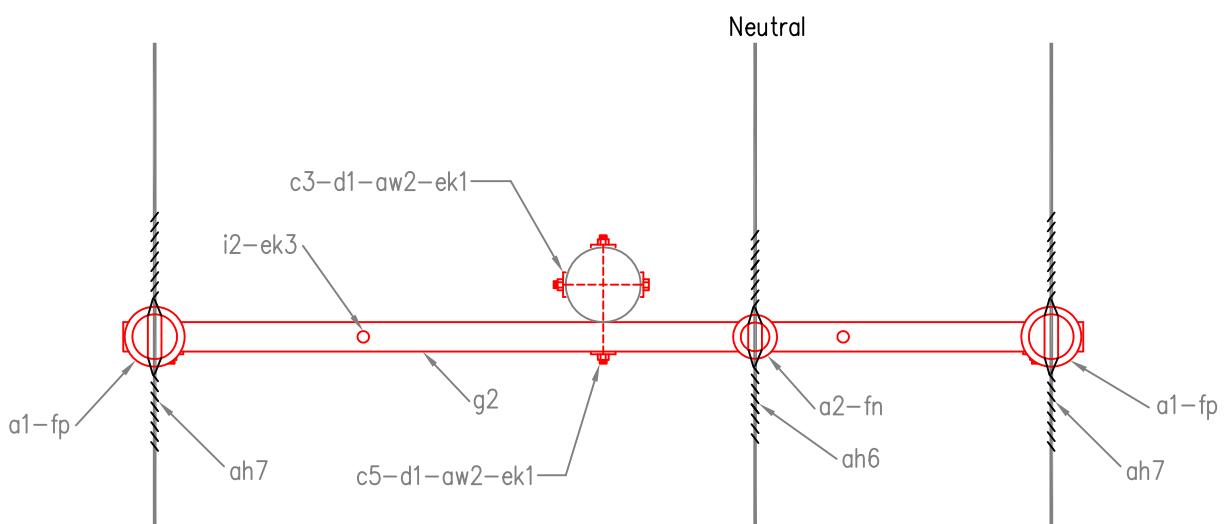
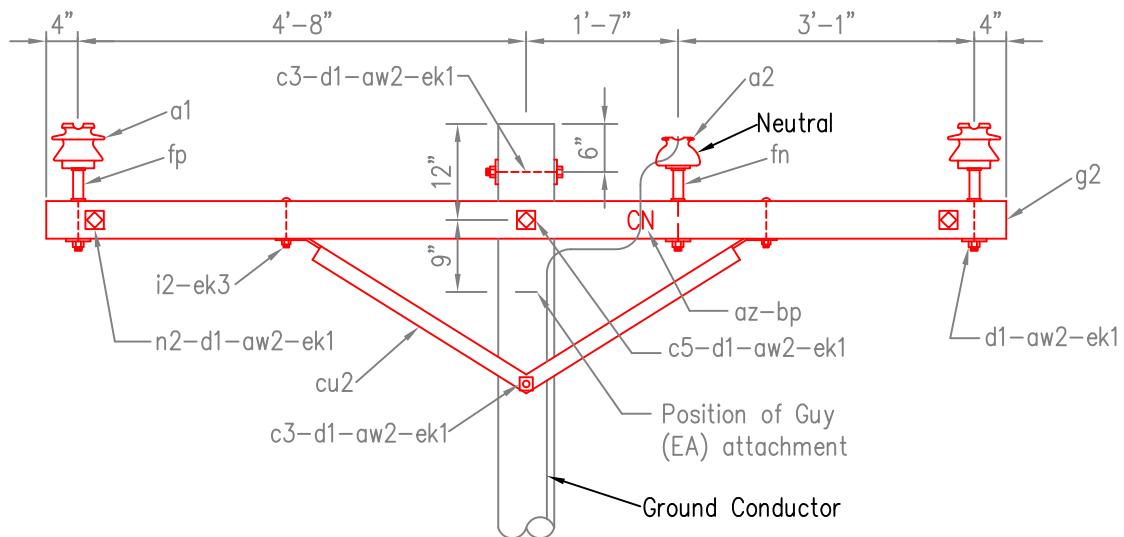
NOTES:

1. Maximum transverse load: 1000 lbs. per conductor.
2. Maximum line angle within load limits: 20°
3. This unit also can be used as VB7S.
4. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
5. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

ENGINEERING APPROVAL ONLY



DATE	REVISION	14.4/24.9 kV, TWO PHASE CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT	ISSUED	2/04/2008
			REVISED	9/1/2011
			STANDARD NUMBER	
				VB9-1



ENGINEERING APPROVAL ONLY



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
CROSSARM CONSTRUCTION  
SINGLE PRIMARY SUPPORT

ISSUED	2/04/2008
REVISED	9/1/2011
STANDARD NUMBER	VB9-1

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**Tab VC**

**Tab VC**

**INDEX VC****THREE-PHASE PRIMARY POLE TOP ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
VC1	SINGLE SUPPORT – TANGENT
VC1-LN	SINGLE SUPPORT – LESS NEUTRAL TANGENT
VC1-10	SINGLE SUPPORT – TANGENT – 10' CROSSARM
VC1-10-LN	SINGLE SUPPORT – TANGENT – 10' CROSSARM LESS NEUTRAL
VC1N	SINGLE SUPPORT – NARROW PROFILE TANGENT
VC1-1	DOUBLE SUPPORT – TANGENT
VC1-1-LN	DOUBLE SUPPORT – TANGENT – LESS NEUTRAL
VC1-1-10	DOUBLE SUPPORT – TANGENT – 10' CROSSARM
VC1-1-10-LN	DOUBLE SUPPORT – TANGENT – 10' CROSSARM LESS NEUTRAL
VC1-1N	DOUBLE SUPPORT – NARROW PROFILE TANGENT
VC1-1N-LN	DOUBLE SUPPORT – NARROW PROFILE TANGENT LESS NEUTRAL
VC1-2	SINGLE SUPPORT – TANGENT LARGE CONDUCTOR
VC1-2-LN	SINGLE SUPPORT – TANGENT LARGE CONDUCTOR – LESS NEUTRAL
VC1-2-10	SINGLE SUPPORT – TANGENT LARGE CONDUCTOR – 10' CROSSARM
VC1-2-10-LN	SINGLE SUPPORT – TANGENT LARGE CONDUCTOR – 10' CROSSARM LESS NEUTRAL
VC1-3	DOUBLE SUPPORT – TANGENT LARGE CONDUCTOR
VC1-3-LN	DOUBLE SUPPORT – TANGENT LARGE CONDUCTOR – LESS NEUTRAL
VC1-3-10	DOUBLE SUPPORT – TANGENT LARGE CONDUCTOR – 10' CROSSARM
VC1-3-10-LN	DOUBLE SUPPORT – TANGENT LARGE CONDUCTOR – 10' CROSSARM LESS NEUTRAL

**INDEX VC (cont.)****THREE-PHASE PRIMARY POLE TOP ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
VC1-4-R	SINGLE SUPPORT – TANGENT LARGE CONDUCTOR (RETIREMENT ONLY)
VC2	DOUBLE SUPPORT – MEDIUM ANGLE 5° TO 30°
VC2-LN	DOUBLE SUPPORT – MEDIUM ANGLE 5° TO 30° – LESS NEUTRAL
VC2N	DOUBLE SUPPORT – MEDIUM ANGLE 5° TO 30° – NARROW PROFILE
VC2N-LN	DOUBLE SUPPORT – MEDIUM ANGLE 5° TO 30° – NARROW PROFILE LESS NEUTRAL
VC2-1	DOUBLE SUPPORT – MEDIUM ANGLE 5° TO 30°
VC2-1-LN	DOUBLE SUPPORT – MEDIUM ANGLE 5° TO 30° – LESS NEUTRAL
VC2-2	DOUBLE SUPPORT – MEDIUM ANGLE 5° TO 30°
VC3	SUSPENSION ANGLE – LARGE 30° TO 60°
VC3S	REDUCED TENSION
VC4-1	DEADEND ANGLE – 60° TO 90°
VC7	SINGLE DEADEND
VC7N	SINGLE DEADEND – NARROW PROFILE
VC7A-R	SINGLE DEADEND – SMALL CONDUCTOR (RETIREMENT ONLY)
VC7A-L-R	SINGLE DEADEND – LARGE CONDUCTOR (RETIREMENT ONLY)
VC7A-10-R	SINGLE DEADEND – SMALL CONDUCTOR 10' CROSSARM (RETIREMENT ONLY)
VC7S	3Ø TAP TAKE OFF FOR REDUCED TENSION DEADEND
VC7S-10	3Ø TAP TAKE OFF FOR REDUCED TENSION DEADEND 10' CROSSARM (ENGINEERING APPROVAL ONLY)
VC7X	3Ø TAKE OFF FROM 3Ø DEADEND WITH TENSION

**INDEX VC (cont.)****THREE-PHASE PRIMARY POLE TOP ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
VC7X-LN	3Ø TAKE OFF FROM 3Ø DEADEND WITH TENSION LESS NEUTRAL
VC7XS	3Ø TAKE OFF FROM 3Ø DEADEND WITH REDUCED TENSION
VC7-1-R	SINGLE DEADEND – TRIPLE CROSSARMS (RETIREMENT ONLY)
VC8A-R	DOUBLE DEADEND – HUGHES ARM (RETIREMENT ONLY)
VC8A-L-R	DOUBLE DEADEND – LARGE CONDUCTOR (RETIREMENT ONLY)
VC8N	DOUBLE DEADEND – SMALL CONDUCTOR NARROW PROFILE
VC9	DOUBLE SUPPORT CROSSARM – TANGENT NEUTRAL ON CROSSARM (ENGINEERING APPROVAL ONLY)
VC9-1	SINGLE SUPPORT CROSSARM – TANGENT NEUTRAL ON CROSSARM (ENGINEERING APPROVAL ONLY)
VC9-2	DOUBLE SUPPORT CROSSARM – TANGENT NEUTRAL ON CROSSARM (ENGINEERING APPROVAL ONLY)
VC9-2-LN	DOUBLE SUPPORT CROSSARM – LESS NEUTRAL
VC9-3	SINGLE SUPPORT – LARGE CONDUCTOR NEUTRAL ON CROSSARM (ENGINEERING APPROVAL ONLY)
VC9-3-LN	SINGLE SUPPORT CROSSARM – LARGE CONDUCTOR LESS NEUTRAL
VC33-7	DOUBLE SUPPORT – ALLEY ARM

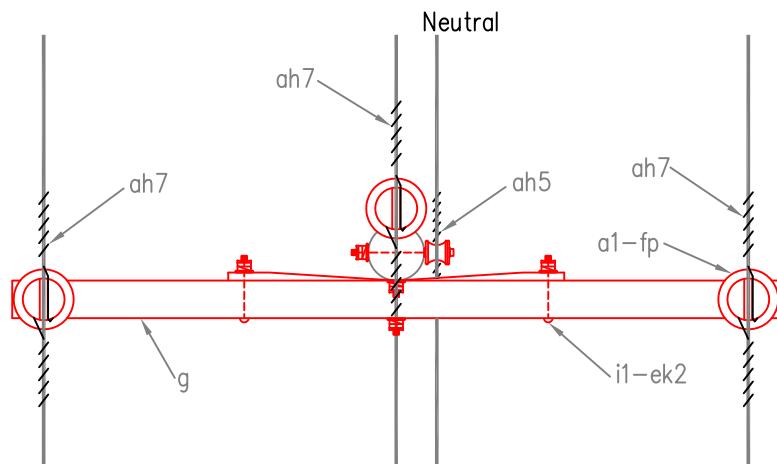
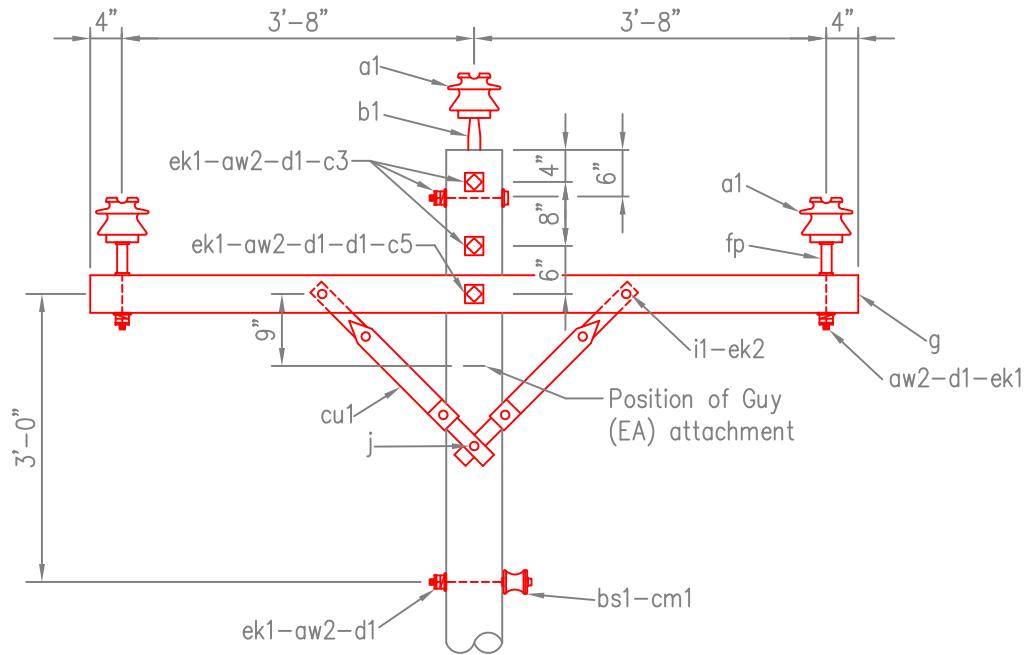
ITM.	QTY.	CATALOG No.	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	7	7018-99-41	Washers, double spring lock, 5/8"
b1	1	4561-23-20	Pin, pole top 14.4
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
c5	1	0638-05-16	Bolts, machine 5/8" x 16"
cm1	1	3426-20-12	Insulator, 3" spool
cu1	1	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	9	7102-04-91	Washers, square, 5/8"
ek1	7	4290-70-63	Locknuts 5/8"
ek2	2	4290-70-38	Locknuts 3/8"
fp	2	4541-23-13	Pin, crossarm 14.4, phase
g	1	1809-01-01	Crossarm, Wood 8'
i1	2	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	1	5550-44-40	Screw, lag 1/2 "x 4"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT 0° TO 5° ANGLE	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VC1



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
SINGLE PRIMARY SUPPORT  
0° TO 5° ANGLE

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC1

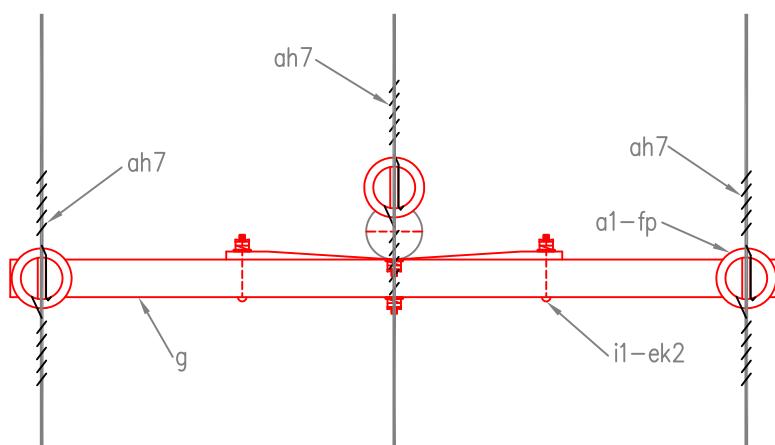
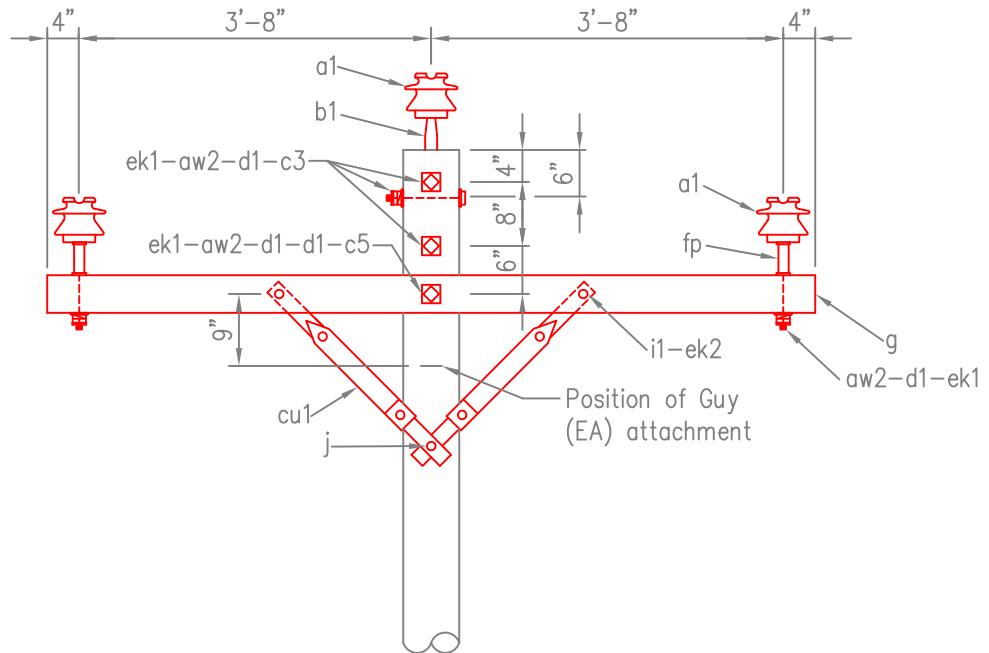
ITM.	QTY.	CATALOG No.	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	6	7108-99-41	Washers, double spring lock, 5/8"
b1	1	4561-23-20	Pin, pole top 14.4
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
c5	1	0638-05-16	Bolts, machine 5/8" x 16"
cu1	1	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	8	7102-04-91	Washers, square, 5/8"
ek1	6	4290-70-63	Locknuts 5/8"
ek2	2	4290-70-38	Locknuts 3/8"
fp	2	4541-23-13	Pin, crossarm 14.4, phase
g	1	1809-01-01	Crossarm, Wood 8'
i1	2	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	1	5550-44-40	Screw, lag 1/2 "x 4"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT 0° TO 5° ANGLE LESS NEUTRAL	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VC1-LN



DATE

REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
SINGLE PRIMARY SUPPORT  
0° TO 5° ANGLE  
LESS NEUTRAL

ISSUED

2/04/2008

REVISED

STANDARD NUMBER

VC1-LN

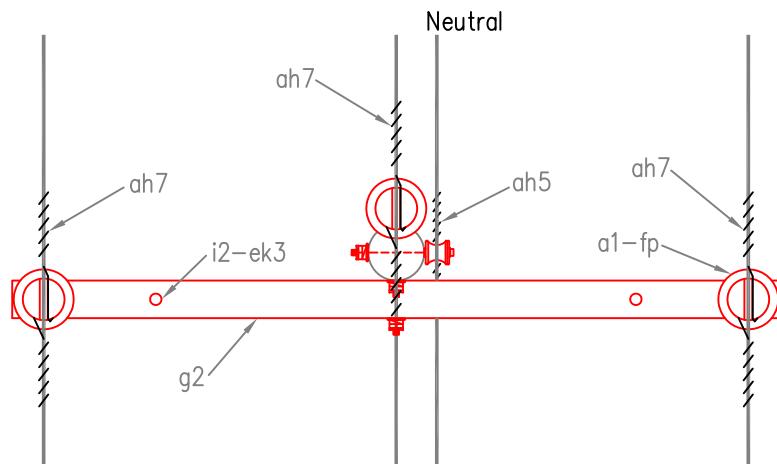
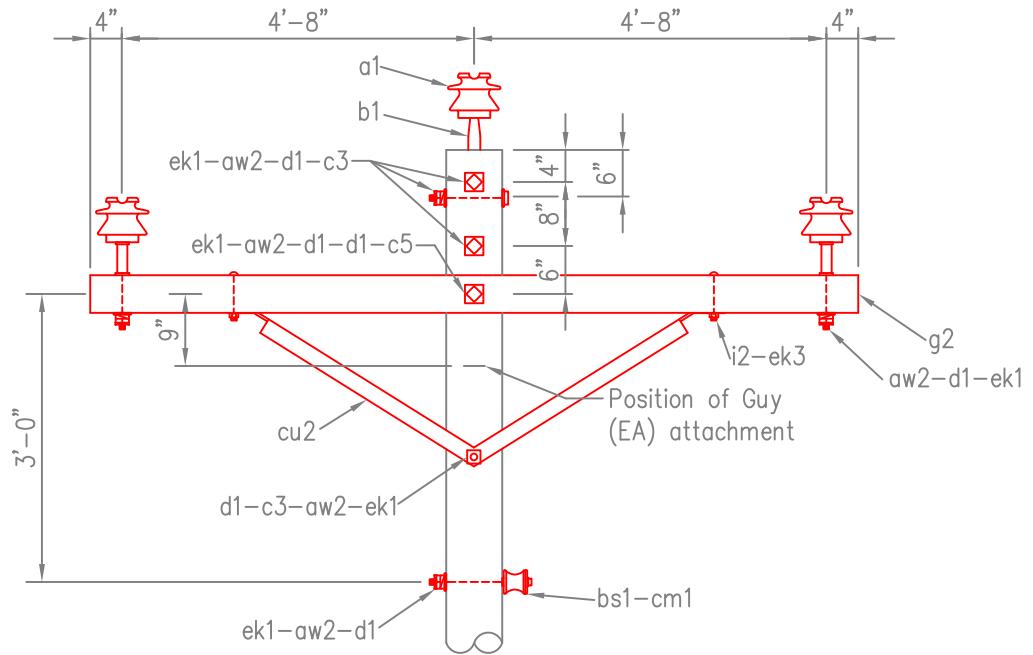
ITM.	QTY.	CATALOG No.	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	8	7108-99-41	Washers, double spring lock, 5/8"
b1	1	4561-23-20	Pin, pole top 14.4
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	4	0638-05-12	Bolts, machine 5/8" x 12"
c5	1	0638-05-16	Bolts, machine 5/8" x 16"
cm1	1	3426-20-12	Insulator, 3" spool
cu2	1	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	10	7102-04-91	Washers, square, 5/8"
ek1	8	4290-70-63	Locknuts 5/8"
ek3	2	4290-70-50	Locknuts 1/2"
fp	2	4541-23-13	Pin, crossarm 14.4, phase
g2	1	1809-01-03	Crossarm, Wood 10'
i2	2	0631-04-06	Bolts, carriage 1/2" x 6"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION 10' SINGLE PRIMARY SUPPORT 0° TO 5° ANGLE	ISSUED	2/04/2008
			REVISED	11/6/2009
			STANDARD NUMBER	VC1-10



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
10' SINGLE PRIMARY SUPPORT  
0° TO 5° ANGLE

ISSUED	2/04/2008
REVISED	11/6/2009
STANDARD NUMBER	VC1-10

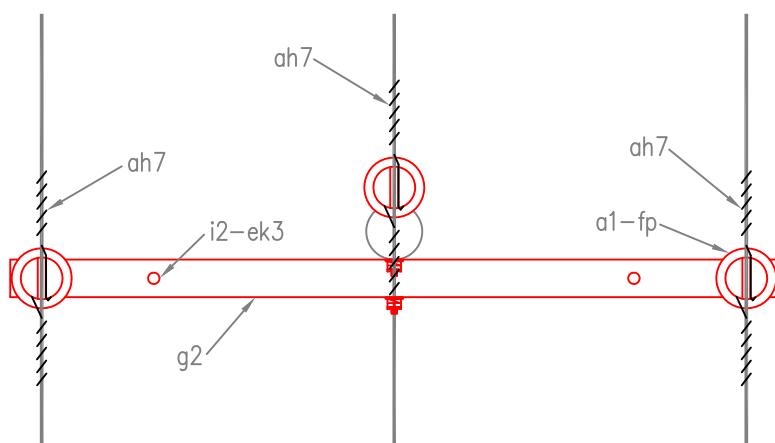
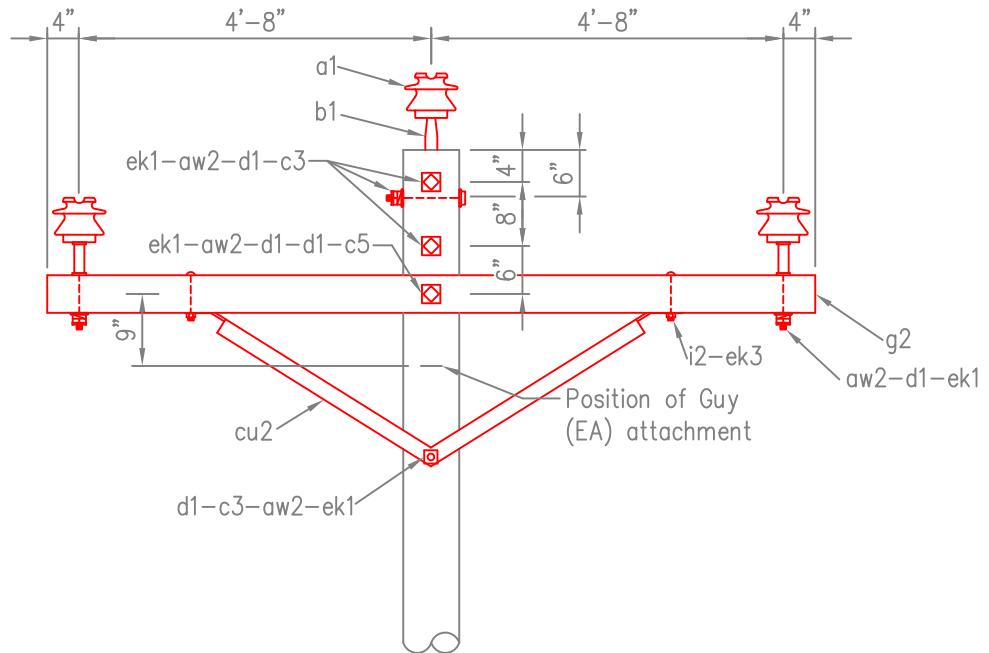
ITM.	QTY.	CATALOG No.	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	7	7108-99-41	Washers, double spring lock, 5/8"
b1	1	4561-23-20	Pin, pole top 14.4
c3	4	0638-05-12	Bolts, machine 5/8" x 12"
c5	1	0638-05-16	Bolts, machine 5/8" x 16"
cu2	1	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	9	7102-04-91	Washers, square, 5/8"
ek1	7	4290-70-63	Locknuts 5/8"
ek3	2	4290-70-50	Locknuts 1/2"
fp	2	4541-23-13	Pin, crossarm 14.4, phase
g2	1	1809-01-03	Crossarm, Wood 10'
i2	2	0631-04-06	Bolts, carriage 1/2" x 6"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION 10' SINGLE PRIMARY SUPPORT 0° TO 5° ANGLE LESS NEUTRAL	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VC1-10-LN



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
10' SINGLE PRIMARY SUPPORT  
0° TO 5° ANGLE  
LESS NEUTRAL

ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VC1-10-LN

ITEM.	QTY.	CATALOG No.	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	6	7108-99-41	Washers, double spring lock, 5/8"
b1	1	4561-23-20	Pin, pole top 14.4
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	5	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
d1	7	7102-04-91	Washers, square, 5/8"
ek1	6	4290-70-63	Locknuts 5/8"
eq3	1	0780-47-03	Bracket, vertical pin insulator, Fiberglass, VØ

NOTES:

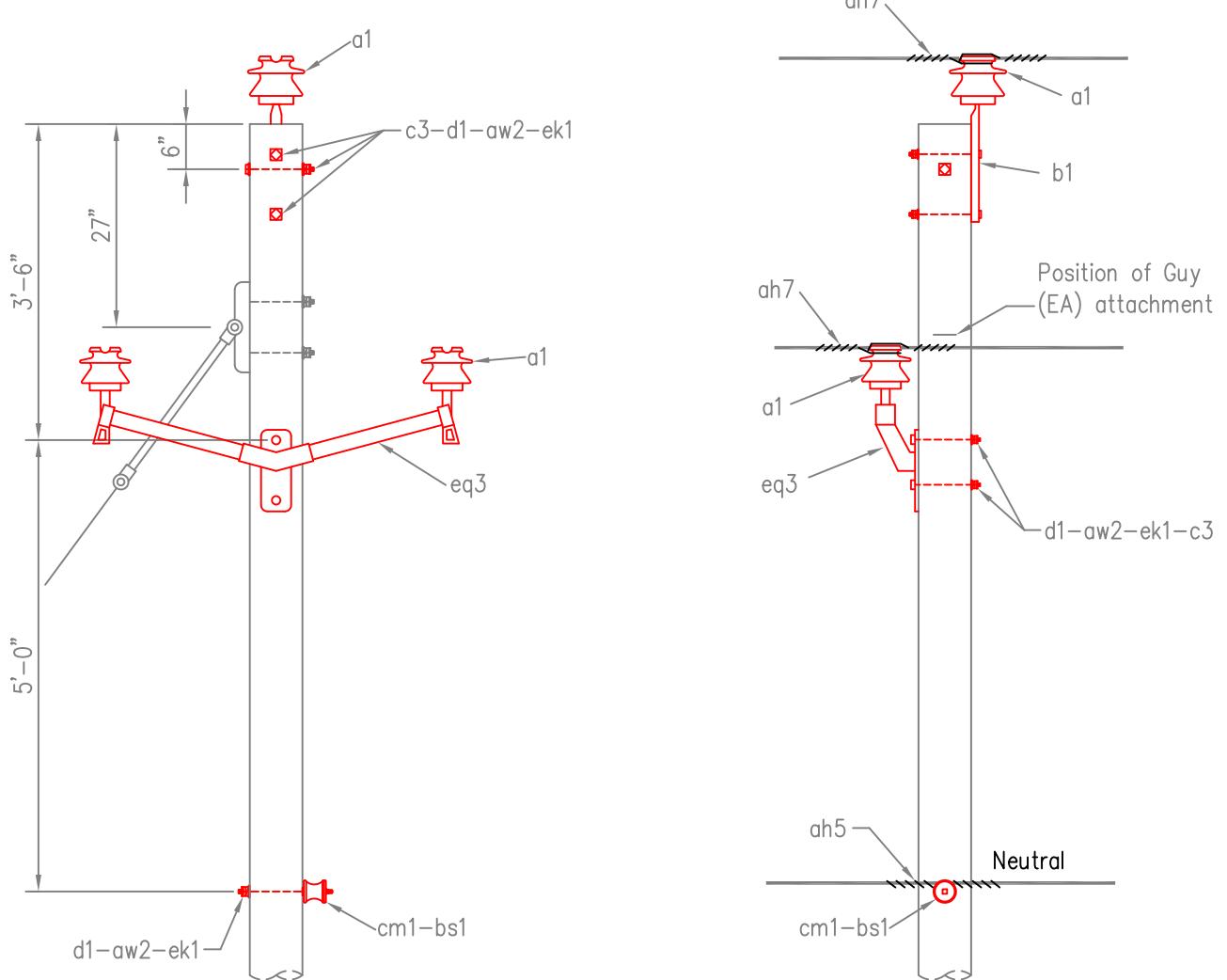
1. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
NARROW PROFILE  
SINGLE PRIMARY SUPPORT

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC1N



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
NARROW PROFILE  
SINGLE PRIMARY SUPPORT

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC1N

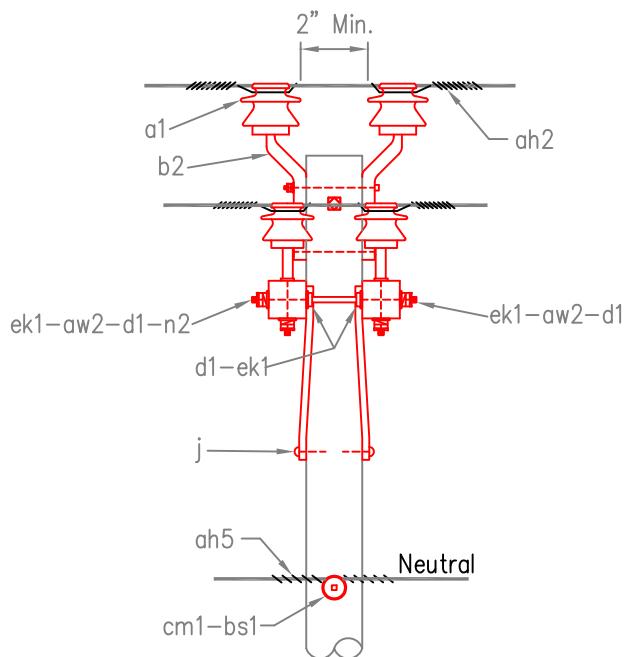
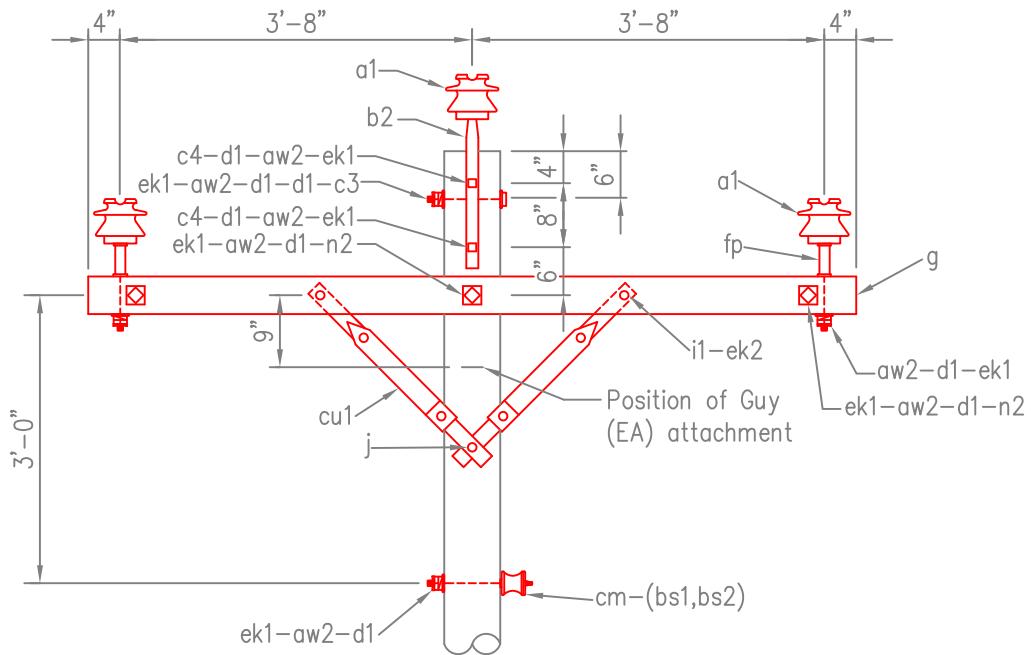
ITM.	QTY.	CATALOG No.	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	14	7108-99-41	Washers, double spring lock, 5/8"
b2	2	4561-33-21	Pin, offset pole top 14.4
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
cm1	1	3426-20-12	Insulator, 3" spool
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	17	7102-04-91	Washers, square, 5/8"
ek1	18	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
fp	4	4541-23-13	Pin, crossarm 14.4, phase
g	2	1809-01-01	Crossarm, Wood 8'
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT 0° TO 5° ANGLE	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VC1-1



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT  
0° TO 5° ANGLE

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC1-1

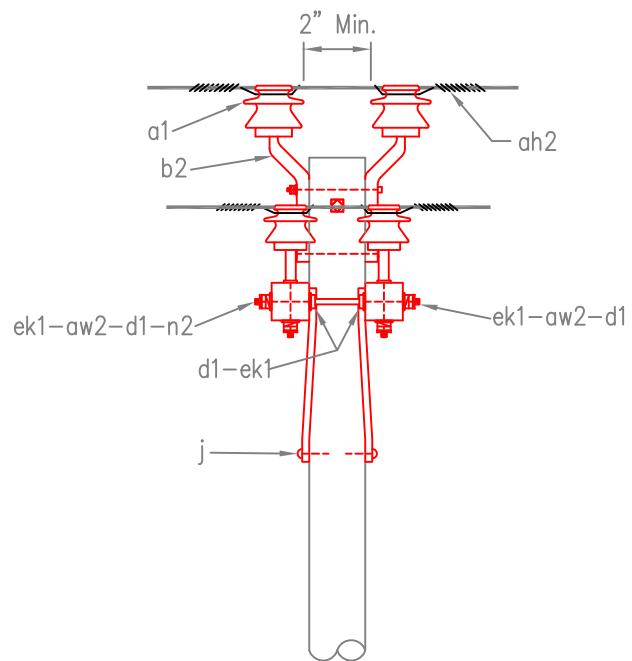
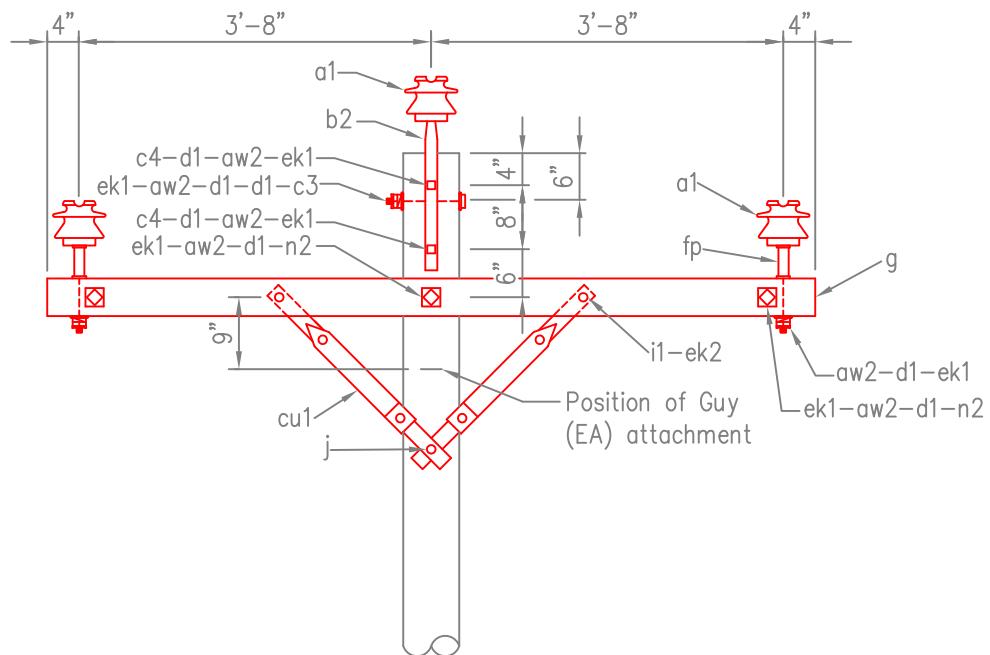
ITM.	QTY.	CATALOG No.	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
aw2	13	7108-99-41	Washers, double spring lock, 5/8"
b2	2	4561-33-21	Pin, offset pole top 14.4
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	16	7102-04-91	Washers, square, 5/8"
ek1	17	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
fp	4	4541-23-13	Pin, crossarm 14.4, phase
g	2	1809-01-01	Crossarm, Wood 8'
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT 0° TO 5° ANGLE LESS NEUTRAL	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VC1-1-LN



DATE

REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT  
0° TO 5° ANGLE  
LESS NEUTRAL

ISSUED

2/04/2008

REVISED

STANDARD NUMBER

VC1-1-LN

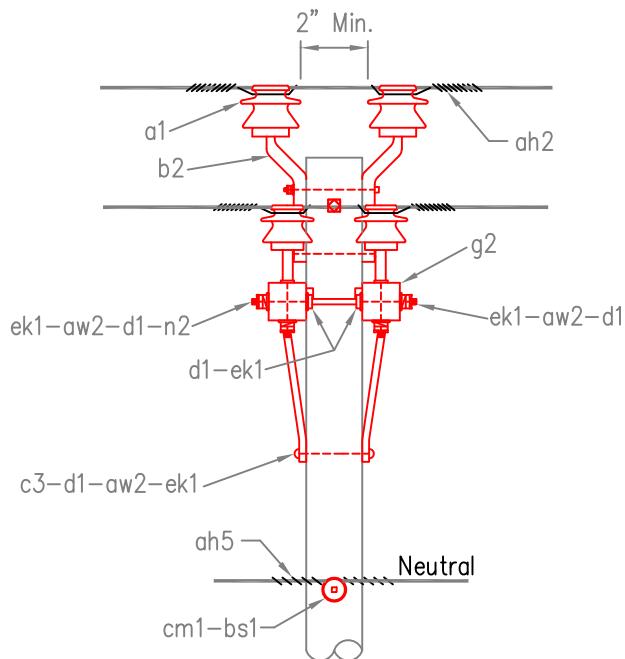
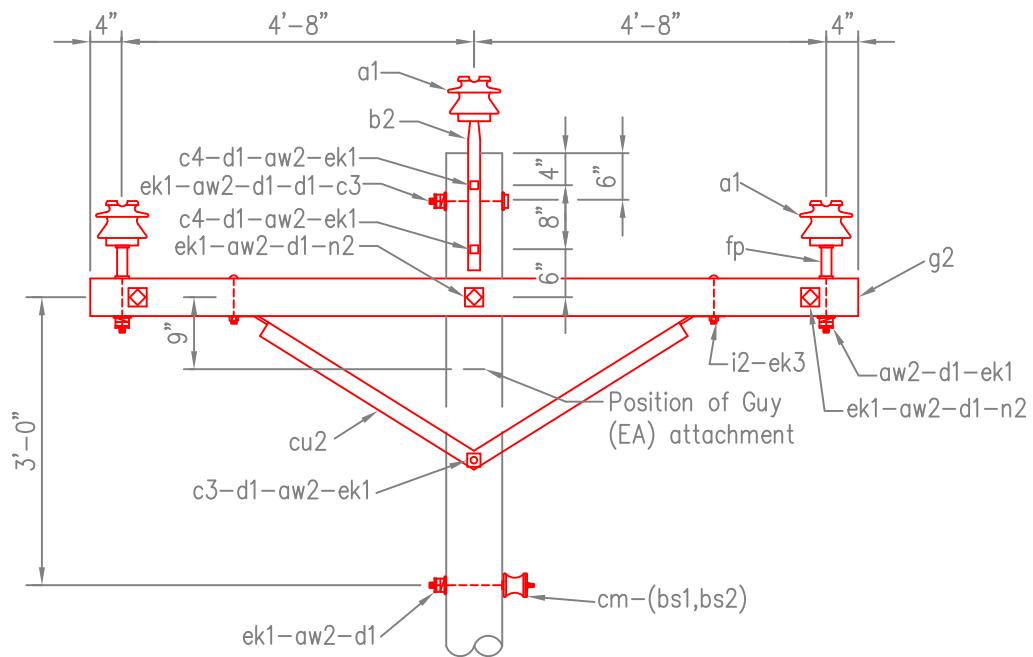
ITM.	QTY.	CATALOG No.	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral Spool tie, (Specify conductor size)
aw2	14	7108-99-41	Washers, double spring lock, 5/8"
b2	2	4561-33-21	Pin, offset pole top 14.4
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
cu2	2	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	17	7102-04-91	Washers, square, 5/8"
ek1	19	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
fp	4	4541-23-13	Pin, crossarm 14.4, phase
g2	2	1809-01-03	Crossarm, Wood 10'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION 10' DOUBLE PRIMARY SUPPORT 0° TO 5° ANGLE	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VC1-1-10



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
10' DOUBLE PRIMARY SUPPORT  
0° TO 5° ANGLE

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC1-1-10

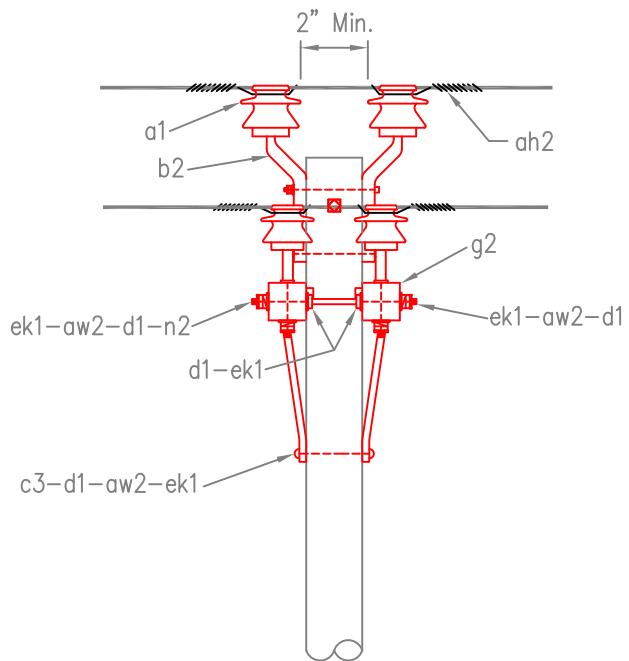
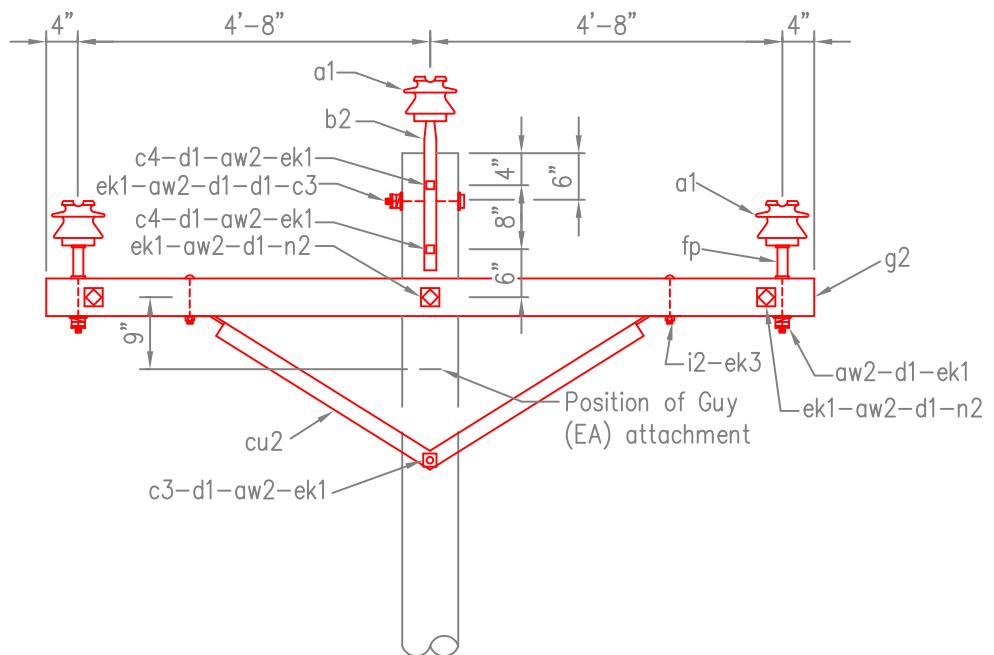
ITM.	QTY.	CATALOG No.	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
aw2	14	7108-99-41	Washers, double spring lock, 5/8"
b2	2	4561-33-21	Pin, offset pole top 14.4
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
cu2	2	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	16	7102-04-91	Washers, square, 5/8"
ek1	18	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
fp	4	4541-23-13	Pin, crossarm 14.4, phase
g	2	1809-01-03	Crossarm, Wood 10'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE	ISSUED 2/04/2008
		CROSSARM CONSTRUCTION	
		10' DOUBLE PRIMARY SUPPORT	
		0° TO 5° ANGLE	
		LESS NEUTRAL	
		STANDARD NUMBER	
		VC1-1-10-LN	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
10' DOUBLE PRIMARY SUPPORT  
0° TO 5° ANGLE  
LESS NEUTRAL

ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VC1-1-10-LN

ITEM.	QTY.	CATALOG No.	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	6	7108-99-41	Washers, double spring lock, 5/8"
b2	2	4561-33-21	Pin, offset pole top 14.4
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c4	4	0638-05-14	Bolts, machine 5/8" x 14"
cm1	1	3426-20-12	Insulator, 3" spool
d1	3	7102-04-91	Washers, square, 5/8"
ek1	6	4290-70-63	Locknuts 5/8"
eq3	2	0780-47-03	Bracket, vertical pin insulator, Fiberglass, VØ

NOTES:

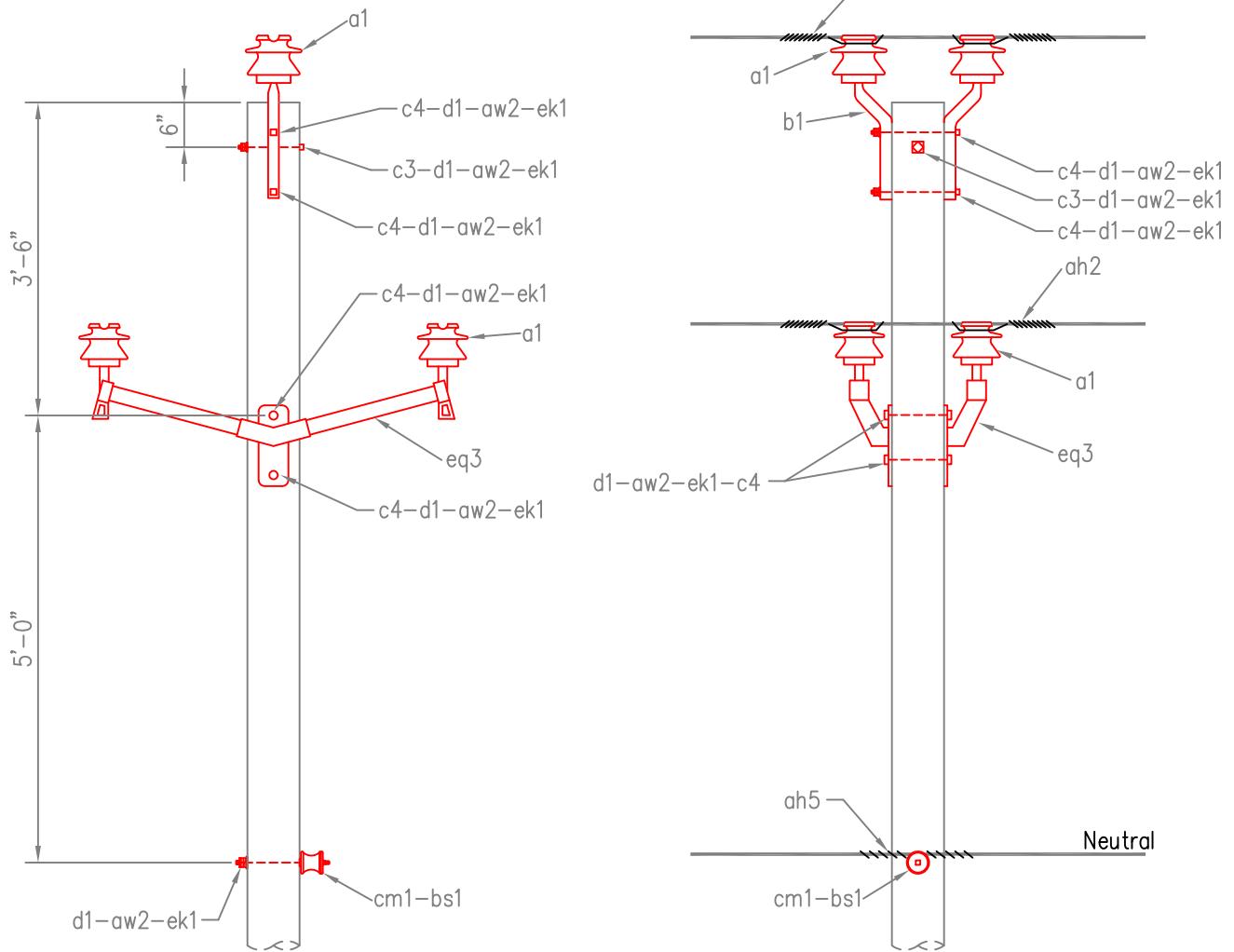
1. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
NARROW PROFILE  
DOUBLE PRIMARY SUPPORT

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC1-1N



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
NARROW PROFILE  
DOUBLE PRIMARY SUPPORT

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC1-1N

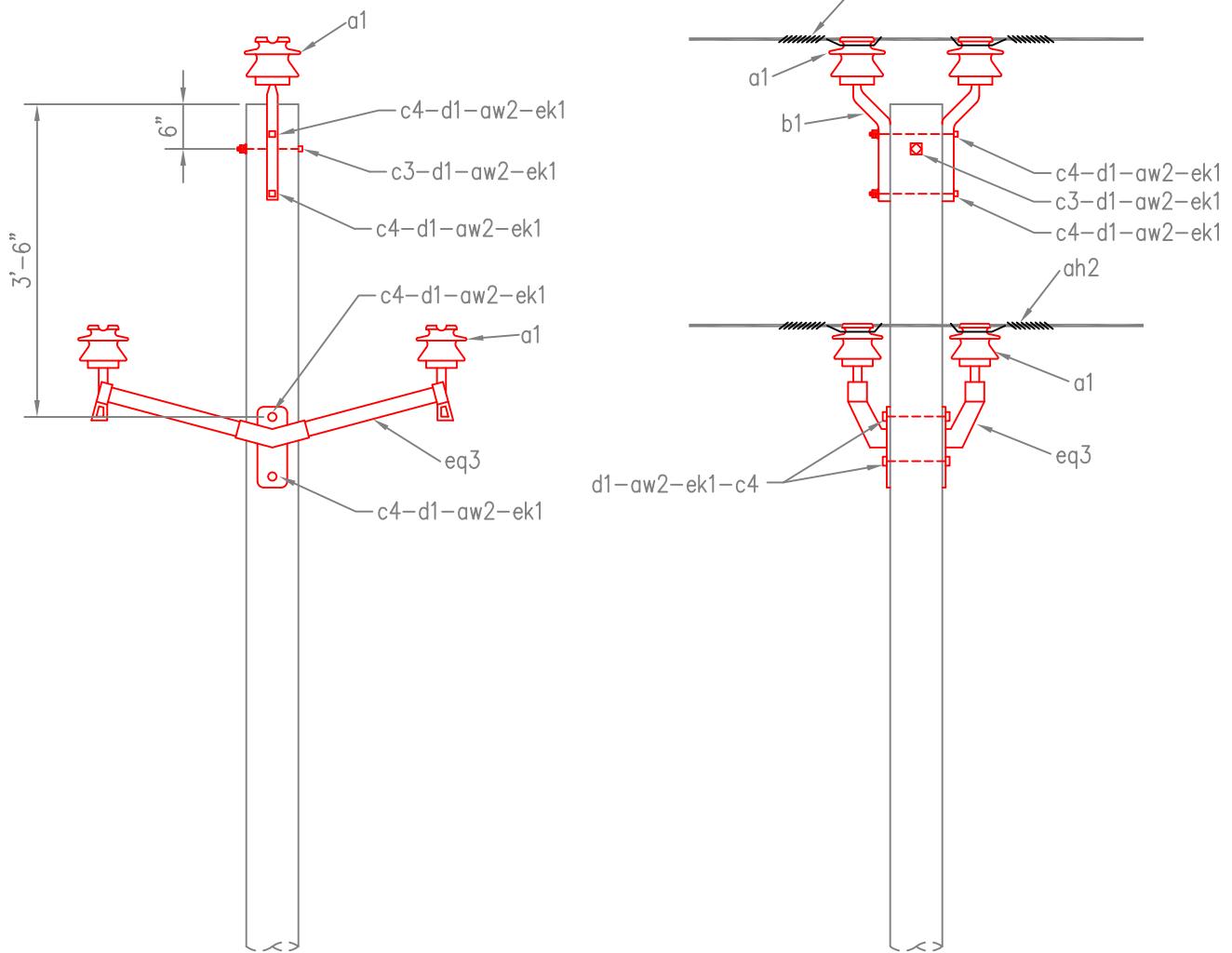
ITEM.	QTY.	CATALOG No.	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
aw2	5	7108-99-41	Washers, double spring lock, 5/8"
b2	2	4561-33-21	Pin, offset pole top 14.4
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c4	4	0638-05-14	Bolts, machine 5/8" x 14"
d1	2	7102-04-91	Washers, square, 5/8"
ek1	5	4290-70-63	Locknuts 5/8"
eq3	2	0780-47-03	Bracket, vertical pin insulator, Fiberglass, VØ

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE NARROW PROFILE DOUBLE PRIMARY SUPPORT LESS NEUTRAL	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VC1-1N-LN



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
NARROW PROFILE  
DOUBLE PRIMARY SUPPORT  
LESS NEUTRAL

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC1-1N-LN

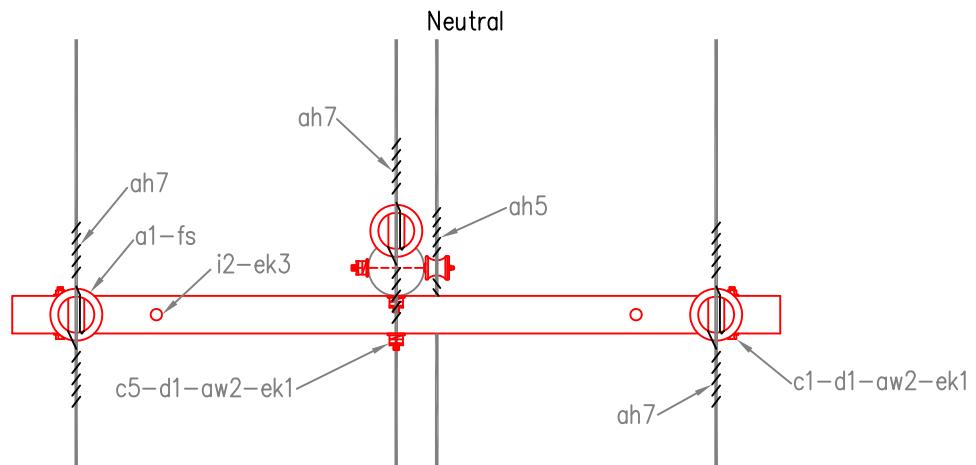
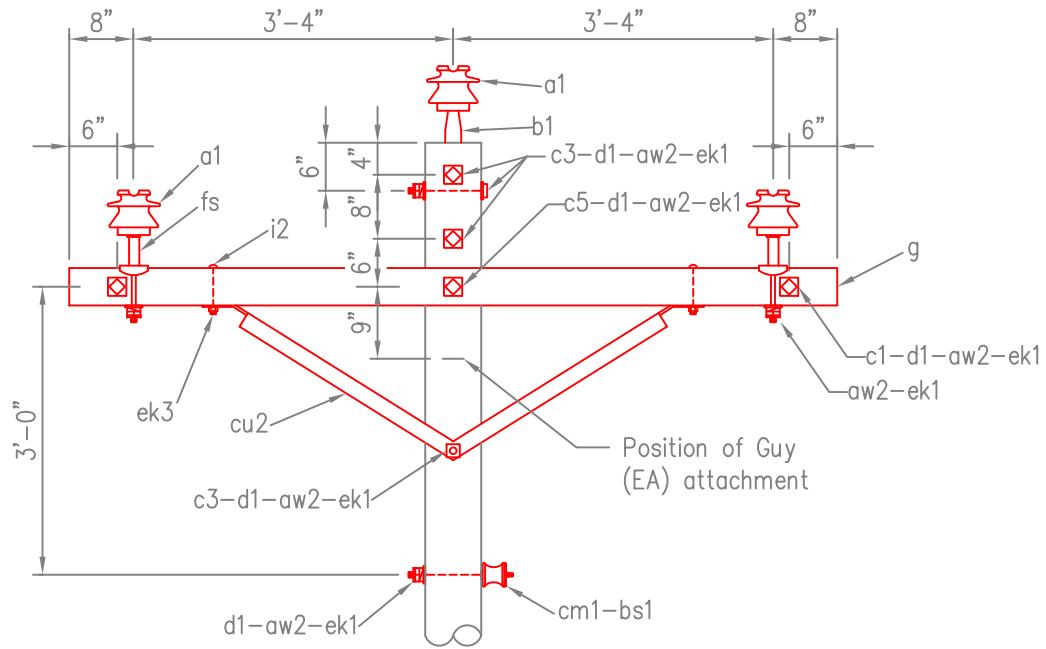
ITM.	QTY.	CATALOG No.	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	12	7108-99-41	Washers, double spring lock, 5/8"
b1	1	4561-23-20	Pin, pole top 14.4
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c1	2	0638-05-06	Bolts, machine 5/8" x 6"
c3	4	0638-05-12	Bolts, machine 5/8" x 12"
c5	1	0638-05-16	Bolts, machine 5/8" x 16"
cm1	1	3426-20-12	Insulator, 3" spool
cu2	1	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	12	7102-04-91	Washers, square, 5/8"
ek1	12	4290-70-63	Locknuts 5/8"
ek3	2	4290-70-50	Locknuts 1/2"
fs	2	4541-11-13	Pin, saddle crossarm 14.4, phase
g	1	1809-01-01	Crossarm, Wood 8'
i2	2	0631-04-06	Bolts, carriage 1/2" x 6"

NOTES:

1. This construction required for all conductors having a breaking strength of more than 4500 pounds.
2. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION LARGE CONDUCTOR SINGLE PRIMARY SUPPORT 0° TO 2° MAX. LINE ANGLE	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VC1-2



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
LARGE CONDUCTOR  
SINGLE PRIMARY SUPPORT  
0° TO 2° MAX. LINE ANGLE

ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VC1-2

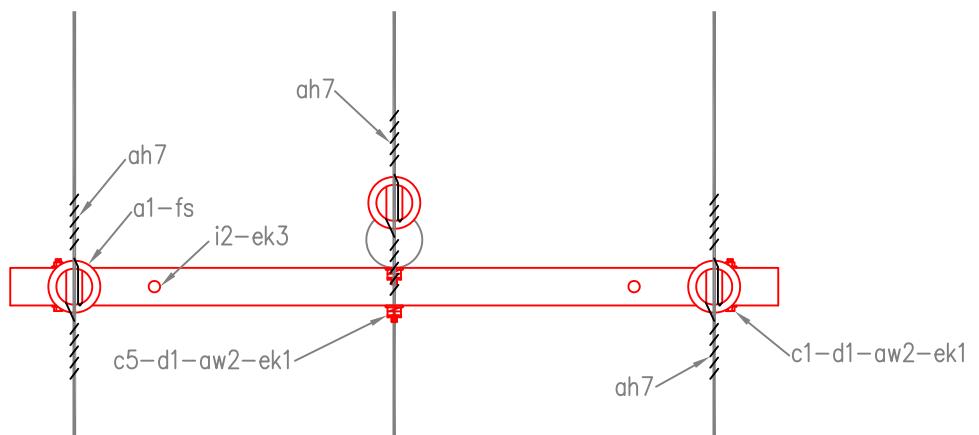
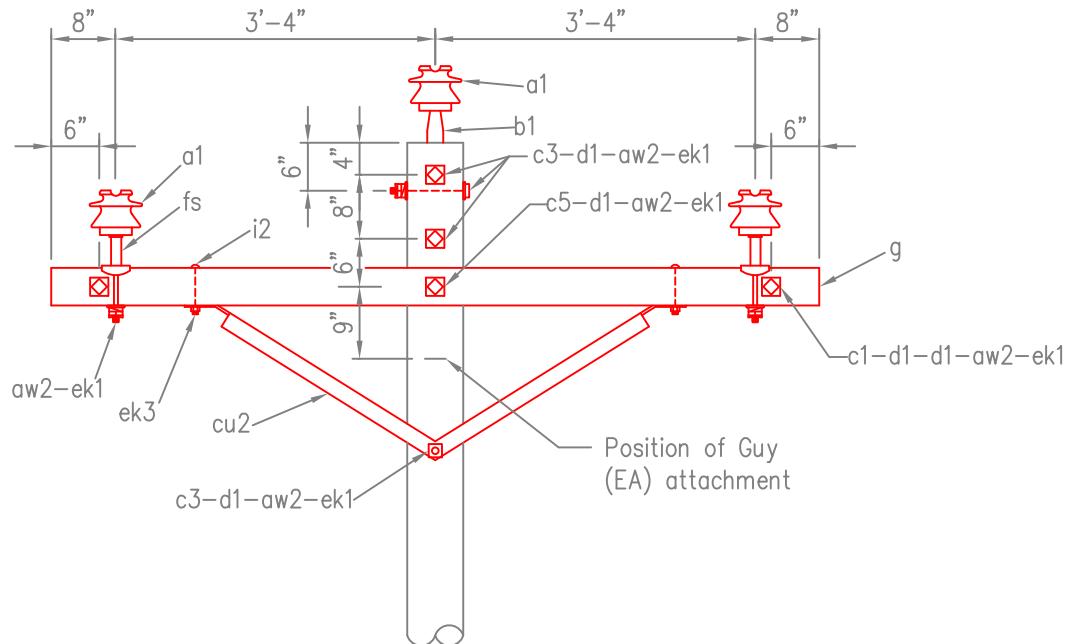
ITEM.	QTY.	CATALOG No.	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	11	7108-99-41	Washers, double spring lock, 5/8"
b1	1	4561-23-20	Pin, pole top 14.4
c1	2	0638-05-06	Bolts, machine 5/8" x 6"
c3	4	0638-05-12	Bolts, machine 5/8" x 12"
c5	1	0638-05-16	Bolts, machine 5/8" x 16"
cu2	1	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	11	7102-04-91	Washers, square, 5/8"
ek1	11	4290-70-63	Locknuts 5/8"
ek3	2	4290-70-50	Locknuts 1/2"
fs	2	4541-11-13	Pin, saddle crossarm 14.4, phase
g	1	1809-01-01	Crossarm, Wood 8'
i2	2	0631-04-06	Bolts, carriage 1/2" x 6"

NOTES:

1. This construction required for all conductors having a breaking strength of more than 4500 pounds.
2. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 KV, THREE PHASE CROSSARM CONSTRUCTION LARGE CONDUCTOR SINGLE PRIMARY SUPPORT 0° TO 2° MAX. LINE ANGLE LESS NEUTRAL	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VC1-2-LN



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
LARGE CONDUCTOR  
SINGLE PRIMARY SUPPORT  
0° TO 2° MAX. LINE ANGLE  
LESS NEUTRAL

ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VC1-2-LN

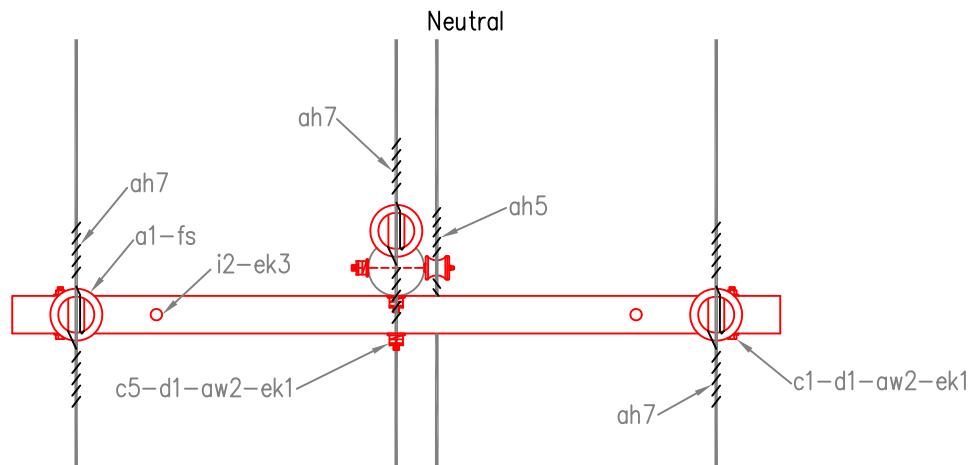
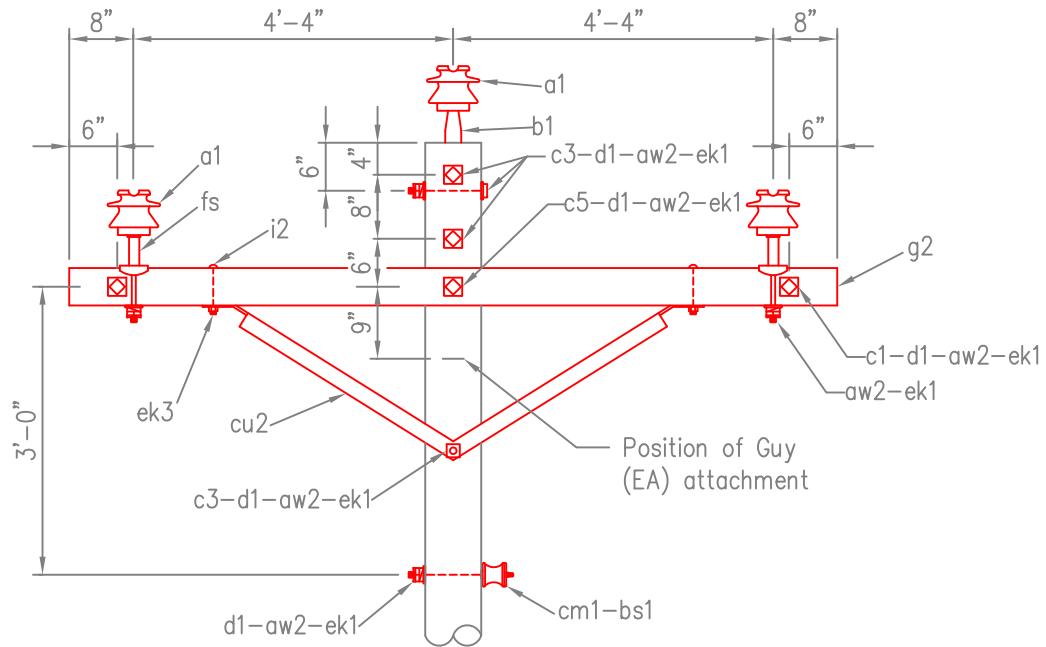
ITM.	QTY.	CATALOG No.	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	12	7108-99-41	Washers, double spring lock, 5/8"
b1	1	4561-23-20	Pin, pole top 14.4
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c1	2	0638-05-06	Bolts, machine 5/8" x 6"
c3	4	0638-05-12	Bolts, machine 5/8" x 12"
c5	1	0638-05-16	Bolts, machine 5/8" x 16"
cm1	1	3426-20-12	Insulator, 3" spool
cu2	1	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	12	7102-04-91	Washers, square, 5/8"
ek1	12	4290-70-63	Locknuts 5/8"
ek3	2	4290-70-50	Locknuts 1/2"
fs	2	4541-11-13	Pin, saddle crossarm 14.4, phase
g2	1	1809-01-03	Crossarm, Wood 10'
i2	2	0631-04-06	Bolts, carriage 1/2" x 6"

NOTES:

1. This construction required for all conductors having a breaking strength of more than 4500 pounds.
2. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE	ISSUED	2/04/2008
		CROSSARM CONSTRUCTION		
		LARGE CONDUCTOR		
		10' SINGLE PRIMARY SUPPORT		
		0° TO 2° MAX. LINE ANGLE		
				REVISED
				STANDARD NUMBER
				VC1-2-10



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
LARGE CONDUCTOR  
10' SINGLE PRIMARY SUPPORT  
0° TO 2° MAX. LINE ANGLE

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC1-2-10

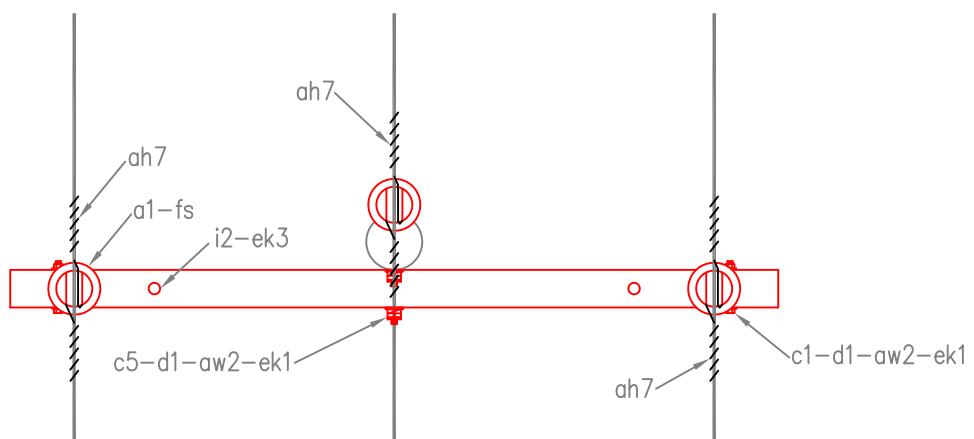
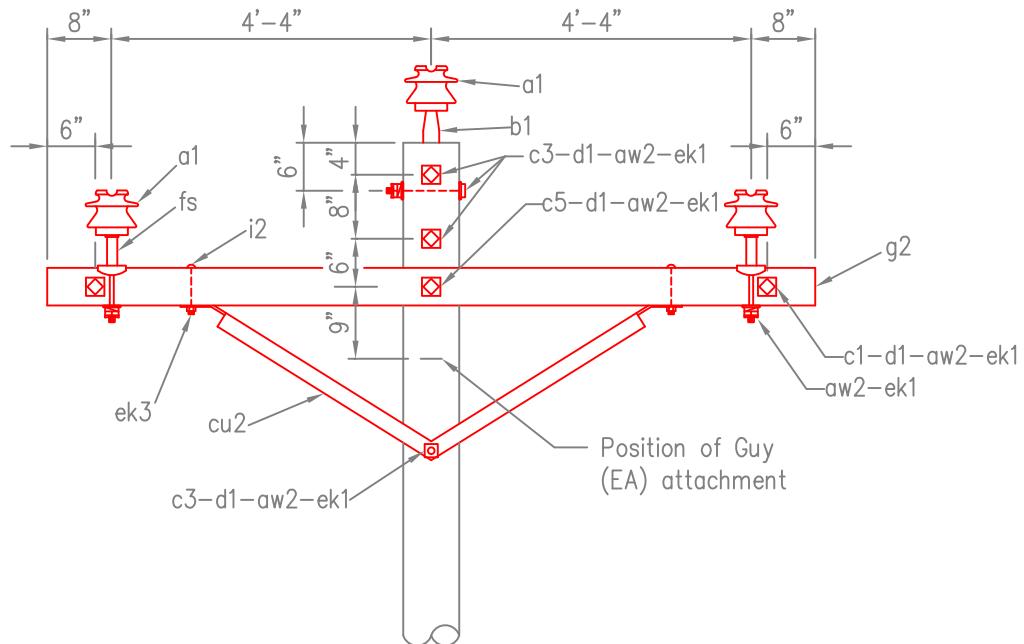
ITM.	QTY.	CATALOG No.	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	11	7108-99-41	Washers, double spring lock, 5/8"
b1	1	4561-23-20	Pin, pole top 14.4
c1	2	0638-05-06	Bolts, machine 5/8" x 6"
c3	4	0638-05-12	Bolts, machine 5/8" x 12"
c5	1	0638-05-16	Bolts, machine 5/8" x 16"
cu2	1	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	11	7102-04-91	Washers, square, 5/8"
ek1	11	4290-70-63	Locknuts 5/8"
ek3	2	4290-70-50	Locknuts 1/2"
fs	2	4541-11-13	Pin, saddle crossarm 14.4, phase
g2	1	1809-01-03	Crossarm, Wood 10'
i2	2	0631-04-06	Bolts, carriage 1/2" x 6"

NOTES:

1. This construction required for all conductors having a breaking strength of more than 4500 pounds.
2. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE	ISSUED	2/04/2008
		CROSSARM CONSTRUCTION		
		LARGE CONDUCTOR		
		10' SINGLE PRIMARY SUPPORT		
		0° TO 2° MAX. LINE ANGLE		
		LESS NEUTRAL		
		STANDARD NUMBER		VC1-2-10-LN



**14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
LARGE CONDUCTOR  
10' SINGLE PRIMARY SUPPORT  
0° TO 2° MAX. LINE ANGLE  
LESS NEUTRAL**

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	
VC1-2-10-LN	

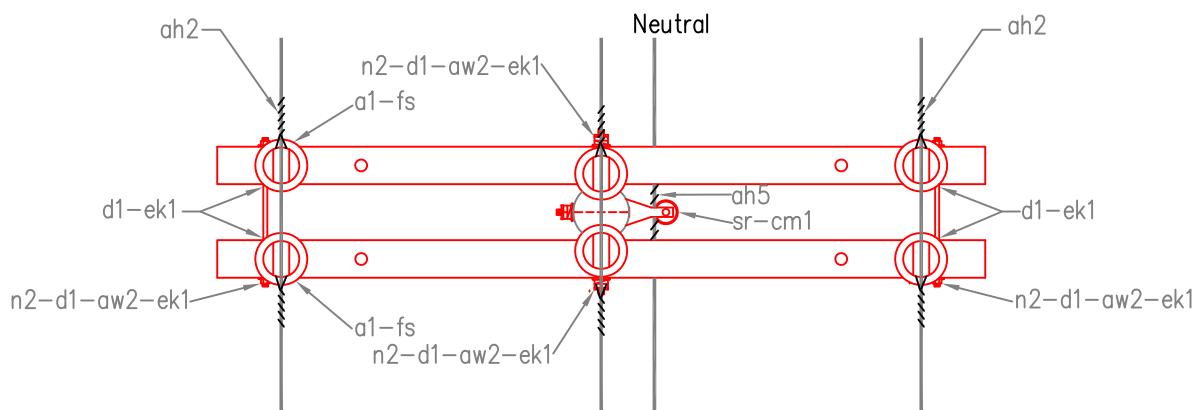
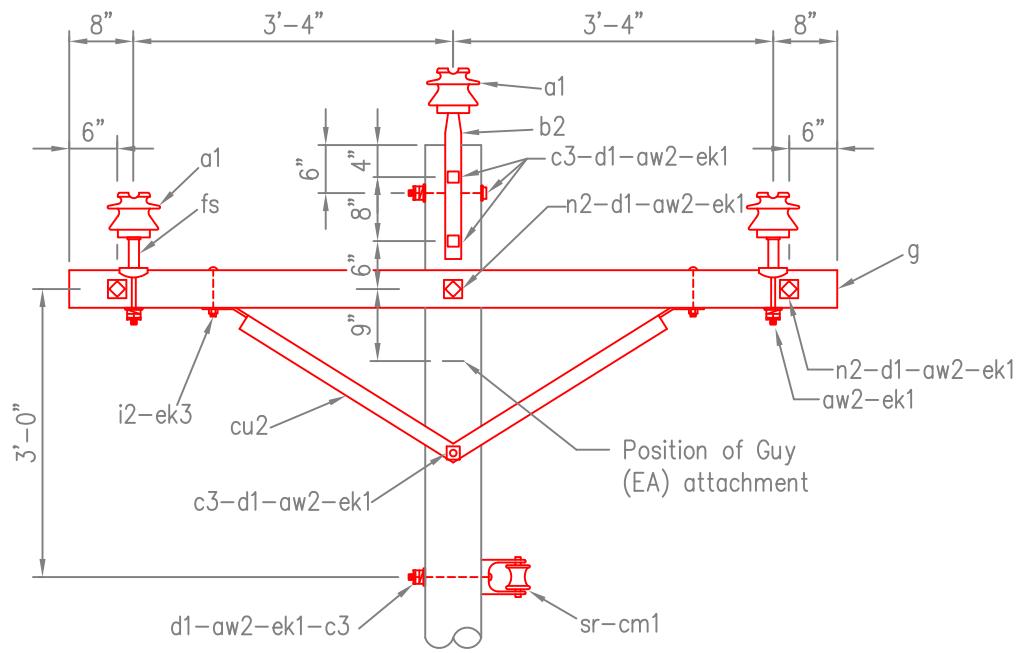
ITM.	QTY.	CATALOG No.	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	19	7108-99-41	Washers, double spring lock, 5/8"
b2	2	4561-33-21	Pin, offset pole top 14.4
c3	5	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
cu2	2	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	13	7102-04-91	Washers, square, 5/8"
ek1	23	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
fs	4	4541-11-13	Pin, saddle crossarm 14.4, phase
g	2	1809-01-01	Crossarm, Wood 8'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"
sr	1	1230-17-01	Clevis, rigid (D-bracket)

NOTES:

1. This construction required for all conductors having a breaking strength of more than 4500 pounds.
2. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION LARGE CONDUCTOR DOUBLE PRIMARY SUPPORT 0° TO 5° ANGLE	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VC1-3



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
LARGE CONDUCTOR  
DOUBLE PRIMARY SUPPORT  
0° TO 5° ANGLE

ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VC1-3

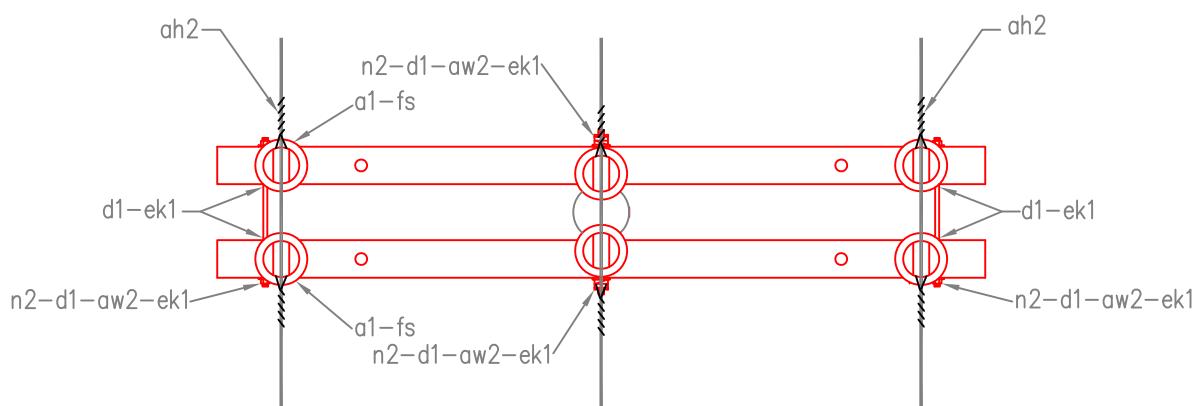
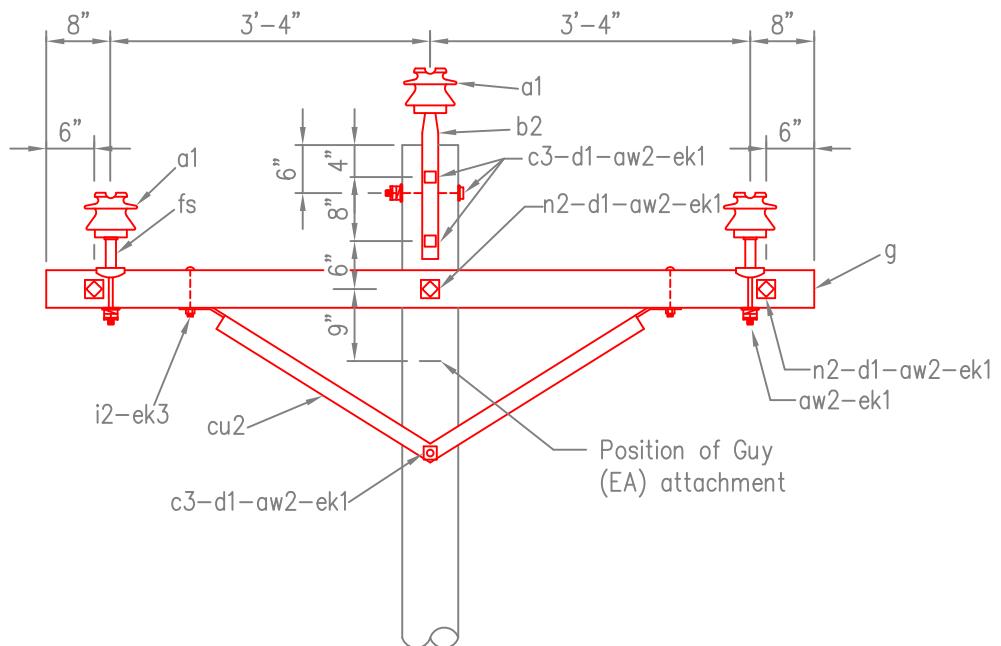
ITM.	QTY.	CATALOG No.	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
aw2	18	7108-99-41	Washers, double spring lock, 5/8"
b2	2	4561-33-21	Pin, offset pole top 14.4
c3	4	0638-05-12	Bolts, machine 5/8" x 12"
cu2	2	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	12	7102-04-91	Washers, square, 5/8"
ek1	22	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
fs	4	4541-11-13	Pin, saddle crossarm 14.4, phase
g	2	1809-01-01	Crossarm, Wood 8'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. This construction required for all conductors having a breaking strength of more than 4500 pounds.
2. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE DOUBLE CROSSARM CONSTRUCTION LARGE CONDUCTOR DOUBLE PRIMARY SUPPORT 0° TO 5° MAX. ANGLE LESS NEUTRAL	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VC1-3-LN



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
DOUBLE CROSSARM CONSTRUCTION  
LARGE CONDUCTOR  
DOUBLE PRIMARY SUPPORT  
0° TO 5° MAX. ANGLE  
LESS NEUTRAL

ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VC1-3-LN

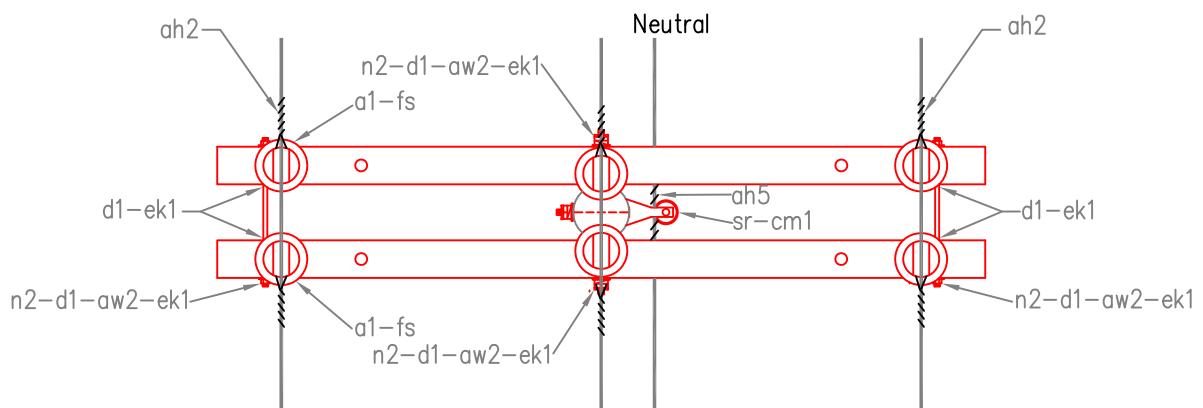
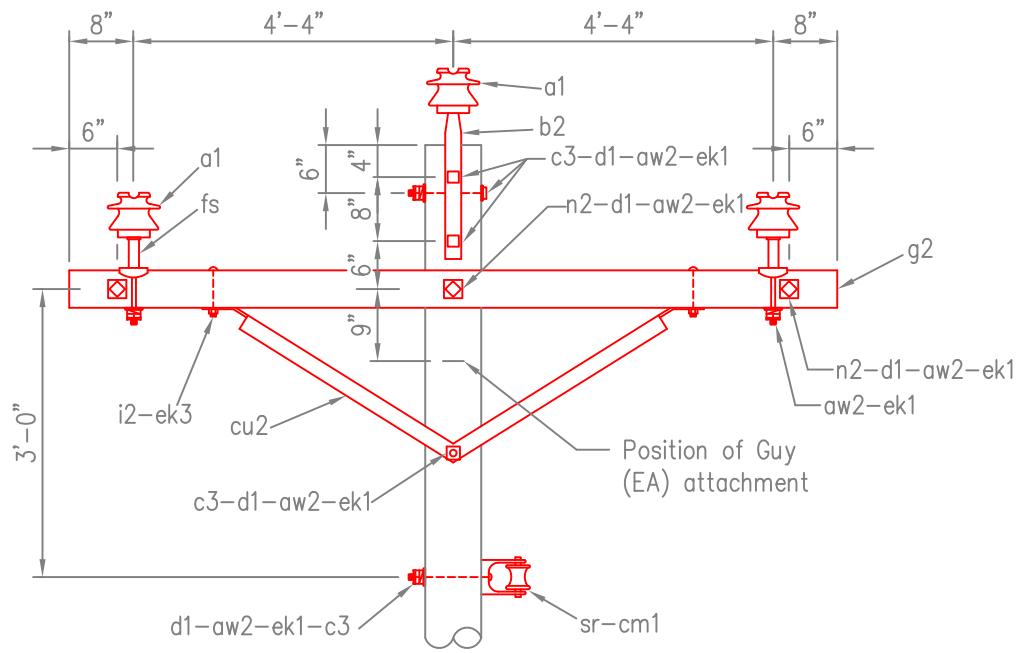
ITM.	QTY.	CATALOG No.	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	19	7108-99-41	Washers, double spring lock, 5/8"
b2	2	4561-33-21	Pin, offset pole top 14.4
c3	5	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
cu2	2	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	13	7102-04-91	Washers, square, 5/8"
ek1	23	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
fs	4	4541-11-13	Pin, saddle crossarm 14.4, phase
g2	2	1809-01-03	Crossarm, Wood 10'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"
sr	1	1230-17-01	Clevis, rigid (D-bracket)

NOTES:

1. This construction required for all conductors having a breaking strength of more than 4500 pounds.
2. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE DOUBLE CROSSARM CONSTRUCTION LARGE CONDUCTOR 10' DOUBLE PRIMARY SUPPORT 0° TO 5° MAX. ANGLE	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VC1-3-10



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
DOUBLE CROSSARM CONSTRUCTION  
LARGE CONDUCTOR  
10' DOUBLE PRIMARY SUPPORT  
0° TO 5° MAX. ANGLE

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC1-3-10

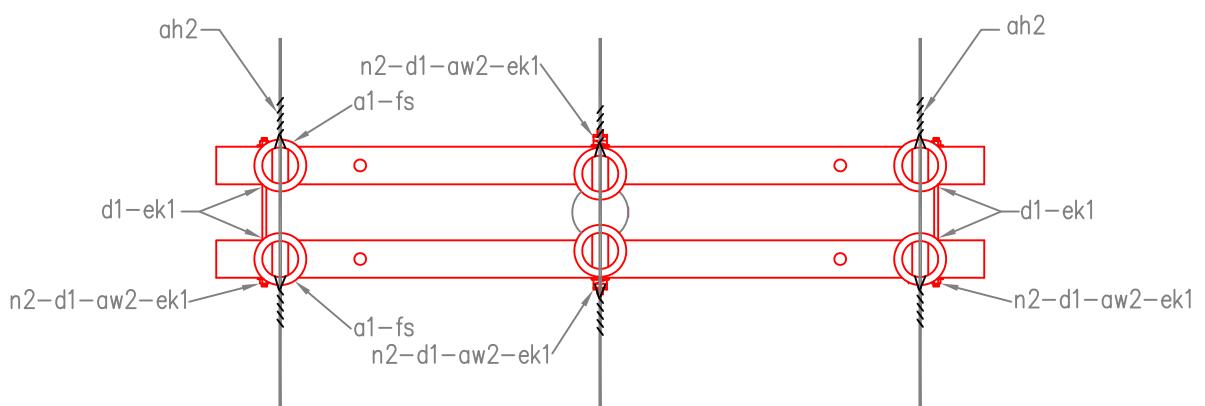
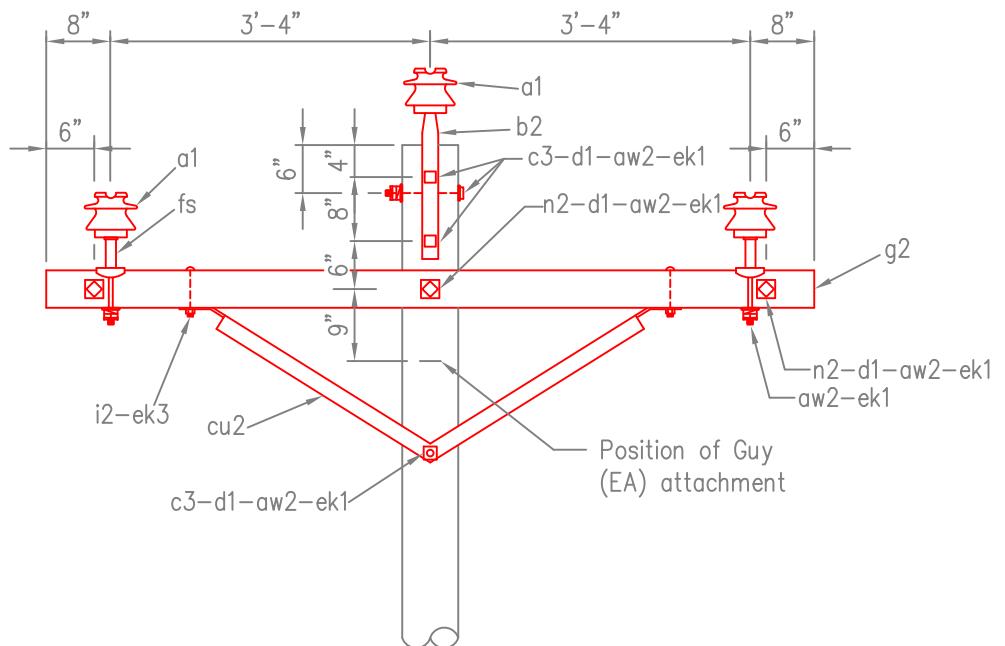
ITM.	QTY.	CATALOG No.	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
aw2	18	7108-99-41	Washers, double spring lock, 5/8"
b2	2	4561-33-21	Pin, offset pole top 14.4
c3	4	0638-05-12	Bolts, machine 5/8" x 12"
cu2	2	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	12	7102-04-91	Washers, square, 5/8"
ek1	22	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
fs	4	4541-11-13	Pin, saddle crossarm 14.4, phase
g2	2	1809-01-01	Crossarm, Wood 10'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. This construction required for all conductors having a breaking strength of more than 4500 pounds.
2. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE DOUBLE CROSSARM CONSTRUCTION LARGE CONDUCTOR 10' DOUBLE PRIMARY SUPPORT 0° TO 5° MAX. ANGLE LESS NEUTRAL	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VC1-3-10-LN



DATE	REVISION

14.4/24.9 KV, THREE PHASE  
 DOUBLE CROSSARM CONSTRUCTION  
 LARGE CONDUCTOR  
 10' DOUBLE PRIMARY SUPPORT  
 0° TO 5° MAX. ANGLE  
 LESS NEUTRAL

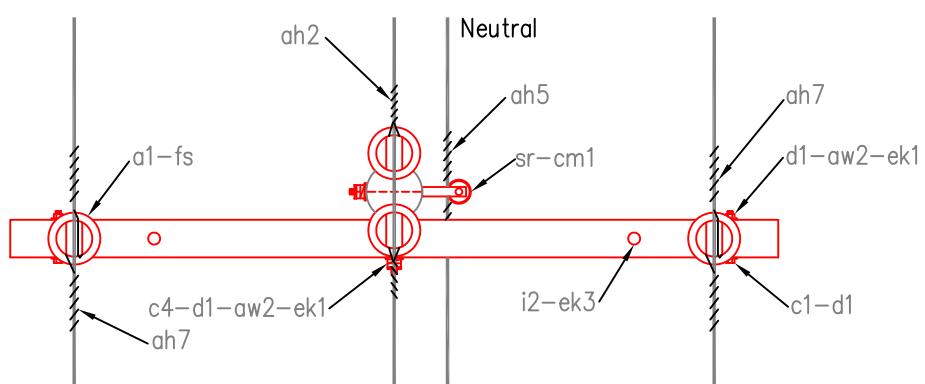
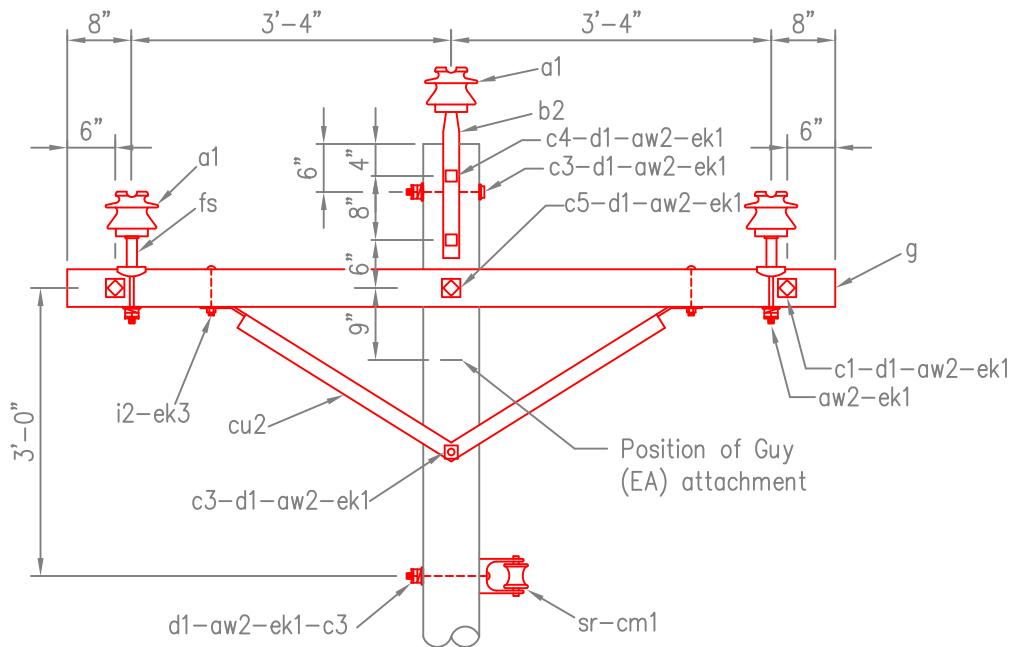
ISSUED 2/04/2008  
 REVISED  
 STANDARD NUMBER  
 VC1-3-10-LN

ITEM.	QTY.	CATALOG No.	MATERIAL
a1	4	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	1	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	2	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	12	7108-99-41	Washers, double spring lock, 5/8"
b2	2	4561-33-21	Pin, offset pole top 14.4
c1	2	0638-05-06	Bolts, machine 5/8" x 6"
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
c4	2	0638-09-14	Bolts, machine 5/8" x 14"
c5	1	0638-05-16	Bolts, machine 5/8" x 16"
cm1	1	3426-20-12	Insulator, 3" spool
cu2	1	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	10	7102-04-91	Washers, square, 5/8"
ek1	12	4290-70-63	Locknuts 5/8"
ek3	2	4290-70-50	Locknuts 1/2"
fs	2	4541-11-13	Pin, saddle crossarm 14.4, phase
g	1	1809-01-01	Crossarm, Wood 8'
i2	2	0631-04-06	Bolts, carriage 1/2" x 6"
sr	1	1230-17-01	Clevis, rigid (D-bracket)

NOTES:

1. This construction required for all conductors having a breaking strength of more than 4500 pounds.
  2. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
  3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.
- FOR RETIREMENT ONLY**

	DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION LARGE CONDUCTOR SINGLE PRIMARY SUPPORT 2° TO 5° ANGLE	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VC1-4-R



## **FOR RETIREMENT ONLY**



**14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
LARGE CONDUCTOR  
SINGLE PRIMARY SUPPORT  
2° TO 5° ANGLE**

ISSUED 3/04/2008

REVISED

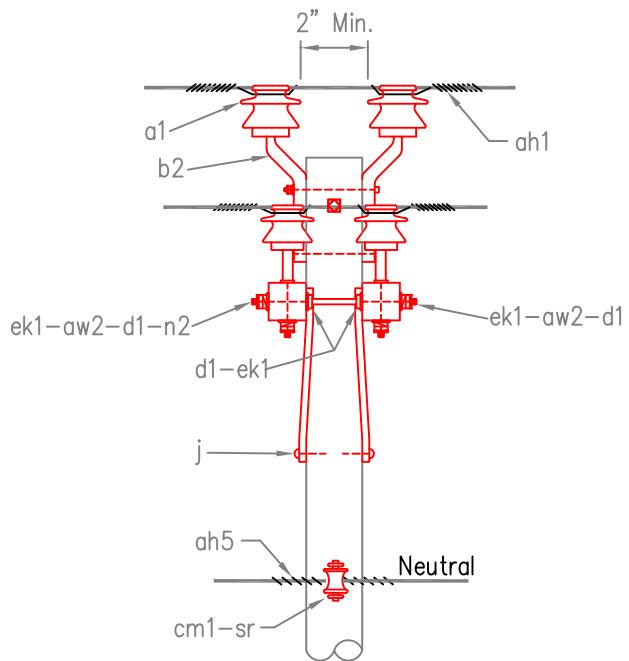
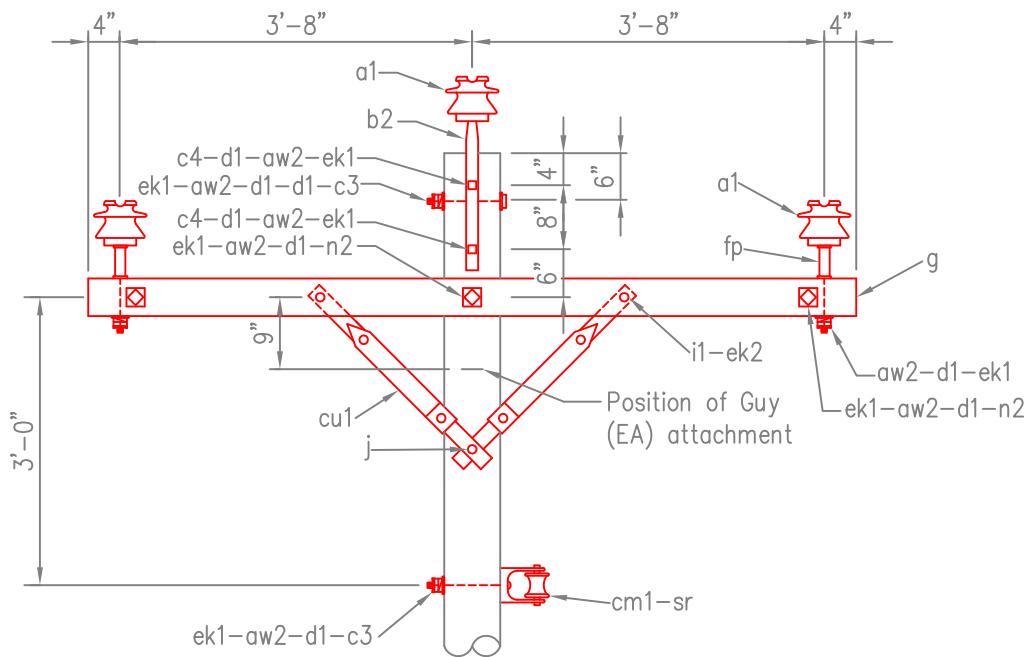
**STANDARD NUMBER**

ITM.	QTY.	CATALOG No.	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah1	3	6790-XX-22	Double side tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	14	7108-99-41	Washers, double spring lock, 5/8"
b2	2	4561-33-21	Pin, offset pole top 14.4
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
cm1	1	3426-20-12	Insulator, 3" spool
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	17	7102-04-91	Washers, square, 5/8"
ek1	18	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
fp	4	4541-23-13	Pin, crossarm 14.4, phase
g	2	1809-01-01	Crossarm, Wood 8'
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"
sr	1	1230-17-01	Clevis, rigid (D-bracket)

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT MAX. TRANSVERSE LOADING 500 LBS./PIN 5° TO 30° MAX. ANGLE	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	VC2



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT  
MAX. TRANSVERSE LOADING 500 LBS./PIN  
5° TO 30° MAX. ANGLE

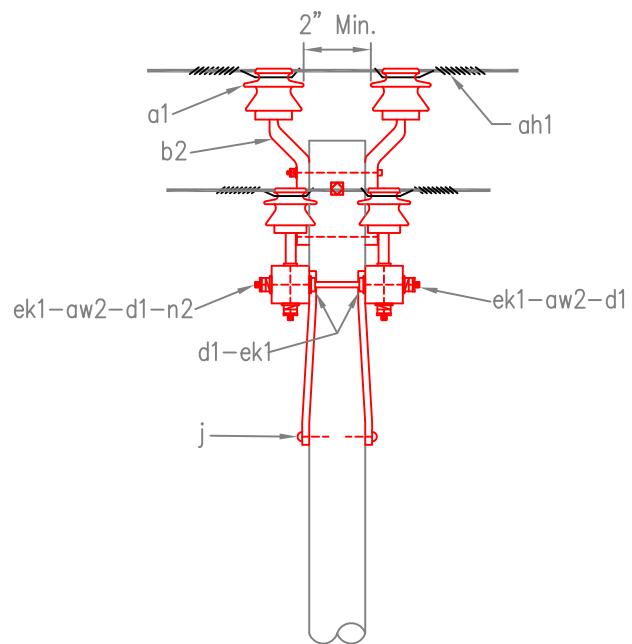
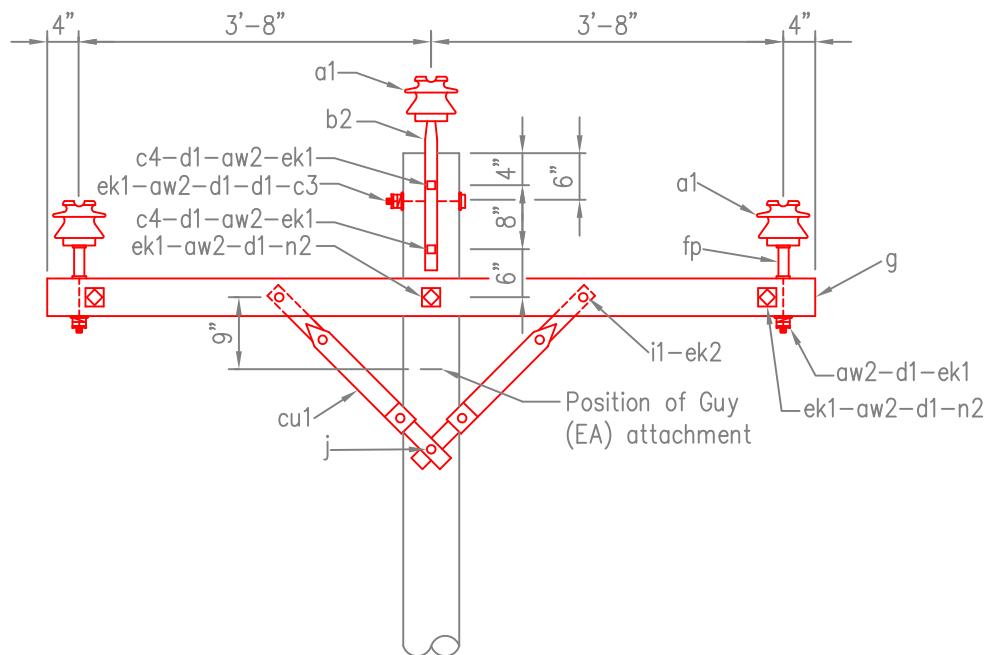
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC2

ITEM.	QTY.	CATALOG No.	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah1	3	6790-XX-22	Double side tie, (Specify conductor size)
aw2	13	7108-99-41	Washers, double spring lock, 5/8"
b2	2	4561-33-21	Pin, offset pole top 14.4
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	16	7102-04-91	Washers, square, 5/8"
ek1	17	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
fp	4	4541-23-13	Pin, crossarm 14.4, phase
g	2	1809-01-01	Crossarm, Wood 8'
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT MAX. TRANSVERSE LOADING 500 LBS./PIN 5° TO 30° MAX. ANGLE-LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VC2-LN



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT  
MAX. TRANSVERSE LOADING 500 LBS./PIN  
5° TO 30° MAX. ANGLE-LESS NEUTRAL

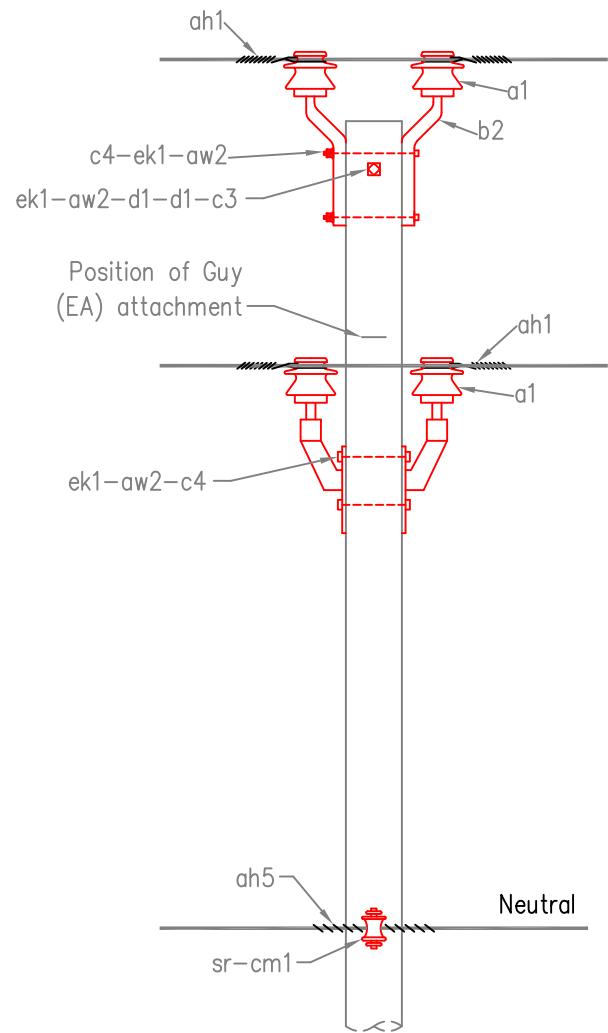
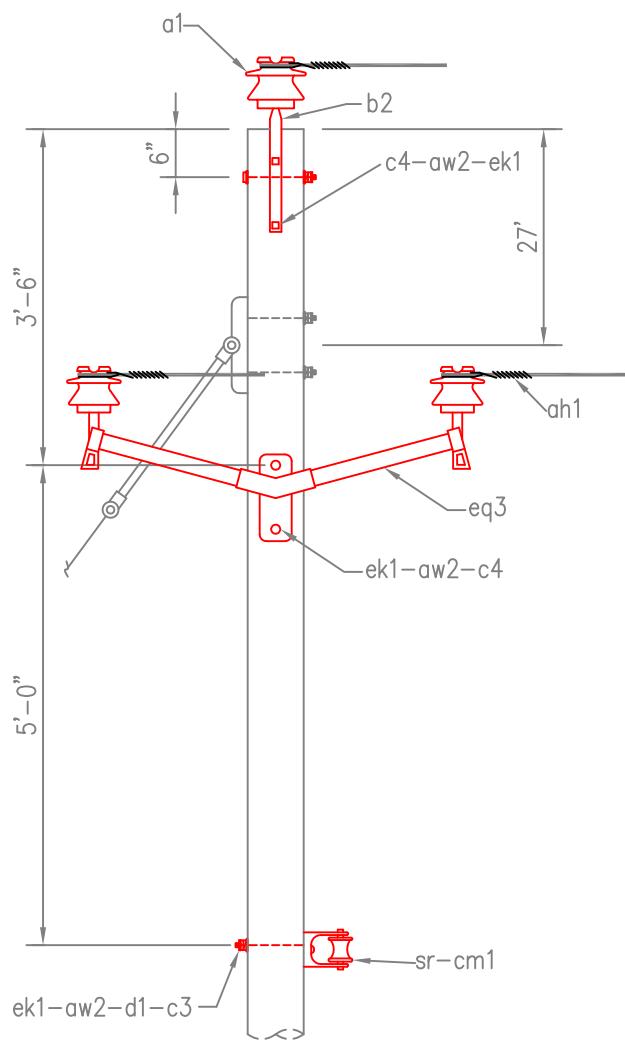
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC2-LN

ITEM.	QTY.	CATALOG No.	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah1	3	6790-XX-22	Double side tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	6	7108-99-41	Washers, double spring lock, 5/8"
b2	2	4561-33-21	Pin, offset pole top 14.4
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c4	4	0638-05-14	Bolts, machine 5/8" x 14"
cm1	1	3426-20-12	Insulator, 3" spool
d1	3	7102-04-91	Washers, square, 5/8"
ek1	6	4290-70-63	Locknuts 5/8"
eq3	2	0780-47-03	Bracket, vertical pin insulator, Fiberglass, VØ
sr	1	1230-17-01	Clevis, rigid (D-bracket)

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE NARROW PROFILE DOUBLE PRIMARY SUPPORT 5° TO 30° MAX. ANGLE	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VC2N



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
NARROW PROFILE  
DOUBLE PRIMARY SUPPORT  
5° TO 30° MAX. ANGLE

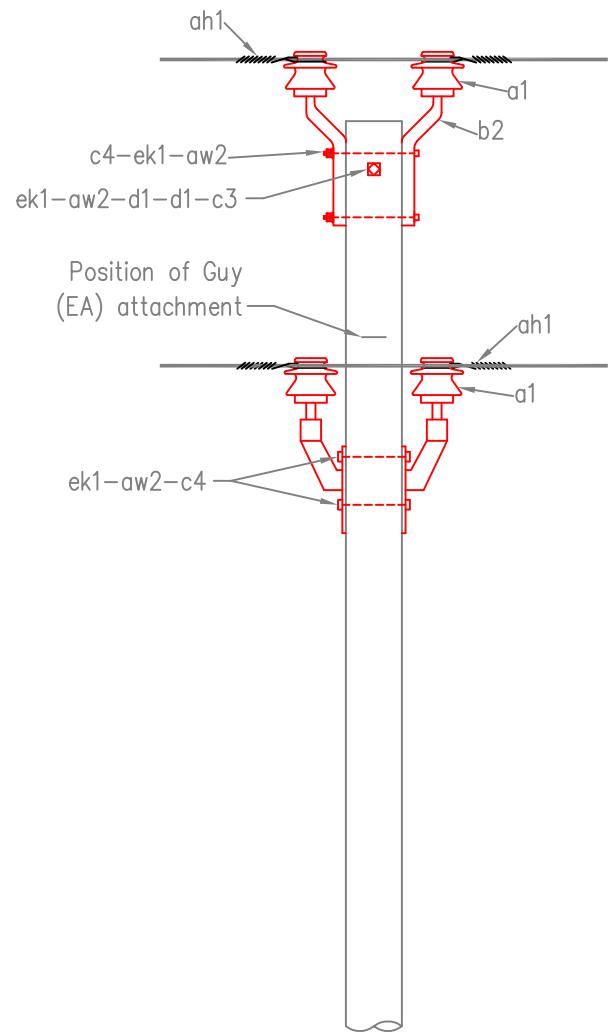
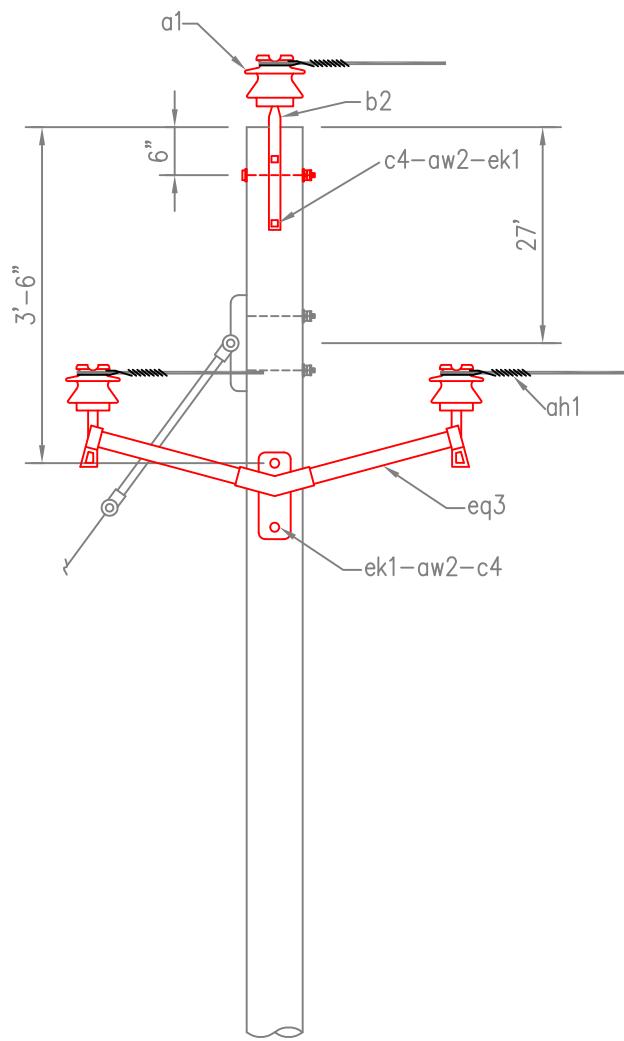
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC2N

ITM.	QTY.	CATALOG No.	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah1	3	6790-XX-22	Double side tie, (Specify conductor size)
aw2	5	7108-99-41	Washers, double spring lock, 5/8"
b2	2	4561-33-21	Pin, offset pole top 14.4
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c4	4	0638-05-14	Bolts, machine 5/8" x 14"
d1	2	7102-04-91	Washers, square, 5/8"
ek1	5	4290-70-63	Locknuts 5/8"
eq3	2	0780-47-03	Bracket, vertical pin insulator, Fiberglass, VØ

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE NARROW PROFILE DOUBLE PRIMARY SUPPORT 5° TO 30° MAX. ANGLE LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VC2N-LN	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
NARROW PROFILE  
DOUBLE PRIMARY SUPPORT  
5° TO 30° MAX. ANGLE  
LESS NEUTRAL

ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VC2N-LN

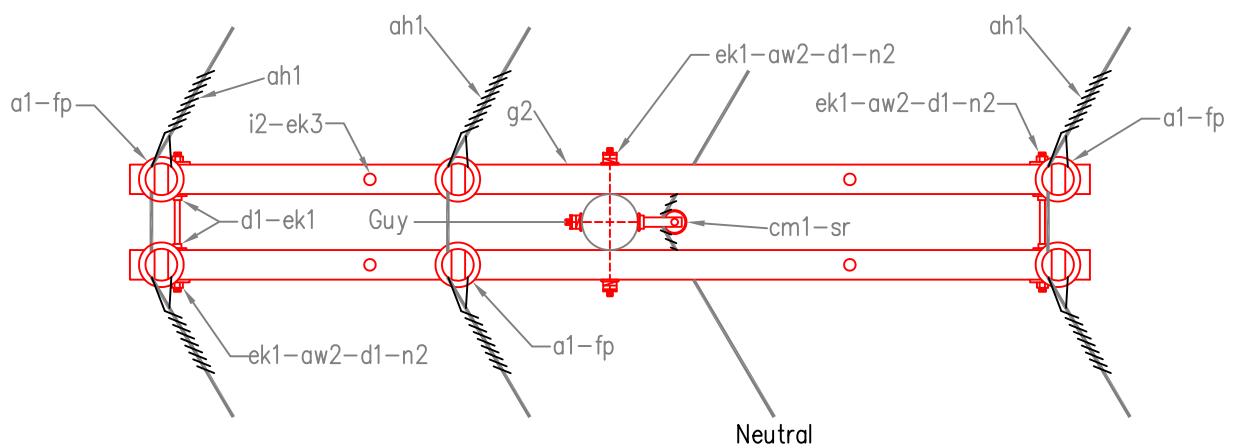
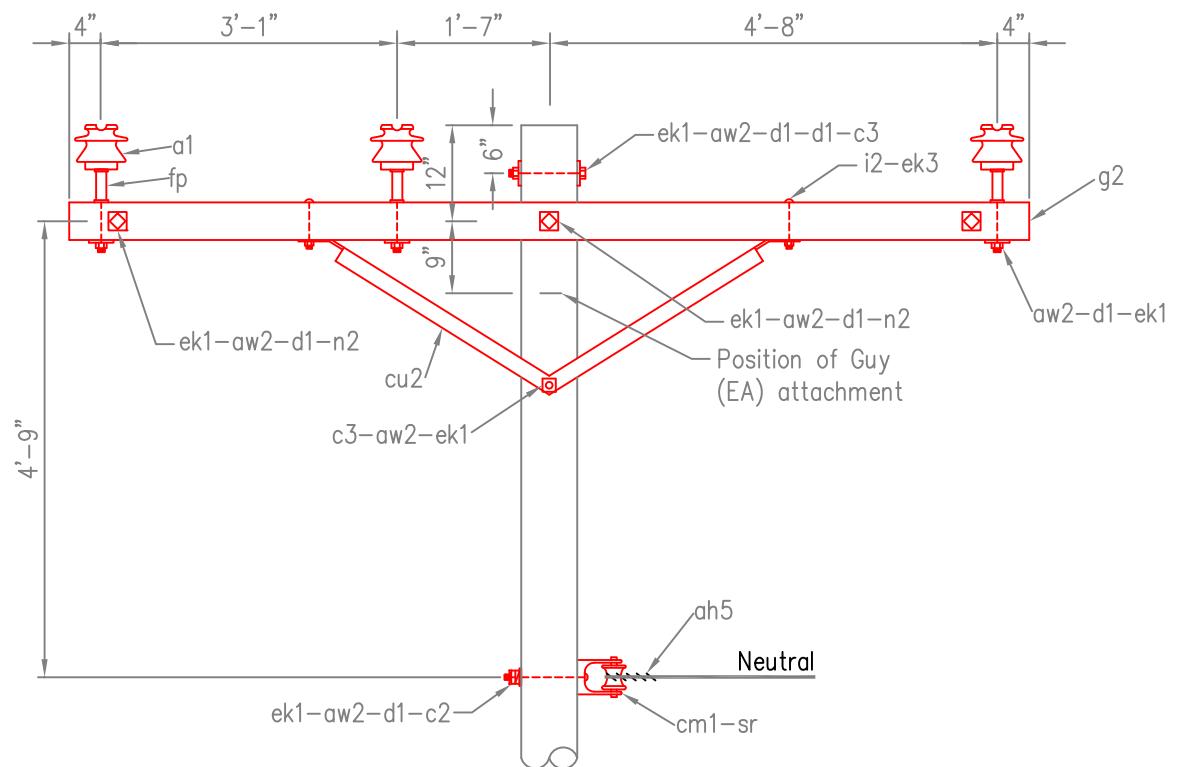
ITEM.	QTY.	CATALOG No.	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah1	3	6790-XX-22	Double side tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	15	7108-99-41	Washers, double spring lock, 5/8"
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
cu2	2	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	19	7102-04-91	Washers, square, 5/8"
ek1	19	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
fp	6	4541-23-13	Pin, crossarm 14.4, phase
g2	2	1809-01-03	Crossarm, Wood 10'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"
sr	1	1230-17-01	Clevis, rigid (D-bracket)

## NOTES:

1. Maximum transverse load: 1000 lbs. per conductor.
  2. Maximum line angle within load limits: 20°
  3. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine  $\frac{3}{4}$ ".
  4. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT MAX. TRANSVERSE LOADING 750 LBS./PIN 5° TO 30° MAX. ANGLE	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	VC2-1



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT  
MAX. TRANSVERSE LOADING 750 LBS./PIN  
5° TO 30° MAX. ANGLE

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC2-1

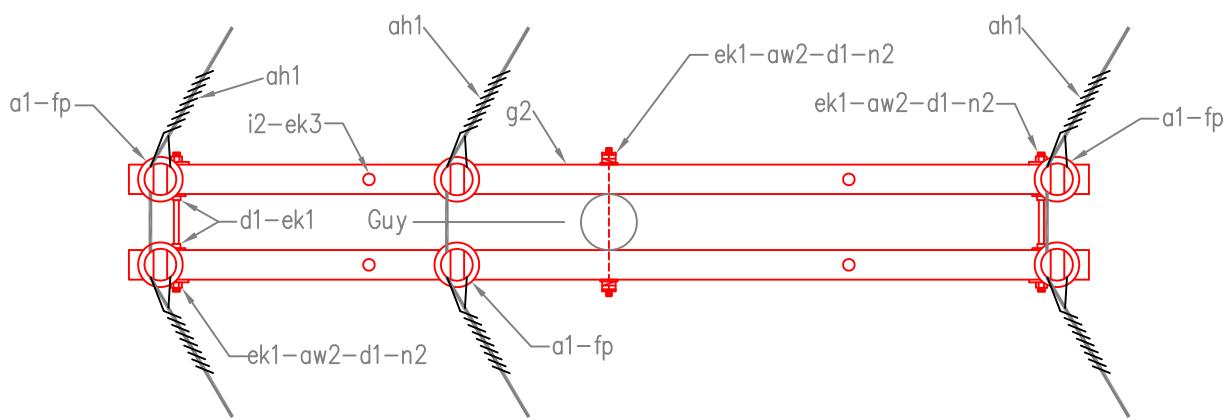
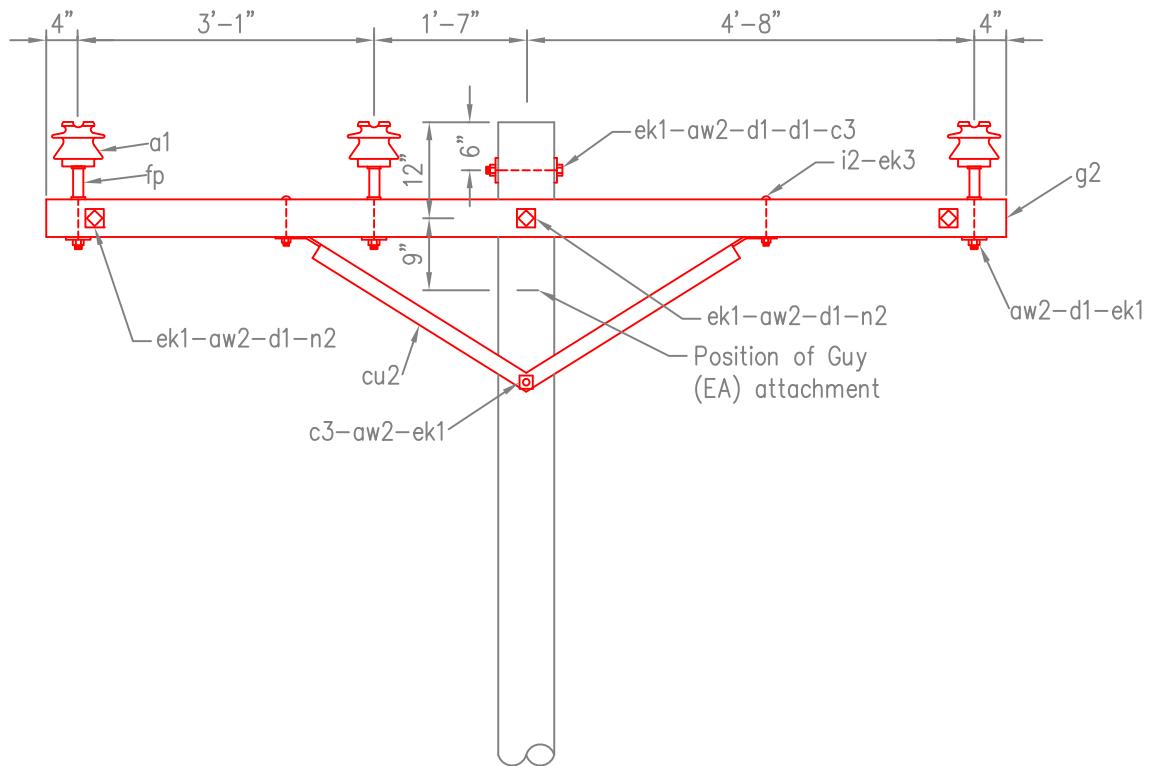
ITEM.	QTY.	CATALOG No.	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah1	3	6790-XX-22	Double side tie, (Specify conductor size)
aw2	14	7108-99-41	Washers, double spring lock, 5/8"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cu2	2	0753-51-68	Brace, crossarm 60", 18" drop. (pair)
d1	18	7102-04-91	Washers, square, 5/8"
ek1	18	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
fp	6	4541-23-13	Pin, crossarm 14.4, phase
g2	2	1809-01-03	Crossarm, Wood 10'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. Maximum transverse load: 1000 lbs. per conductor.
2. Maximum line angle within load limits: 20°
3. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
4. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT MAX. TRANSVERSE LOADING 750 LBS./PIN 5° TO 30° MAX. ANGLE-LESS NEUTRAL	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VC2-1-LN



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT  
MAX. TRANSVERSE LOADING 750 LBS./PIN  
5° TO 30° MAX. ANGLE-LESS NEUTRAL

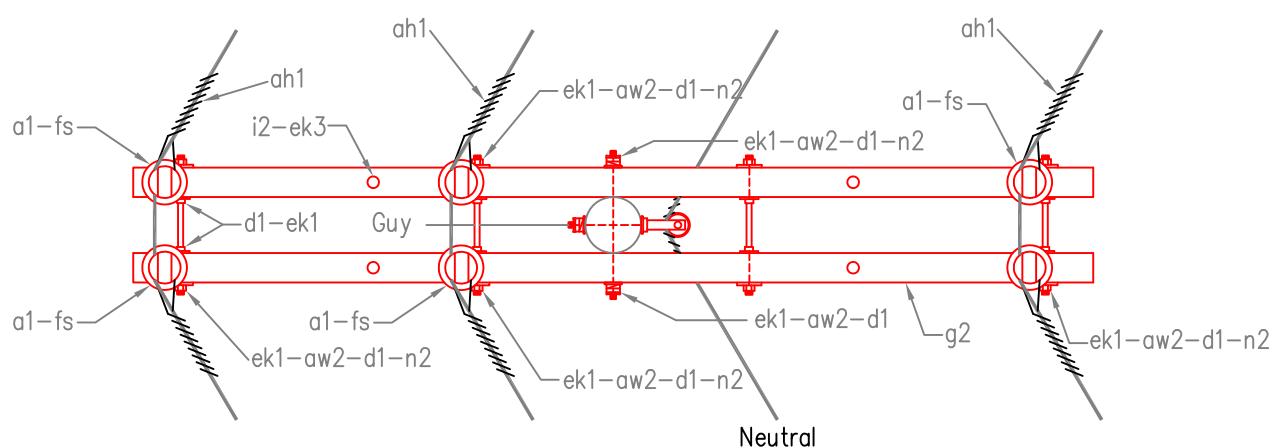
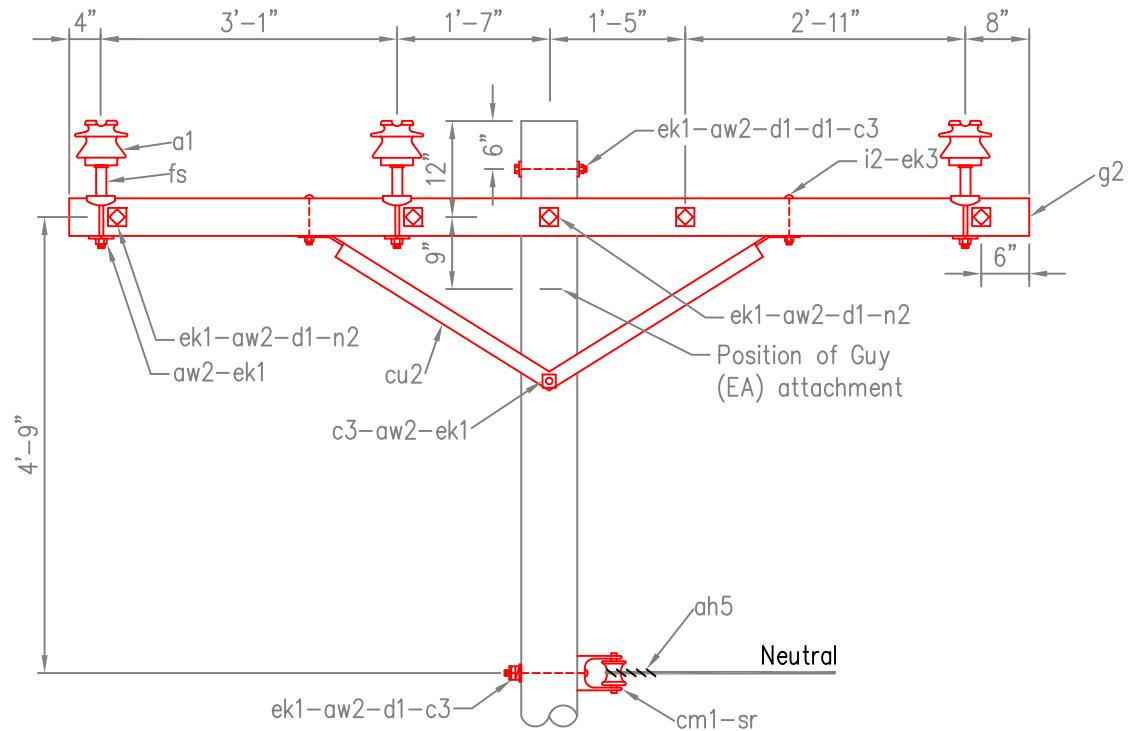
ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VC2-1-LN

ITEM.	QTY.	CATALOG No.	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah1	3	6790-XX-22	Double side tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	25	7108-99-41	Washers, double spring lock, 5/8"
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
cu2	2	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	21	7102-04-91	Washers, square, 5/8"
ek1	33	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
fs	6	4541-11-13	Pin, saddle crossarm 14.4, phase
g2	2	1809-01-03	Crossarm, Wood 10'
n2	5	0633-05-22	Bolts, DA 5/8" x 22"
sr	1	1230-17-01	Clevis, rigid (D-bracket)

NOTES:

1. Side groove of insulator must always be larger than the overall diameter of conductor including armor rods when required.
2. Center phase wire or neutral wire may be located on the opposite of the pole where necessary to avoid crossing of wires in midspan.
3. This construction required for all conductors having a breaking strength of more than 4,500 pounds.
4. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
5. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT MAX. TRANSVERSE LOADING 1000 LBS./PIN 5° TO 30° MAX. ANGLE	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	VC2-2



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT  
MAX. TRANSVERSE LOADING 1000 LBS./PIN  
5° TO 30° MAX. ANGLE

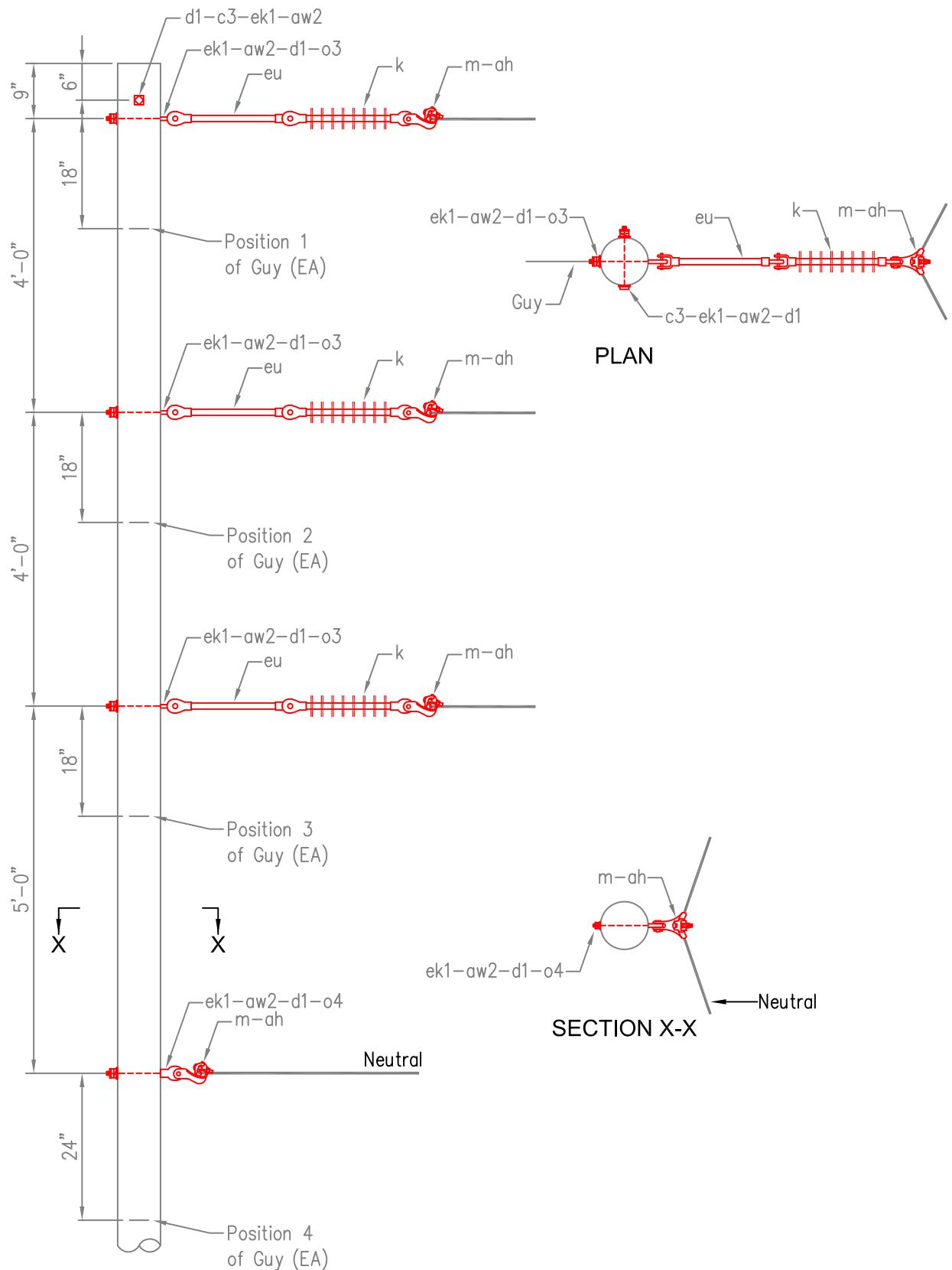
ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VC2-2

ITM.	QTY.	CATALOG No.	MATERIAL
ah	4	6790-XX-11	Preform, Armor Rod (Specify conductor size)
aw2	5	7108-99-41	Washers, double spring lock, 5/8"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
d1	6	7102-04-91	Washers, square, 5/8"
ek1	5	4290-70-63	Locknuts 5/8"
eu	3	3427-70-30	Link, F.G. primary extension, clevis-eye, 12"
k	3	3428-60-60	Insulator, polymer suspension
m	4	1174-12-XX	Shoe, angle, (Specify conductor size)
o3	3	0636-15-12	Bolts, ovaleye 5/8" x 12"
o4	1	0636-15-14	Bolts, ovaleye 5/8" x 14"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine  $\frac{3}{4}$ ".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE VERTICAL CONSTRUCTION 30° TO 60° ANGLE	ISSUED	2/04/2008
				REVISED	8/15/2011
				STANDARD NUMBER	
				VC3	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
VERTICAL CONSTRUCTION  
30° TO 60° ANGLE

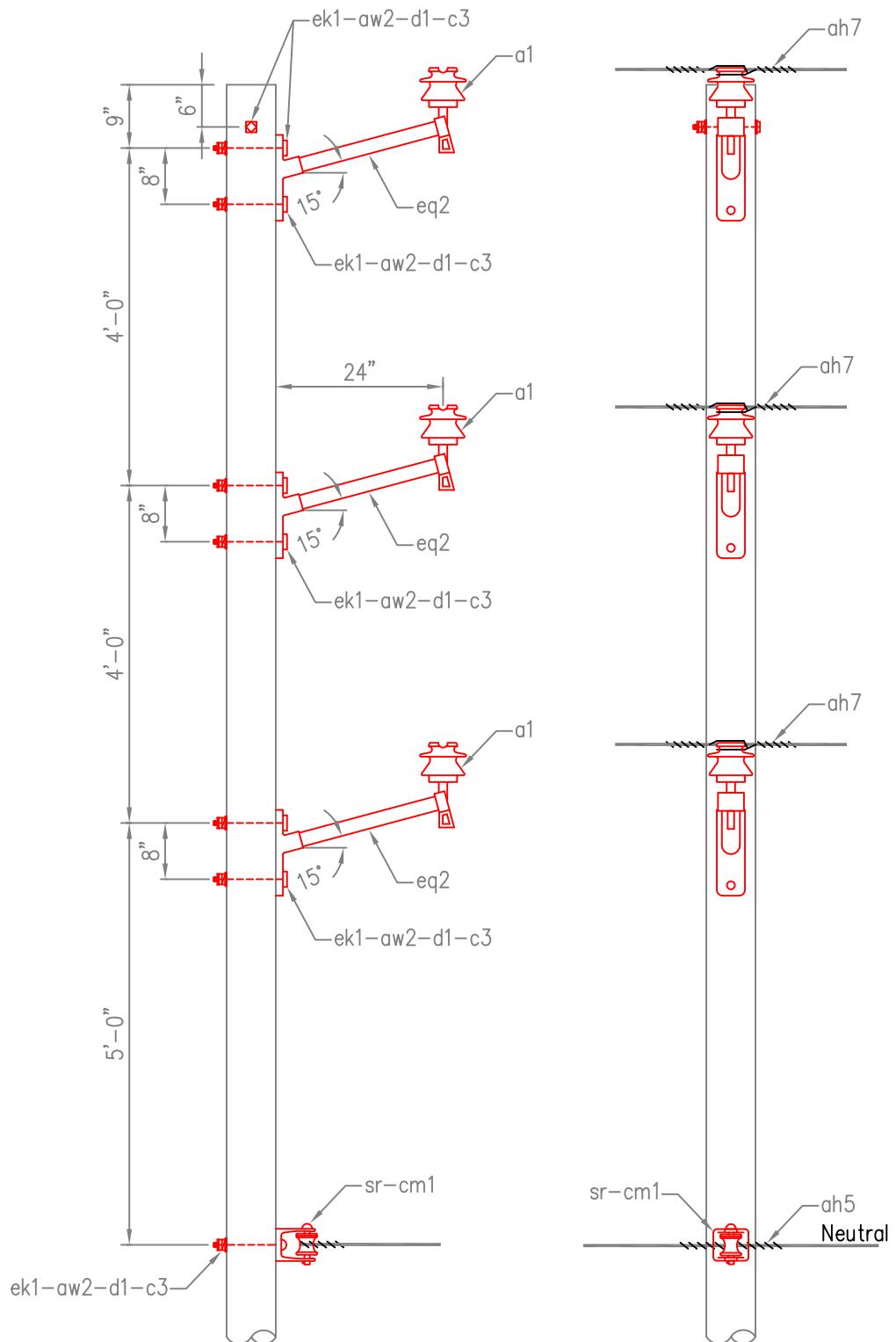
ISSUED	2/04/2008
REVISED	8/15/2011
STANDARD NUMBER	VC3

ITM.	QTY.	CATALOG No.	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	8	7108-99-41	Washers, double spring lock, 5/8"
c3	8	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
d1	9	7102-04-91	Washers, square, 5/8"
ek1	8	4290-70-63	Locknuts 5/8"
eq2	3	0780-47-01	Bracket, vertical pin insulator, Fiberglass, 1Ø
sr	1	1230-17-01	Clevis, rigid (D-bracket)

NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE VERTICAL CONSTRUCTION SINGLE PRIMARY SUPPORT REDUCED TENSION	ISSUED	2/04/2008
				REVISED	
					STANDARD NUMBER
					VC3S



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
VERTICAL CONSTRUCTION  
SINGLE PRIMARY SUPPORT  
REDUCED TENSION

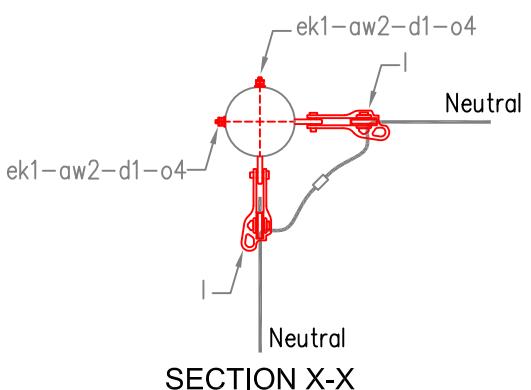
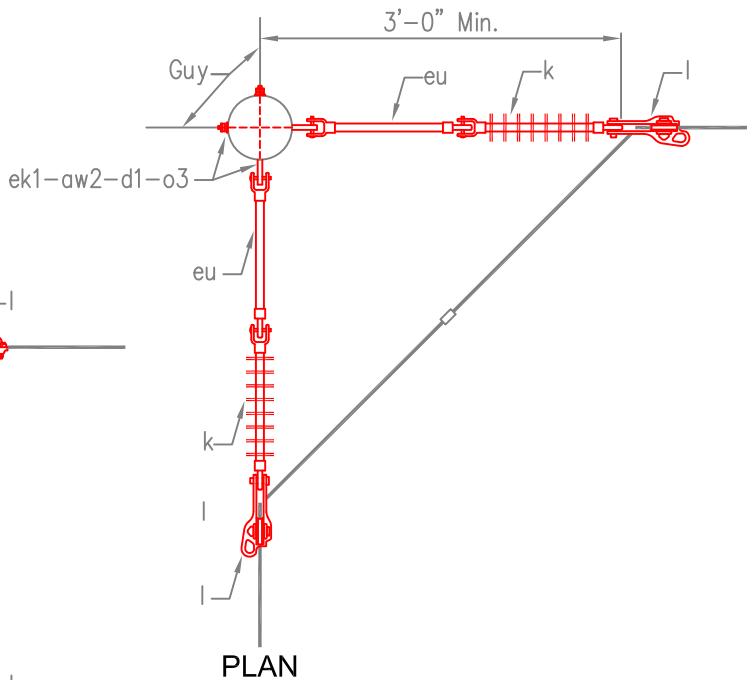
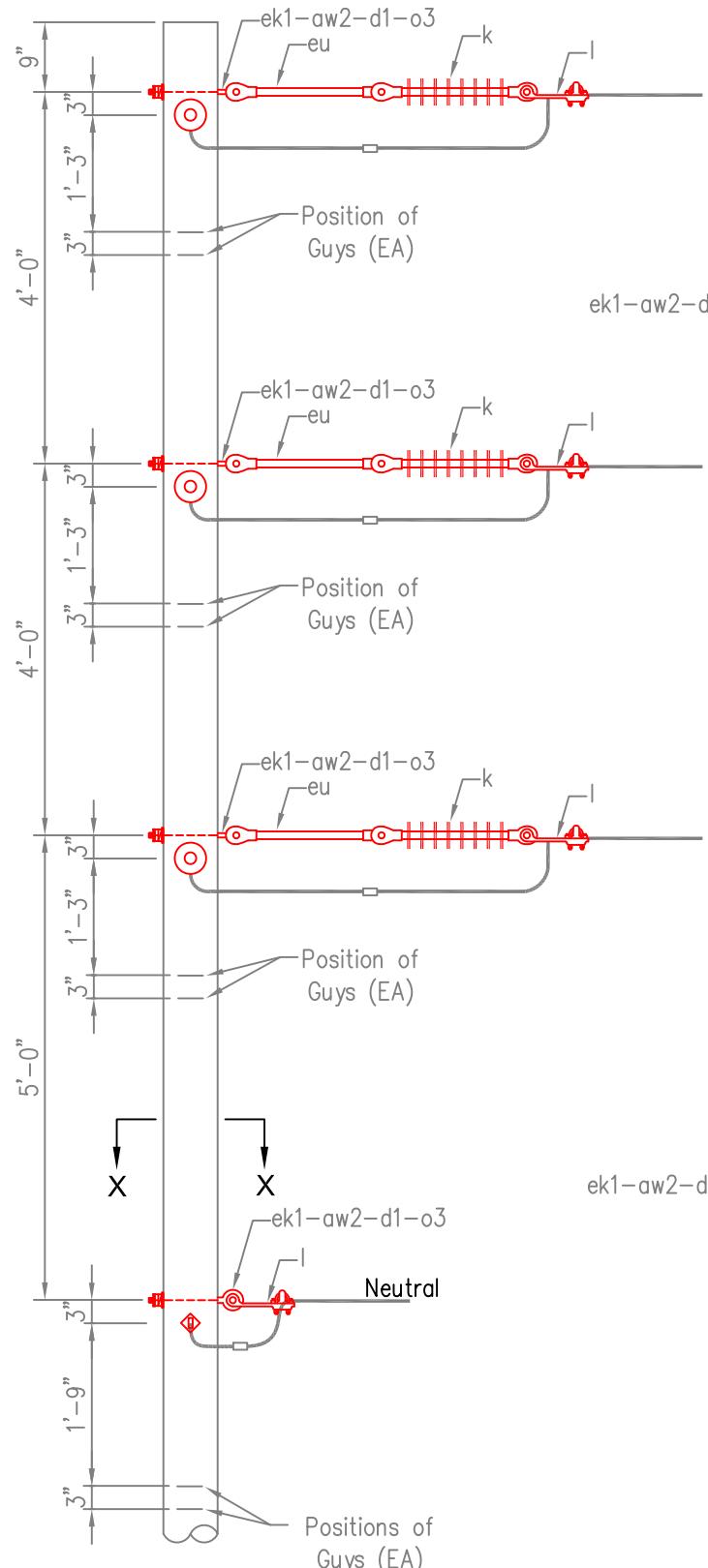
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC3S

ITM.	QTY.	CATALOG No.	MATERIAL
aw2	8	7108-99-41	Washers, double spring lock, 5/8"
d1	8	7102-04-91	Washers, square, 5/8"
ek1	8	4290-70-63	Locknuts 5/8"
eu	6	3427-70-30	Link, F.G. primary extension, clevis-eye, 12"
k	6	3428-60-60	Insulator, polymer suspension
l	8	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o3	6	0636-15-12	Bolts, ovaleye 5/8" x 12"
o4	2	0636-15-14	Bolts, ovaleye 5/8" x 14"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine  $\frac{3}{4}$ ".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE VERTICAL CONSTRUCTION DEADEND ANGLE STRUCTURE 60° TO 90° ANGLE	ISSUED	2/04/2008
				REVISED	8/12/2011
				STANDARD NUMBER	
					VC4-1



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
VERTICAL CONSTRUCTION  
DEADEND ANGLE STRUCTURE  
60° TO 90° ANGLE

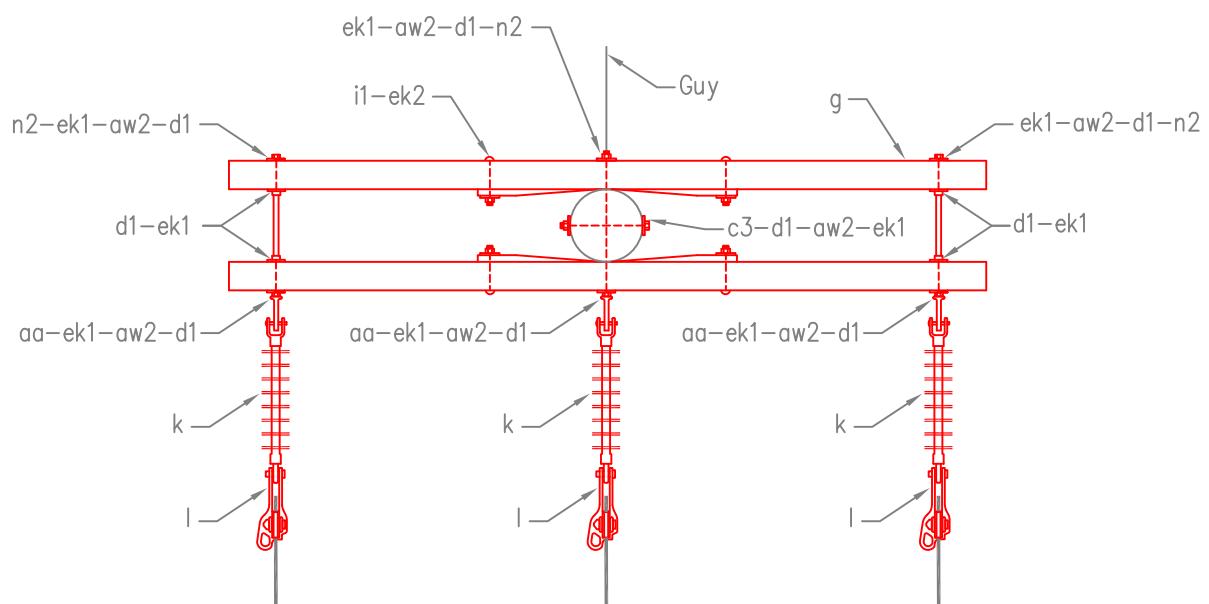
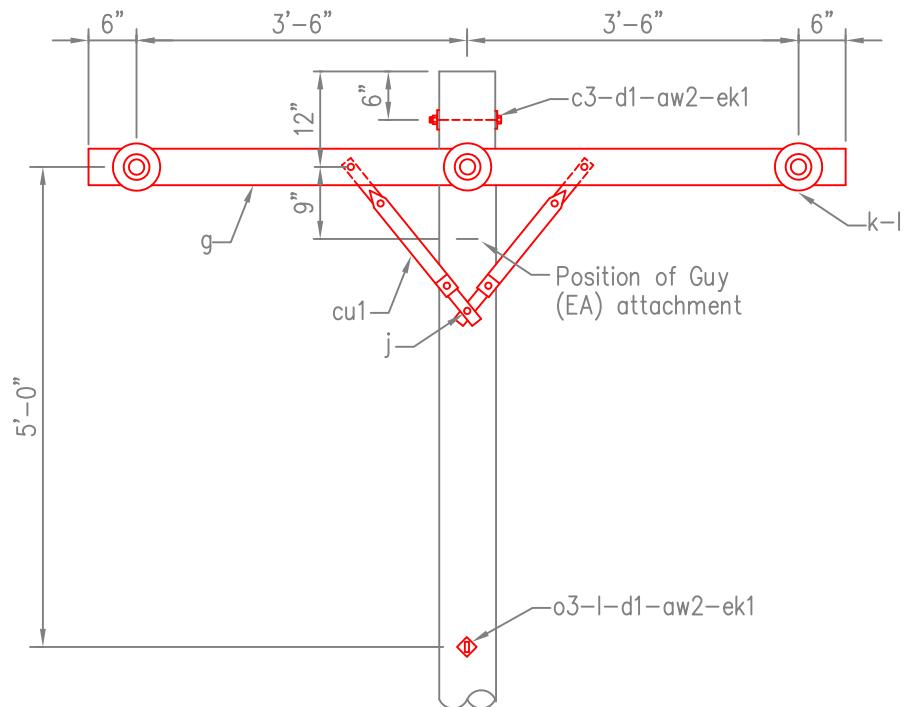
ISSUED	2/04/2008
REVISED	8/12/2011
STANDARD NUMBER	VC4-1

ITM.	QTY.	CATALOG No.	MATERIAL
aa	3	4290-40-63	Nuts, ovaleye 5/8"
aw2	8	7108-99-41	Washers, double spring lock, 5/8"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	13	7102-04-91	Washers, square, 5/8"
ek1	15	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
g	2	1809-01-01	Crossarm, Wood 8'
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
k	3	3428-60-60	Insulator, polymer suspension
l	4	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
n2	3	0633-05-22	Bolts, DA 5/8" x 22"
o3	1	0636-15-12	Bolts, ovaleye 5/8" x 12"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine  $\frac{3}{4}$ ".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION SINGLE DEADEND	ISSUED	2/04/2008
				REVISED	8/12/2011
				STANDARD NUMBER	
				VC7	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
SINGLE DEADEND

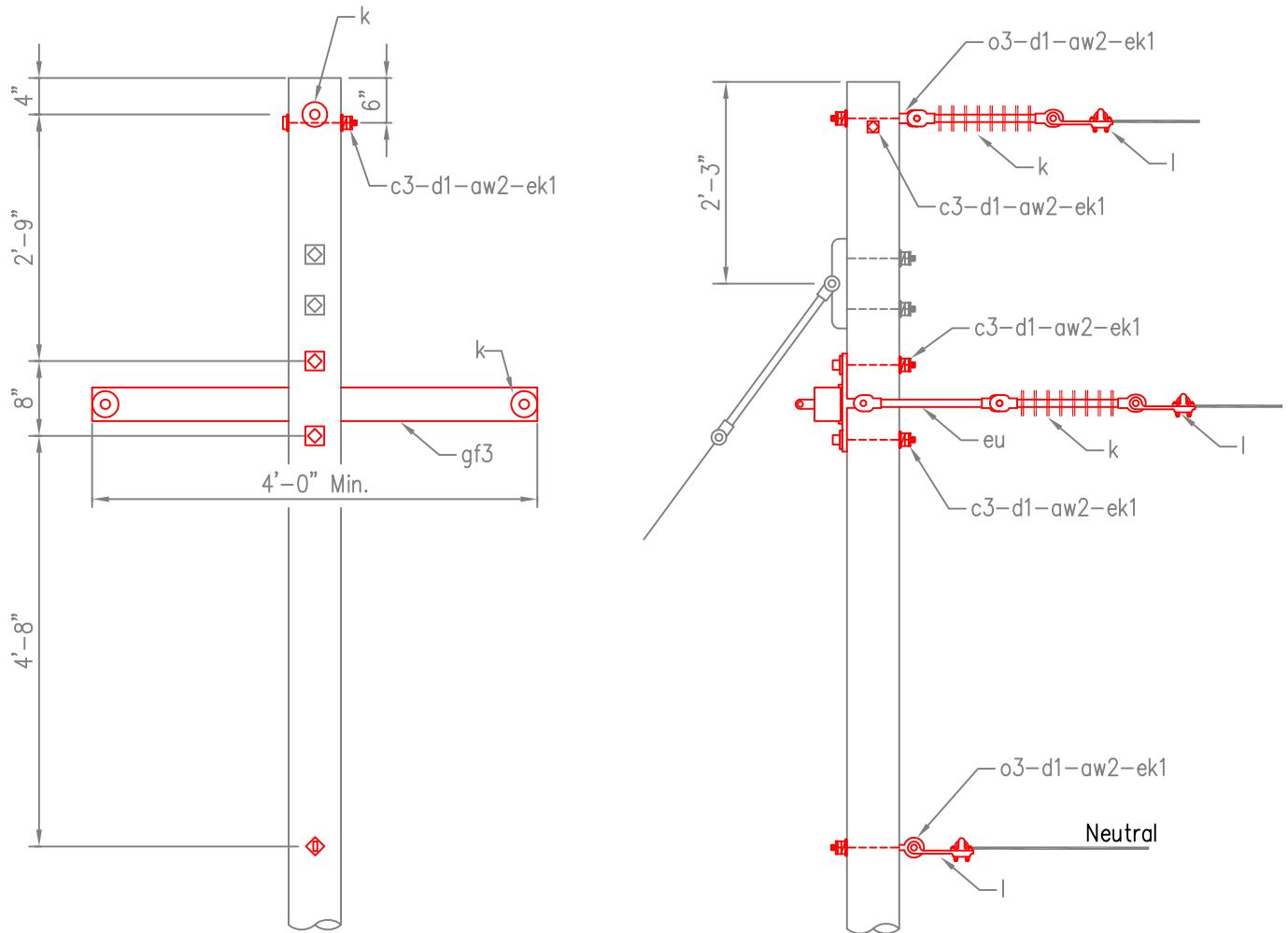
ISSUED	2/04/2008
REVISED	8/12/2011
STANDARD NUMBER	VC7

ITM.	QTY.	CATALOG No.	MATERIAL
aw2	5	7108-99-41	Washers, double spring lock, 5/8"
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
d1	6	7102-04-91	Washers, square, 5/8"
ek1	5	4290-70-63	Locknuts 5/8"
eu	2	3427-70-30	Link, F.G. primary extension, clevis-eye, 12"
gf3	1	1809-09-13	Crossarm, Fiberglass, 48", narrow profile
k	3	3428-60-60	Insulator, polymer suspension
l	4	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o3	2	0636-15-12	Bolts, ovaleye 5/8" x 12"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", bolts, machine  $\frac{3}{4}$ ".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE NARROW PROFILE SINGLE PRIMARY DEADEND	ISSUED	2/04/2008
				REVISED	8/12/2011
				STANDARD NUMBER	VC7N



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
NARROW PROFILE  
SINGLE PRIMARY DEADEND

ISSUED	2/04/2008
REVISED	8/12/2011
STANDARD NUMBER	VC7N

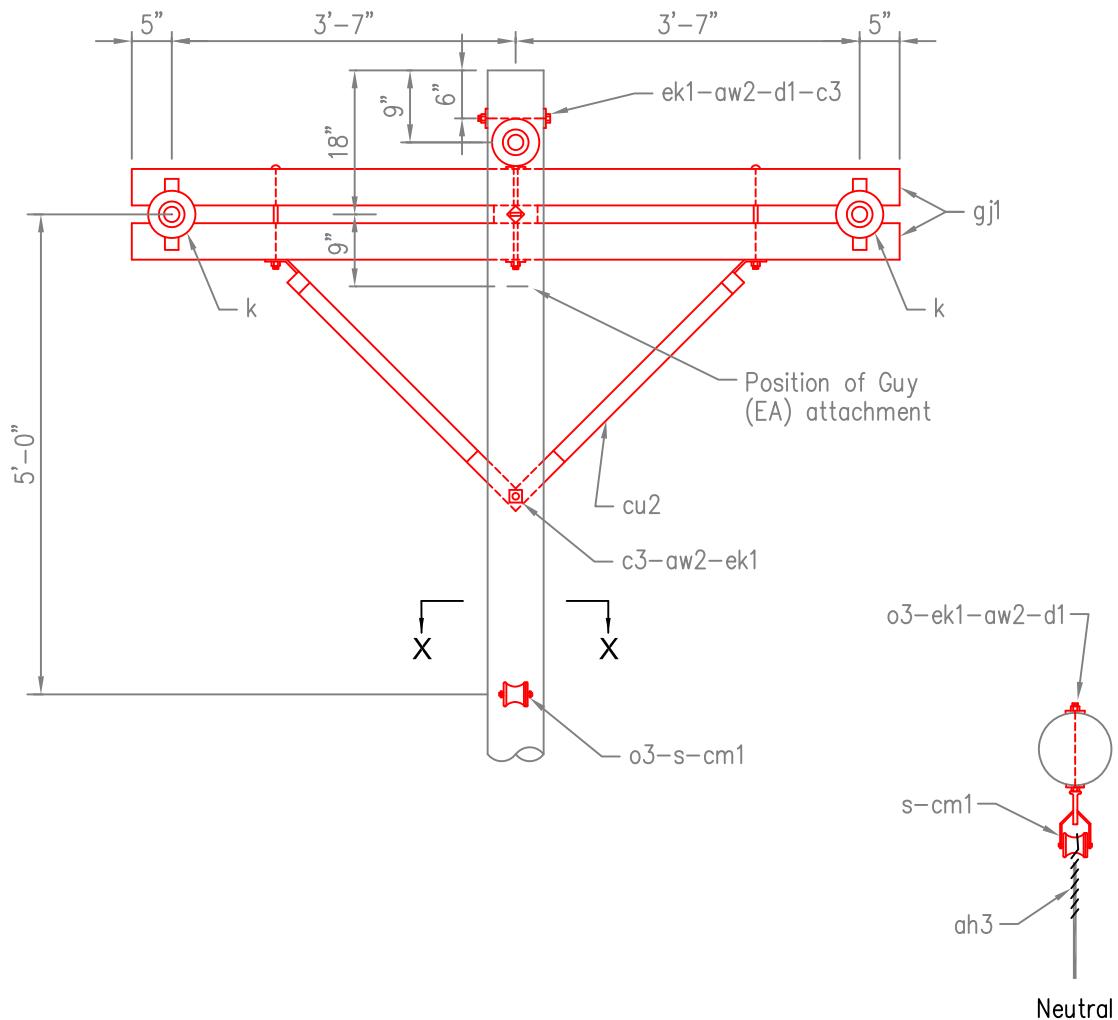
ITM.	QTY.	CATALOG No.	MATERIAL
ah3	1	6790-XX-44	Neutral deadend tie, (Specify conductor size)
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
cu2	1	0753-51-68	Brace, crossarm 60" span 18" drop (pair)
d1	5	7102-04-91	Washers, square, 5/8"
ek1	3	4290-70-63	Locknuts 5/8"
gj1	1	1808-12-03	Hughes regular crossarm, 8' (2890-B)
k	3	3428-60-60	Insulator, polymer suspension
l	3	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o3	2	0636-15-12	Bolts, ovaleye 5/8" x 12"
s	1	1230-19-01	Clevis, swinging (J-6)

NOTES:

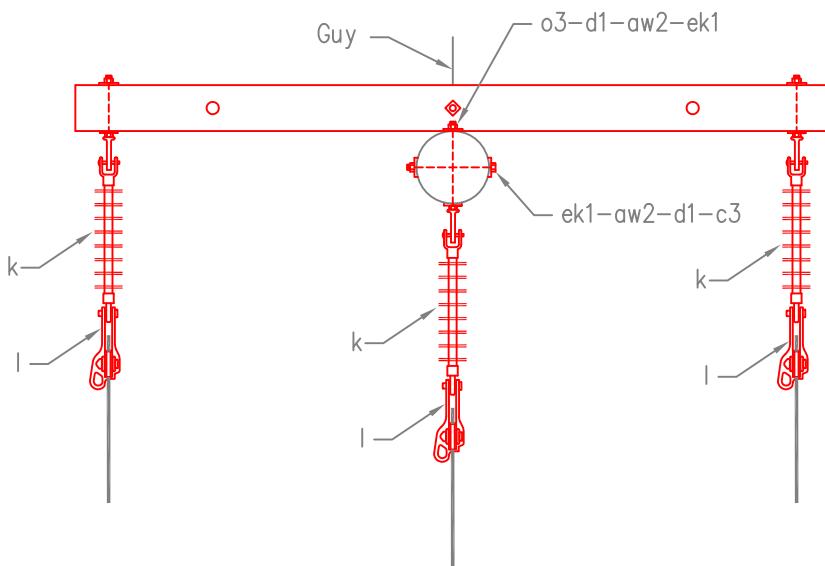
- For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
- Crossarm braces and mounting hardware are included in the crossarm package.
- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

FOR RETIREMENT ONLY

	DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION SMALL CONDUCTOR DEADEND (SINGLE) STRUCTURE	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VC7A-R



SECTION X-X



FOR RETIREMENT ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
SMALL CONDUCTOR  
DEADEND (SINGLE) STRUCTURE

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC7A-R

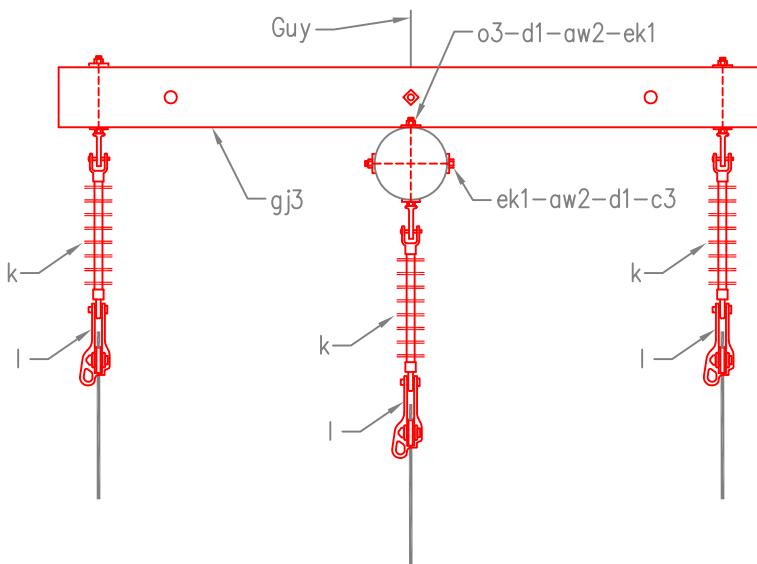
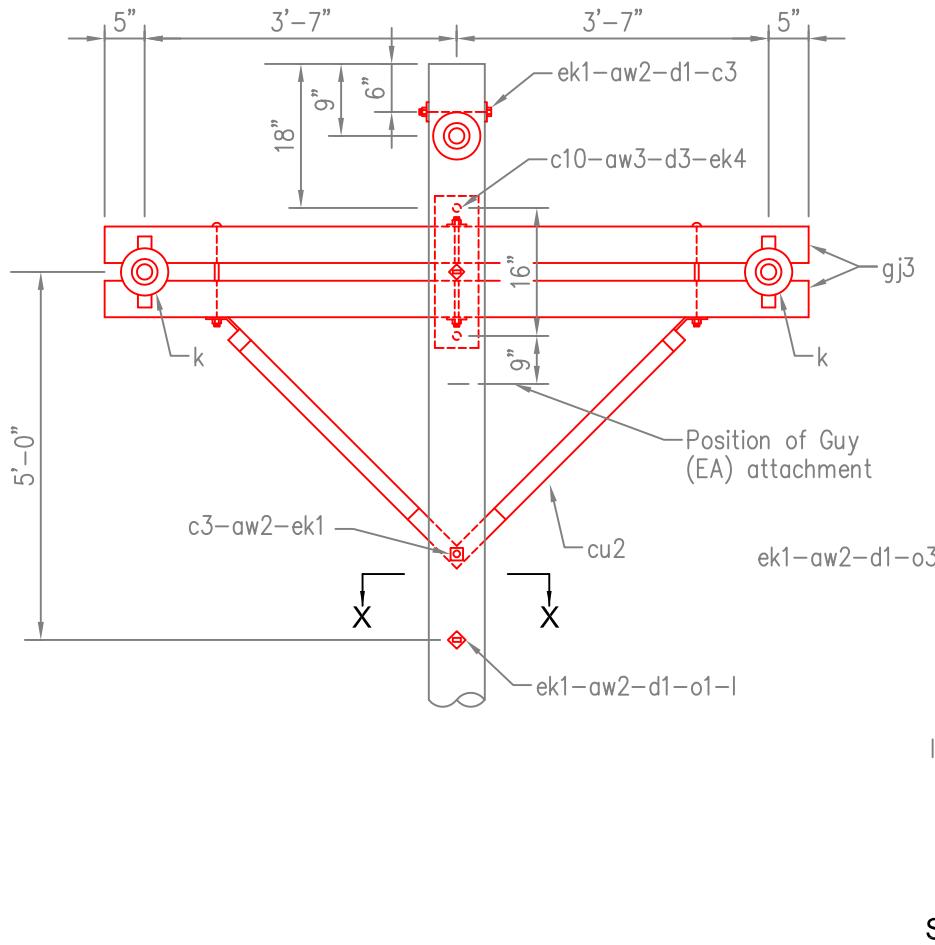
ITM.	QTY.	CATALOG No.	MATERIAL
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washer, double spring lock, 3/4"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cu2	1	0753-51-68	Brace, crossarm 60" span 18" drop (pair)
d1	5	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washer, curved, 3/4"
ek1	4	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
gj3	1	1808-12-01	Hughes large crossarm, 8' (2892-A)
k	3	3428-60-60	Insulator, polymer suspension
l	4	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o3	2	0636-15-12	Bolts, ovaleye 5/8" x 12"

NOTES:

- For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
- Crossarm braces and mounting hardware are included in the crossarm package.
- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

FOR RETIREMENT ONLY

	DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION LARGE CONDUCTOR DEADEND (SINGLE) STRUCTURE	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VC7A-L-R



FOR RETIREMENT ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
LARGE CONDUCTOR  
DEADEND (SINGLE) STRUCTURE

ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VC7A-L-R

ITM.	QTY.	CATALOG No.	MATERIAL
ah3	1	6790-XX-44	Neutral deadend tie, (Specify conductor size)
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washer, double spring lock, 3/4"
az	1	4260-21-04	CN Metal Tag
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cm1	1	3426-20-12	Insulator, 3" spool
cu2	1	0753-51-68	Brace, crossarm 60" span 18" drop (pair)
d1	4	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washer, curved, 3/4"
ek1	3	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
eq7	1	0780-37-01	Bracket, downlead standoff, Fiberglass
gj2	1	1808-12-07	Hughes regular crossarm, 10' (2892-B4)
k	3	3428-60-60	Insulator, polymer suspension
l	3	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
s	1	1230-19-01	Clevis, swinging (J-6)

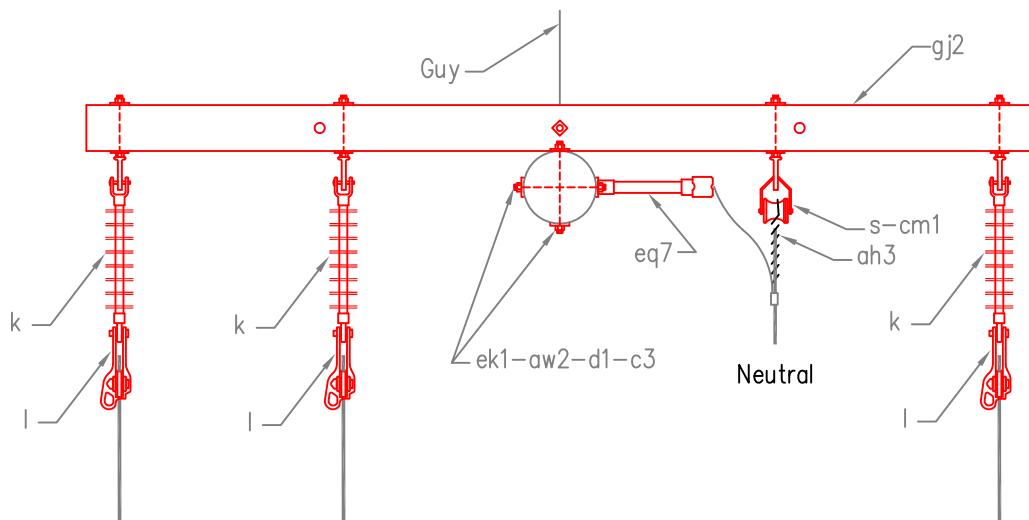
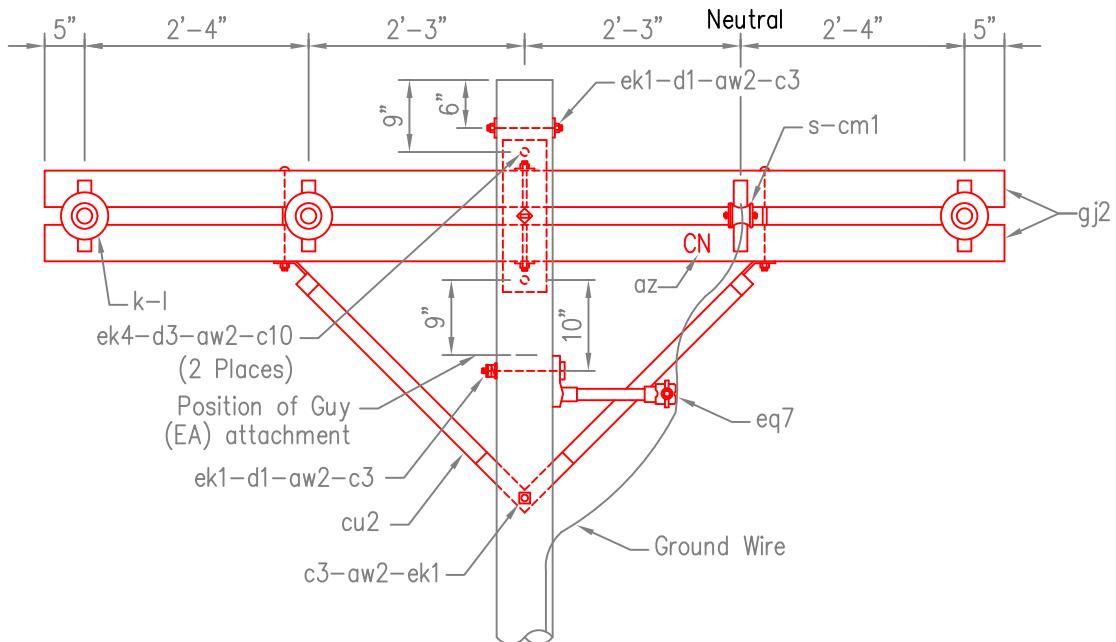
NOTES:

- For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
- Crossarm braces and mounting hardware are included in the crossarm package.
- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

FOR RETIREMENT ONLY



DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION SMALL CONDUCTOR 10' DEADEND (SINGLE) STRUCTURE	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VC7A-10-R



FOR RETIREMENT ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
SMALL CONDUCTOR  
10' DEADEND (SINGLE) STRUCTURE

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC7A-10-R

ITM.	QTY.	CATALOG No.	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah9	3	6790-XX-88	Slack span deadend tie, (Specify conductor size)
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
aw3	4	7108-99-51	Washers, double spring lock, 3/4"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
d1	3	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	2	7102-04-51	Washers, square, 3/4"
ek1	3	4290-70-63	Locknuts 5/8"
ek4	4	4290-70-75	Locknuts 3/4"
eq2	1	0780-47-01	Bracket, Vertical pin insulator, Fiberglass, 1Ø
fr	2	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gk	1	1809-09-14	Crossarm, Fiberglass 8' TB 3000-96
l	1	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o3	1	0636-15-12	Bolts, ovaleye 5/8" x 12"

NOTES:

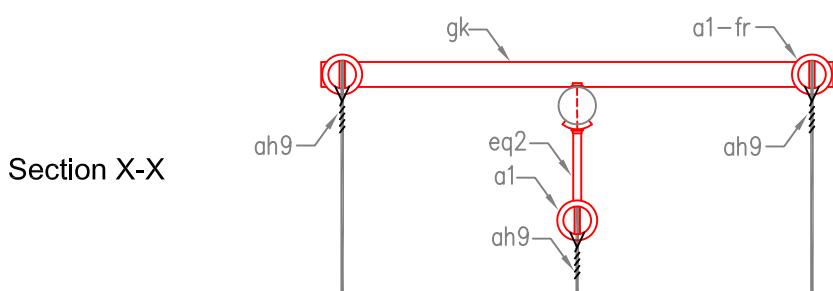
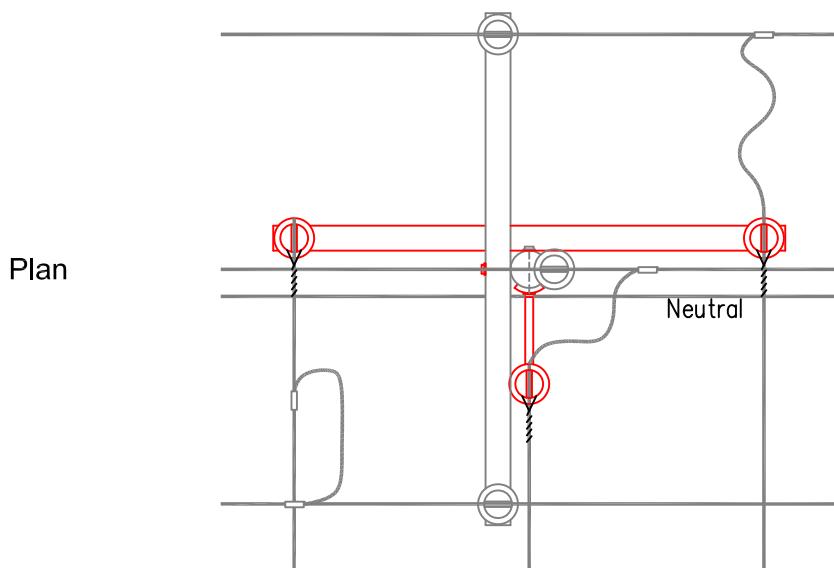
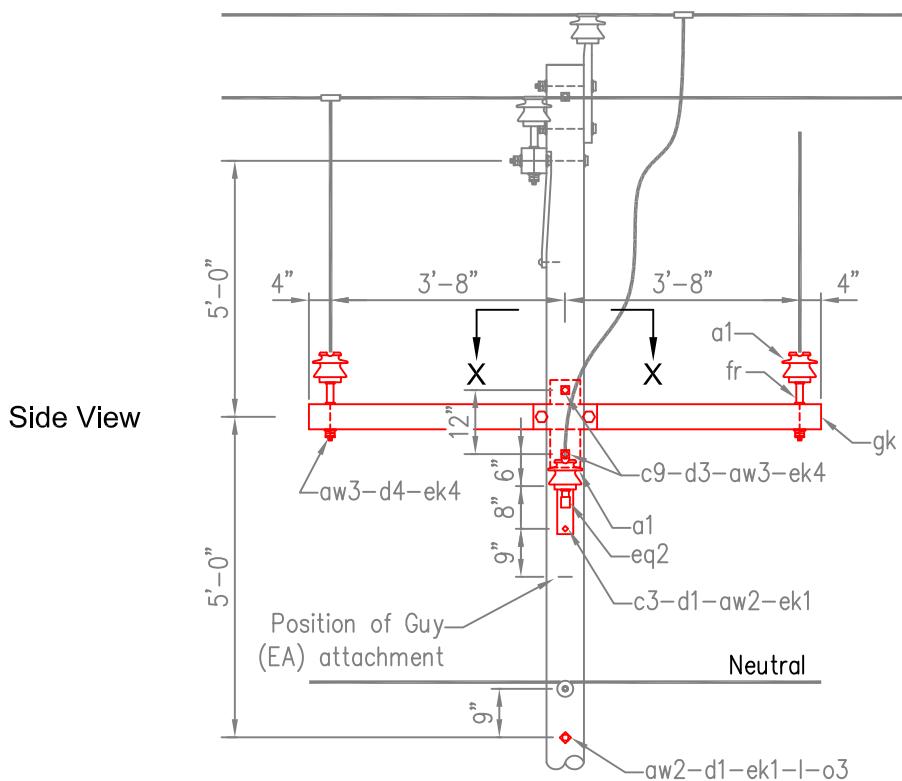
1. If 4-conductors to be on arm for clearance, use VC7S-10.
2. Bolt lengths will be determined by the pole diameter at the position of the crossarm, the braces, and guy attachment.
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
3Ø TAP TAKEOFF FOR  
REDUCED TENSION DEADEND

ISSUED	2/04/2008
REVISED	3/23/2011
STANDARD NUMBER	VC7S



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
3Ø TAP TAKEOFF FOR  
REDUCED TENSION DEADEND

ISSUED	2/04/2008
REVISED	3/23/2011
STANDARD NUMBER	VC7S

ITEM.	QTY.	CATALOG No.	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
a2	1	3422-40-10	Insulator, 7.2 pin, white, 1" internal thread
ah9	3	6790-XX-88	Slack span deadend tie, (Specify conductor size)
ah10	1	6790-XX-89	C/F Slack span deadend tie, (Specify conductor size)
aw2	1	7108-99-41	Washers, double spring lock 5/8"
aw3	6	7108-99-51	Washers, double spring lock, 3/4"
az	2	4285-10-01	CN Stick-On Tag
c3	1	0638-05-12	Bolts, machine 5/8" x12"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
d1	1	7102-04-91	Washes, square 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	4	7102-04-51	Washers, square, 3/4"
ek1	1	4290-70-63	Locknut 5/8"
ek4	6	4290-70-75	Locknuts 3/4"
eq7	1	0780-37-01	Bracket, download standoff, Fiberglass
fm	1	4541-22-32	Pin, crossarm 7.2, 3/4" shank, neutral
fr	3	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gi	1	1809-09-09	Crossarm, Fiberglass 10' TB 3000-120

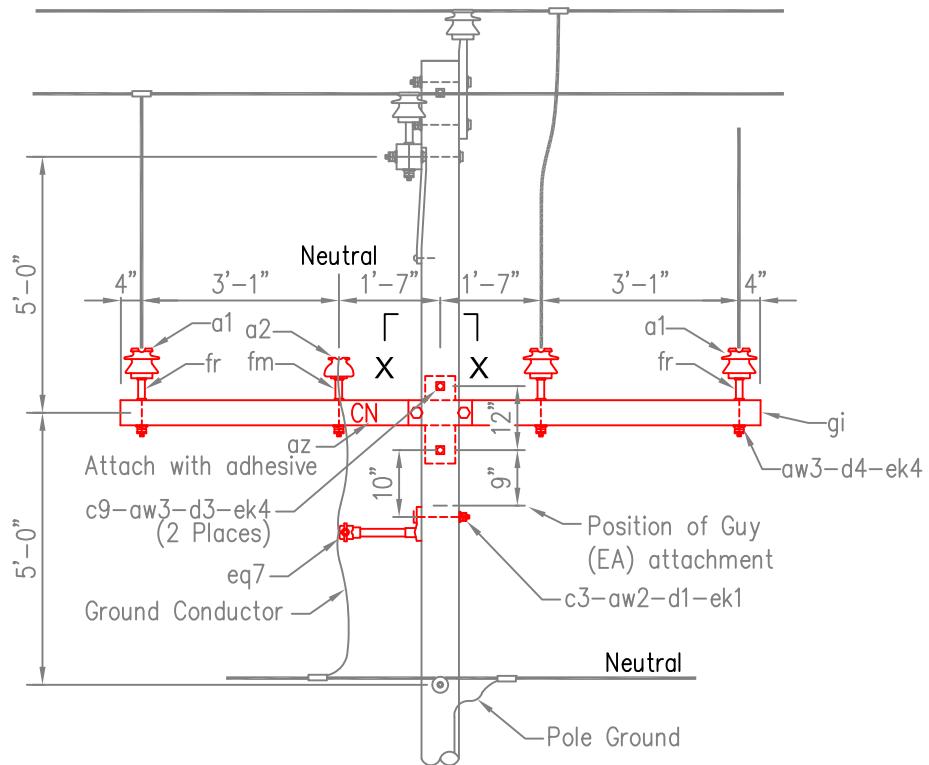
NOTES:

1. If Neutral to be attached to the pole, use VC7S.
2. Bolt lengths will be determined by the pole diameter at the position of the crossarm, the braces, and guy attachment.
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

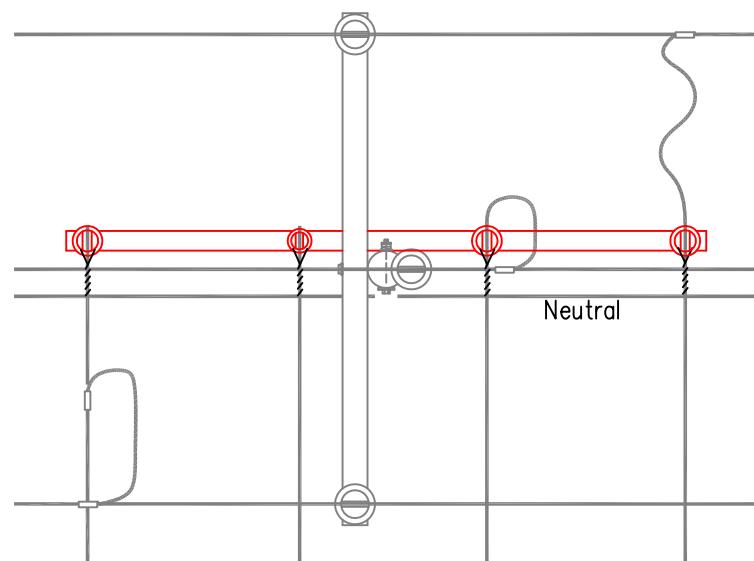
ENGINEERING APPROVAL ONLY

	DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION 3Ø TAP TAKEOFF FOR REDUCED TENSION DEADEND	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VC7S-10

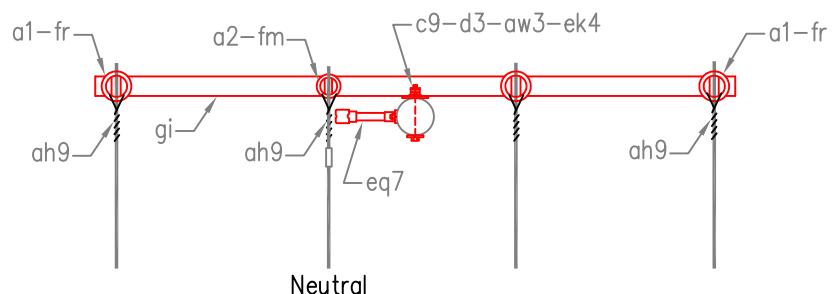
Side View



PLAN



Section X-X



ENGINEERING APPROVAL ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
3Ø TAP TAKEOFF FOR  
REDUCED TENSION DEADEND

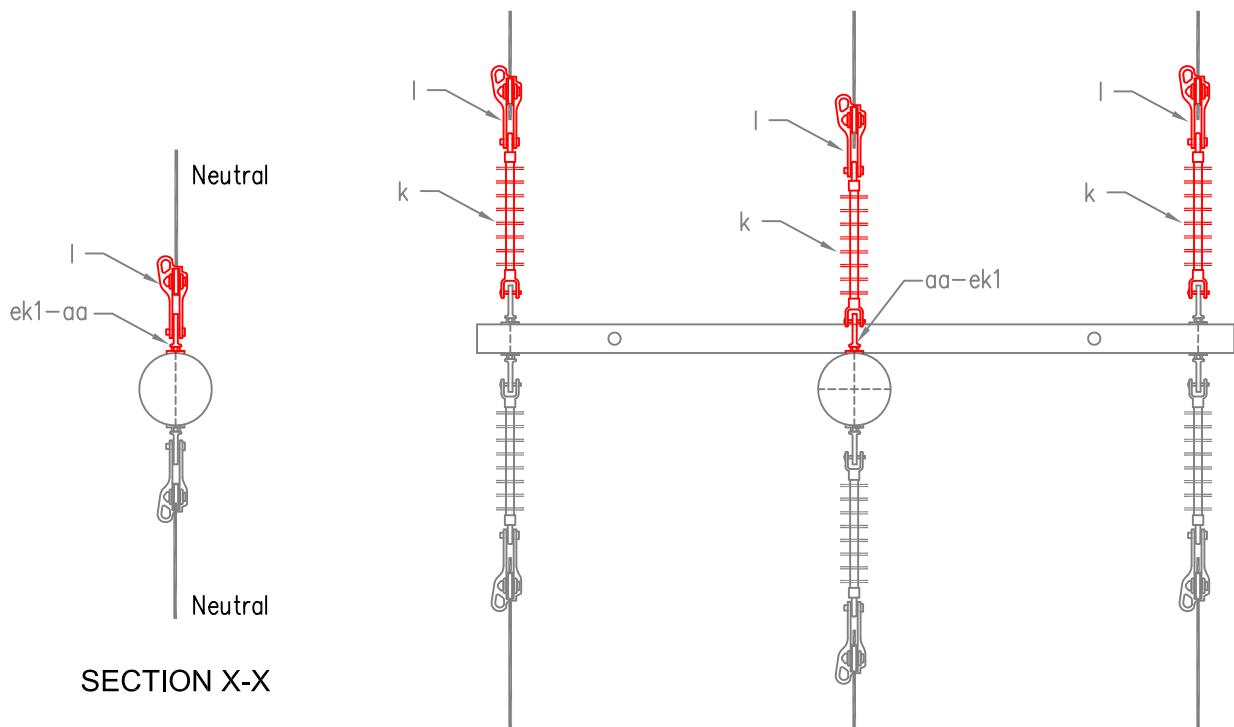
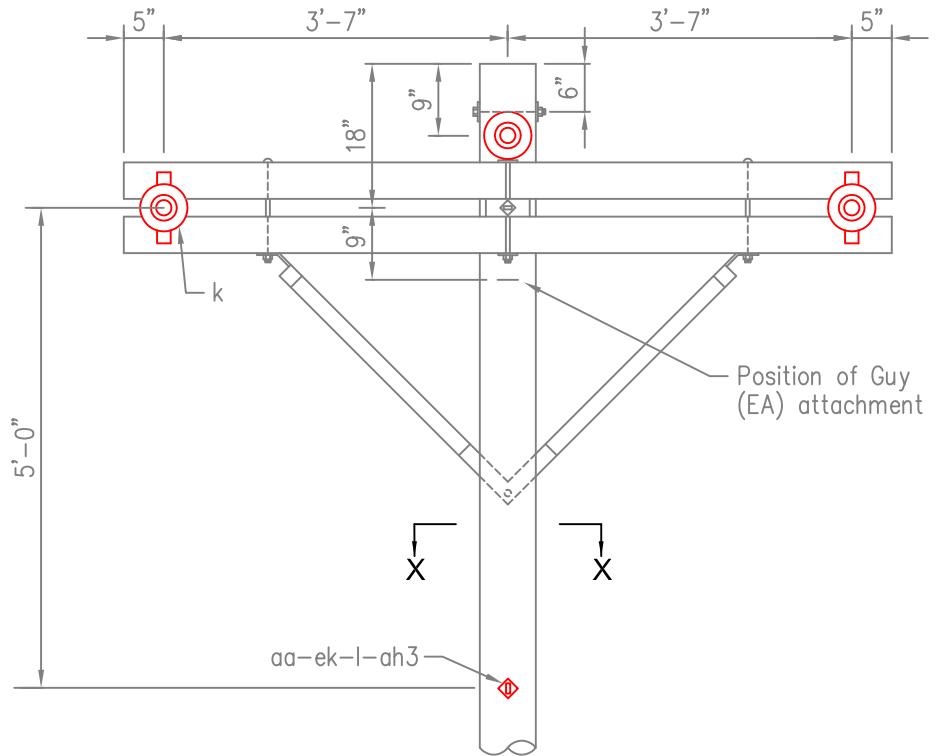
ISSUED	2/04/2008
REVISED	8/12/2011
STANDARD NUMBER	VC7S-10

ITEM.	QTY.	CATALOG No.	MATERIAL
aa	2	4290-40-63	Nuts, oval eye 5/8"
ek1	2	4290-70-63	Locknuts 5/8"
k	3	3428-60-60	Insulator, polymer suspension
l	4	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

NOTES:

1. If jumpers are run, call for VM5-2 or VM5-5.
2. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine  $\frac{3}{4}$ ".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION DEADEND TAKEOFF FOR SPAN WITH TENSION	ISSUED	2/04/2008
				REVISED	8/12/2011
				STANDARD NUMBER	
					VC7X



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
DEADEND TAKEOFF FOR  
SPAN WITH TENSION

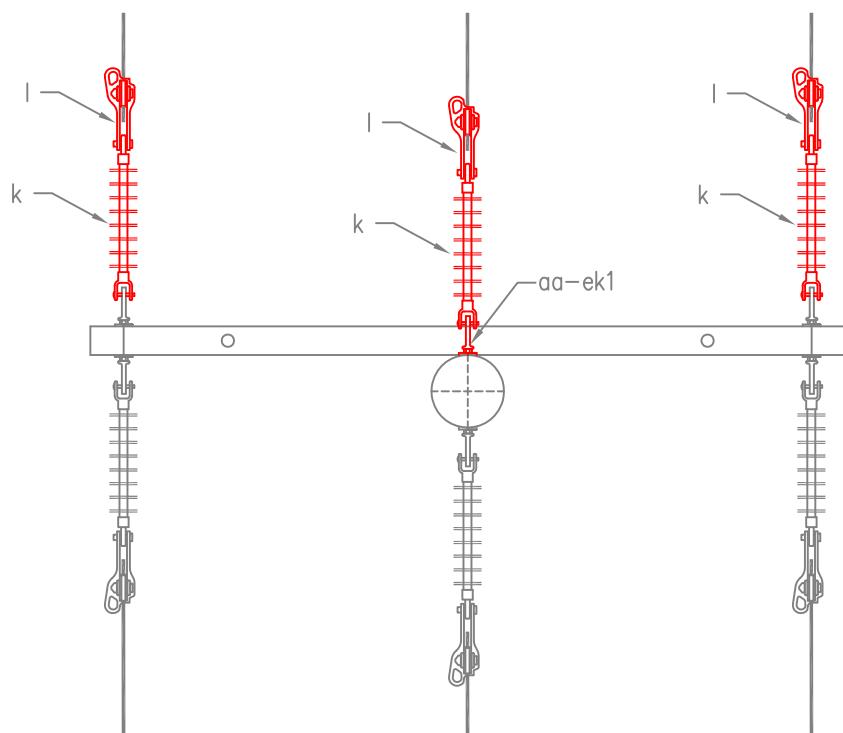
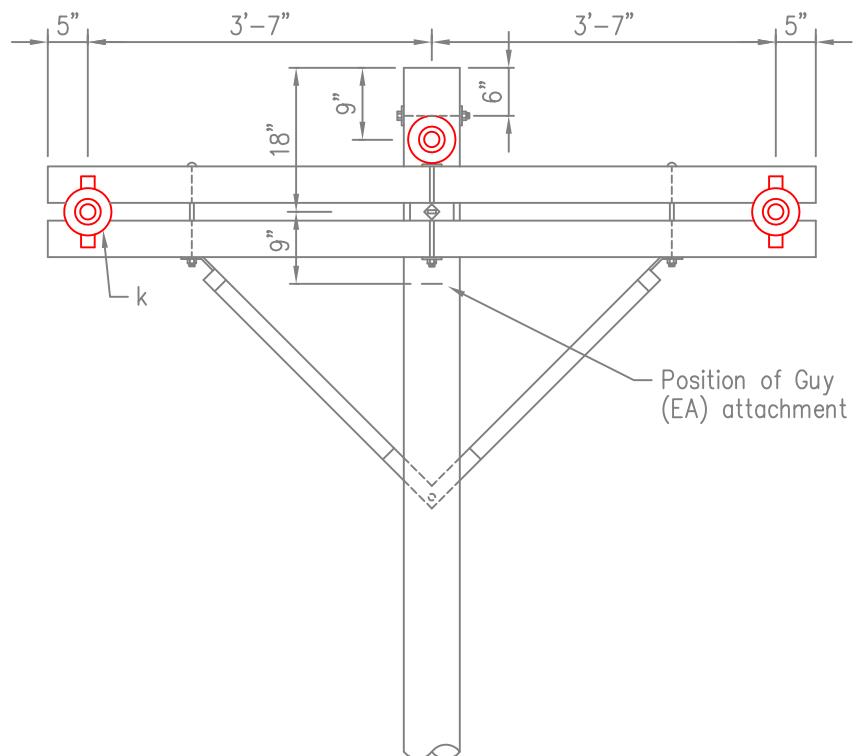
ISSUED	2/04/2008
REVISED	8/12/2011
STANDARD NUMBER	VC7X

ITEM.	QTY.	CATALOG No.	MATERIAL
aa	1	4290-40-63	Nuts, oval eye 5/8"
ek1	1	4290-70-63	Locknuts 5/8"
k	3	3428-60-60	Insulator, polymer suspension
l	3	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

NOTES:

1. If jumpers are run, call for VM5-2 or VM5-5.
2. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine  $\frac{3}{4}$ ".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION DEADEND TAKEOFF FOR SPAN WITH TENSION LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VC7X-LN	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
DEADEND TAKEOFF FOR  
SPAN WITH TENSION  
LESS NEUTRAL

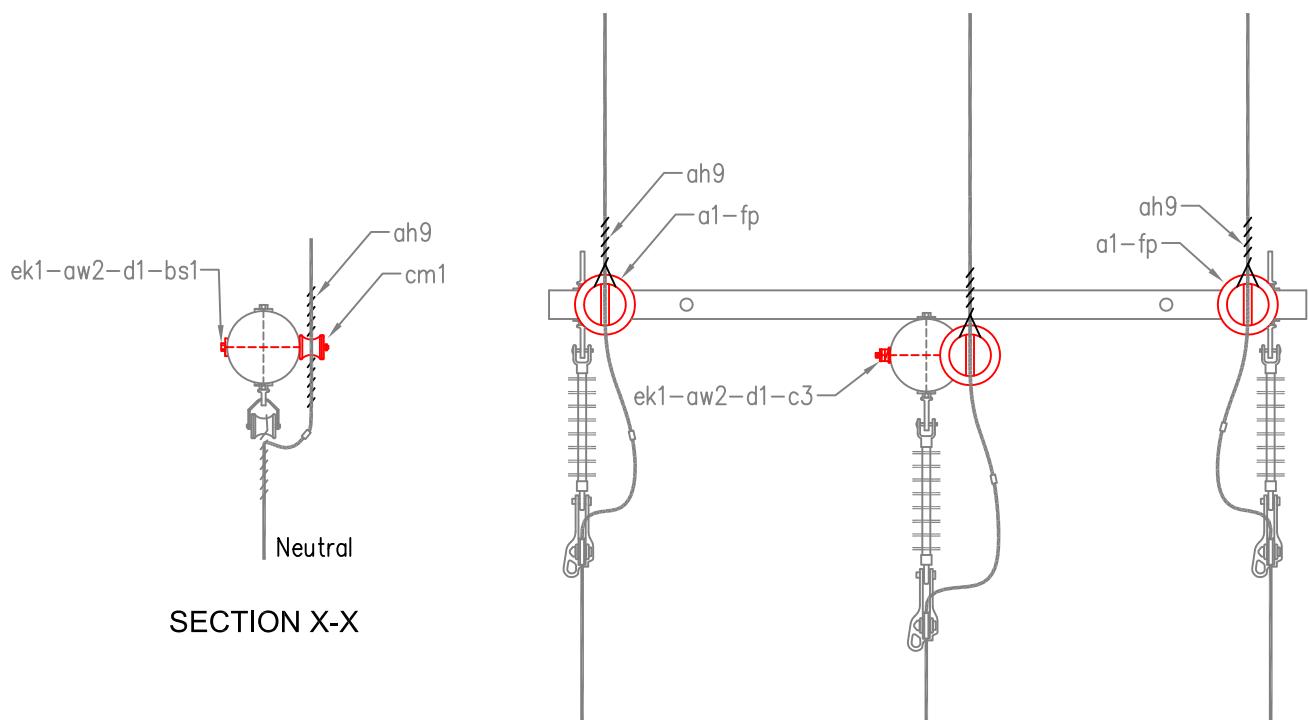
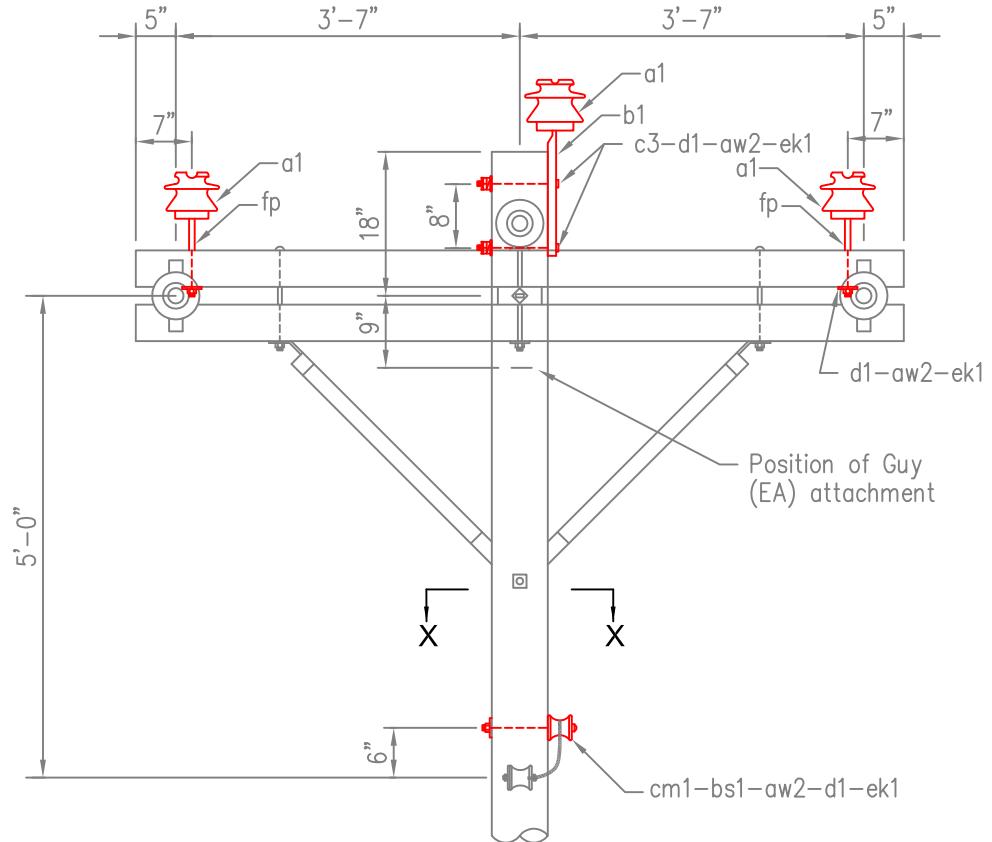
ISSUED 2/04/2008  
REVISED 8/12/2011  
STANDARD NUMBER  
VC7X-LN

ITEM.	QTY.	CATALOG No.	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-44	Neutral deadend tie, (Specify conductor size)
ah9	3	6790-XX-88	Slack span deadend tie, (Specify conductor size)
aw2	5	7108-99-41	Washers, double spring lock, 5/8"
b1	1	4561-23-20	Pin, pole top 14.4
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	2	0638-05-12	Bolts, machine 5/8" X 12"
cm1	1	3426-20-12	Insulator, 3" spool
d1	5	7102-04-91	Washers, square, 5/8"
ek1	5	4290-70-63	Locknuts 5/8"
fp	2	4541-23-13	Pin, crossarm 14.4, phase

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine  $\frac{3}{4}$ ".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION DEADEND TAKEOFF FOR SPAN WITH REDUCED TENSION	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VC7XS	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
DEADEND TAKEOFF FOR  
SPAN WITH REDUCED TENSION

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC7XS

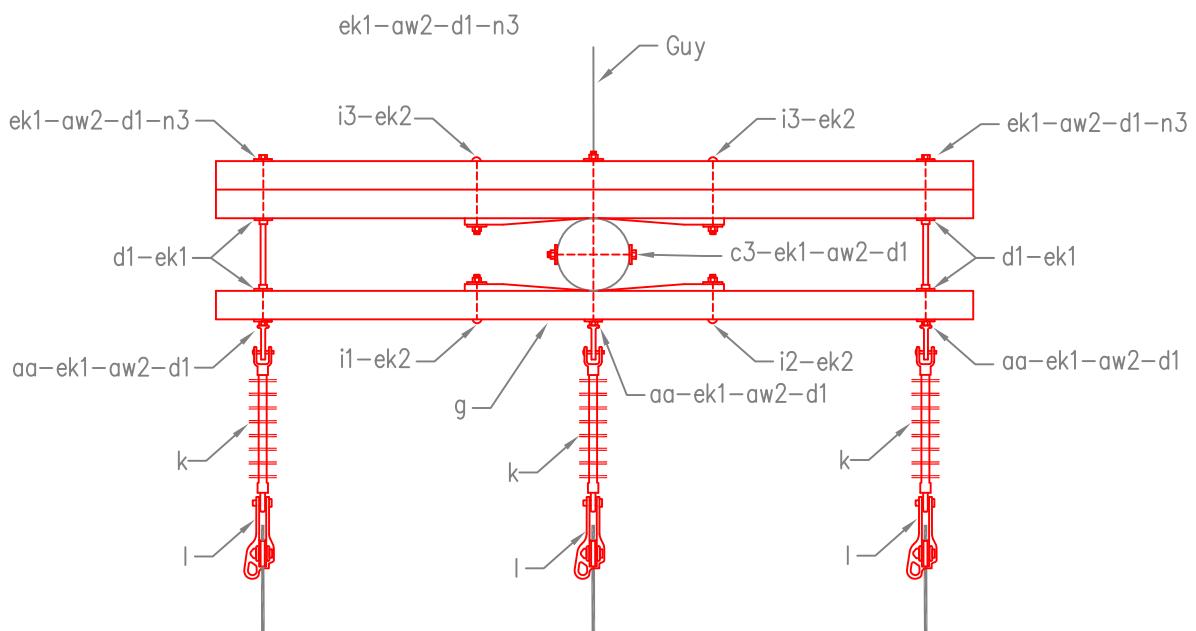
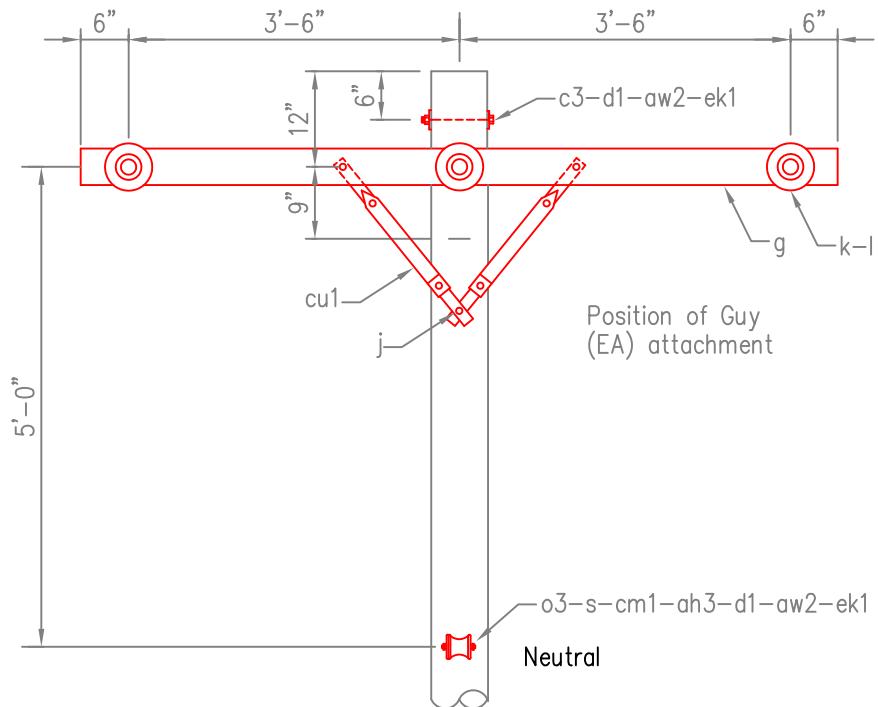
ITM.	QTY.	CATALOG No.	MATERIAL
aa	3	4290-40-63	Nuts, ovaleye 5/8"
ah3	1	6790-XX-44	Neutral deadend tie, (Specify conductor size)
aw2	8	7108-99-41	Washers, double spring lock, 5/8"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	13	7102-04-91	Washers, square, 5/8"
ek1	15	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
g	3	1809-01-01	Crossarm, Wood 8'
i1	2	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
i3	2	0631-03-09	Bolts, carriage 3/8" x 9"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
k	3	3428-60-60	Insulator, polymer suspension
l	3	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
n3	3	0633-05-24	Bolts, DA 5/8" x 24"
o3	1	0636-15-12	Bolts, ovaleye 5/8" x 12"
s	1	1230-19-01	Clevis, swinging (J-6)

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine  $\frac{3}{4}$ ".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

FOR RETIREMENT ONLY

	DATE	REVISION	14.4/24.9 kV, THREE PHASE THREE CROSSARM CONSTRUCTION SINGLE DEADEND	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VC7-1-R



FOR RETIREMENT ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
THREE CROSSARM CONSTRUCTION  
SINGLE DEADEND

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC7-1-R

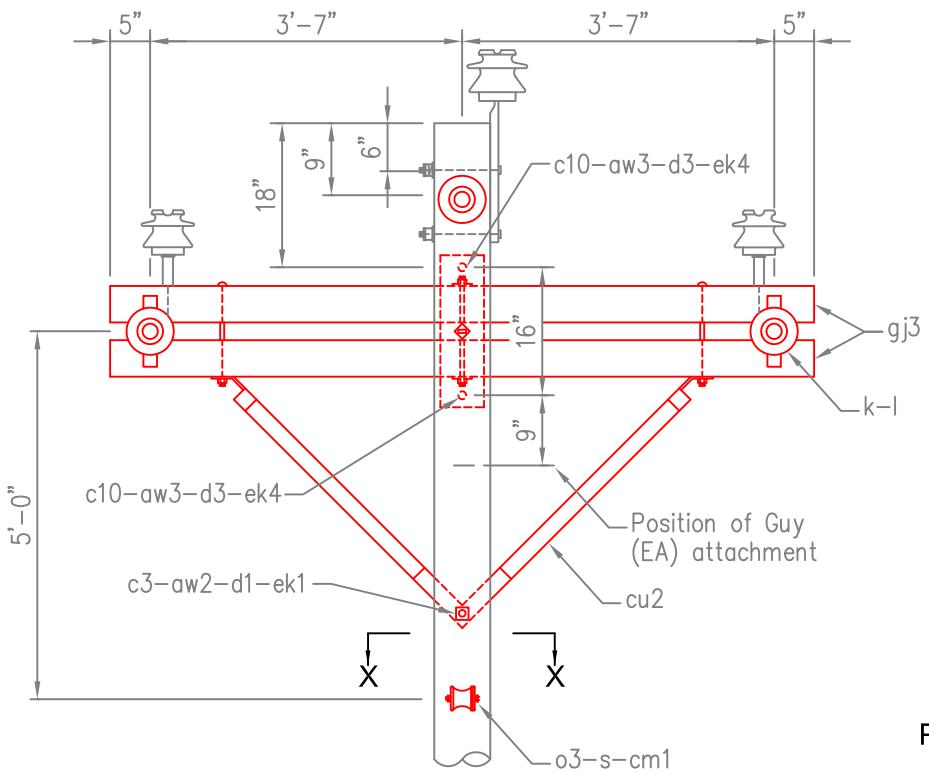
ITEM.	QTY.	CATALOG No.	MATERIAL
aa	2	4290-40-63	Nuts, ovaleye 5/8"
ah3	2	6790-XX-44	Neutral deadend tie, (Specify conductor size)
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washer, double spring lock, 3/4"
c3	1	0638-05-12	Bolts, Machine 5/8" x 12"
cm1	2	3426-20-12	Insulator, 3" spool
cu2	1	0753-51-68	Brace, crossarm 60" span 18" drop (pair)
d1	3	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washer, curved, 3/4"
ek1	5	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
gj1	1	1808-12-03	Hughes regular crossarm, 8' (2890-B)
k	6	3428-60-60	Insulator, polymer suspension
l	6	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o3	2	0636-15-12	Bolts, ovaleye 5/8" x 12"
s	2	1230-19-01	Clevis, swinging (J-6)

NOTES:

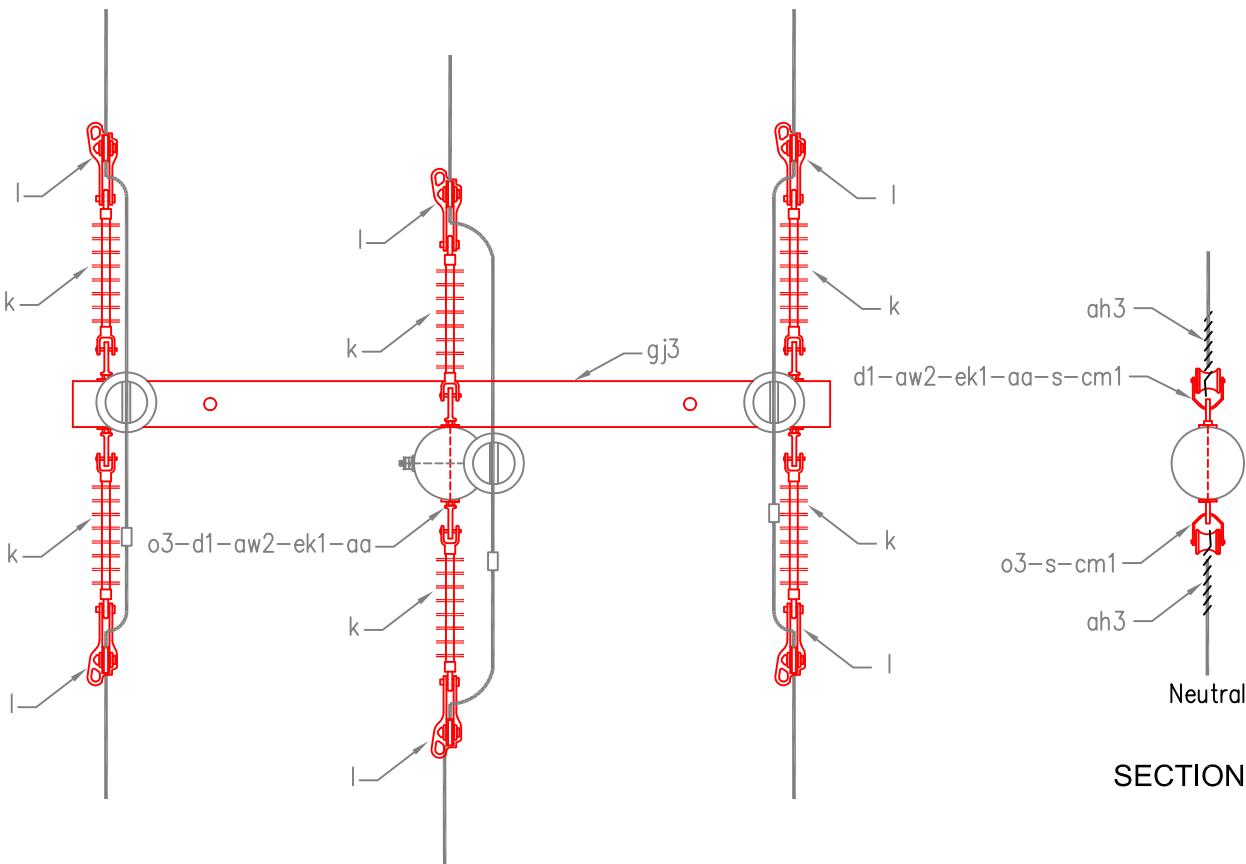
1. If jumpers are run, call for VM5-2 and two VM5-5.
2. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
3. Crossarm braces and mounting hardware are included in the crossarm package.
4. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

FOR RETIREMENT ONLY

	DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION DOUBLE DEADEND STRUCTURE	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VC8A-R



POLE TOP PIN ASSEMBLY



SECTION X-X

**FOR RETIREMENT ONLY**



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
DOUBLE DEADEND STRUCTURE

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC8A-R

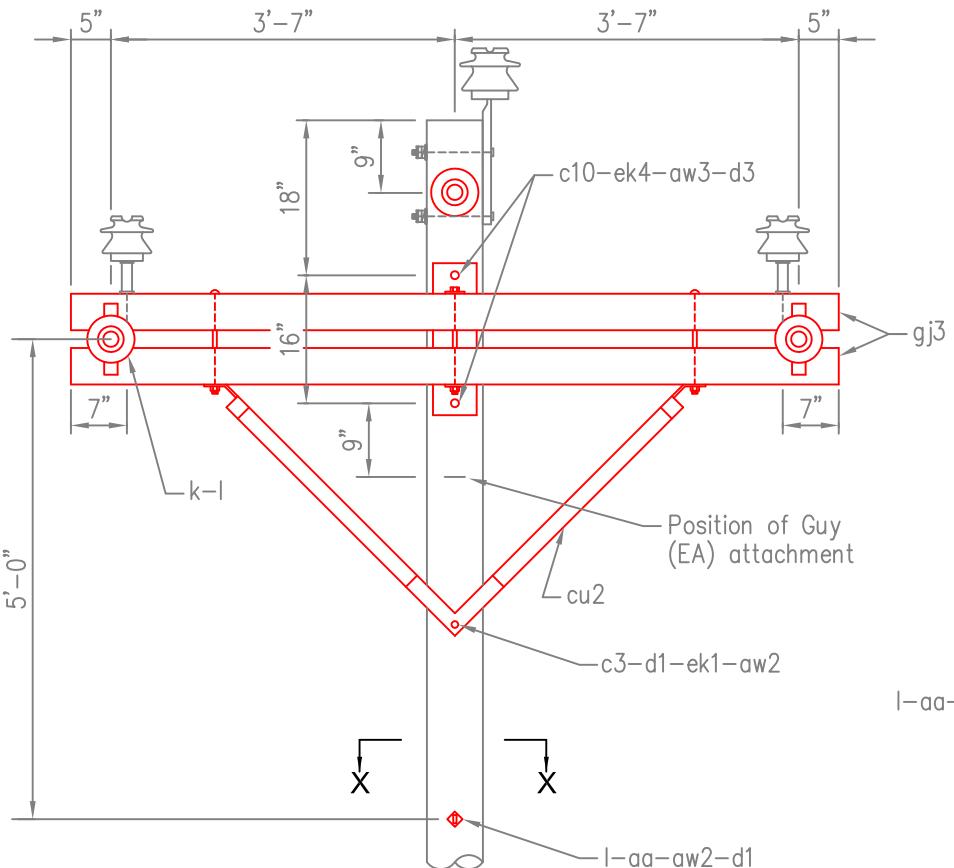
ITM.	QTY.	CATALOG No.	MATERIAL
aa	2	4290-40-63	Nuts, ovaleye 5/8"
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
cu2	1	0753-51-68	Brace, crossarm 60" span 18" drop (pair)
d1	3	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	5	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
gj3	1	1808-12-01	Hughes large crossarm, 8' (2892-A)
k	6	3428-60-60	Insulator, polymer suspension
l	8	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o3	2	0636-15-12	Bolts, ovaleye 5/8" x 12"

NOTES:

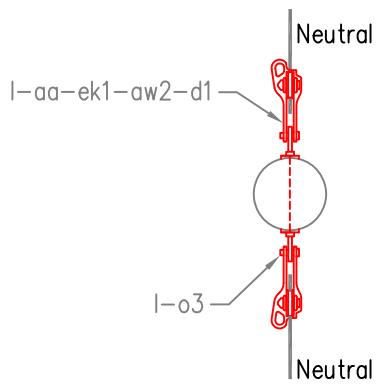
1. If jumpers are run, call for VM5-2 and two VM5-5.
2. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
3. Crossarm braces and mounting hardware are included in the crossarm package.
4. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

FOR RETIREMENT ONLY

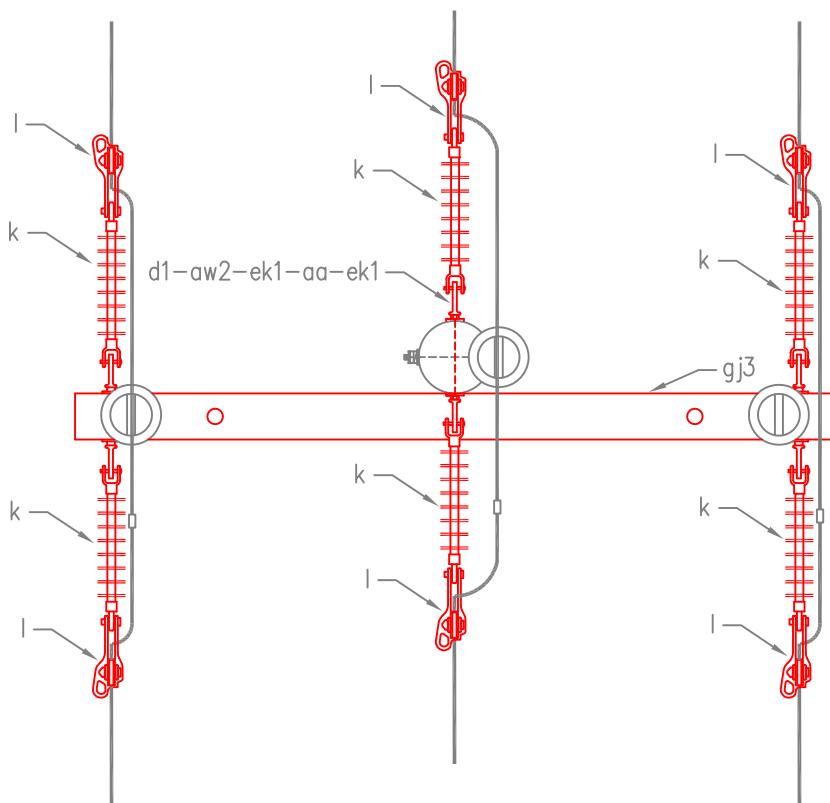
	DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION DOUBLE DEADEND STRUCTURE LARGE CONDUCTOR	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VC8A-L-R	



POLE TOP PIN ASSEMBLY



SECTION X-X



FOR RETIREMENT ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
DOUBLE DEADEND STRUCTURE  
LARGE CONDUCTOR

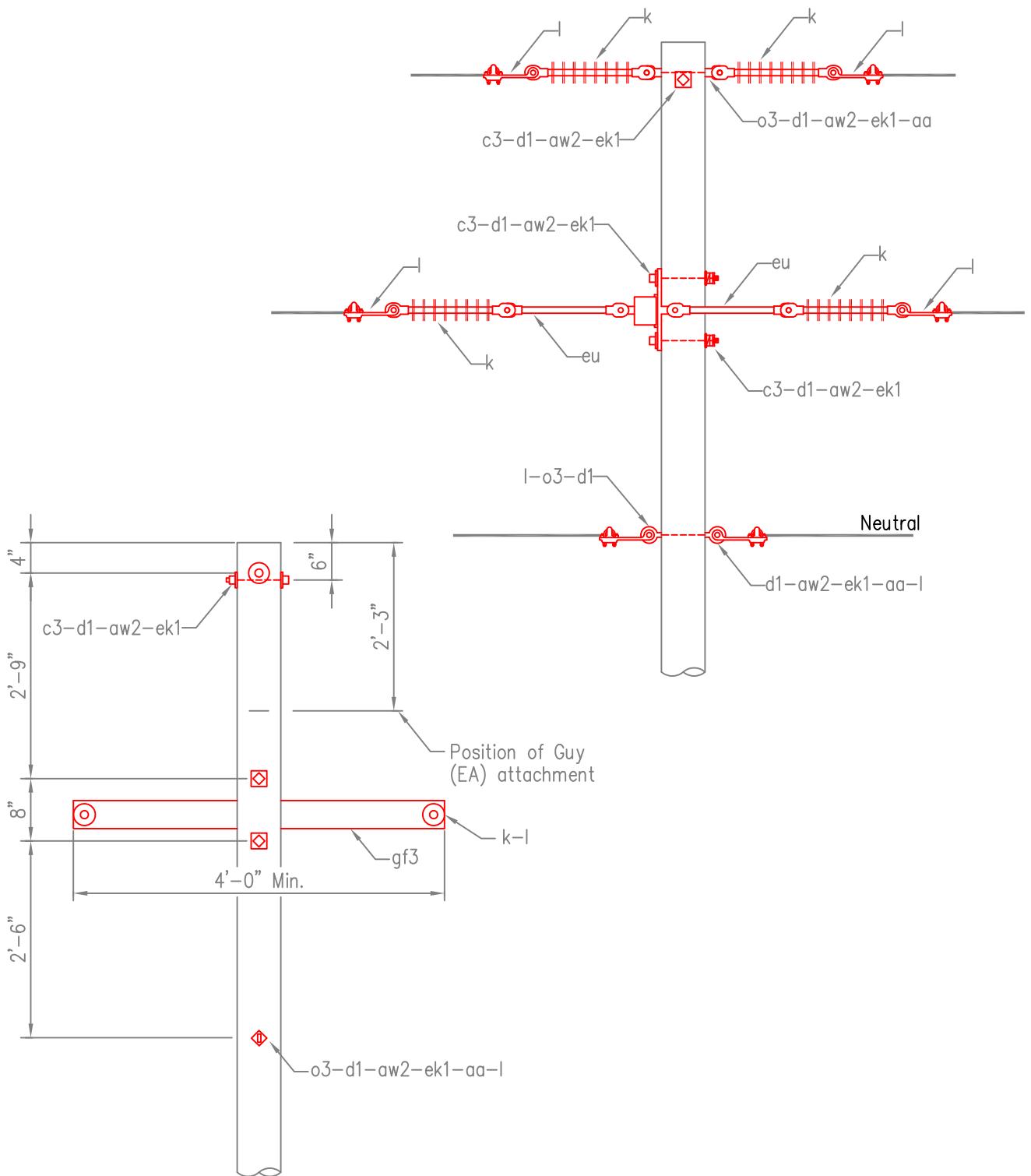
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC8A-L-R

ITM.	QTY.	CATALOG No.	MATERIAL
aa	2	4290-40-63	Nuts, ovaleye 5/8"
aw2	5	7108-99-41	Washers, double spring lock, 5/8"
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
d1	6	7102-04-91	Washers, square, 5/8"
ek1	7	4290-70-63	Locknuts 5/8"
eu	4	3427-70-30	Link, F.G. primary extension, clevis-eye, 12"
gf3	1	1809-09-13	Crossarm, Fiberglass, 48", narrow profile
k	6	3428-60-60	Insulator, polymer suspension
l	8	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o3	2	0636-15-12	Bolts, ovaleye 5/8" x 12"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine  $\frac{3}{4}$ ".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE NARROW PROFILE DOUBLE DEADEND PRIMARY	ISSUED	2/04/2008
				REVISED	8/12/2011
				STANDARD NUMBER	
				VC8N	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
NARROW PROFILE  
DOUBLE DEADEND PRIMARY

ISSUED	2/04/2008
REVISED	8/12/2011
STANDARD NUMBER	VC8N

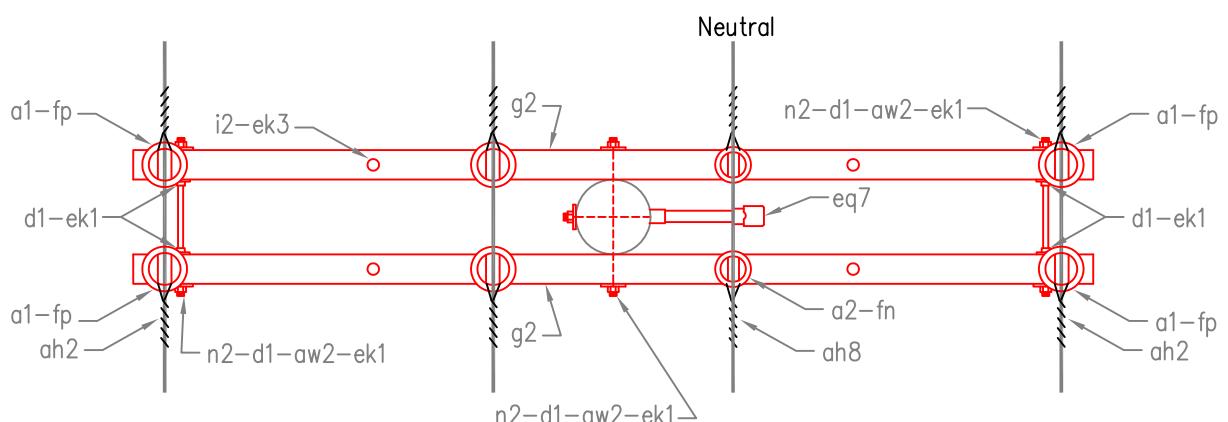
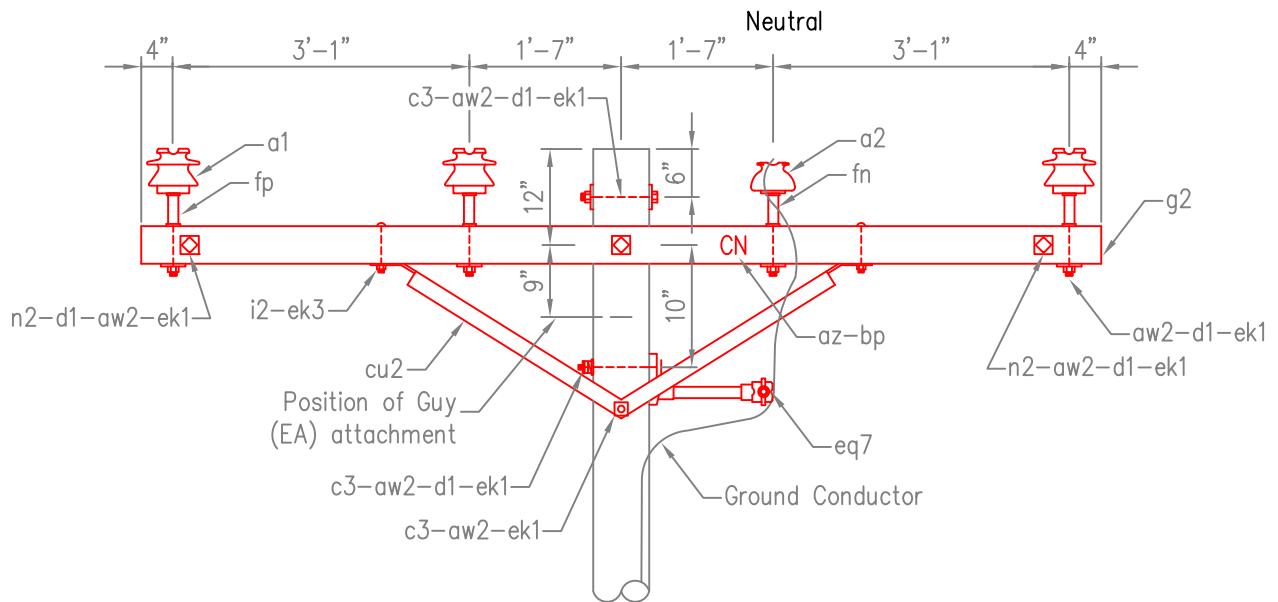
ITM.	QTY.	CATALOG No.	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
a2	2	3422-40-10	Insulator, 7.2 pin, white, 1" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
ah8	1	6790-XX-78	C/F Double support tie (Specify conductor size)
aw2	17	7108-99-41	Washers, double spring lock, 5/8"
az	2	4260-21-04	CN Metal Tag
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
cu2	2	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	21	7102-04-91	Washers, square, 5/8"
ek1	21	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
eq7	1	0780-37-01	Bracket, download standoff, Fiberglass
fn	2	4541-24-11	Pin, crossarm 7.2, neutral
fp	6	4541-23-13	Pin, crossarm 14.4, phase
g2	2	1809-01-03	Crossarm, Wood 10'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. Maximum transverse load: 1000 lbs. per conductor.
2. Maximum line angle within load limits: 20°
3. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
4. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

ENGINEERING APPROVAL ONLY

	DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT	ISSUED	2/04/2008
				REVISED	9/1/2011
				STANDARD NUMBER	VC9



ENGINEERING APPROVAL ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT

ISSUED	2/04/2008
REVISED	9/1/2011
STANDARD NUMBER	VC9

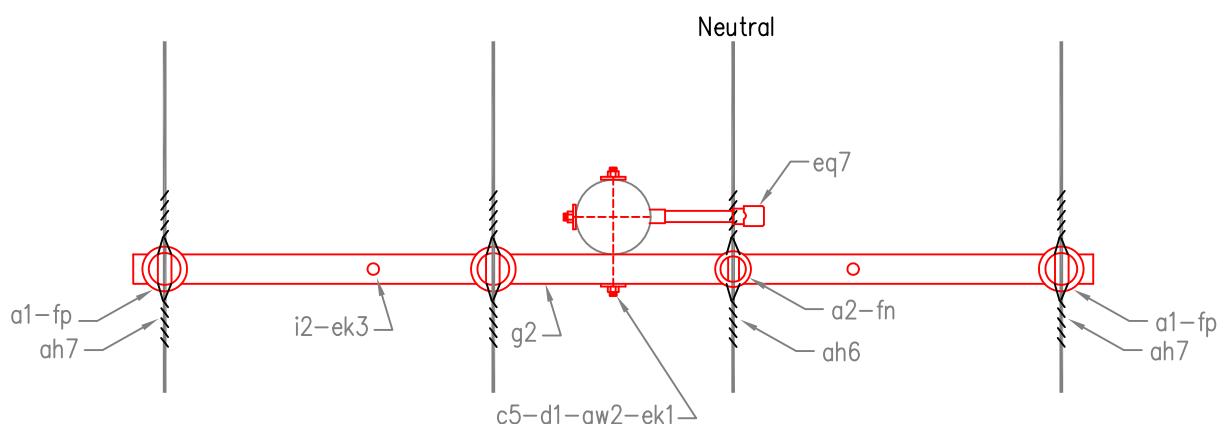
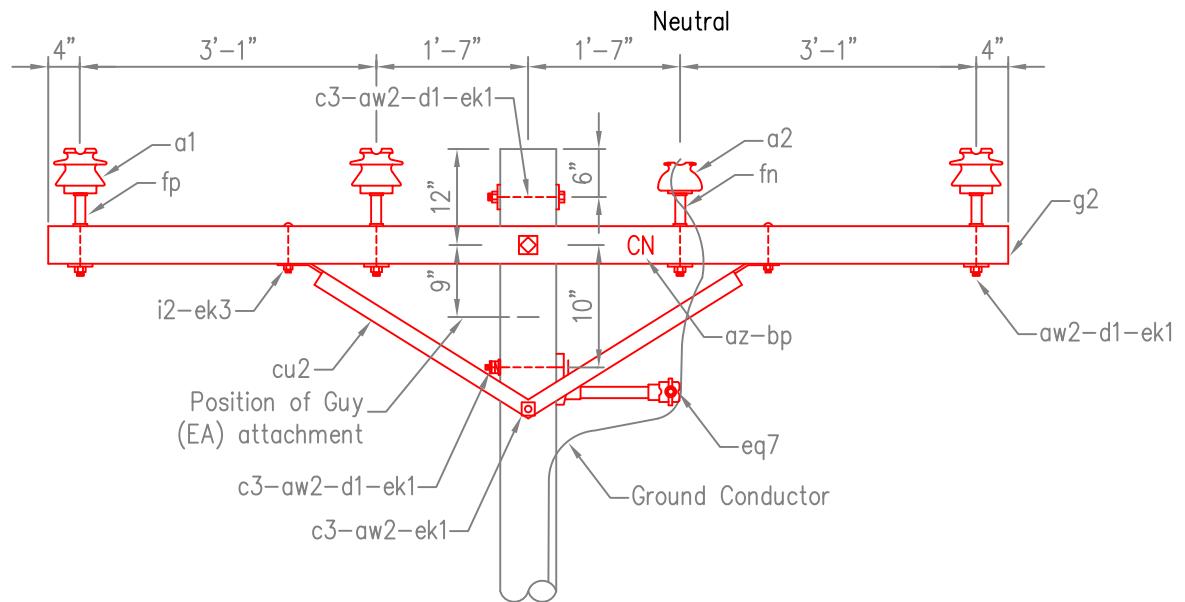
ITM.	QTY.	CATALOG No.	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
a2	1	3422-40-10	Insulator, 7.2 pin, white, 1" internal thread
ah6	1	6790-XX-76	C/F neck wrap lock tie, (Specify conductor size)
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	8	7108-99-41	Washers, double spring lock, 5/8"
az	2	4260-21-04	CN Metal Tag
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
c5	1	0638-05-16	Bolts, machine 5/8" x 16"
cu2	1	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	10	7102-04-91	Washers, square, 5/8"
ek1	8	4290-70-63	Locknuts 5/8"
ek3	2	4290-70-50	Locknuts 1/2"
eq7	1	0780-37-01	Bracket, downlead standoff, Fiberglass
fn	1	4541-24-11	Pin, crossarm 7.2, neutral
fp	3	4541-23-13	Pin, crossarm 14.4, phase
g2	1	1809-01-03	Crossarm, Wood 10'
i2	2	0631-04-06	Bolts, carriage 1/2" x 6"

NOTES:

1. Maximum transverse load: 1000 lbs. per conductor.
2. Maximum line angle within load limits: 20°
3. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
4. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

ENGINEERING APPROVAL ONLY

	DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT	ISSUED	2/04/2008
				REVISED	9/1/2011
				STANDARD NUMBER	VC9-1



ENGINEERING APPROVAL ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
SINGLE PRIMARY SUPPORT

ISSUED	2/04/2008
REVISED	9/1/2011
STANDARD NUMBER	VC9-1

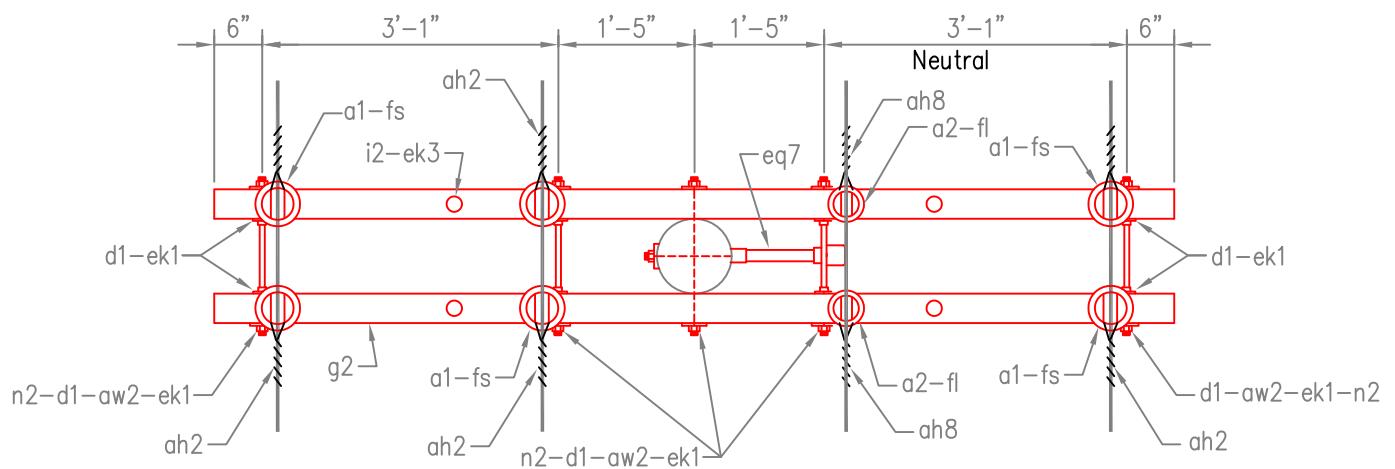
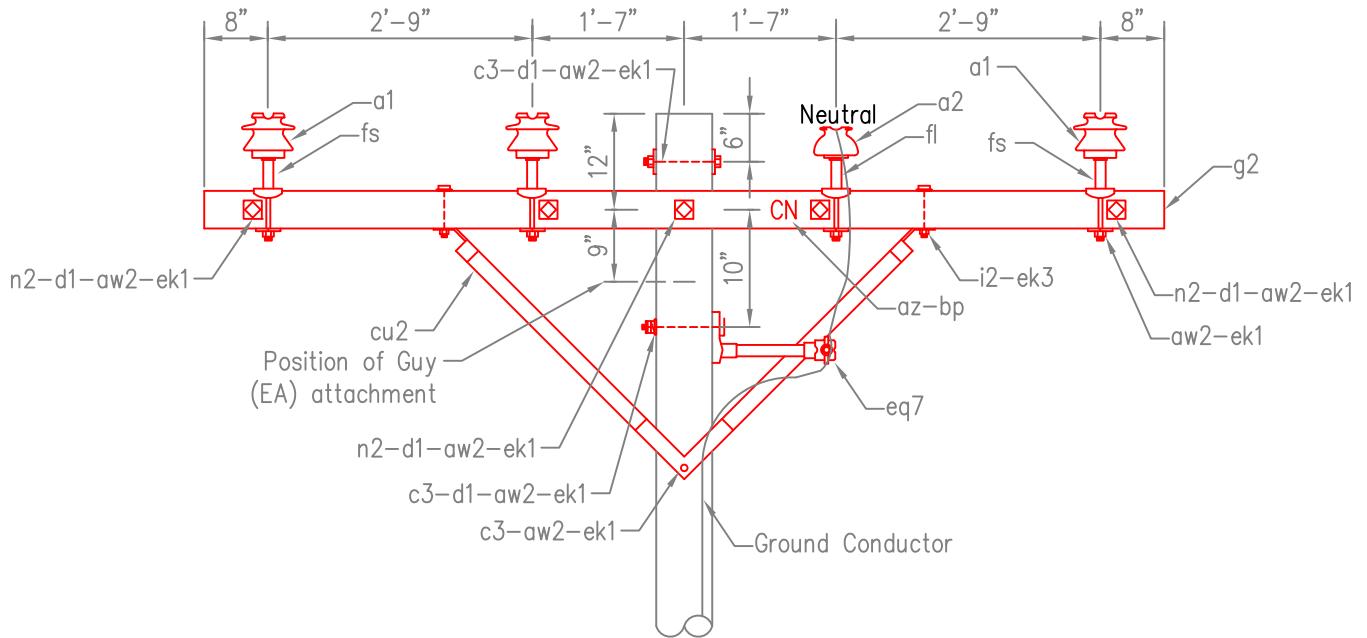
ITM.	QTY.	CATALOG No.	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
a2	2	3422-40-10	Insulator, 7.2 pin, white, 1" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
ah8	1	6790-XX-78	C/F double support tie (Specify conductor size)
aw2	29	7108-99-41	Washers, double spring lock, 5/8"
az	2	4260-21-04	CN Metal Tag
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
cu2	2	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	21	7102-04-91	Washers, square, 5/8"
ek1	37	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
eq7	1	0780-37-01	Bracket, download standoff, Fiberglass
fl	2	4541-14-12	Pin, saddle crossarm 7.2, neutral
fs	6	4541-11-13	Pin, saddle crossarm 14.4, phase
g2	2	1809-01-03	Crossarm, Wood 10'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
n2	5	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. Maximum transverse load: 1000 lbs. per conductor.
2. Maximum line angle within load limits: 20°
3. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
4. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

ENGINEERING APPROVAL ONLY

	DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT 0° TO 5° ANGLE	ISSUED	2/04/2008
				REVISED	9/1/2011
				STANDARD NUMBER	VC9-2



## **ENGINEERING APPROVAL ONLY**



**14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT  
0° TO 5° ANGLE**

ISSUED 2/04/2008

REVISED 9/1/2011

**STANDARD NUMBER**

VC9-2

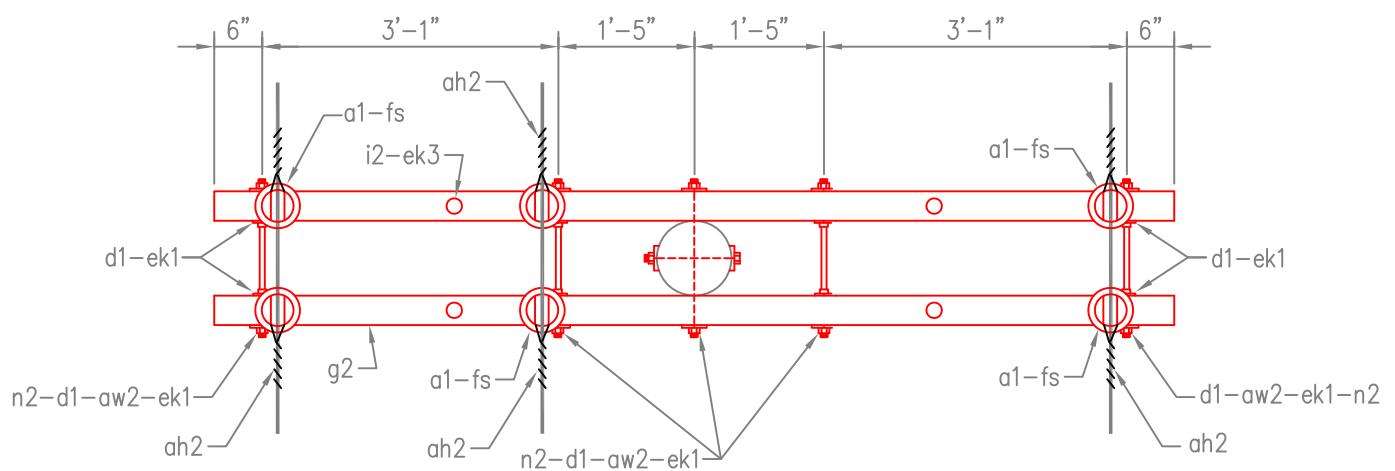
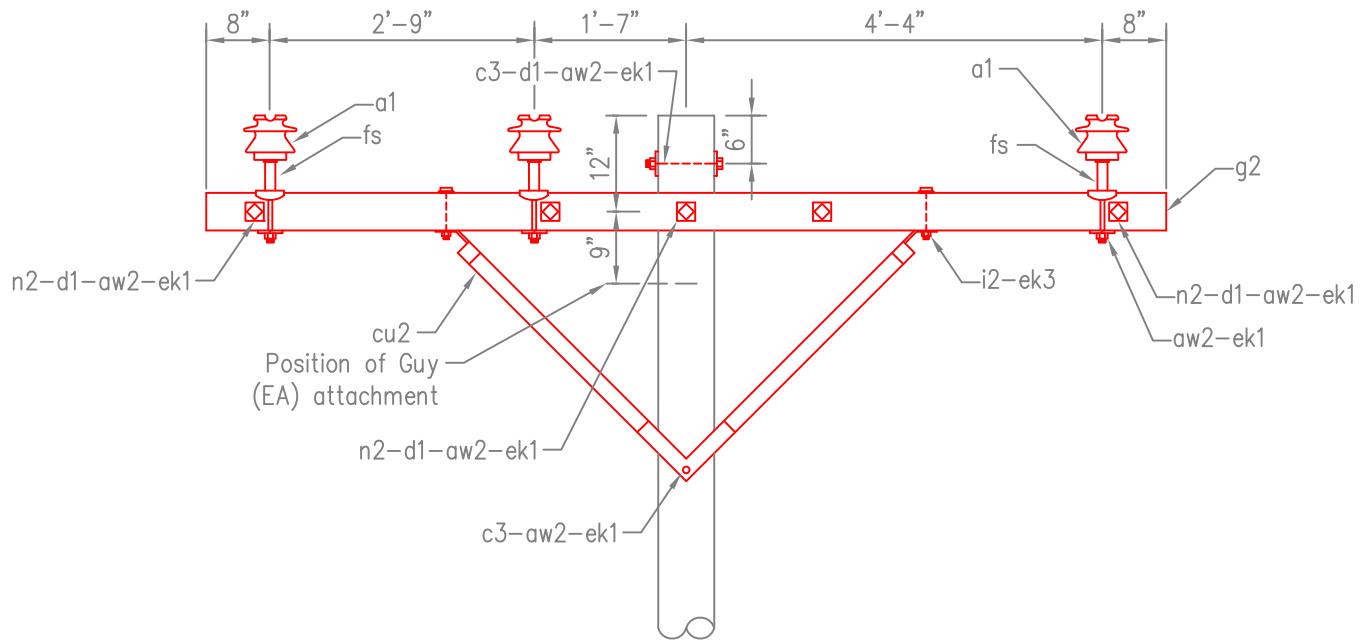
ITM.	QTY.	CATALOG No.	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
aw2	29	7108-99-41	Washers, double spring lock, 5/8"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cu2	2	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	21	7102-04-91	Washers, square, 5/8"
ek1	32	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
fs	6	4541-11-13	Pin, saddle crossarm 14.4, phase
g2	2	1809-01-03	Crossarm, Wood 10'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
n2	5	0633-05-22	Bolts, DA 5/8" x 22"

NOTES:

1. Maximum transverse load: 1000 lbs. per conductor.
2. Maximum line angle within load limits: 20°
3. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
4. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT 0° TO 5° ANGLE LESS NEUTRAL	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VC9-2-LN



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT  
0° TO 5° ANGLE  
LESS NEUTRAL

ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VC9-2-LN

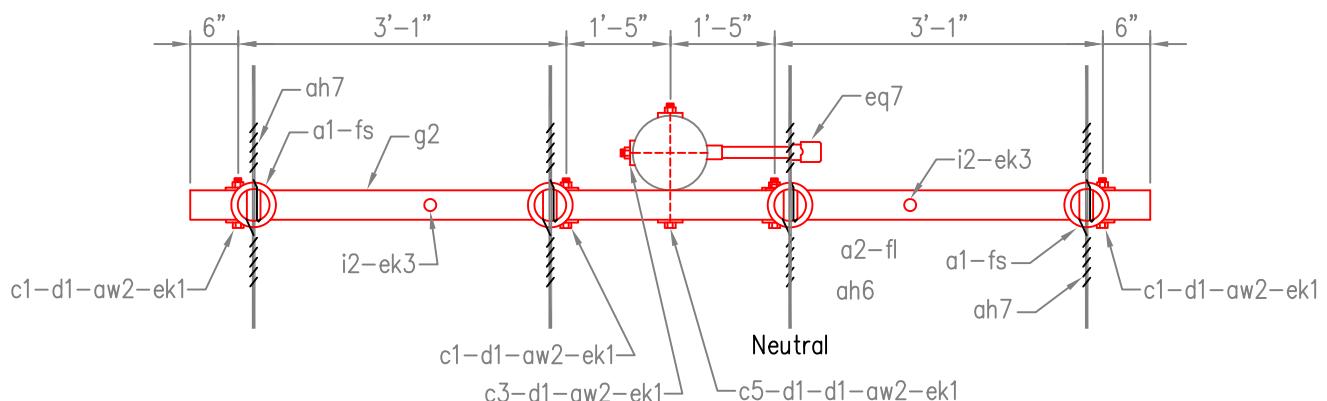
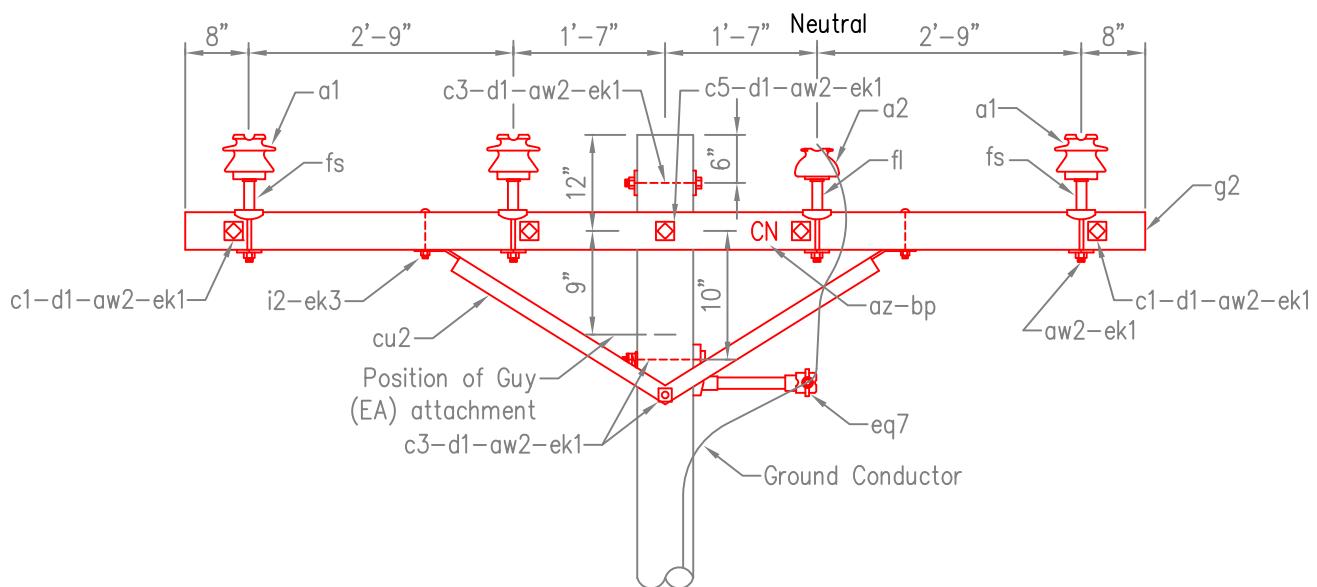
ITM.	QTY.	CATALOG No.	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
a2	1	3422-40-10	Insulator, 7.2 pin, white, 1" internal thread
ah6	1	6790-XX-76	C/F neck wrap lock tie, (Specify conductor size)
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	16	7108-99-41	Washers, double spring lock, 5/8"
az	2	4260-21-04	CN Metal Tag
c1	4	0638-05-06	Bolts, machine 5/8" x 6"
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
c5	1	0638-05-16	Bolts, machine 5/8" x 16"
cu2	1	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	14	7102-04-91	Washers, square, 5/8"
ek1	16	4290-70-63	Locknuts 5/8"
ek3	2	4290-70-50	Locknuts 1/2"
eq7	1	0780-37-01	Bracket, download standoff, Fiberglass
fl	1	4541-14-12	Pin, saddle crossarm 7.2, neutral
fs	3	4541-11-13	Pin, saddle crossarm 14.4, phase
g2	1	1809-01-03	Crossarm, Wood 10'
i2	2	0631-04-06	Bolts, carriage 1/2" x 6"

NOTES:

1. Maximum transverse load: 1000 lbs. per conductor.
2. Maximum line angle within load limits: 20°
3. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
4. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

ENGINEERING APPROVAL ONLY

	DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT LARGE CONDUCTORS	ISSUED	2/04/2008
				REVISED	9/1/2011
				STANDARD NUMBER	VC9-3



ENGINEERING APPROVAL ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
SINGLE PRIMARY SUPPORT  
LARGE CONDUCTORS

ISSUED	2/04/2008
REVISED	9/1/2011
STANDARD NUMBER	VC9-3

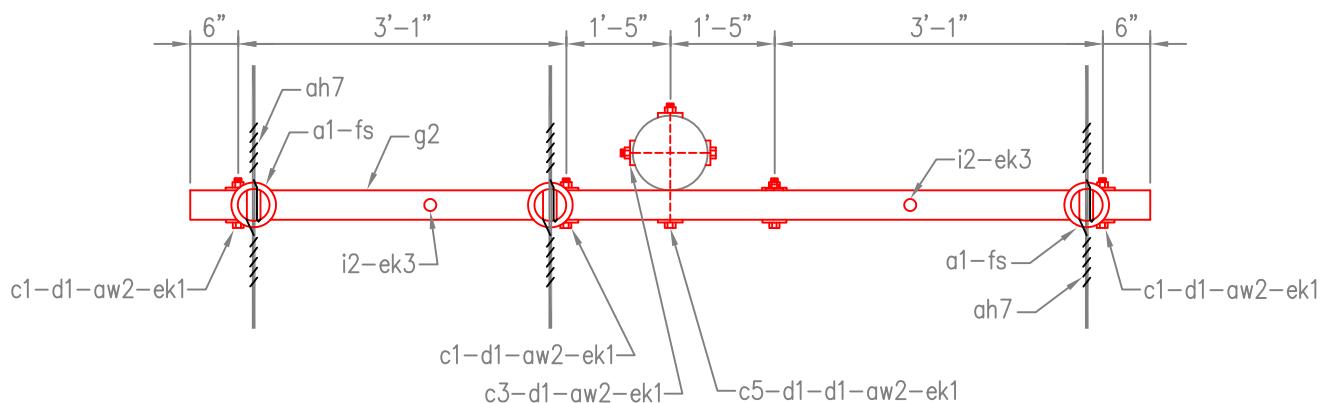
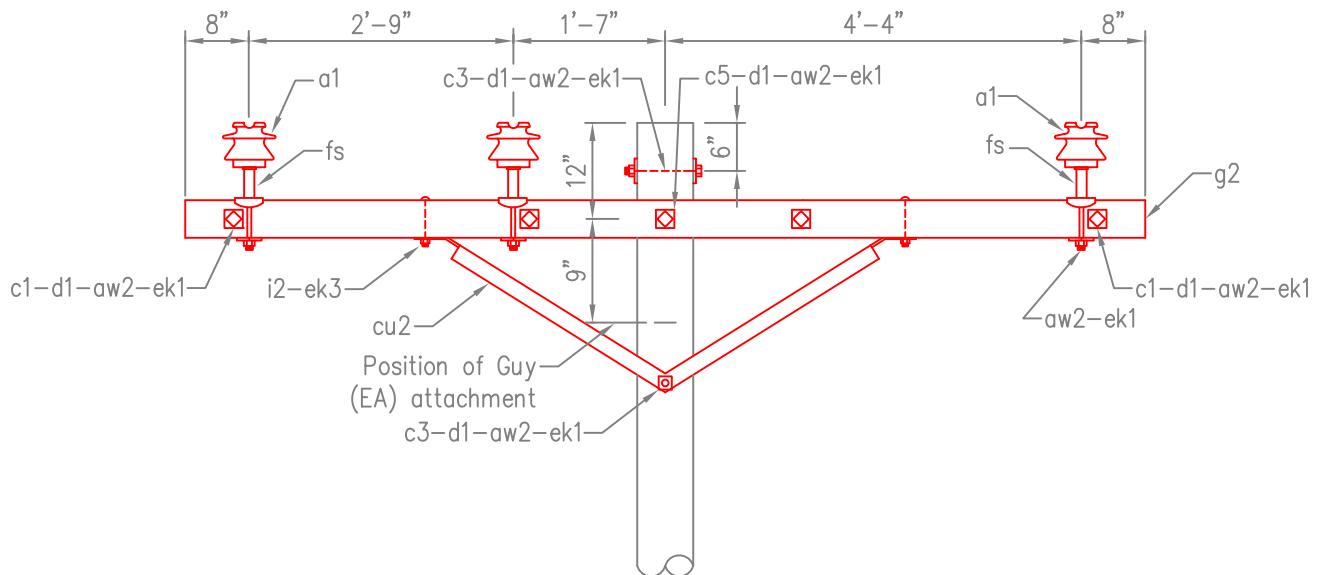
ITEM.	QTY.	CATALOG No.	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	13	7108-99-41	Washers, double spring lock, 5/8"
c1	4	0638-05-06	Bolts, machine 5/8" x 6"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c5	1	0638-05-16	Bolts, machine 5/8" x 16"
cu2	1	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	13	7102-04-91	Washers, square, 5/8"
ek1	13	4290-70-63	Locknuts 5/8"
ek3	2	4290-70-50	Locknuts 1/2"
fs	3	4541-11-13	Pin, saddle crossarm 14.4, phase
g2	1	1809-01-03	Crossarm, Wood 10'
i2	2	0631-04-06	Bolts, carriage 1/2" x 6"

NOTES:

1. Maximum transverse load: 1000 lbs. per conductor.
2. Maximum line angle within load limits: 20°
3. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
4. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT LARGE CONDUCTORS LESS NEUTRAL	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VC9-3-LN



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
SINGLE PRIMARY SUPPORT  
LARGE CONDUCTORS  
LESS NEUTRAL

ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VC9-3-LN

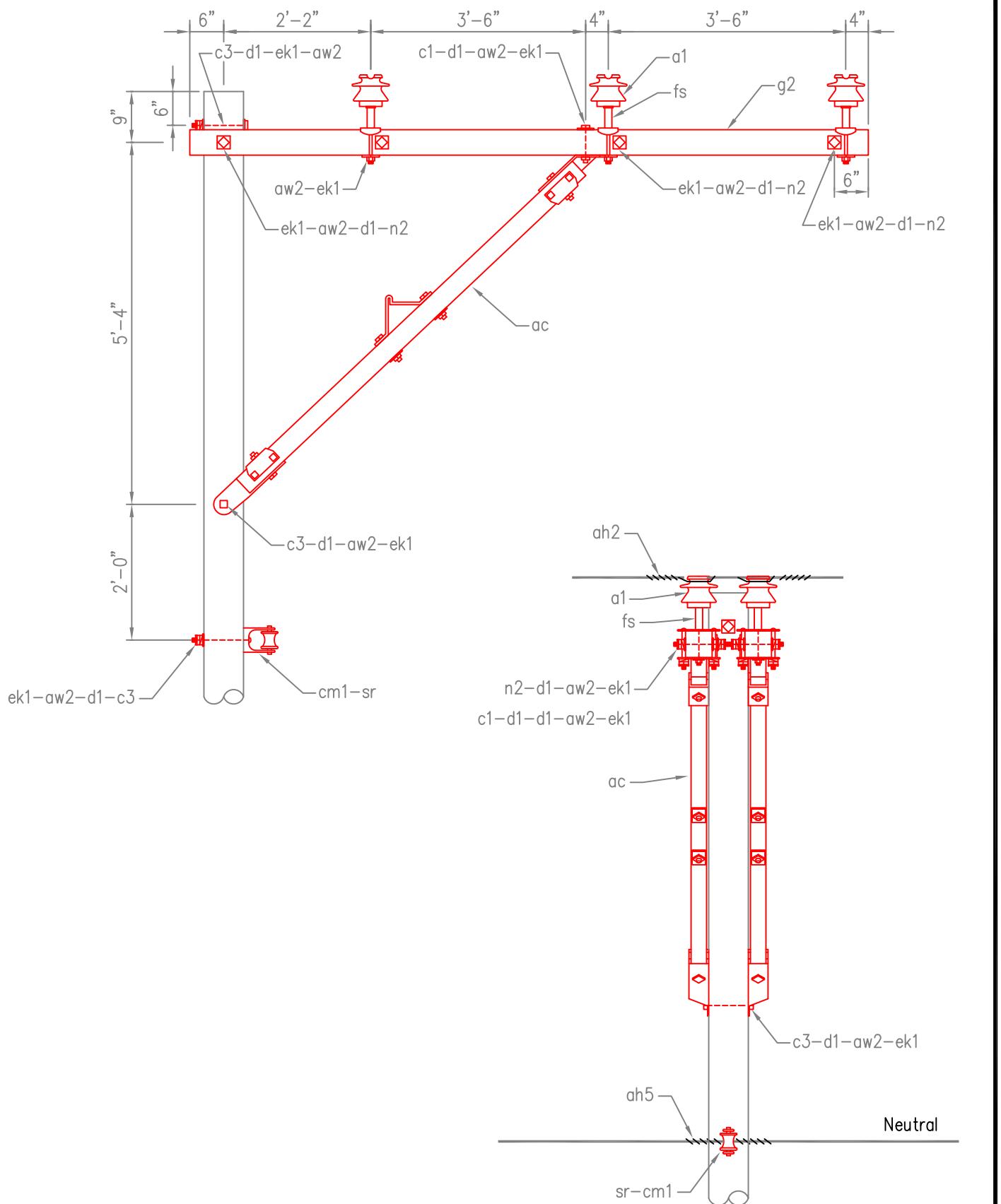
ITM.	QTY.	CATALOG No.	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ac	2	0755-51-84	Brace, alley arm, 84" (Special Order)
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	25	7108-99-41	Washers, double spring lock, 5/8"
c1	2	0638-05-06	Bolts, machine 5/8" x 6"
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
d1	19	7102-04-91	Washers, square, 5/8"
ek1	31	4290-70-63	Locknuts 5/8"
fs	6	4541-11-13	Pin, saddle crossarm 14.4, phase
g2	2	1809-01-03	Crossarm, Wood 10'
n2	4	0633-05-22	Bolts, DA 5/8" x 22"
sr	1	1230-17-01	Clevis, rigid (D-bracket)

NOTES:

1. Use of any alley arm assembly must be determined on a case by case basis. Each case will be designed based on conductor size, span length, & other design parameters.
2. For 42" phase spacing on circuit:  
#2 or larger maximum sag limit = 225"  
Smaller than #2 maximum sag limit = 96"
3. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
4. Crossarm braces and mounting hardware are included in the crossarm package.
5. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT ALLEY ARM	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VC33-7



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT  
ALLEY ARM

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC33-7

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# **Tab VABC-F**

# **Tab VABC-F**

**INDEX VABC-F****1, 2 & 3 PHASE FIBERGLASS FOR WOOD POLE TOP ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
VA7A-F	SINGLE DEADEND – FIBERGLASS CROSSARM
VA8A-F	DOUBLE DEADEND – FIBERGLASS CROSSARM
VA9-F	DOUBLE SUPPORT – FIBERGLASS CROSSARM - TANGENT
VA9-1-F	SINGLE SUPPORT – FIBERGLASS CROSSARM - TANGENT
VB1-F	SINGLE SUPPORT – TANGENT – FIBERGLASS
VB1-LN-F	SINGLE SUPPORT – LESS NEUTRAL TANGENT – FIBERGLASS
VB1-1-F	DOUBLE SUPPORT – TANGENT – FIBERGLASS
VB2-F	DOUBLE SUPPORT – MEDIUM ANGLE 5° TO 30° – FIBERGLASS
VB7A-F	SINGLE DEADEND – FIBERGLASS CROSSARM
VB7A-LN-F	SINGLE DEADEND – FIBERLASS CROSSARM LESS NEUTRAL
VB7AXS-F	2Ø TAKE OFF FROM 2Ø DEADEND WITH REDUCED TENSION – FIBERLASS
VB7AXS-LN-F	2Ø TAKE OFF FROM 2Ø DEADEND WITH REDUCED TENSION – FIBERLASS LESS NEUTRAL
VB8A-F	DOUBLE DEADEND – FIBERGLASS CROSSARM
VB8A-LN-F	DOUBLE DEADEND – FIBERGLASS CROSSARM – LESS NEUTRAL
VB9-F	DOUBLE SUPPORT CROSSARM – TANGENT NEUTRAL ON FIBERGLASS CROSSARM (ENGINEERING APPROVAL ONLY)
VB9-1-F	SINGLE SUPPORT CROSSARM – TANGENT NEUTRAL ON FIBERGLASS CROSSARM (ENGINEERING APPROVAL ONLY)
VC1-F	SINGLE SUPPORT – TANGENT – FIBERGLASS
VC1-LN-F	SINGLE SUPPORT – LESS NEUTRAL TANGENT – FIBERGLASS

**INDEX VABC-F (cont.)**

**1, 2 & 3 PHASE FIBERGLASS FOR WOOD POLE TOP ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
VC1-10-F	SINGLE SUPPORT – TANGENT – 10' FIBERGLASS CROSSARM
VC1-10-LN-F	SINGLE SUPPORT – TANGENT – 10' FIBERGLASS CROSSARM LESS NEUTRAL
VC1-1-F	DOUBLE SUPPORT – TANGENT – FIBERGLASS
VC1-1-LN-F	DOUBLE SUPPORT – TANGENT – FIBERGLASS CROSSARM LESS NEUTRAL
VC1-1-10-F	DOUBLE SUPPORT – TANGENT – 10' FIBERGLASS CROSSARM
VC1-1-10-LN-F	DOUBLE SUPPORT – TANGENT – 10' FIBERGLASS CROSSARM LESS NEUTRAL
VC2-F	DOUBLE SUPPORT – MEDIUM ANGLE 5° TO 30° – FIBERGLASS CROSSARM
VC2-10-F	DOUBLE SUPPORT – MEDIUM ANGLE 5° TO 30° – 10' FIBERGLASS CROSSARM
VC2-1-F	DOUBLE SUPPORT – MEDIUM ANGLE 5° TO 30° – FIBERGLASS CROSSARM
VC7A-F	SINGLE DEADEND – FIBERGLASS CROSSARM
VC7A-LN-F	SINGLE DEADEND – FIBERGLASS CROSSARM LESS NEUTRAL
VC7A-10-F	SINGLE DEADEND – 10' FIBERGLASS CROSSARM (ENGINEERING APPROVAL ONLY)
VC7A-10-LN-F	SINGLE DEADEND – 10' FIBERGLASS CROSSARM LESS NEUTRAL
VC7A-12-F	SINGLE DEADEND – 12' FIBERGLASS CROSSARM (ENGINEERING APPROVAL ONLY)
VC7A-12-LN-F	SINGLE DEADEND – 12' FIBERGLASS CROSSARM LESS NEUTRAL
VC7AXS-F	3Ø TAKE OFF FROM 3Ø DEADEND WITH REDUCED TENSION – FIBERGLASS CROSSARM

**INDEX VABC-F (cont.)**

**1, 2 & 3 PHASE FIBERGLASS FOR WOOD POLE TOP ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
VC7AXS-10-LN-F	3Ø TAKE OFF FROM 3Ø DEADEND WITH REDUCED TENSION – 10' FIBERGLASS CROSSARM LESS NEUTRAL
VC8A-F	DOUBLE DEADEND – FIBERGLASS CROSSARM
VC8A-LN-F	DOUBLE DEADEND – FIBERGLASS CROSSARM LESS NEUTRAL
VC9-F	DOUBLE SUPPORT CROSSARM – TANGENT NEUTRAL ON FIBERGLASS CROSSARM (ENGINEERING APPROVAL ONLY)
VC9-LN-F	DOUBLE SUPPORT CROSSARM – TANGENT NEUTRAL ON FIBERGLASS CROSSARM LESS NEUTRAL
VC9-1-F	SINGLE SUPPORT CROSSARM – TANGENT NEUTRAL ON FIBERGLASS CROSSARM (ENGINEERING APPROVAL ONLY)
VC9-1-LN-F	SINGLE SUPPORT CROSSARM – TANGENT NEUTRAL ON FIBERGLASS CROSSARM LESS NEUTRAL

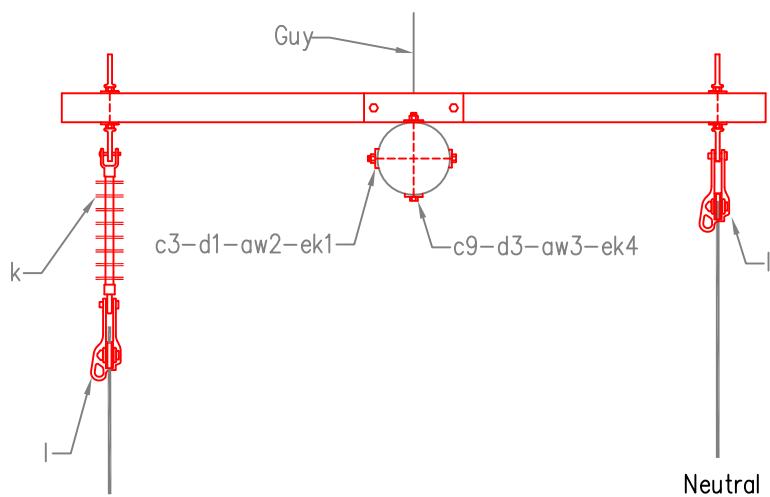
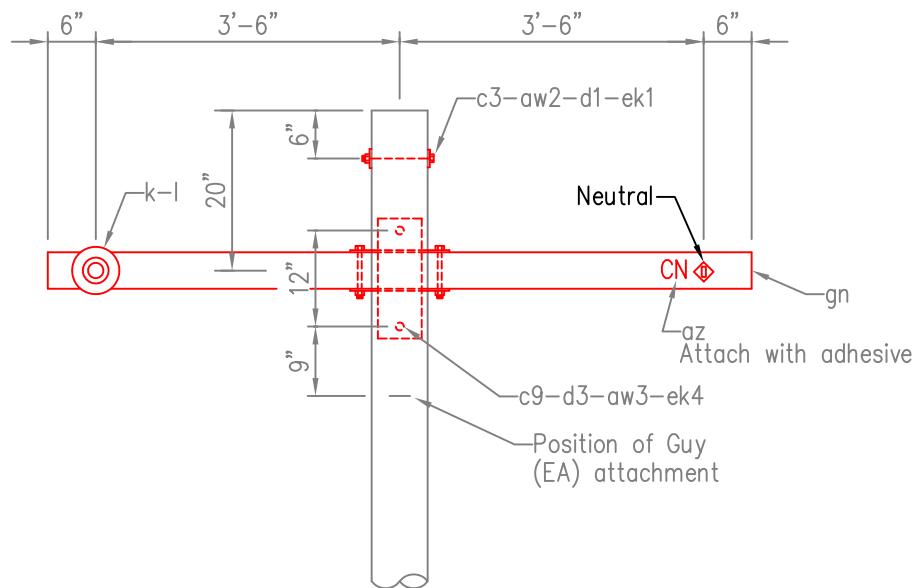
ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
az	2	4285-10-01	CN Stick-On Tag
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
d1	2	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	1	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
gn	1	1809-09-08	Crossarm, Fiberglass 8' DA 3000-96
k	1	3428-60-60	Insulator, polymer suspension
l	2	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, SINGLE PHASE FIBERGLASS CROSSARM CONSTRUCTION DEADEND STRUCTURE (SINGLE DEADEND)	ISSUED	2/04/2008
			REVISED	7/27/2011
			STANDARD NUMBER	
				VA7A-F



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND STRUCTURE  
(SINGLE DEADEND)

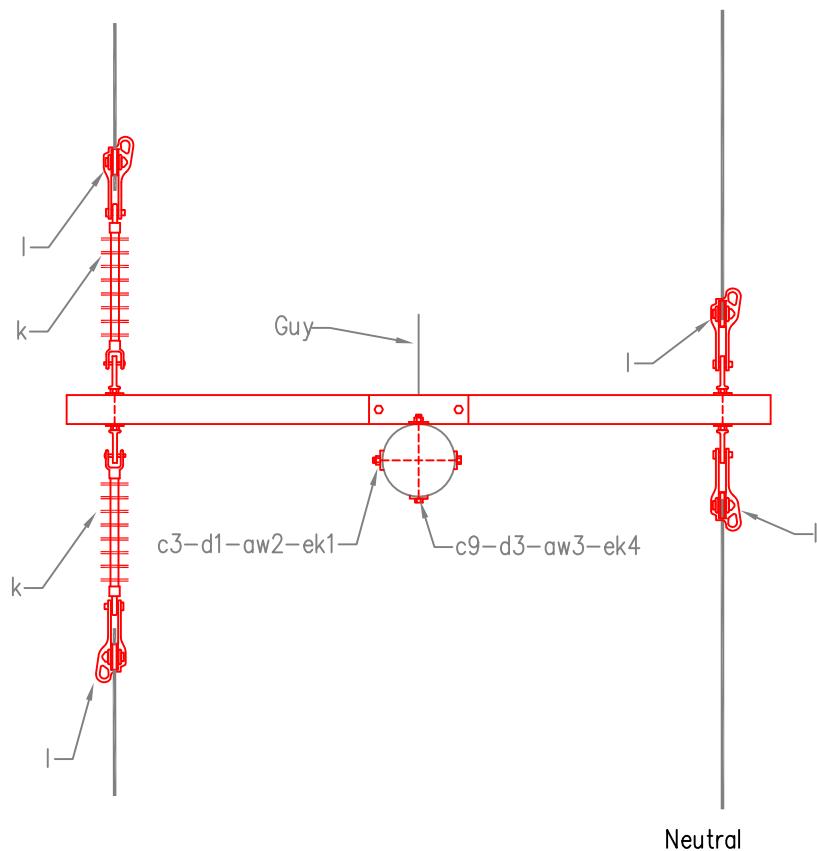
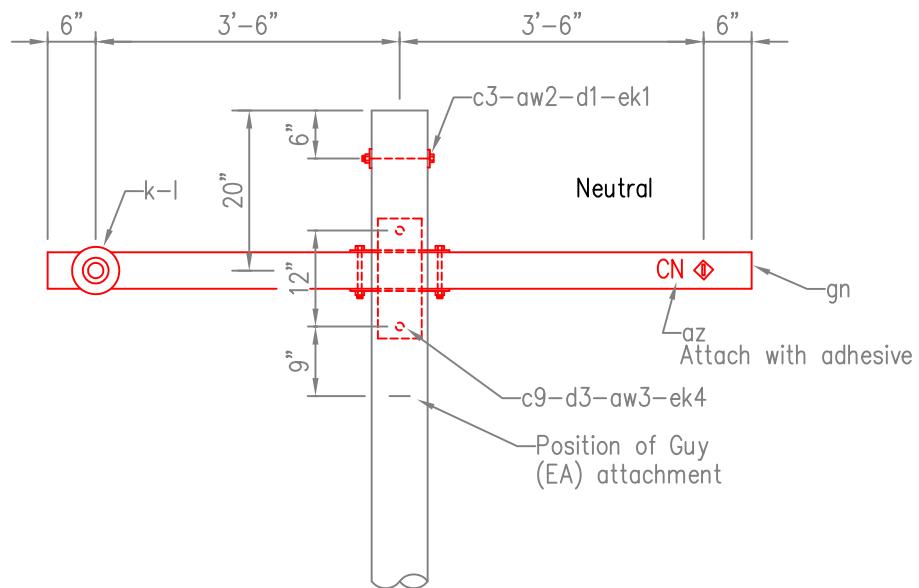
ISSUED	2/04/2008
REVISED	7/27/2011
STANDARD NUMBER	VA7A-F

ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
az	2	4285-10-01	CN Stick-On Tag
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
d1	2	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	1	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
gn	1	1809-09-08	Crossarm, Fiberglass 8' DA 3000-96
k	2	3428-60-60	Insulator, polymer suspension
l	4	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, SINGLE PHASE FIBERGLASS CROSSARM CONSTRUCTION DEADEND STRUCTURE (DOUBLE DEADEND)	ISSUED	2/04/2008
				REVISED	7/27/2011
				STANDARD NUMBER	
				VA8A-F	



DATE	REVISION

14.4/24.9 kV, SINGLE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND STRUCTURE  
(DOUBLE DEADEND)

ISSUED	2/04/2008
REVISED	7/27/2011
STANDARD NUMBER	VA8A-F

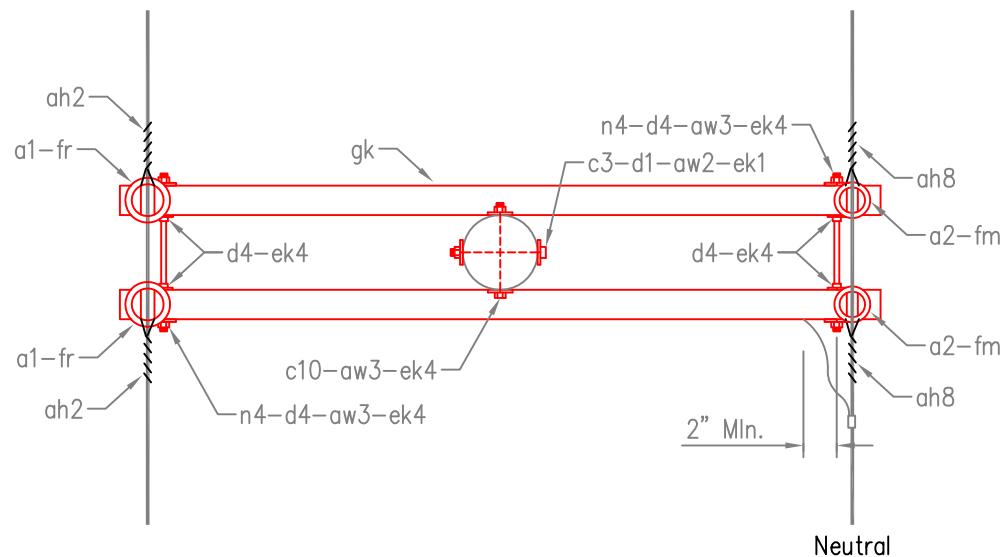
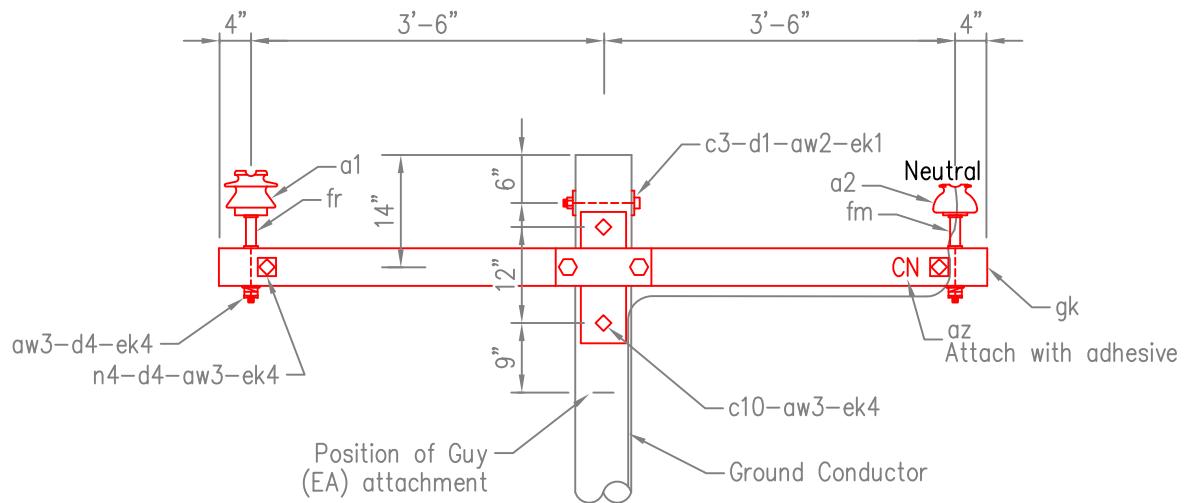
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	2	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
a2	2	3422-40-10	Insulator, 7.2 pin, white, 1" internal thread
ah2	1	6790-XX-33	Double support tie, (Specify conductor size)
ah8	1	6790-XX-78	C/F double neck double support, (Specify conductor size)
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
aw3	10	7108-99-51	Washers, double spring lock, 3/4"
az	2	4285-10-01	CN Stick-On Tag
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
d1	2	7102-04-91	Washers, square, 5/8"
d4	12	7102-04-51	Washers, square, 3/4"
ek1	1	4290-70-63	Locknuts 5/8"
ek4	14	4290-70-75	Locknuts 3/4"
fm	2	4541-22-32	Pin, crossarm 7.2, 3/4" shank, neutral
fr	2	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gk	2	1809-09-14	Crossarm, Fiberglass 8' TB 3000-96
n4	2	0633-06-22	Bolts, DA 3/4" x 22" (Special Order)

NOTES:

1. Maximum transverse load: 1000 lbs. per conductor.
2. Maximum line angle within load limits: 20°
3. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
4. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, SINGLE PHASE FIBERGLASS CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT	ISSUED	2/04/2008
			REVISED	7/27/2011
			STANDARD NUMBER	
				VA9-F



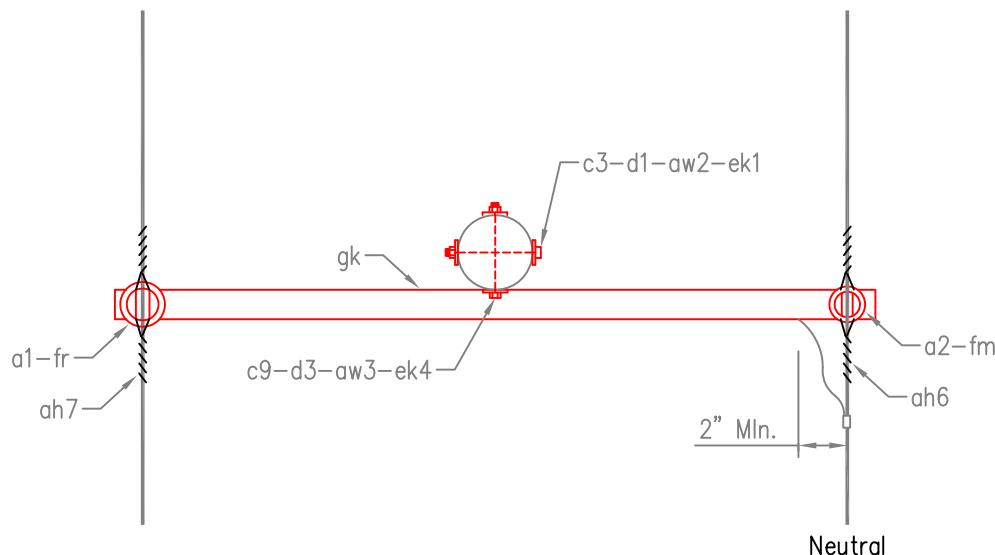
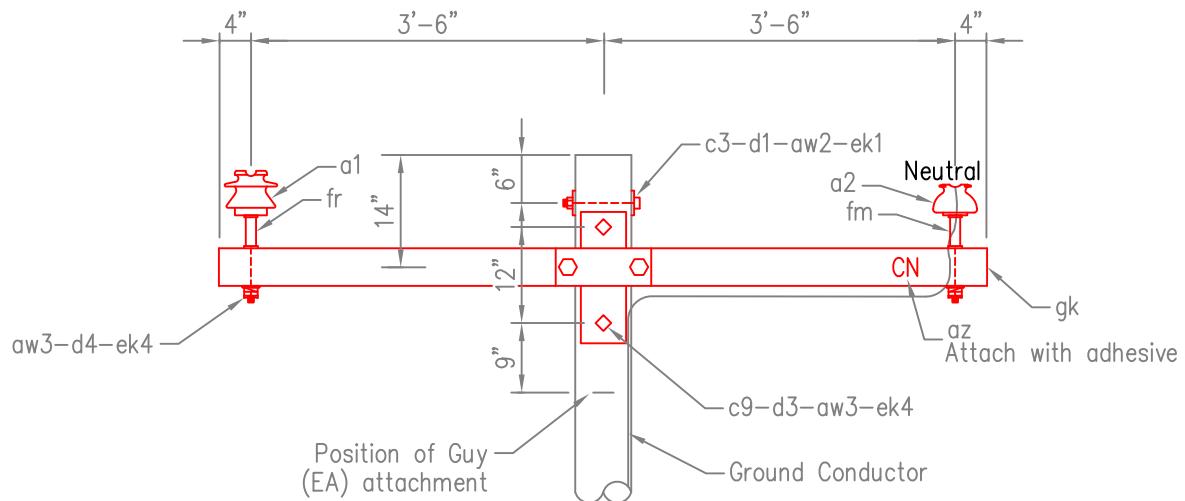
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	1	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
a2	1	3422-40-10	Insulator, 7.2 pin, white, 1" internal thread
ah6	1	6790-XX-76	C/F neck wrap lock tie, (Specify conductor size)
ah7	1	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
aw3	4	7108-99-51	Washers, double spring lock, 3/4"
az	2	4285-10-01	CN Stick-On Tag
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
d1	2	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	2	7102-04-51	Washers, square, 3/4"
ek1	1	4290-70-63	Locknuts 5/8"
ek4	4	4290-70-75	Locknuts 3/4"
fm	1	4541-22-32	Pin, crossarm 7.2, 3/4" shank, neutral
fr	1	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gk	1	1809-09-14	Crossarm, Fiberglass 8' TB 3000-96

NOTES:

1. Maximum line angle within load limits: 5°
2. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, SINGLE PHASE FIBERGLASS CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT	ISSUED	2/04/2008
			REVISED	7/27/2011
			STANDARD NUMBER	
				VA9-1-F

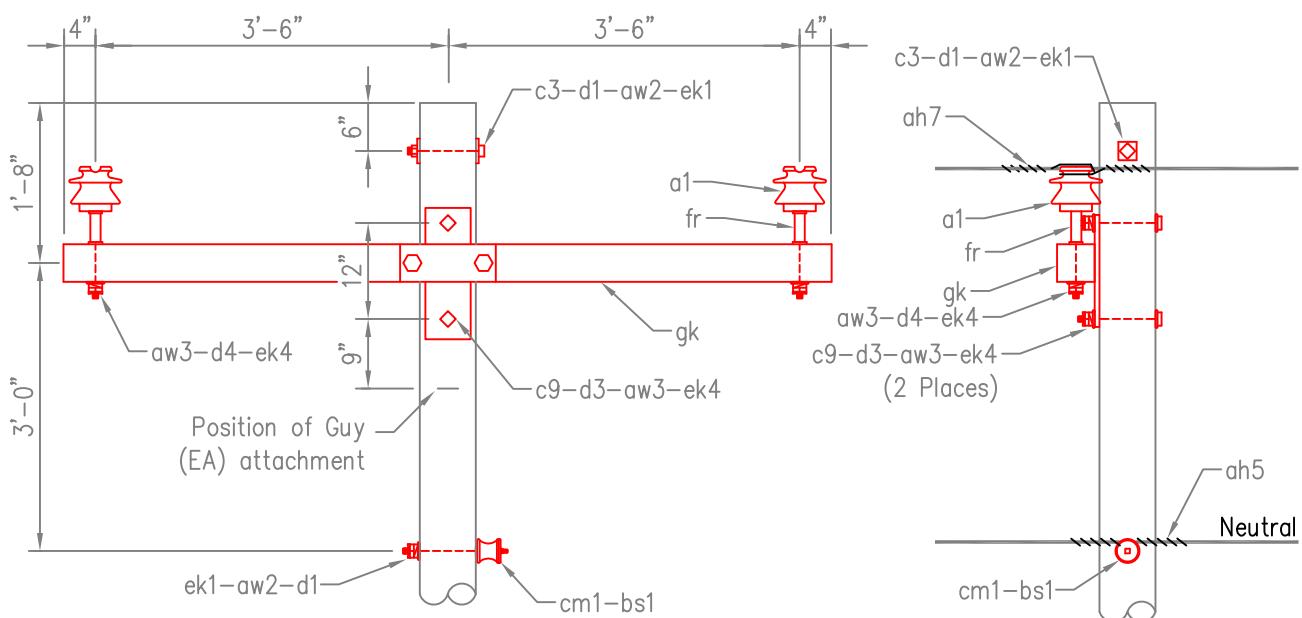


ITEM.	QTY.	MAT.CODE No	MATERIAL
a1	2	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	2	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	4	7108-99-51	Washers, double spring lock, 3/4"
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
d1	3	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	2	7102-04-51	Washers, square, 3/4"
ek1	2	4290-70-63	Locknuts 5/8"
ek4	4	4290-70-75	Locknuts 3/4"
fr	2	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gk	1	1809-09-14	Crossarm, Fiberglass 8' TB 3000-96

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE FIBERGLASS CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT 0° TO 5° ANGLE	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VB1-F



DATE	REVISION

14.4/24.9 kV, TWO PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
SINGLE PRIMARY SUPPORT  
0° TO 5° ANGLE

ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VB1-F

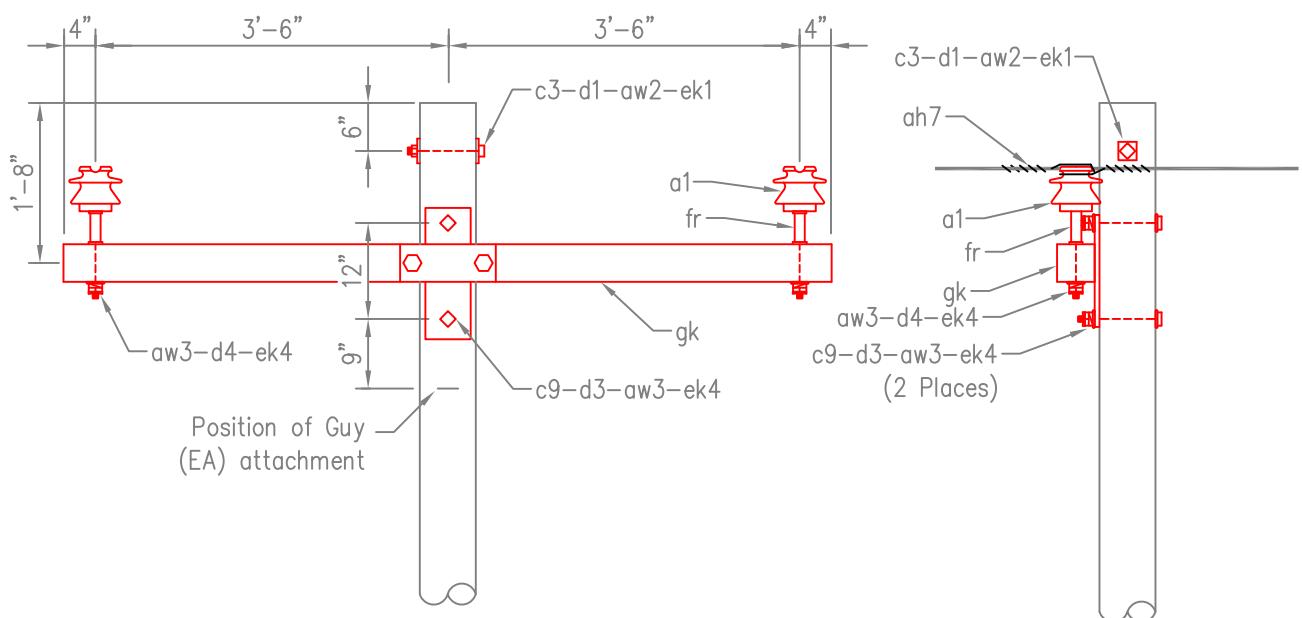
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	2	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah7	2	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
aw3	4	7108-99-51	Washers, double spring lock, 3/4"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
d1	2	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	2	7102-04-51	Washers, square, 3/4"
ek1	1	4290-70-63	Locknuts 5/8"
ek4	4	4290-70-75	Locknuts 3/4"
fr	2	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gk	1	1809-09-14	Crossarm, Fiberglass 8' TB 3000-96

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, TWO PHASE	ISSUED	2/04/2008
		FIBERGLASS CROSSARM CONSTRUCTION	REVISED	
		SINGLE PRIMARY SUPPORT		
		0° TO 5° ANGLE		
		LESS NEUTRAL		
			STANDARD NUMBER	
			VB1-LN-F	



DATE	REVISION

14.4/24.9 kV, TWO PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
SINGLE PRIMARY SUPPORT  
0° TO 5° ANGLE  
LESS NEUTRAL

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VB1-LN-F

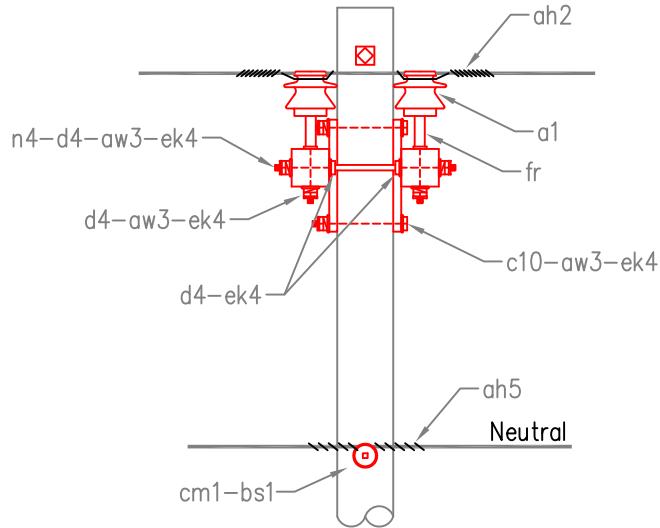
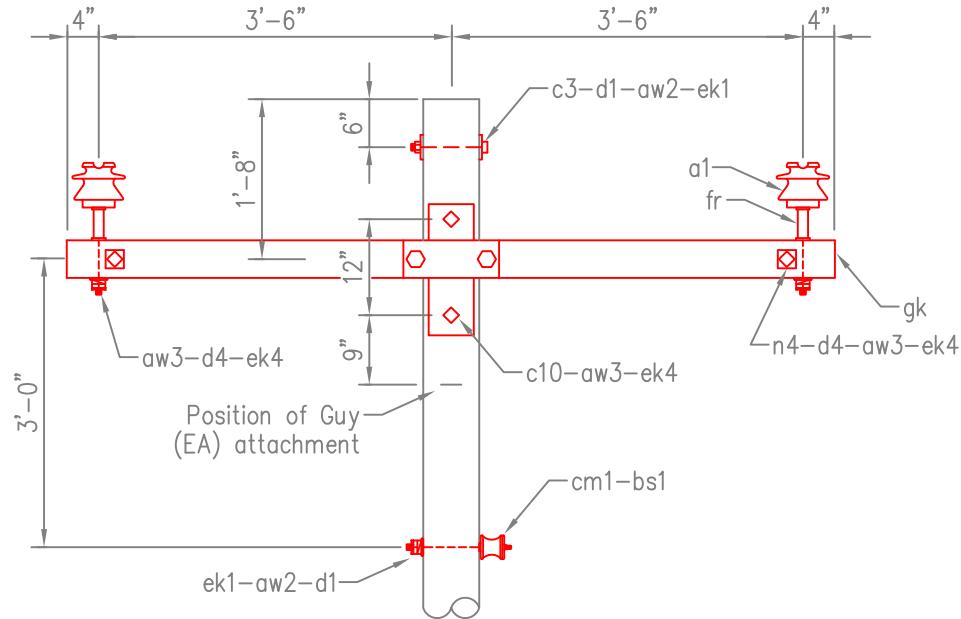
ITEM	QTY.	MAT.CODE No	MATERIAL
a1	4	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	2	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	10	7108-99-51	Washers, double spring lock, 3/4"
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cm1	1	3426-20-12	Insulator, 3" spool
d1	3	7102-04-91	Washers, square, 5/8"
d4	12	7102-04-51	Washers, square, 3/4"
ek1	2	4290-70-63	Locknuts 5/8"
ek4	14	4290-70-75	Locknuts 3/4"
fr	4	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gk	2	1809-09-14	Crossarm, Fiberglass 8' TB 3000-96
n4	2	0633-06-22	Bolts, DA 3/4" x 22" (Special Order)

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, TWO PHASE	ISSUED	2/04/2008
		FIBERGLASS CROSSARM CONSTRUCTION	REVISED	
		DOUBLE PRIMARY SUPPORT		
		0° TO 5° ANGLE		
			STANDARD NUMBER	
			VB1-1-F	



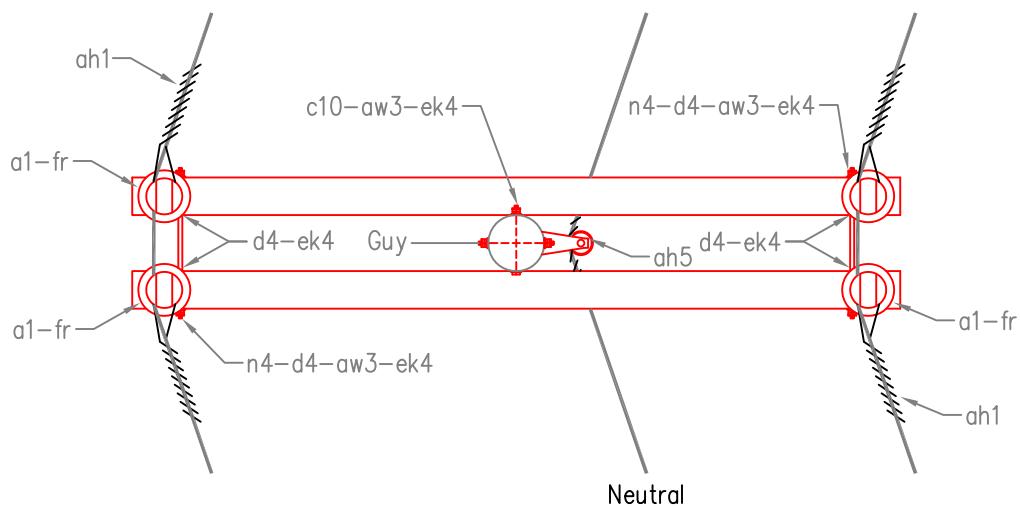
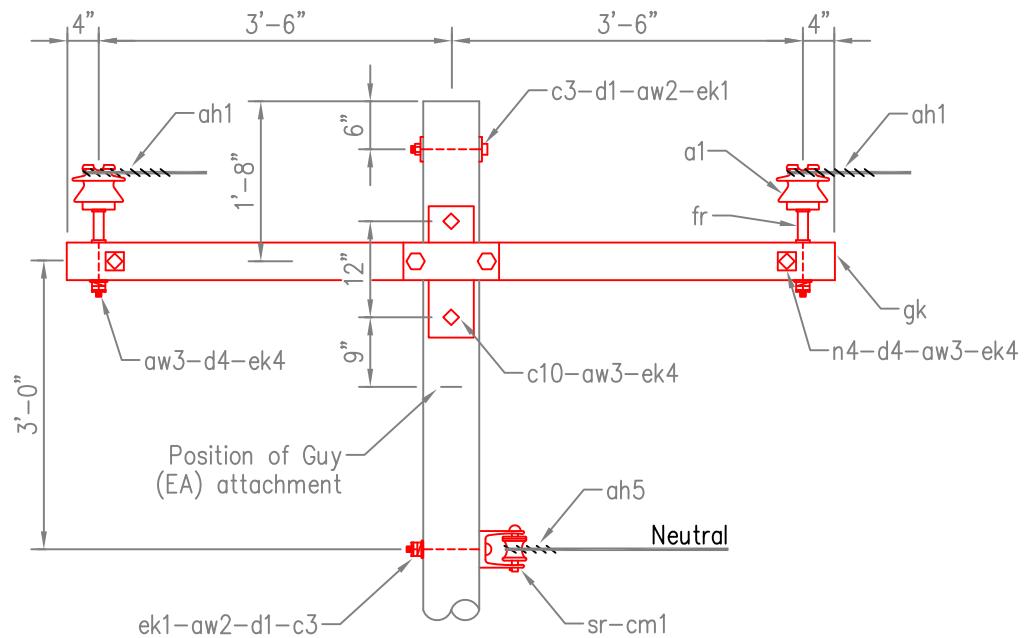
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	4	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah1	2	6790-XX-22	Double side tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	10	7108-99-51	Washers, double spring lock, 3/4"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cm1	1	3426-20-12	Insulator, 3" spool
d1	3	7102-04-91	Washers, square, 5/8"
d4	12	7102-04-51	Washers, square, 3/4"
ek1	2	4290-70-63	Locknuts 5/8"
ek4	14	4290-70-75	Locknuts 3/4"
fr	4	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gk	2	1809-09-14	Crossarm, Fiberglass 8' TB 3000-96
n4	2	0633-06-22	Bolts, DA 3/4" x 22" (Special Order)
sr	1	1230-17-01	Clevis, rigid (D-bracket)

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, TWO PHASE	ISSUED	2/04/2008
		FIBERGLASS CROSSARM CONSTRUCTION	REVISED	
		DOUBLE PRIMARY SUPPORT		
		MAX. TRANSVERSE LOADING 750 LBS./PIN		
		5° TO 30° MAX. LINE ANGLE		
			STANDARD NUMBER	
			VB2-F	



DATE	REVISION

14.4/24.9 kV, TWO PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT  
MAX. TRANSVERSE LOADING 750 LBS./PIN  
5° TO 30° MAX. LINE ANGLE

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VB2-F

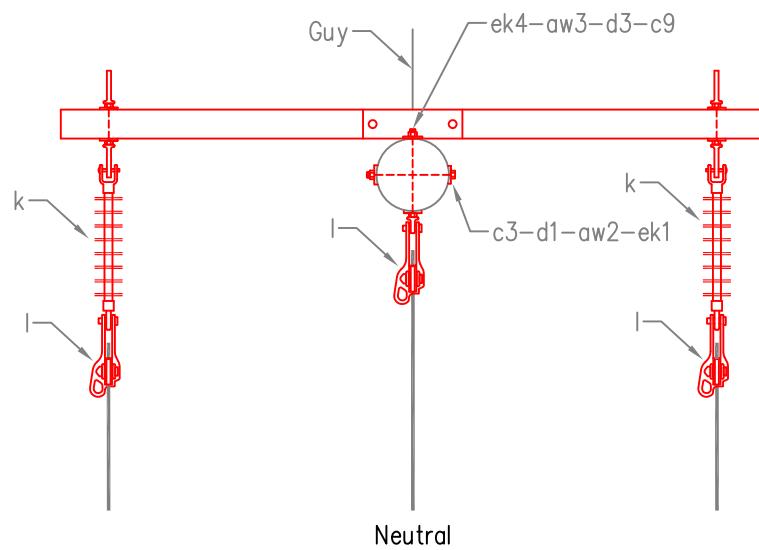
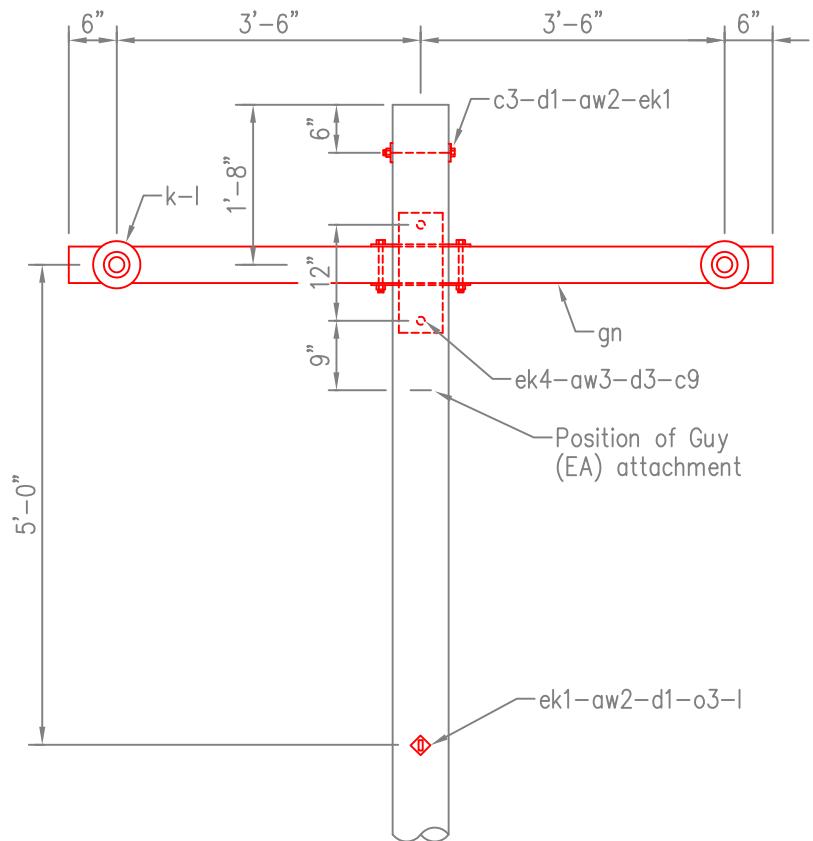
ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
d1	3	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	2	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
gn	1	1809-09-08	Crossarm, Fiberglass 8' DA 3000-96
k	2	3428-60-60	Insulator, polymer suspension
l	3	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o3	1	0636-15-12	Bolts, ovaleye 5/8" x 12"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, TWO PHASE	ISSUED	2/04/2008
		FIBERGLASS CROSSARM CONSTRUCTION	REVISED	7/27/2011
		DEADEND STRUCTURE		
		(SINGLE DEADEND)		
			STANDARD NUMBER	
				VB7A-F



DATE	REVISION

14.4/24.9 KV, TWO PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND STRUCTURE  
(SINGLE DEADEND)

ISSUED	2/04/2008
REVISED	7/27/2011
STANDARD NUMBER	VB7A-F

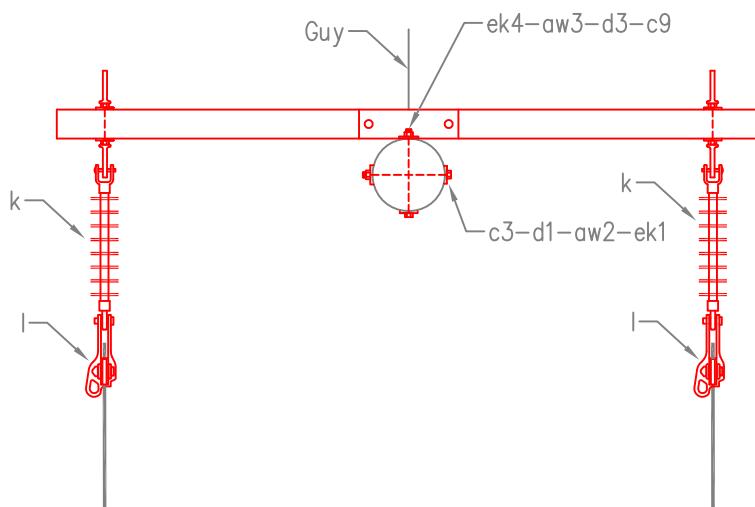
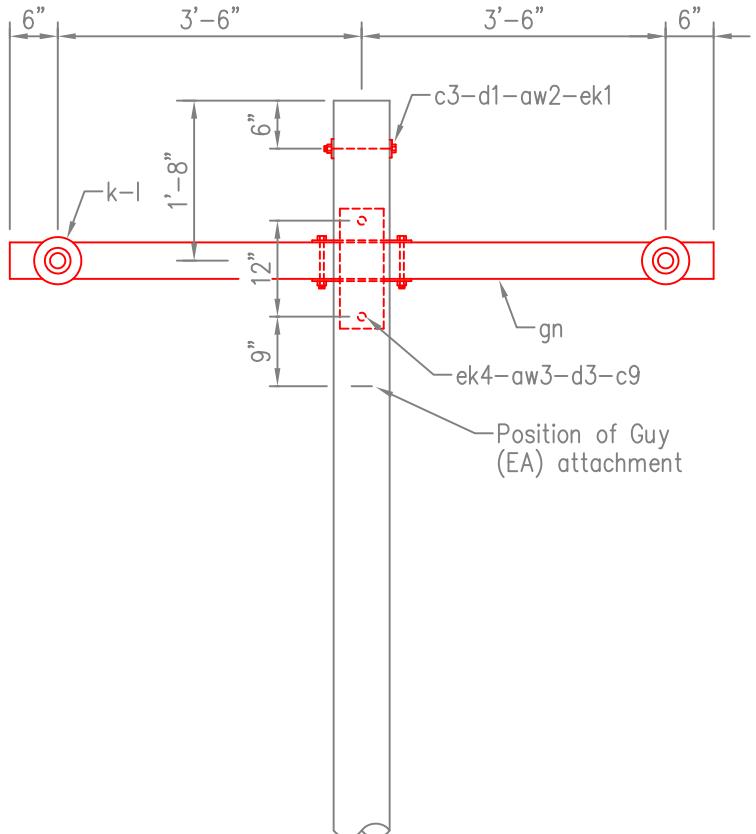
ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
d1	2	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	1	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
gn	1	1809-09-08	Crossarm, Fiberglass 8' DA 3000-96
k	2	3428-60-60	Insulator, polymer suspension
l	2	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, TWO PHASE	ISSUED	2/04/2008
		FIBERGLASS CROSSARM CONSTRUCTION	REVISED	
		DEADEND STRUCTURE		
		(SINGLE DEADEND)		
		LESS NEUTRAL		
			STANDARD NUMBER	
			VB7A-LN-F	



DATE	REVISION

14.4/24.9 kV, TWO PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND STRUCTURE  
(SINGLE DEADEND)  
LESS NEUTRAL

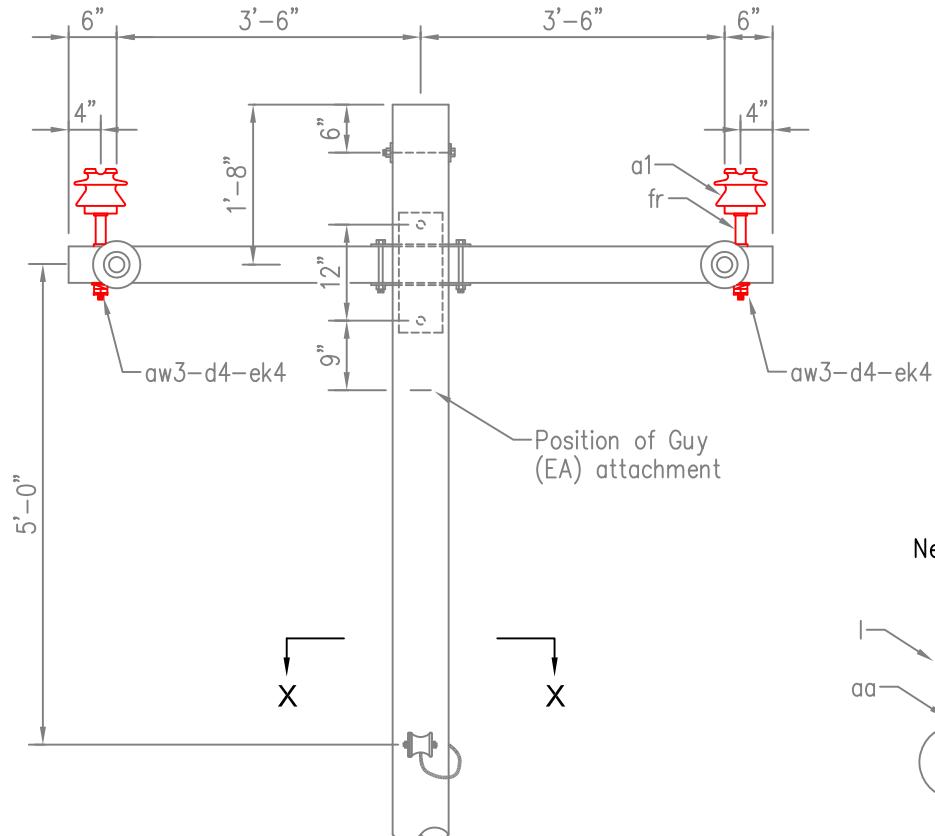
ISSUED 2/04/2008  
REVISED 7/27/2011  
STANDARD NUMBER  
VB7A-LN-F

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	2	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
aa	1	4290-40-63	Nuts, ovaleye 5/8"
ah9	2	6790-XX-88	Slack span deadend tie, (Specify conductor size)
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
d4	2	7102-04-51	Washers, square, 3/4"
ek1	1	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
fr	2	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
I	1	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

NOTES:

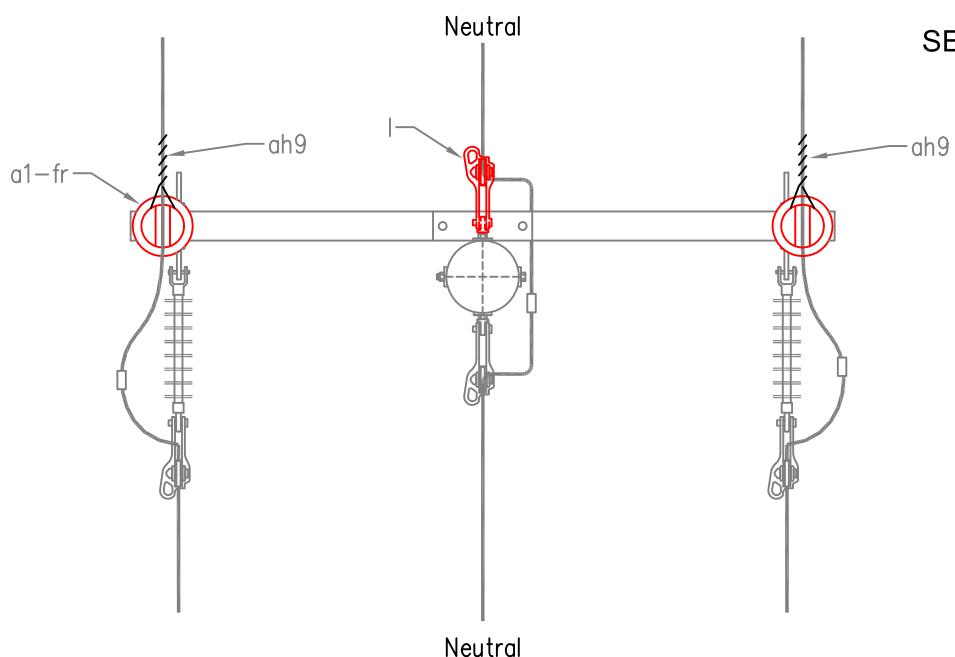
1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE FIBERGLASS CROSSARM CONSTRUCTION DEADEND TAKEOFF FOR SPAN WITH REDUCED TENSION	ISSUED	2/04/2008
				REVISED	7/27/2011
				STANDARD NUMBER	
				VB7AXS-F	



Neutral

SECTION X-X



DATE	REVISION

14.4/24.9 kV, TWO PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND TAKEOFF FOR  
SPAN WITH REDUCED TENSION

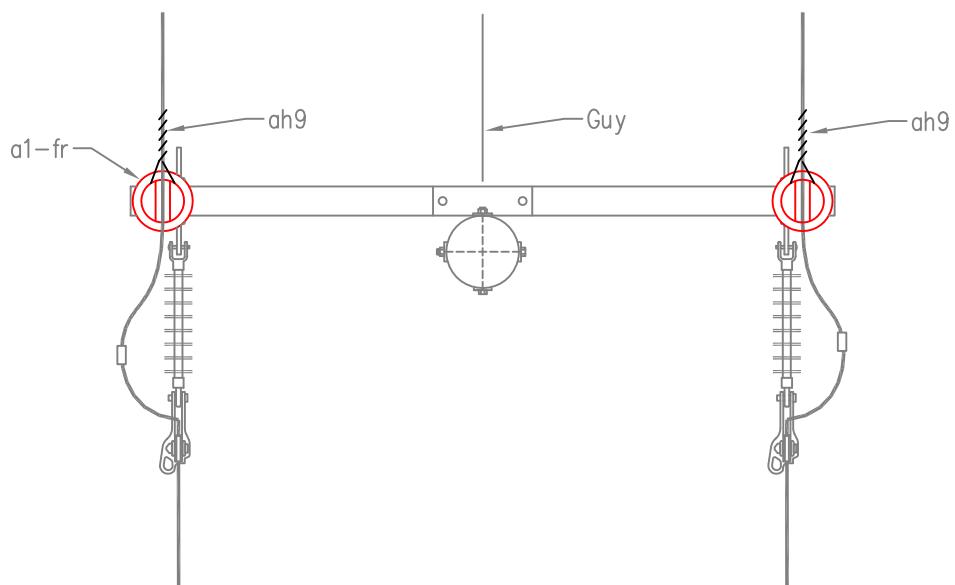
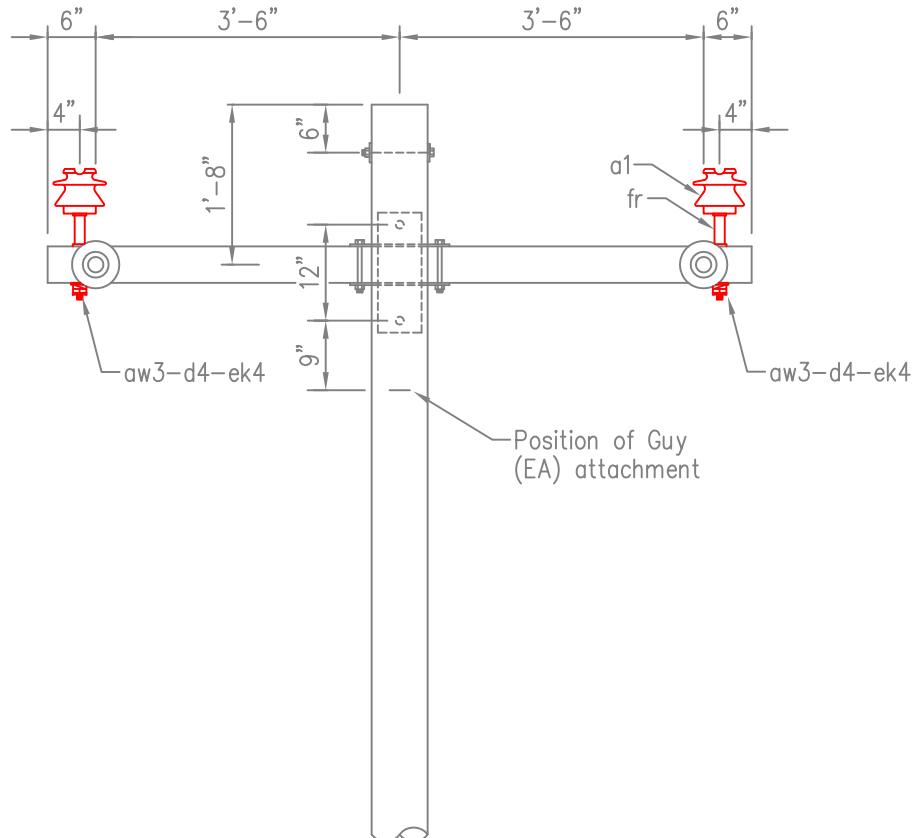
ISSUED	2/04/2008
REVISED	7/27/2011
STANDARD NUMBER	VB7AXS-F

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	2	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah9	2	6790-XX-88	Slack span deadend tie, (Specify conductor size)
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
d4	2	7102-04-51	Washers, square, 3/4"
ek4	2	4290-70-75	Locknuts 3/4"
fr	2	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE FIBERGLASS CROSSARM CONSTRUCTION DEADEND TAKEOFF FOR SPAN WITH REDUCED TENSION LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VB7AXS-LN-F	



DATE	REVISION

14.4/24.9 kV, TWO PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND TAKEOFF FOR  
SPAN WITH REDUCED TENSION  
LESS NEUTRAL

ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VB7AXS-LN-F

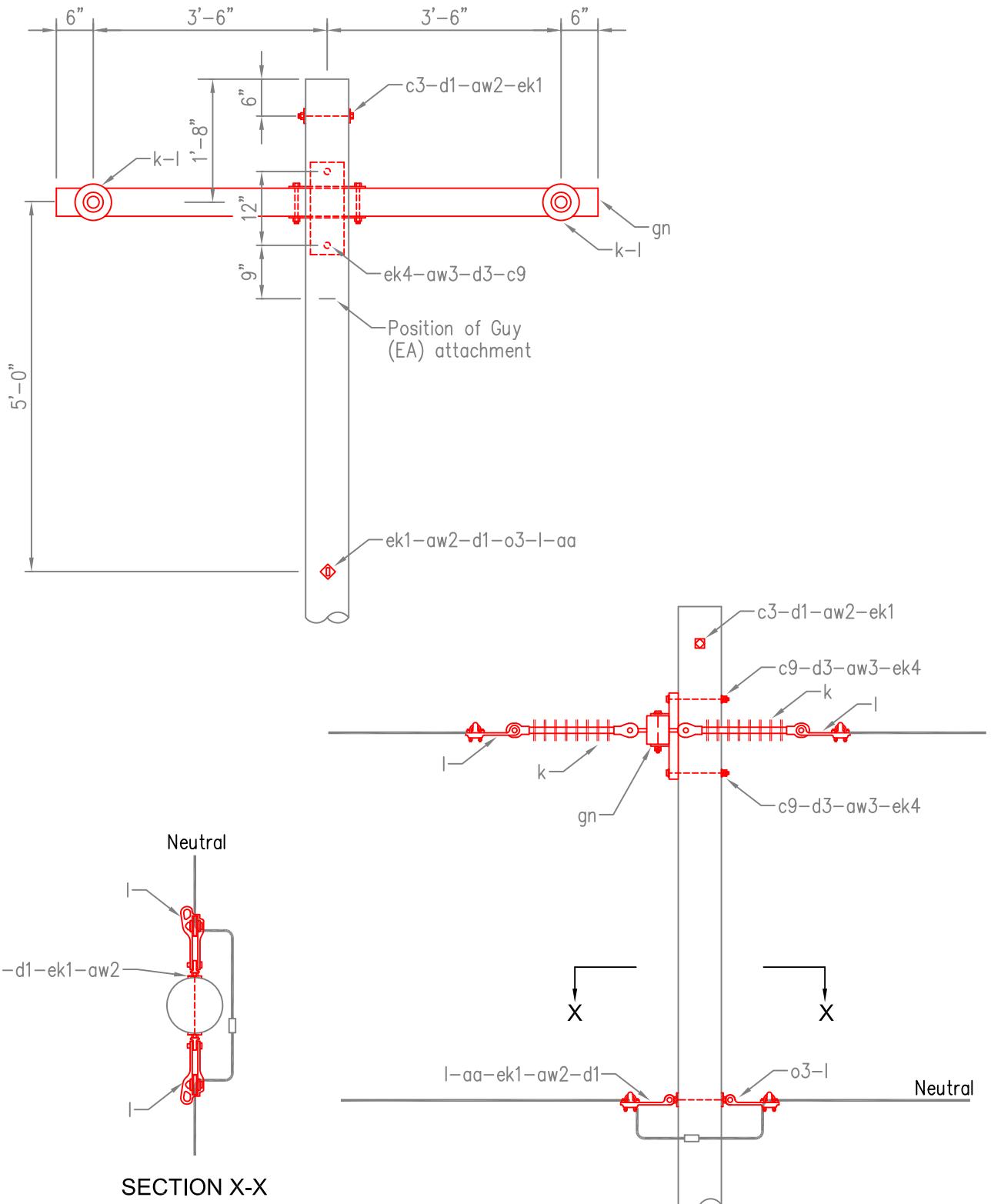
ITM.	QTY.	MAT.CODE No	MATERIAL
aa	1	4290-40-63	Nuts, ovaleye 5/8"
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
d1	3	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	3	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
gn	1	1809-09-08	Crossarm, Fiberglass 8' DA 3000-96
k	4	3428-60-60	Insulator, polymer suspension
l	6	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o3	1	0636-15-12	Bolts, ovaleye 5/8" x 12"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, TWO PHASE	ISSUED	2/04/2008
		FIBERGLASS CROSSARM CONSTRUCTION	REVISED	7/27/2011
		DEADEND STRUCTURE		
		(DOUBLE DEADEND)		
			STANDARD NUMBER	
				VB8A-F



DATE	REVISION

14.4/24.9 kV, TWO PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND STRUCTURE  
(DOUBLE DEADEND)

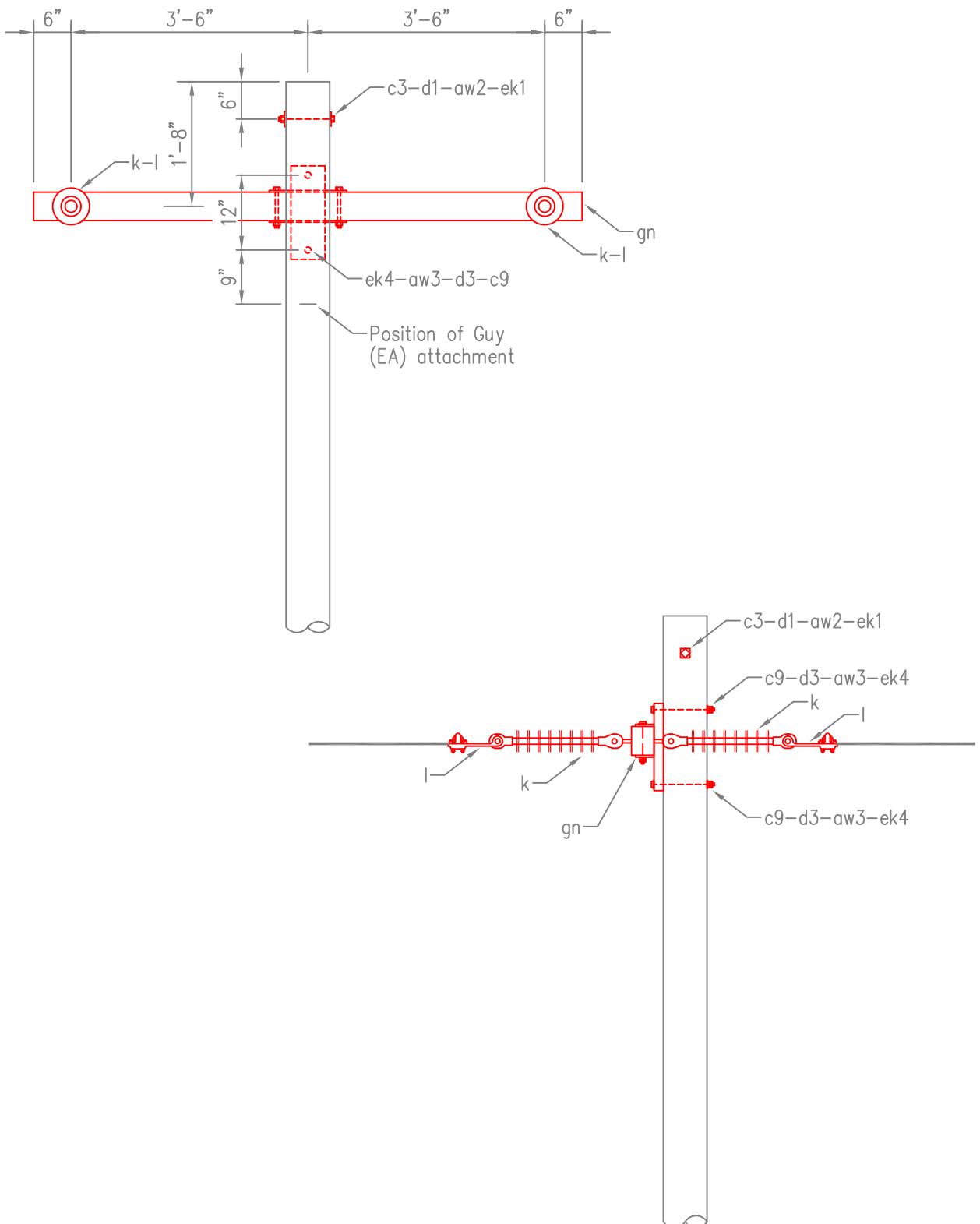
ISSUED	2/04/2008
REVISED	7/27/2011
STANDARD NUMBER	VB8A-F

ITEM.	QTY.	MAT.CODE No	MATERIAL
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
d1	2	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	1	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
gn	1	1809-09-08	Crossarm, Fiberglass 8' DA 3000-96
k	4	3428-60-60	Insulator, polymer suspension
l	4	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO PHASE FIBERGLASS CROSSARM CONSTRUCTION DEADEND STRUCTURE (DOUBLE DEADEND) LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VB8A-LN-F	



DATE	REVISION

14.4/24.9 kV, TWO PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND STRUCTURE  
(DOUBLE DEADEND)  
LESS NEUTRAL

ISSUED	2/04/2008
REVISED	7/27/2011
STANDARD NUMBER	VB8A-LN-F

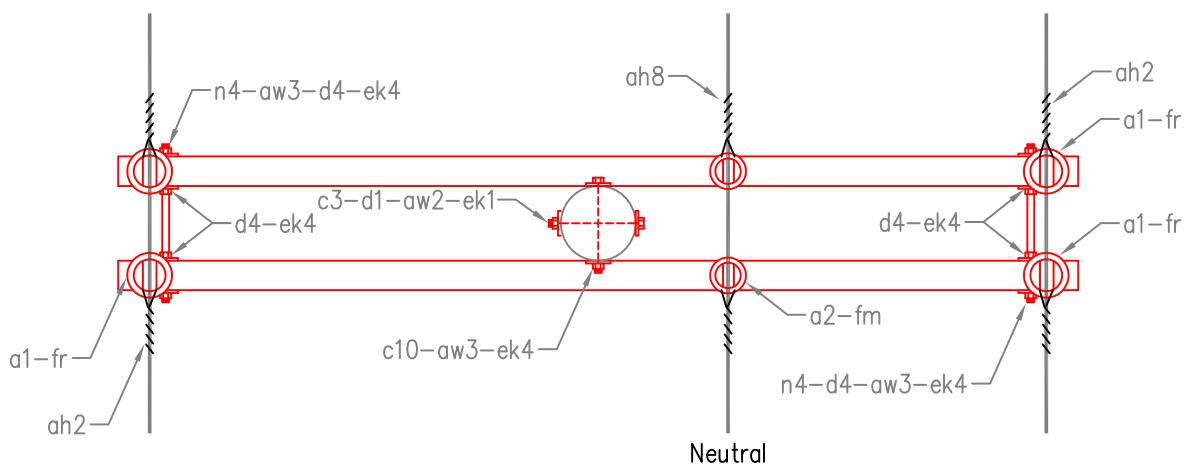
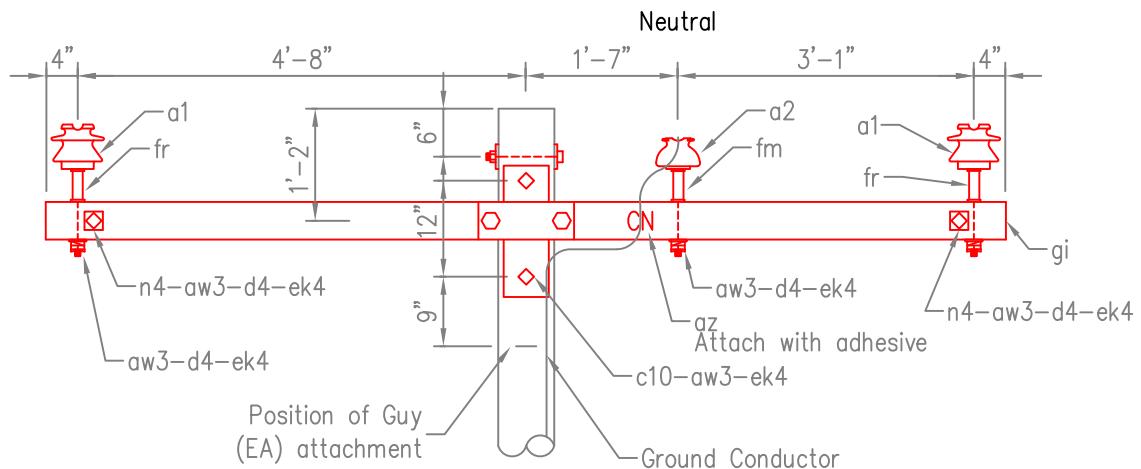
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	4	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
a2	2	3422-30-12	Insulator, 7.2 pin, white, 1" internal thread
ah2	2	6790-XX-33	Double support tie, (Specify conductor size)
ah8	1	6790-XX-78	C/F double neck double support, (Specify conductor size)
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
aw3	12	7108-99-51	Washers, double spring lock, 3/4"
az	2	4285-10-01	CN Stick-On Tag
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
d1	2	7102-04-91	Washers, square, 5/8"
d4	14	7102-04-51	Washers, square, 3/4"
ek1	1	4290-70-63	Locknuts 5/8"
ek4	16	4290-70-75	Locknuts 3/4"
fm	2	4541-22-32	Pin, crossarm 7.2, 3/4" shank, neutral
fr	4	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gi	2	1809-09-09	Crossarm, Fiberglass 10' TB 3000-120
n4	2	0633-06-22	Bolts, DA 3/4" x 22" (Special Order)

NOTES:

1. Maximum line angle within load limits: 20°
2. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

ENGINEERING APPROVAL ONLY

	DATE	REVISION	14.4/24.9 kV, TWO PHASE FIBERGLASS CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT	ISSUED	2/04/2008
				REVISED	7/27/2011
				STANDARD NUMBER	
					VB9-F



ENGINEERING APPROVAL ONLY



DATE	REVISION

14.4/24.9 kV, TWO PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT

ISSUED	2/04/2008
REVISED	7/27/2011
STANDARD NUMBER	VB9-F

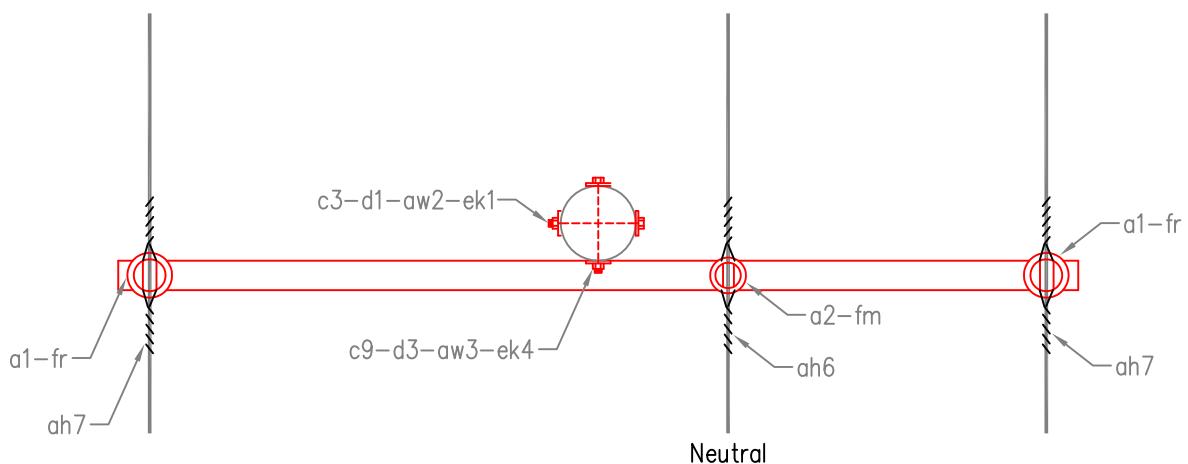
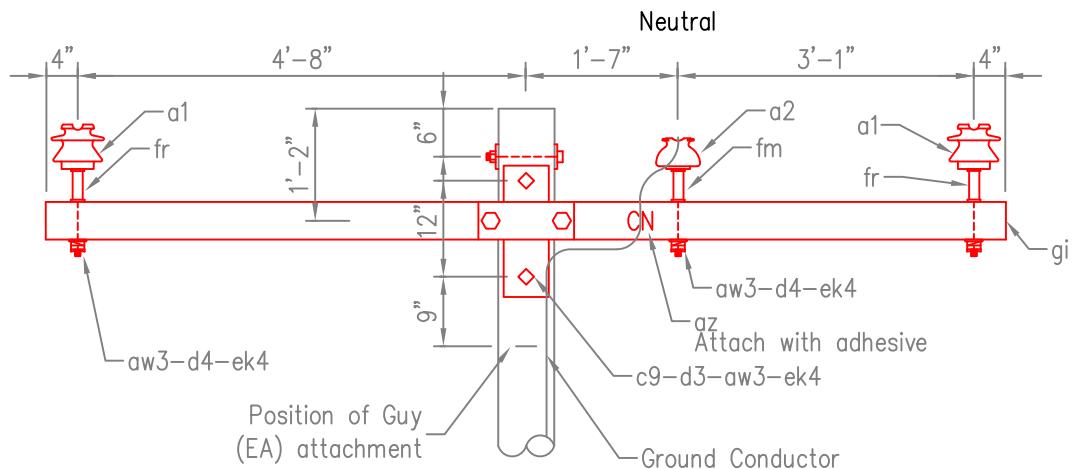
ITEM.	QTY.	MAT.CODE No	MATERIAL
a1	2	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
a2	1	3422-40-10	Insulator, 7.2 pin, white, 1" internal thread
ah6	1	6790-XX-76	C/F neck wrap lock tie, (Specify conductor size)
ah7	2	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
aw3	5	7108-99-51	Washers, double spring lock, 3/4"
az	2	4285-10-01	CN Stick-On Tag
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
d1	2	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	3	7102-04-51	Washers, square, 3/4"
ek1	1	4290-70-63	Locknuts 5/8"
ek4	5	4290-70-75	Locknuts 3/4"
fm	1	4541-22-32	Pin, crossarm 7.2, 3/4" shank, neutral
fr	2	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gi	1	1809-09-09	Crossarm, Fiberglass 10' TB 3000-120

NOTES:

1. Maximum line angle within load limits: 20°
2. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

ENGINEERING APPROVAL ONLY

	DATE	REVISION	14.4/24.9 kV, TWO PHASE FIBERGLASS CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT	ISSUED	2/04/2008
				REVISED	7/27/2011
				STANDARD NUMBER	
				VB9-1-F	



ENGINEERING APPROVAL ONLY



DATE	REVISION

14.4/24.9 kV, TWO PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
SINGLE PRIMARY SUPPORT

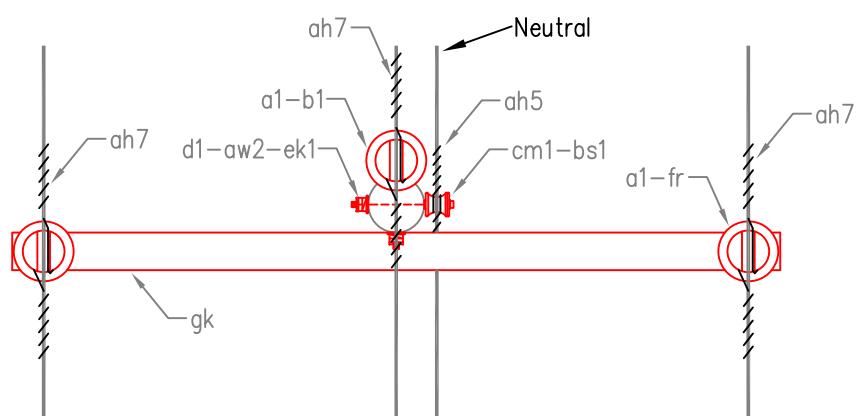
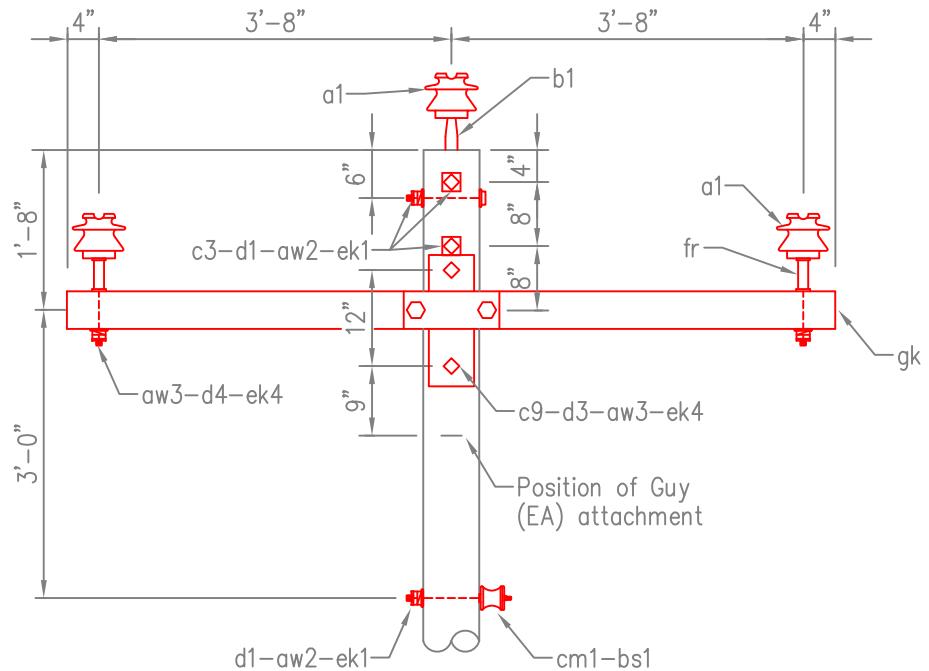
ISSUED	2/04/2008
REVISED	7/27/2011
STANDARD NUMBER	VB9-1-F

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
aw3	4	7108-99-51	Washers, double spring lock, 3/4"
b1	1	4561-23-20	Pin, pole top 14.4
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
d1	5	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	2	7102-04-51	Washers, square, 3/4"
ek1	4	4290-70-63	Locknuts 5/8"
ek4	4	4290-70-75	Locknuts 3/4"
fr	2	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gk	1	1809-09-14	Crossarm, Fiberglass 8' TB 3000-96

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT 0° TO 5° ANGLE	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VC1-F



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
SINGLE PRIMARY SUPPORT  
0° TO 5° ANGLE

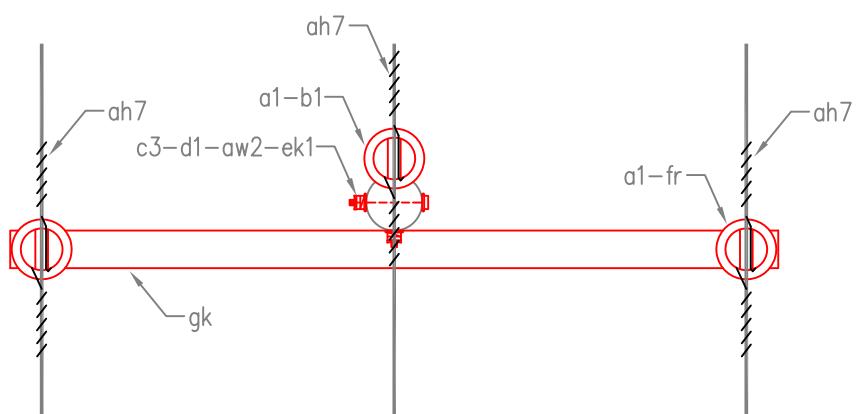
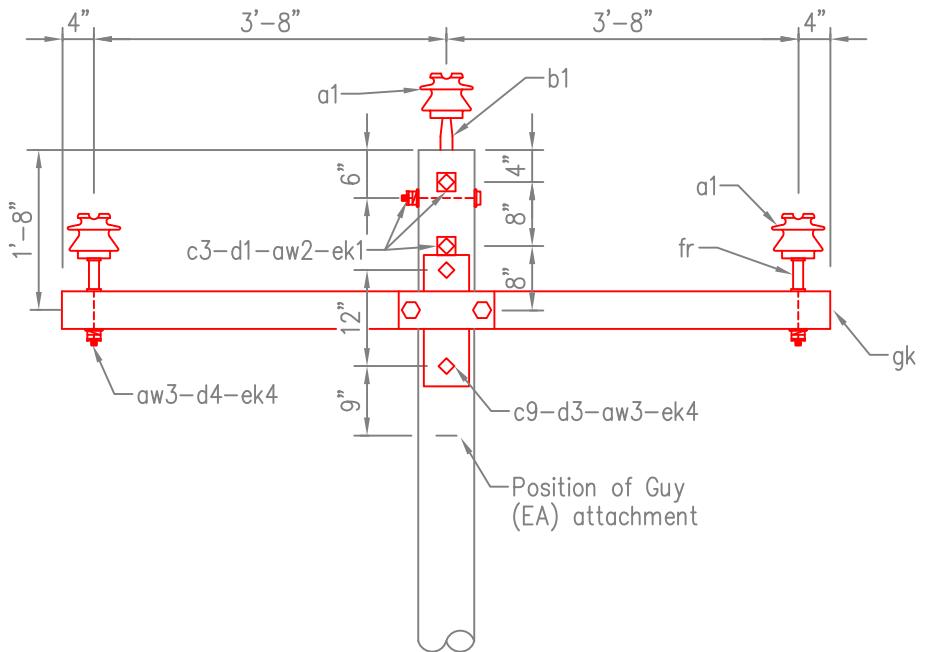
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC1-F

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
aw3	4	7108-99-51	Washers, double spring lock, 3/4"
b1	1	4561-23-20	Pin, pole top 14.4
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
d1	4	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	2	7102-04-51	Washers, square, 3/4"
ek1	3	4290-70-63	Locknuts 5/8"
ek4	4	4290-70-75	Locknuts 3/4"
fr	2	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gk	1	1809-09-14	Crossarm, Fiberglass 8' TB 3000-96

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT 0° TO 5° ANGLE LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VC1-LN-F	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
SINGLE PRIMARY SUPPORT  
 $0^\circ$  TO  $5^\circ$  ANGLE  
LESS NEUTRAL

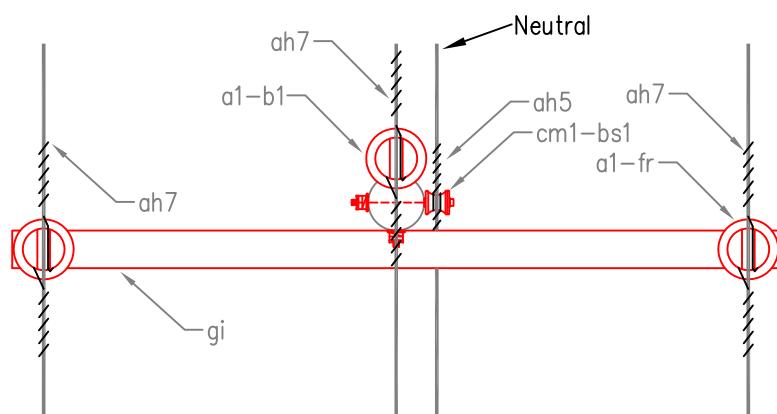
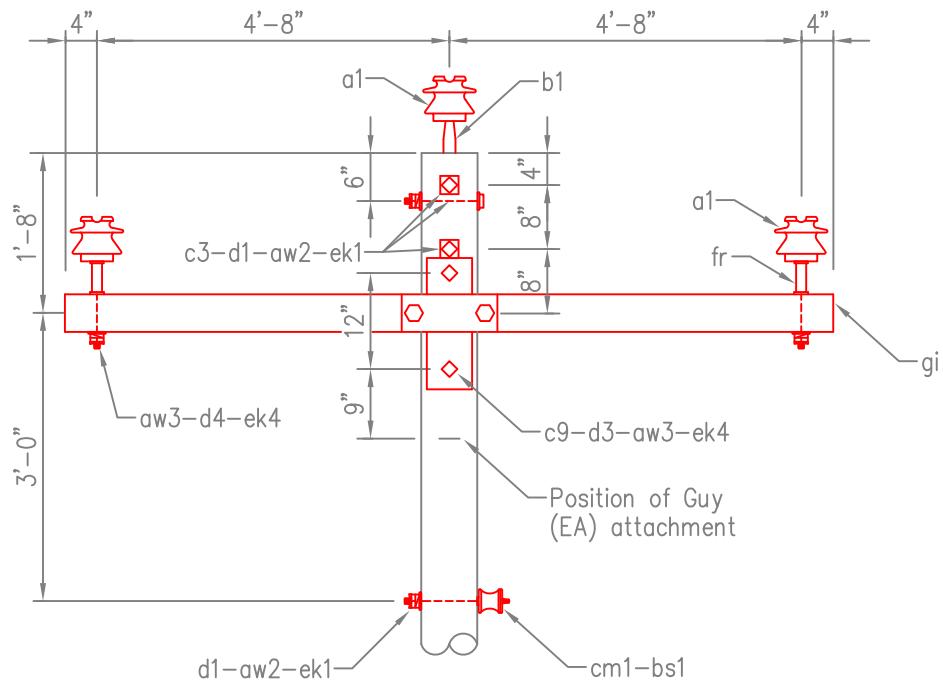
ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VC1-LN-F

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
aw3	4	7108-99-51	Washers, double spring lock, 3/4"
b1	1	4561-23-20	Pin, pole top 14.4
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
d1	5	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	2	7102-04-51	Washers, square, 3/4"
ek1	4	4290-70-63	Locknuts 5/8"
ek4	4	4290-70-75	Locknuts 3/4"
fr	2	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gi	1	1809-09-09	Crossarm, Fiberglass 10' TB 3000-120

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 10' SINGLE PRIMARY SUPPORT 0° TO 5° ANGLE	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VC1-10-F	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
10' SINGLE PRIMARY SUPPORT  
0° TO 5° ANGLE

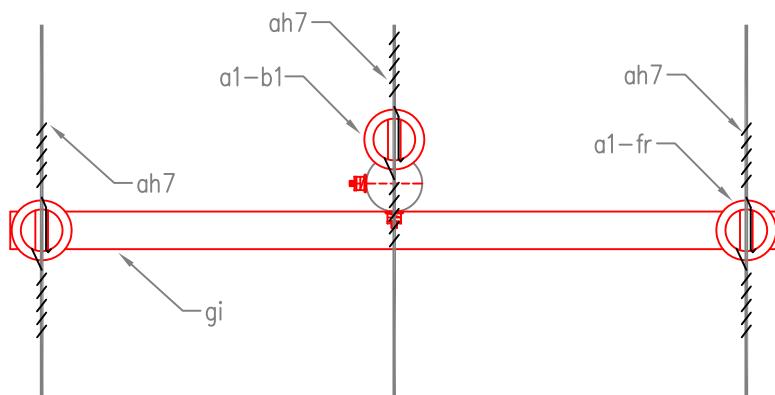
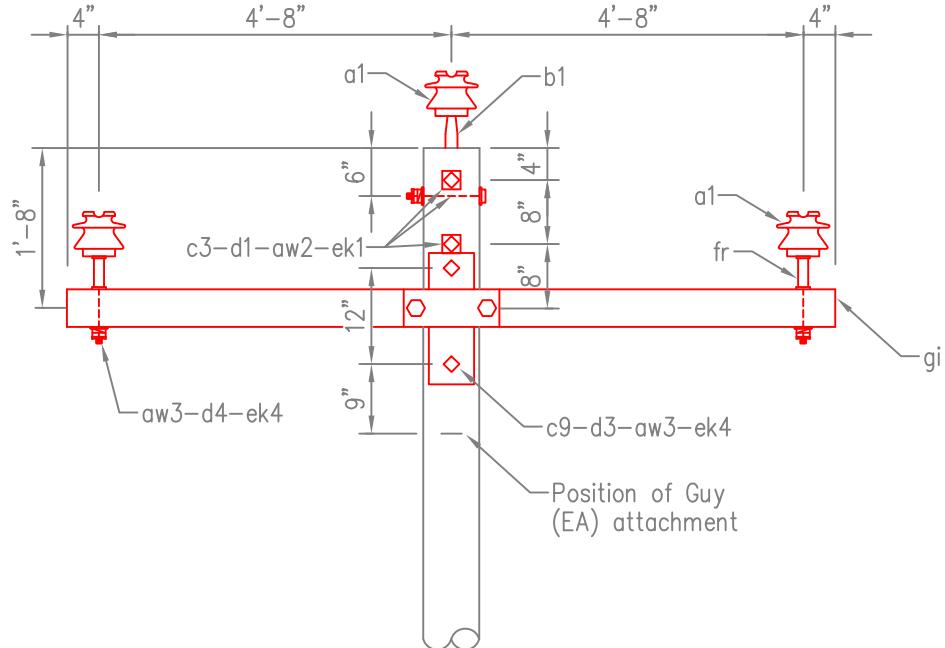
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC1-10-F

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
aw3	4	7108-99-51	Washers, double spring lock, 3/4"
b1	1	4561-23-20	Pin, pole top 14.4
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
d1	4	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	2	7102-04-51	Washers, square, 3/4"
ek1	3	4290-70-63	Locknuts 5/8"
ek4	4	4290-70-75	Locknuts 3/4"
fr	2	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gi	1	1809-09-09	Crossarm, Fiberglass 10' TB 3000-120

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 10' SINGLE PRIMARY SUPPORT 0° TO 5° ANGLE LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VC1-10-LN-F	



14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
10' SINGLE PRIMARY SUPPORT  
0° TO 5° ANGLE  
LESS NEUTRAL

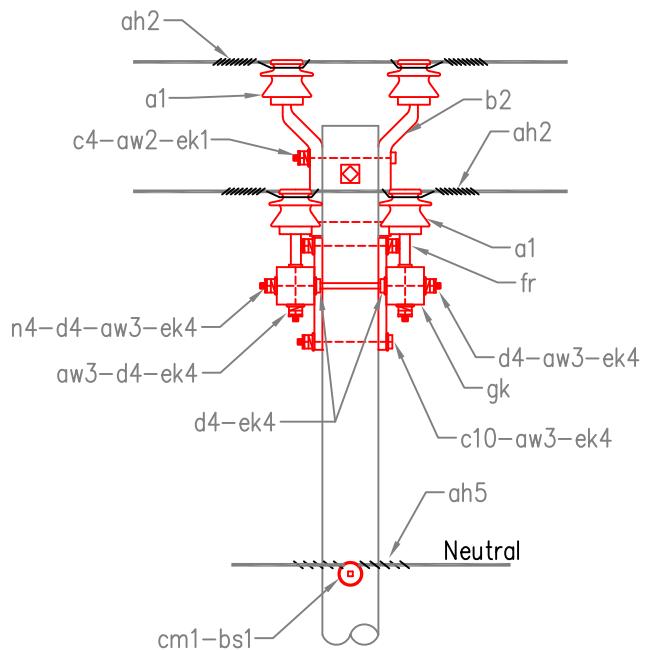
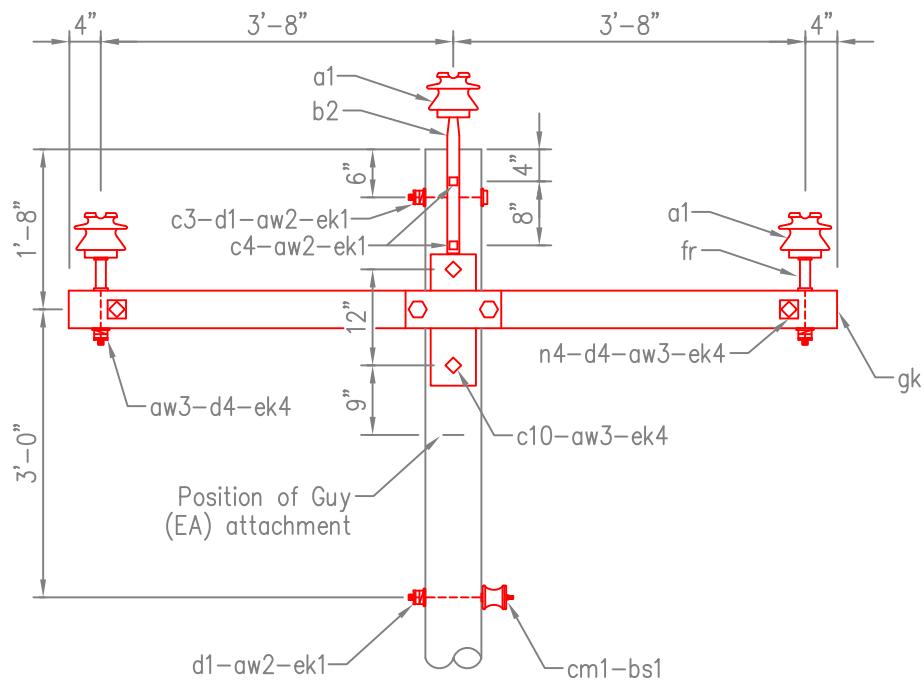
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	
VC1-10-LN-F	

ITEM.	QTY.	MAT.CODE No	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
aw3	10	7108-99-51	Washers, double spring lock, 3/4"
b2	2	4561-33-21	Pin, offset pole top 14.4
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cm1	1	3426-20-12	Insulator, 3" spool
d1	3	7102-04-91	Washers, square, 5/8"
d4	12	7102-04-51	Washers, square, 3/4"
ek1	4	4290-70-63	Locknuts 5/8"
ek4	14	4290-70-75	Locknuts 3/4"
fr	4	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gk	2	1809-09-14	Crossarm, Fiberglass 8' TB 3000-96
n4	2	0633-06-22	Bolts, DA 3/4" x 22" (Special Order)

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT 0° TO 5° ANGLE	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VC1-1-F	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT  
0° TO 5° ANGLE

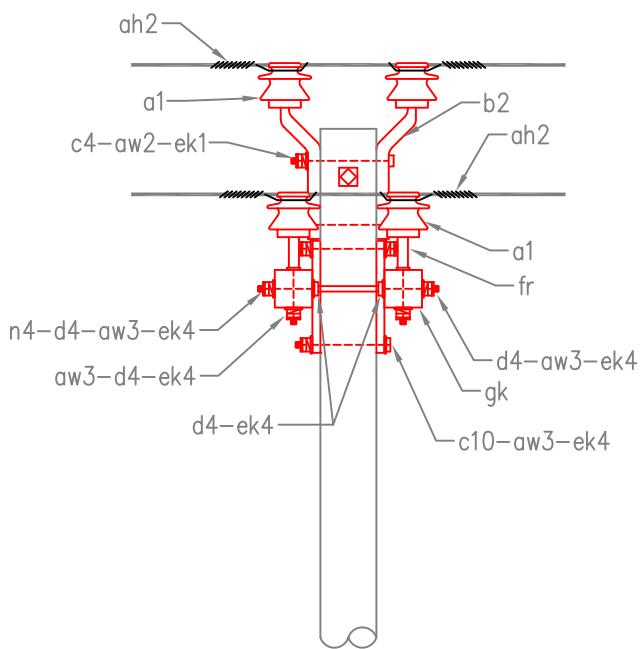
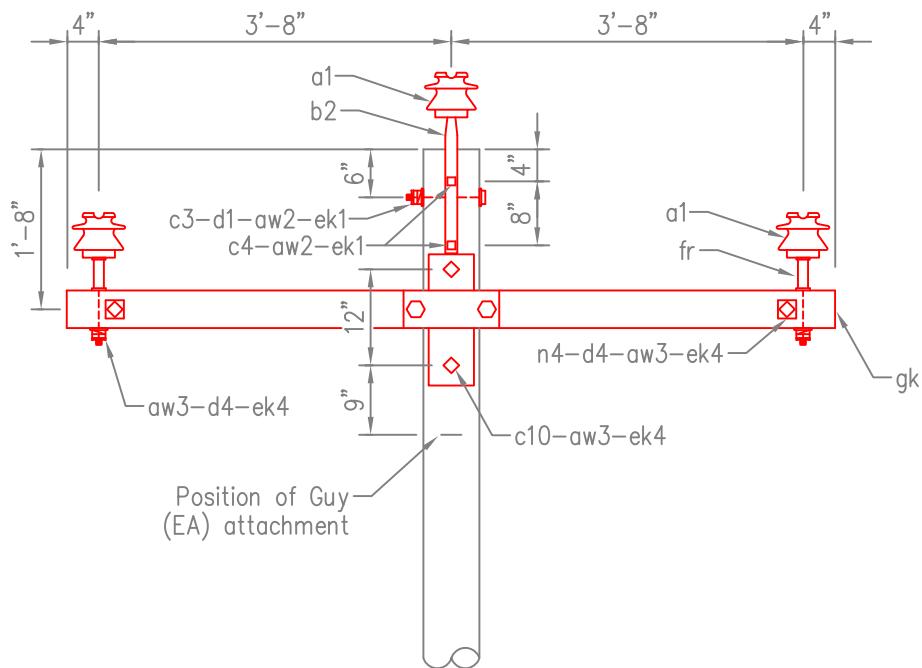
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC1-1-F

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
aw3	10	7108-99-51	Washers, double spring lock, 3/4"
b2	2	4561-33-21	Pin, offset pole top 14.4
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
d1	2	7102-04-91	Washers, square, 5/8"
d4	12	7102-04-51	Washers, square, 3/4"
ek1	3	4290-70-63	Locknuts 5/8"
ek4	14	4290-70-75	Locknuts 3/4"
fr	4	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gk	2	1809-09-14	Crossarm, Fiberglass 8' TB 3000-96
n4	2	0633-06-22	Bolts, DA 3/4" x 22" (Special Order)

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT 0° TO 5° ANGLE LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VC1-1-LN-F	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT  
0° TO 5° ANGLE  
LESS NEUTRAL

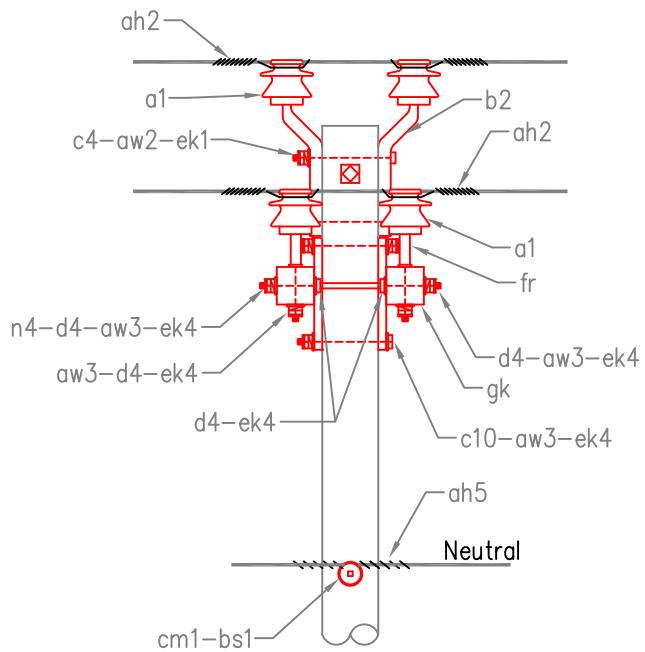
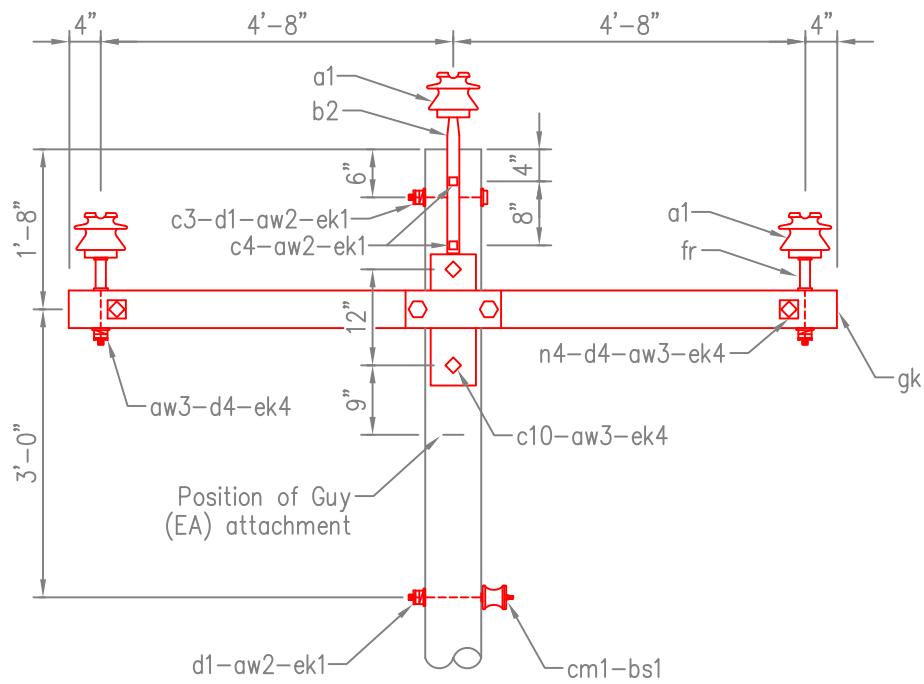
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC1-1-LN-F

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
aw3	10	7108-99-51	Washers, double spring lock, 3/4"
b2	2	4561-33-21	Pin, offset pole top 14.4
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cm1	1	3426-20-12	Insulator, 3" spool
d1	3	7102-04-91	Washers, square, 5/8"
d4	12	7102-04-51	Washers, square, 3/4"
ek1	4	4290-70-63	Locknuts 5/8"
ek4	14	4290-70-75	Locknuts 3/4"
fr	4	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gi	2	1809-09-09	Crossarm, Fiberglass 10' TB 3000-120
n4	2	0633-06-22	Bolts, DA 3/4" x 22" (Special Order)

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 10' DOUBLE PRIMARY SUPPORT 0° TO 5° ANGLE	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VC1-1-10-F	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
10' DOUBLE PRIMARY SUPPORT  
0° TO 5° ANGLE

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC1-1-10-F

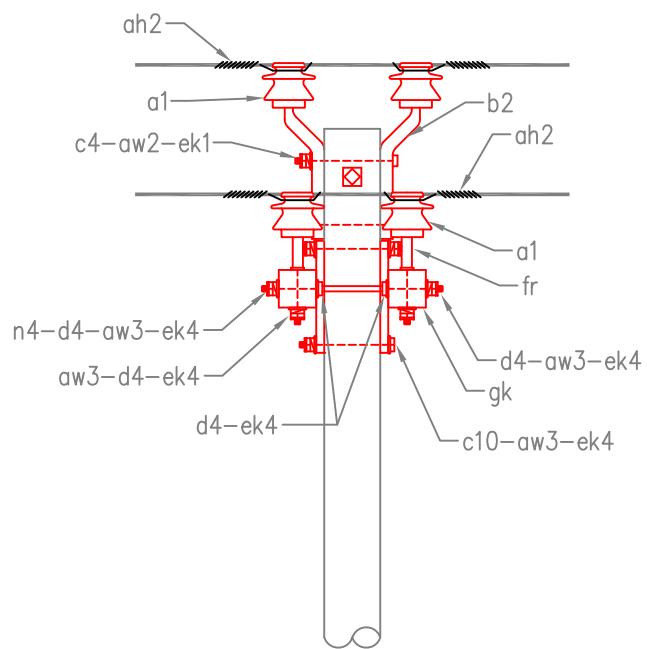
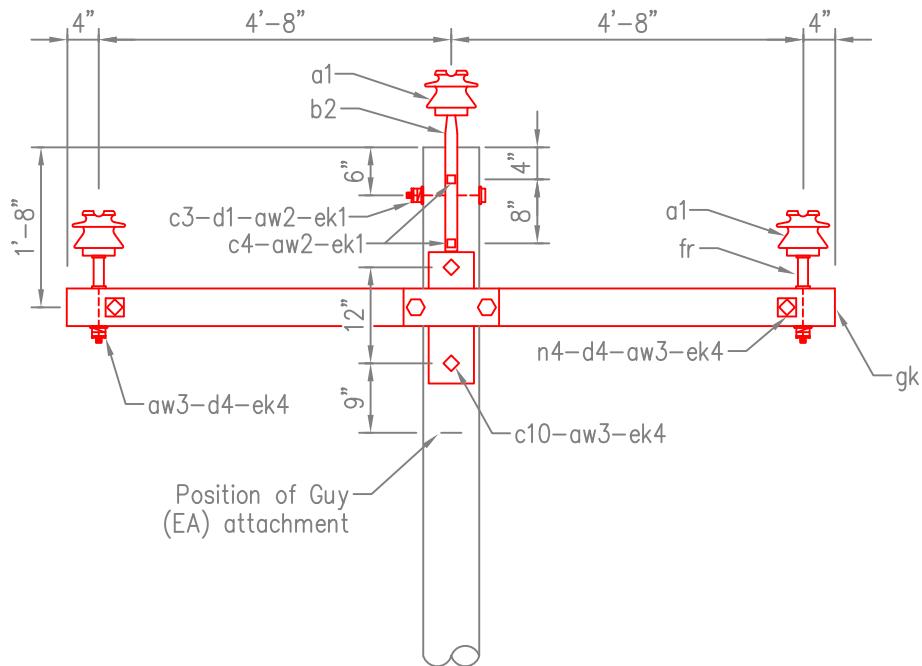
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
aw3	10	7108-99-51	Washers, double spring lock, 3/4"
b2	2	4561-33-21	Pin, offset pole top 14.4
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
d1	2	7102-04-91	Washers, square, 5/8"
d4	12	7102-04-51	Washers, square, 3/4"
ek1	3	4290-70-63	Locknuts 5/8"
ek4	14	4290-70-75	Locknuts 3/4"
fr	4	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gi	2	1809-09-09	Crossarm, Fiberglass 10' TB 3000-120
n4	2	0633-06-22	Bolts, DA 3/4" x 22" (Special Order)

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 10' DOUBLE PRIMARY SUPPORT 0° TO 5° ANGLE LESS NEUTRAL	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
			VC1-1-10-LN-F	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
10' DOUBLE PRIMARY SUPPORT  
0° TO 5° ANGLE  
LESS NEUTRAL

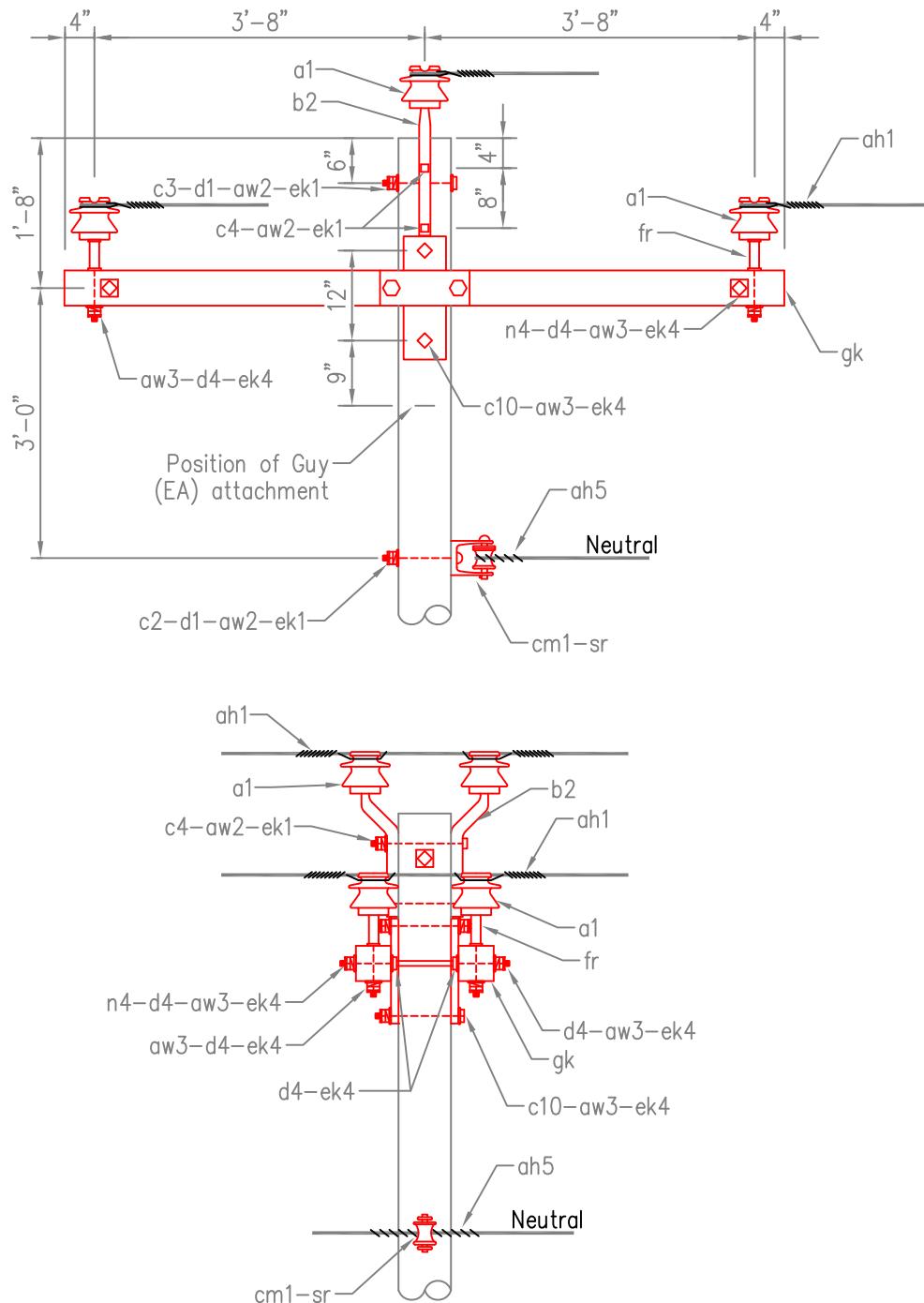
ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VC1-1-10-LN-F

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah1	3	6790-XX-22	Double side tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
aw3	10	7108-99-51	Washers, double spring lock, 3/4"
b2	2	4561-33-21	Pin, offset pole top 14.4
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cm1	1	3426-20-12	Insulator, 3" spool
d1	3	7102-04-91	Washers, square, 5/8"
d4	12	7102-04-51	Washers, square, 3/4"
ek1	4	4290-70-63	Locknuts 5/8"
ek4	14	4290-70-75	Locknuts 3/4"
fr	4	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gk	2	1809-09-14	Crossarm, Fiberglass 8' TB 3000-96
n4	2	0633-06-22	Bolts, DA 3/4" x 22" (Special Order)
sr	1	1230-17-01	Clevis, rigid (D-bracket)

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT MAX. TRANSVERSE LOADING 500 LBS./PIN 5° TO 30° MAX. ANGLE	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VC2-F



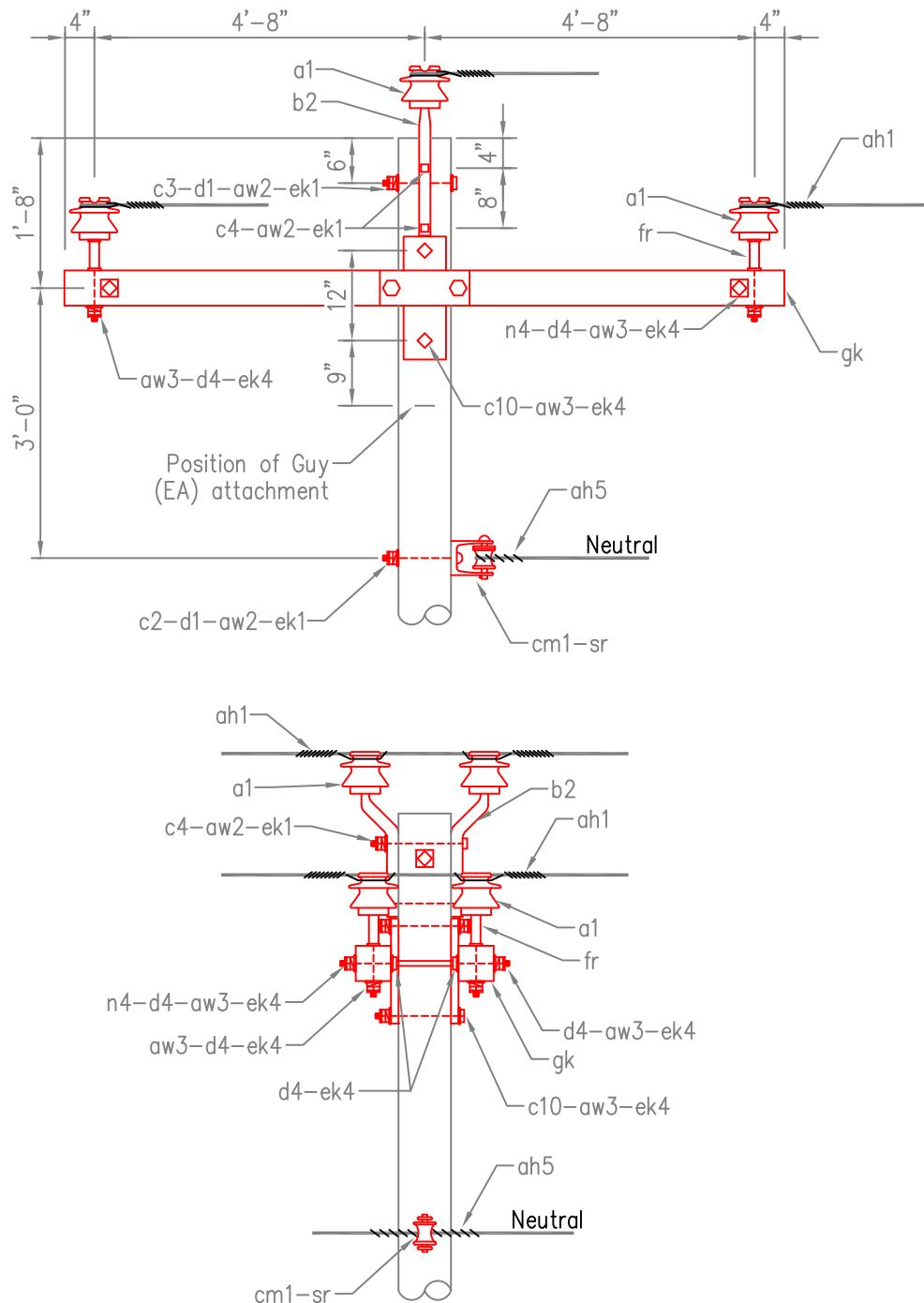
DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT MAX. TRANSVERSE LOADING 500 LBS./PIN 5° TO 30° MAX. ANGLE	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	VC2-F

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah1	3	6790-XX-22	Double side tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
aw3	10	7108-99-51	Washers, double spring lock, 3/4"
b2	2	4561-33-21	Pin, offset pole top 14.4
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cm1	1	3426-20-12	Insulator, 3" spool
d1	3	7102-04-91	Washers, square, 5/8"
d4	12	7102-04-51	Washers, square, 3/4"
ek1	4	4290-70-63	Locknuts 5/8"
ek4	14	4290-70-75	Locknuts 3/4"
fr	4	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gi	2	1809-09-09	Crossarm, Fiberglass 10' TB 3000-120
n4	2	0633-06-22	Bolts, DA 3/4" x 22" (Special Order)
sr	1	1230-17-01	Clevis, rigid (D-bracket)

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 10' DOUBLE PRIMARY SUPPORT MAX. TRANSVERSE LOADING 500 LBS./PIN 5° TO 30° MAX. ANGLE	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VC2-10-F



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
10' DOUBLE PRIMARY SUPPORT  
MAX. TRANSVERSE LOADING 500 LBS./PIN  
5° TO 30° MAX. ANGLE

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC2-10-F

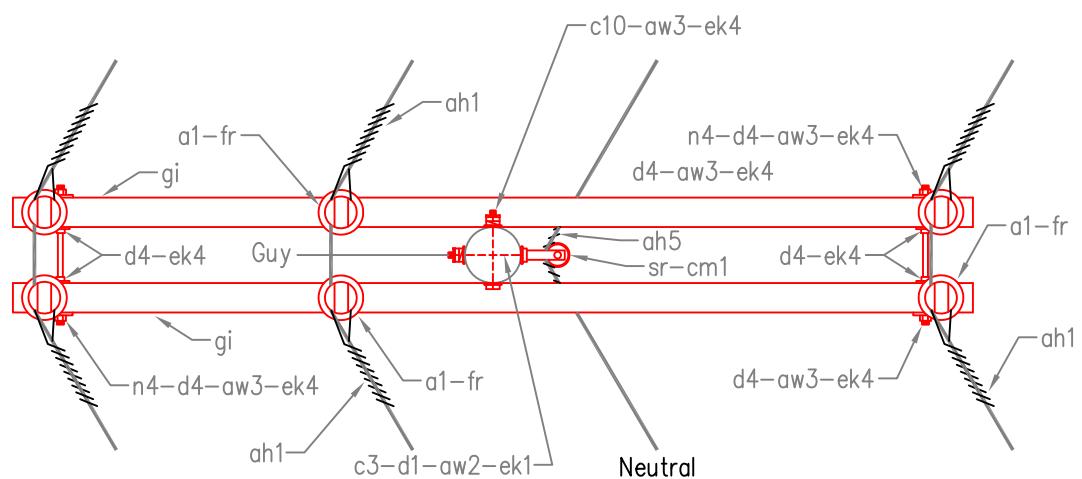
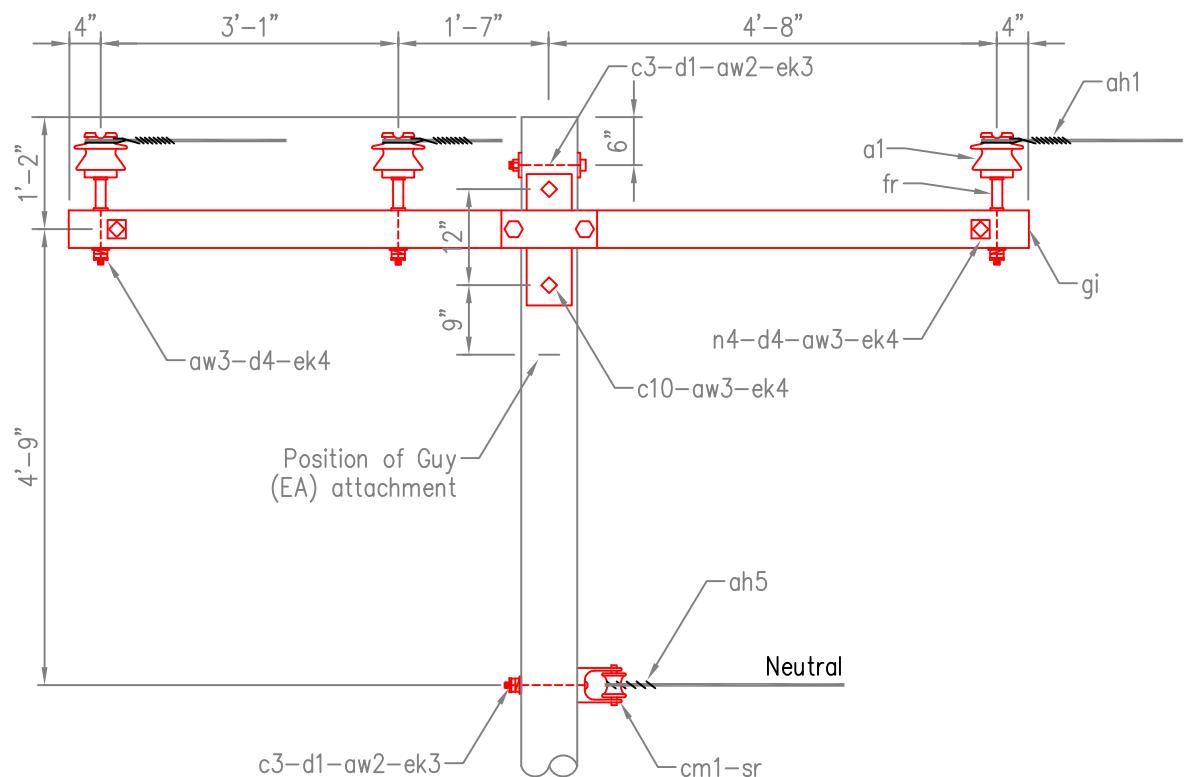
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah1	3	6790-XX-22	Double side tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	12	7108-99-51	Washers, double spring lock, 3/4"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cm1	1	3426-20-12	Insulator, 3" spool
d1	3	7102-04-91	Washers, square, 5/8"
d4	14	7102-04-51	Washers, square, 3/4"
ek1	2	4290-70-63	Locknuts 5/8"
ek4	16	4290-70-75	Locknuts 3/4"
fr	6	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gi	2	1809-09-09	Crossarm, Fiberglass 10' TB 3000-120
n4	2	0633-06-22	Bolts, DA 3/4" x 22" (Special Order)
sr	1	1230-17-01	Clevis, rigid (D-bracket)

NOTES:

1. Maximum transverse load: 1000 lbs. per conductor.
2. Maximum line angle within load limits: 20°
3. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
4. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE	ISSUED	2/04/2008
		FIBERGLASS CROSSARM CONSTRUCTION	REVISED	
		10' DOUBLE PRIMARY SUPPORT		
		MAX. TRANSVERSE LOADING 750 LBS./PIN		
		5° TO 30° MAX. ANGLE		
			STANDARD NUMBER	
			VC2-1-F	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
10' DOUBLE PRIMARY SUPPORT  
MAX. TRANSVERSE LOADING 750 LBS./PIN  
5° TO 30° MAX. ANGLE

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VC2-1-F

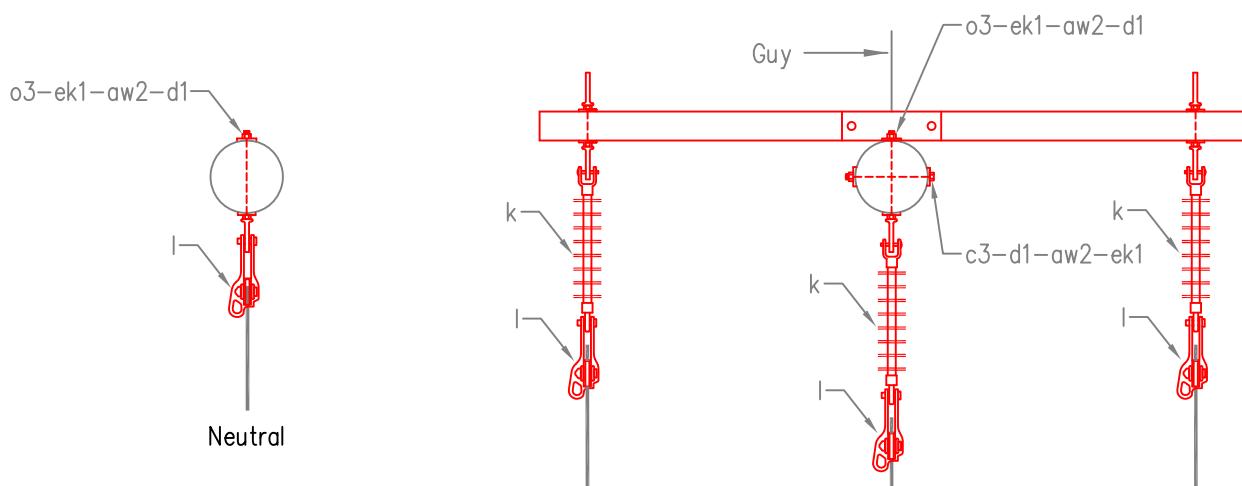
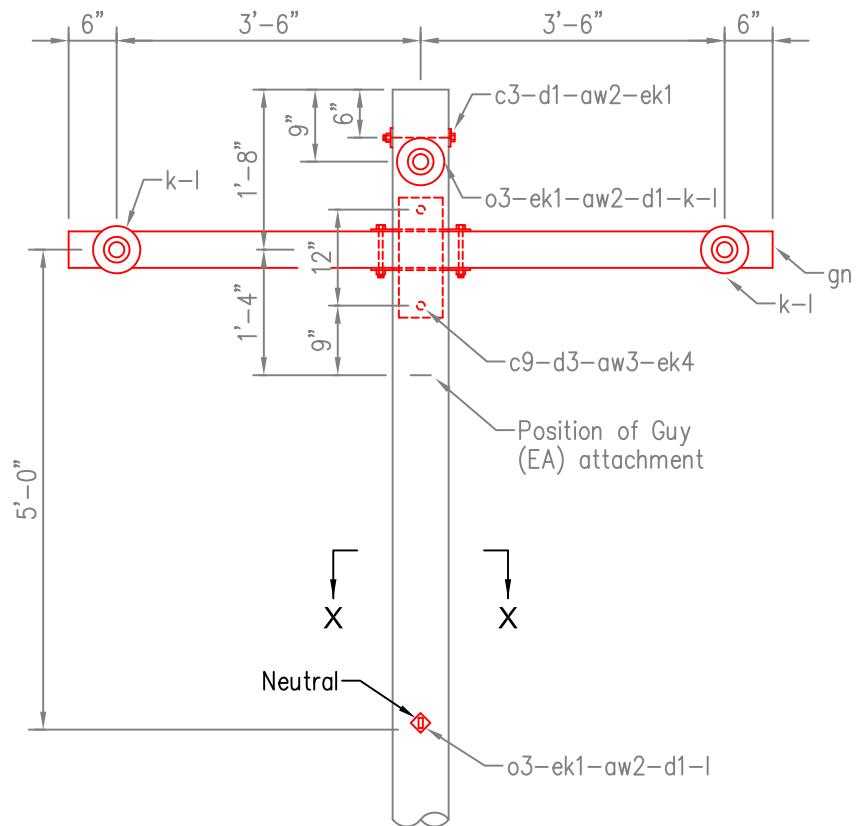
ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
d1	4	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	3	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
gn	1	1809-09-08	Crossarm, Fiberglass 8' DA 3000-96
k	3	3428-60-60	Insulator, polymer suspension
l	4	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o3	2	0636-15-12	Bolts, ovaleye 5/8" x 12"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION DEADEND STRUCTURE (SINGLE DEADEND)	ISSUED	2/04/2008
			REVISED	8/15/2011
			STANDARD NUMBER	
				VC7A-F



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND STRUCTURE  
(SINGLE DEADEND)

ISSUED	2/04/2008
REVISED	8/15/2011
STANDARD NUMBER	VC7A-F

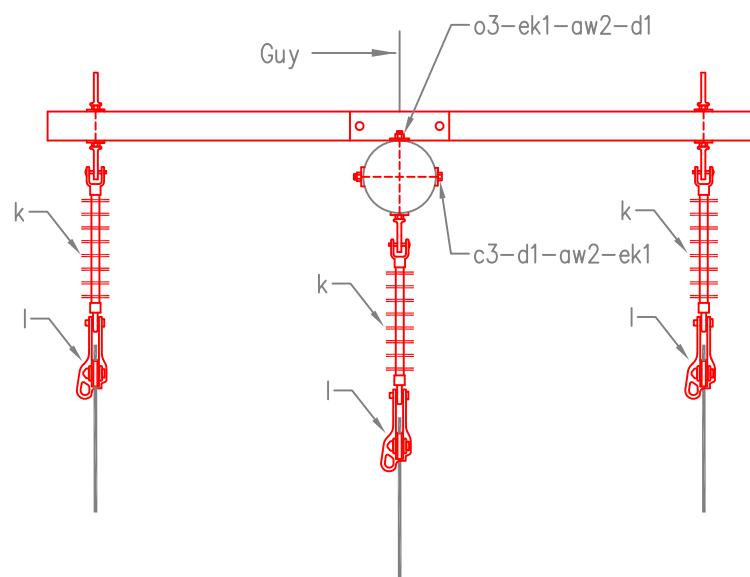
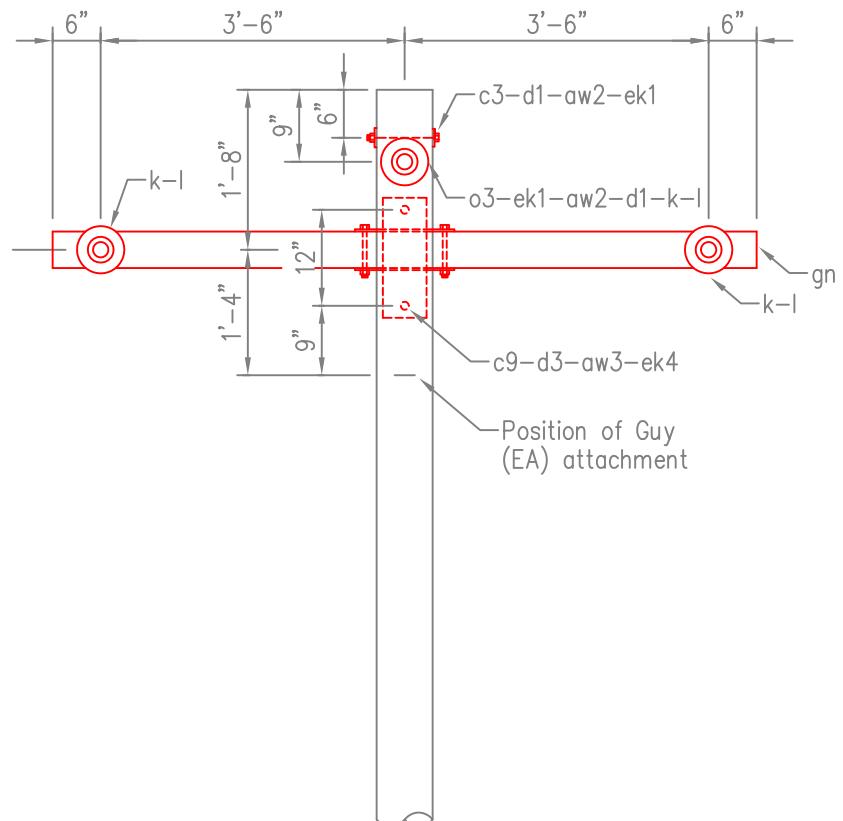
ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
d1	3	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	2	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
gn	1	1809-09-08	Crossarm, Fiberglass 8' DA 3000-96
k	3	3428-60-60	Insulator, polymer suspension
l	3	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o3	1	0636-15-12	Bolts, ovaleye 5/8" X 12"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION DEADEND STRUCTURE (SINGLE DEADEND) LESS NEUTRAL	ISSUED	2/04/2008
			REVISED	8/15/2011
			STANDARD NUMBER	
				VC7A-LN-F



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND STRUCTURE  
(SINGLE DEADEND)  
LESS NEUTRAL

ISSUED	2/04/2008
REVISED	8/15/2011
STANDARD NUMBER	VC7A-LN-F

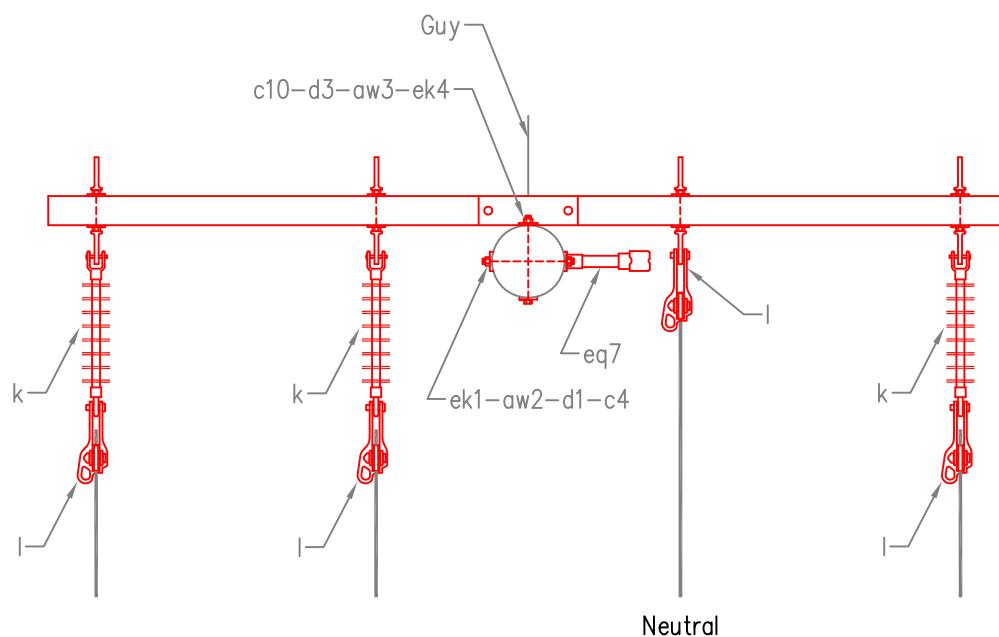
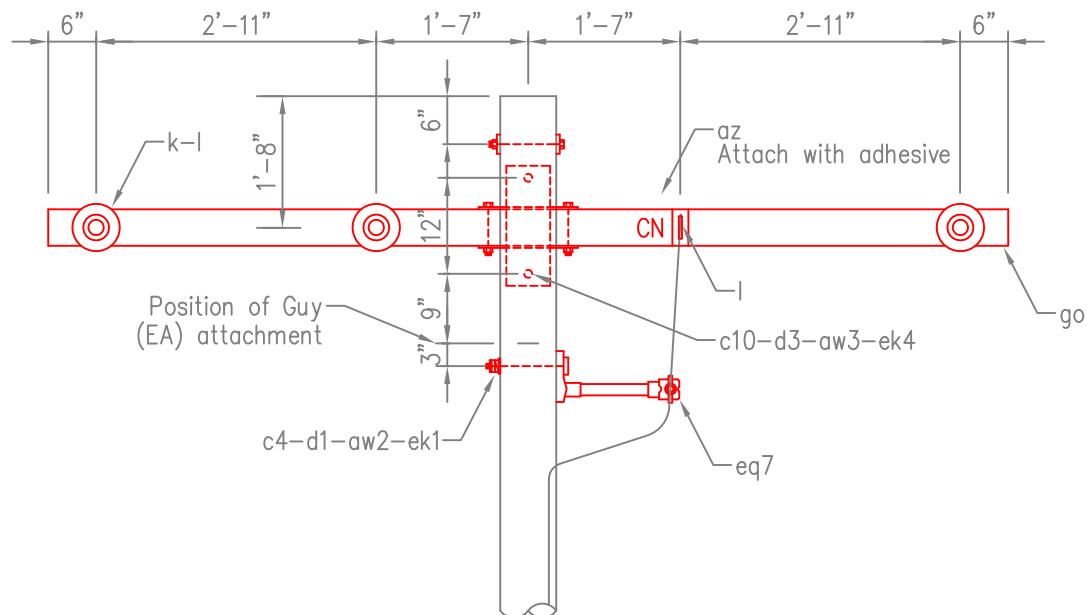
ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
az	2	4285-10-01	CN Stick-on Tag
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
d1	3	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	2	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
eq7	1	0780-37-01	Bracket, downlead standoff, Fiberglass
go	1	1809-09-17	Crossarm, Fiberglass 10' DA 3000-120
k	3	3428-60-60	Insulator, polymer suspension
l	4	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

NOTES:

- For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

**ENGINEERING APPROVAL ONLY**

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 10' DEADEND (SINGLE) STRUCTURE LARGE CONDUCTOR	ISSUED	2/04/2008
				REVISED	7/27/2011
				STANDARD NUMBER	
				VC7A-10-F	



ENGINEERING APPROVAL ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
10' DEADEND (SINGLE) STRUCTURE  
LARGE CONDUCTOR

ISSUED	2/04/2008
REVISED	7/27/2011
STANDARD NUMBER	VC7A-10-F

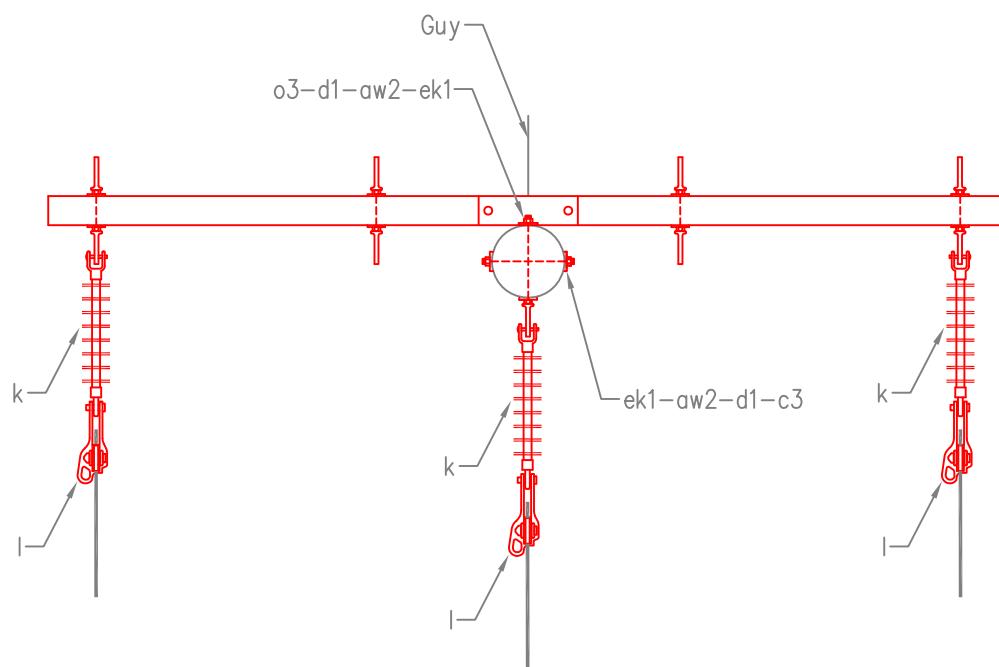
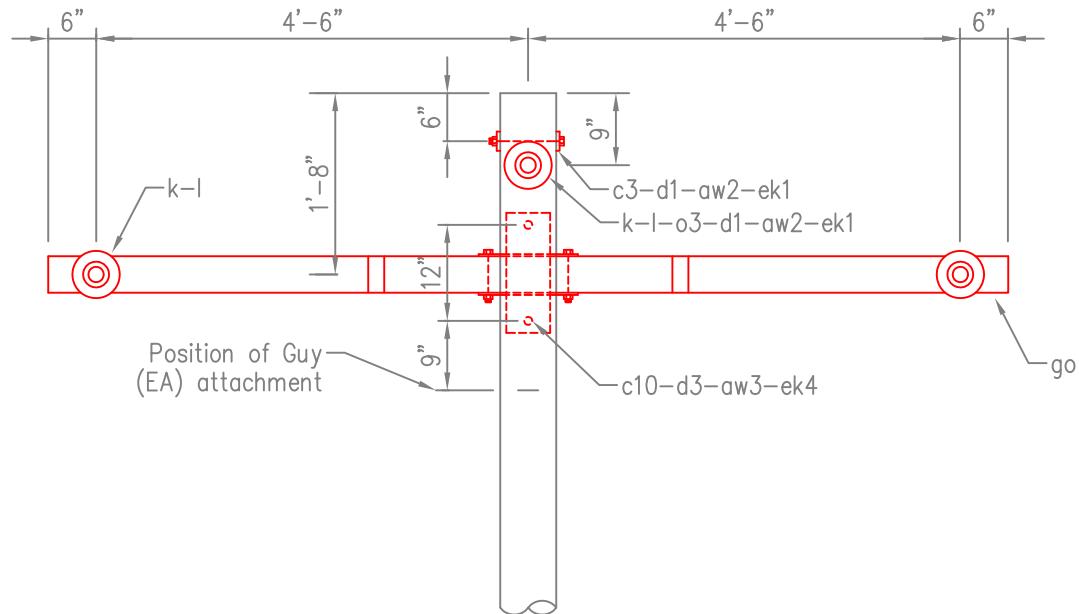
ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c4	1	0638-05-14	Bolts, machine 5/8" x 14"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
d1	3	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	2	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
go	1	1809-09-17	Crossarm, Fiberglass 10' DA 3000-120
k	3	3428-60-60	Insulator, polymer suspension
l	3	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o3	1	0636-15-12	Bolts, ovaleye 5/8" X 12"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE	ISSUED	2/04/2008
		FIBERGLASS CROSSARM CONSTRUCTION	REVISED	11/8/2011
		10' DEADEND (SINGLE) STRUCTURE		
		LARGE CONDUCTOR		
		LESS NEUTRAL		
			STANDARD NUMBER	
			VC7A-10-LN-F	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
10' DEADEND (SINGLE) STRUCTURE  
LARGE CONDUCTOR  
LESS NEUTRAL

ISSUED 2/04/2008  
REVISED 11/8/2011  
STANDARD NUMBER  
VC7A-10-LN-F

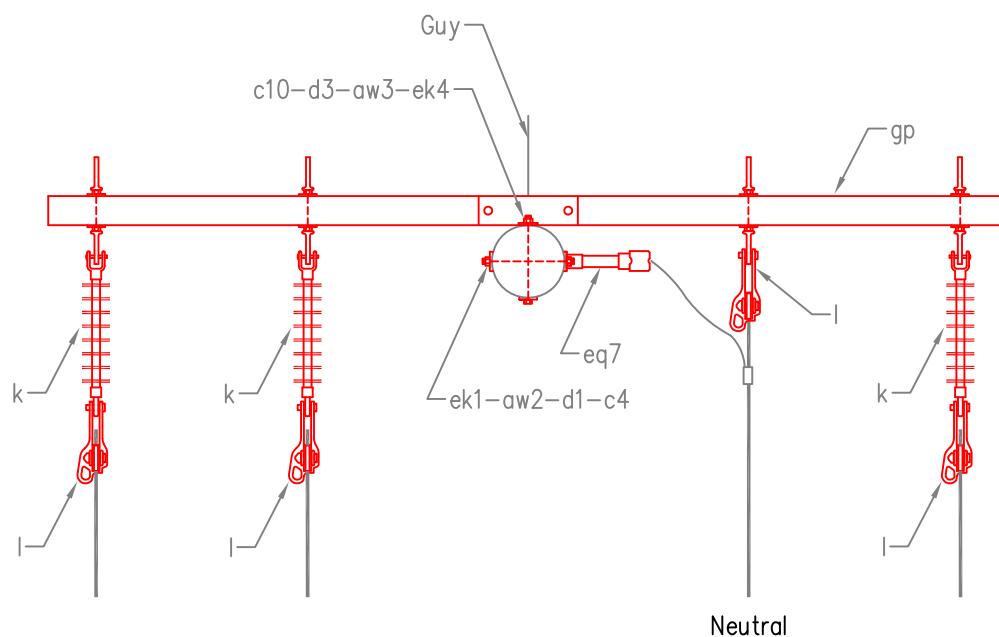
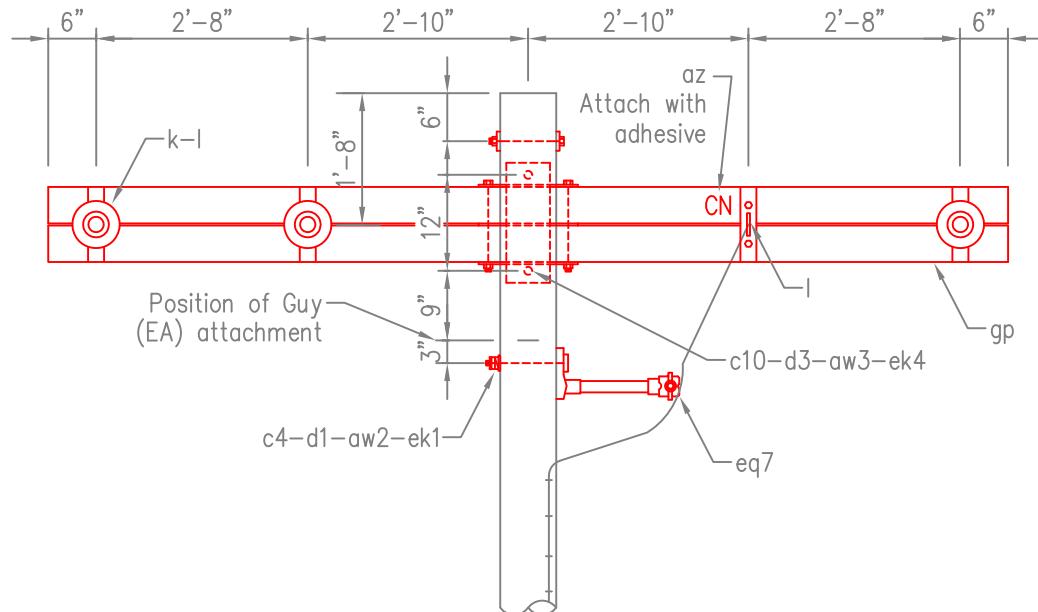
ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
az	2	4285-10-01	CN Stick-on Tag
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
d1	3	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	2	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
eq7	1	0780-37-01	Bracket, downlead standoff, Fiberglass
gp	1	1809-09-11	Crossarm, Fiberglass 12' DA 3200-144
k	3	3428-60-60	Insulator, polymer suspension
l	4	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

NOTES:

- For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

ENGINEERING APPROVAL ONLY

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 12' DEADEND (SINGLE) STRUCTURE LARGE CONDUCTOR	ISSUED	9/07/2012
				REVISED	-
				STANDARD NUMBER	
				VC7A-12-F	



ENGINEERING APPROVAL ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
12' DEADEND (SINGLE) STRUCTURE  
LARGE CONDUCTOR

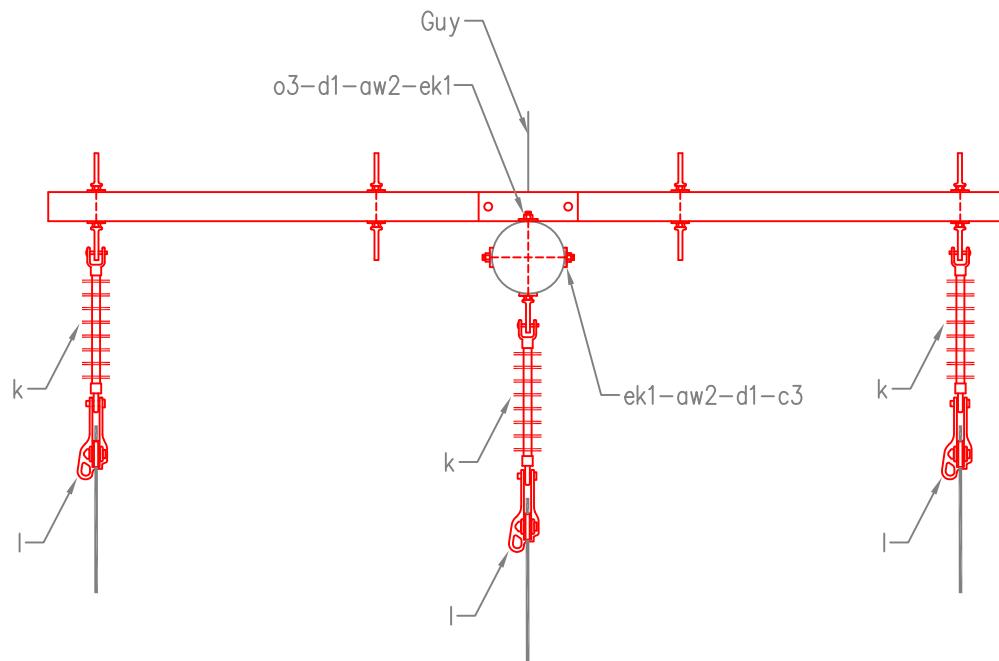
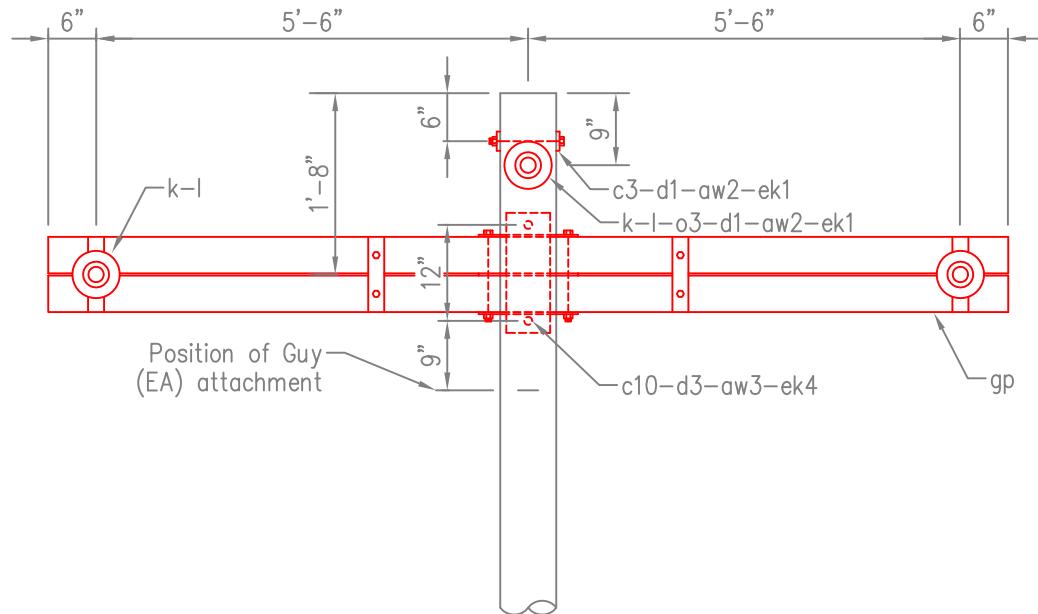
ISSUED	9/07/2012
REVISED	-
STANDARD NUMBER	VC7A-12-F

ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c4	1	0638-05-14	Bolts, machine 5/8" x 14"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
d1	3	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	2	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
gp	1	1809-09-11	Crossarm, Fiberglass 12' DA 3200-144
k	3	3428-60-60	Insulator, polymer suspension
l	3	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o3	1	0636-15-12	Bolts, ovaleye 5/8" X 12"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 12' DEADEND (SINGLE) STRUCTURE LARGE CONDUCTOR LESS NEUTRAL	ISSUED	9/07/2012
				REVISED	-
				STANDARD NUMBER	
				VC7A-12-LN-F	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
 FIBERGLASS CROSSARM CONSTRUCTION  
 12' DEADEND (SINGLE) STRUCTURE  
 LARGE CONDUCTOR  
 LESS NEUTRAL

ISSUED	9/07/2012
REVISED	-
STANDARD NUMBER	VC7A-12-LN-F

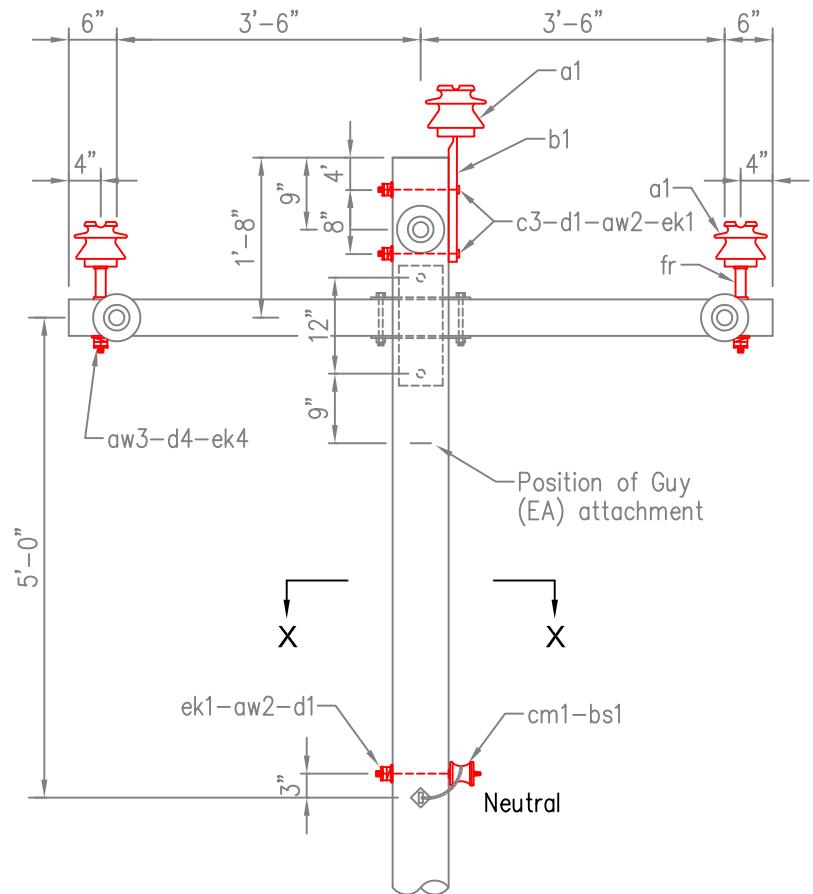
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah9	3	6790-XX-88	Slack span deadend tie, (Specify conductor size)
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
b1	1	4561-23-20	Pin, pole top 14.4
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
d1	3	7102-04-91	Washers, square, 5/8"
d4	2	7102-04-51	Washers, square, 3/4"
ek1	3	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
fr	2	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase

NOTES:

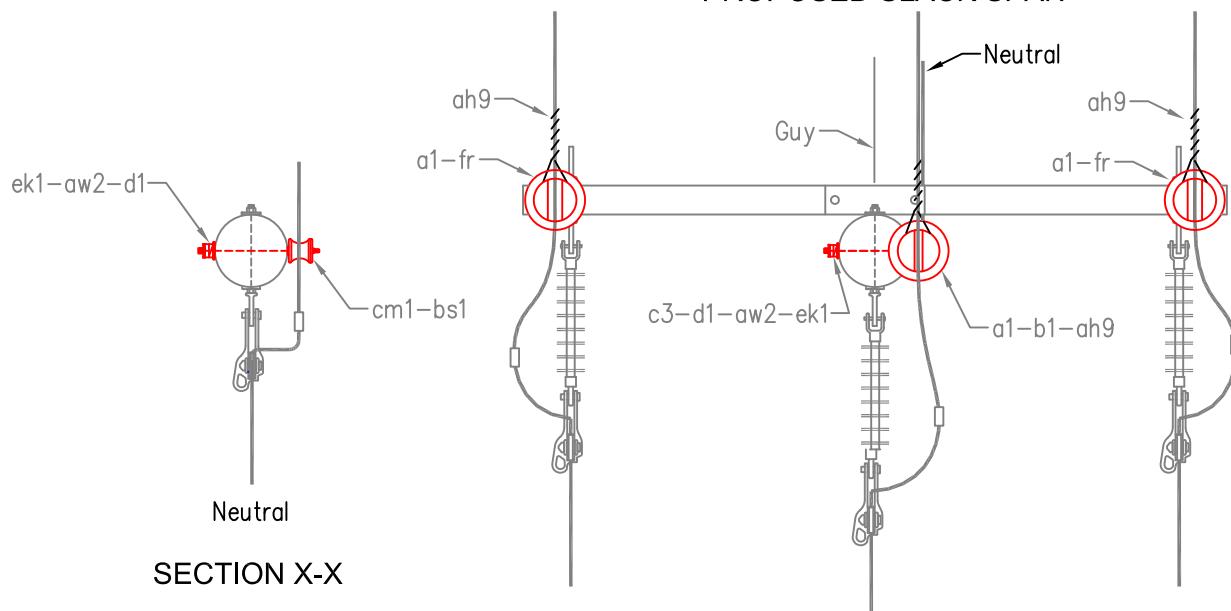
1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION DEADEND TAKEOFF FOR SPAN WITH REDUCED TENSION	ISSUED	2/04/2008
			REVISED	7/27/2011
			STANDARD NUMBER	
				VC7AXS-F



### PROPOSED SLACK SPAN



SECTION X-X

### EXISTING FULL TENSION DEADEND



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND TAKEOFF FOR  
SPAN WITH REDUCED TENSION

ISSUED 2/04/2008

REVISED 7/27/2011

STANDARD NUMBER

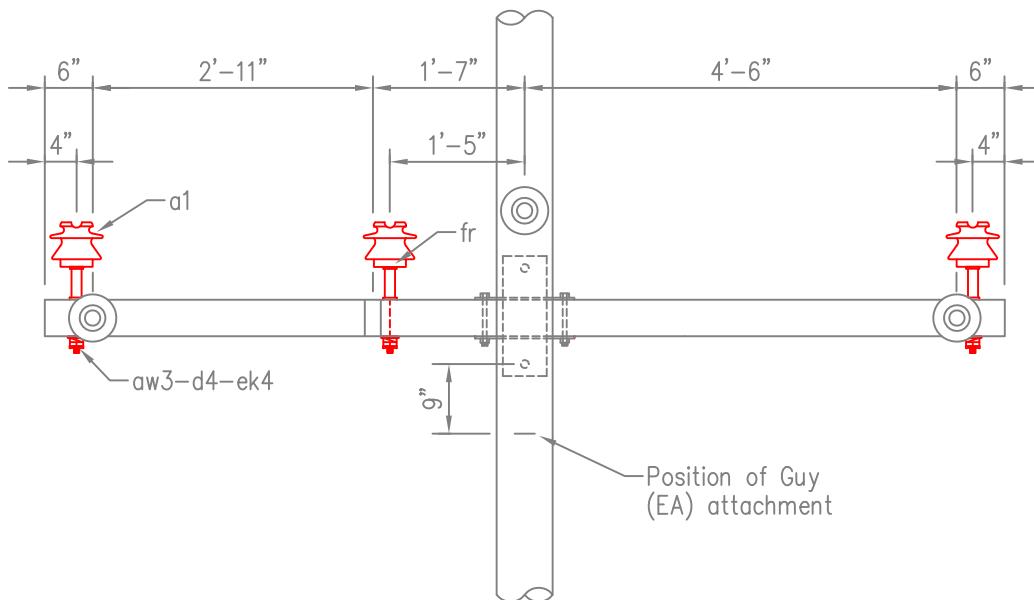
VC7AXS-F

ITEM.	QTY.	MAT. CODE No	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah9	3	6790-XX-88	Slack span deadend tie, (Specify conductor size)
aw3	3	7108-99-51	Washers, double spring lock, 3/4"
d4	3	7102-04-51	Washers, square, 3/4"
ek4	2	4290-70-75	Locknuts 3/4"
fr	3	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase

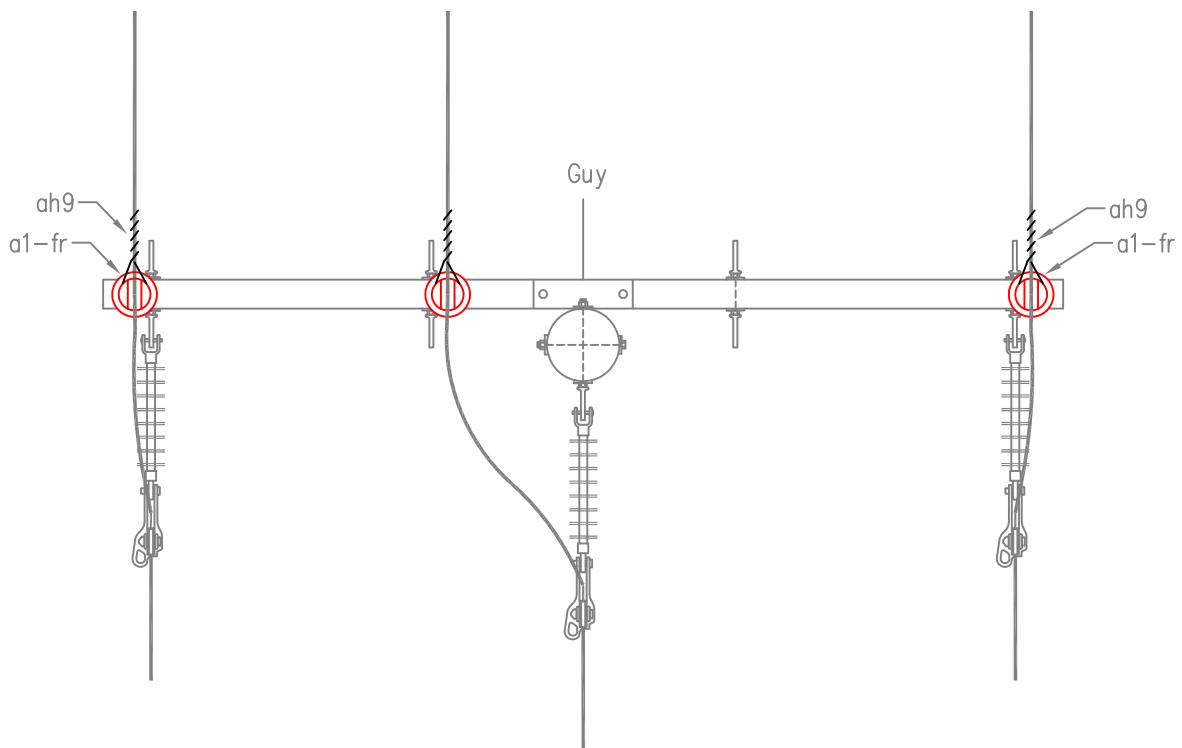
NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 10' DEADEND TAKEOFF FOR SPAN WITH REDUCED TENSION LESS NEUTRAL	ISSUED	11/8/2011
				REVISED	
				STANDARD NUMBER	
				VC7AXS-10-LN-F	



PROPOSED SLACK SPAN



EXISTING FULL TENSION DEADEND



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
10' DEADEND TAKEOFF FOR  
SPAN WITH REDUCED TENSION  
LESS NEUTRAL

ISSUED 11/8/2011  
REVISED  
STANDARD NUMBER  
VC7AXS-10-LN-F

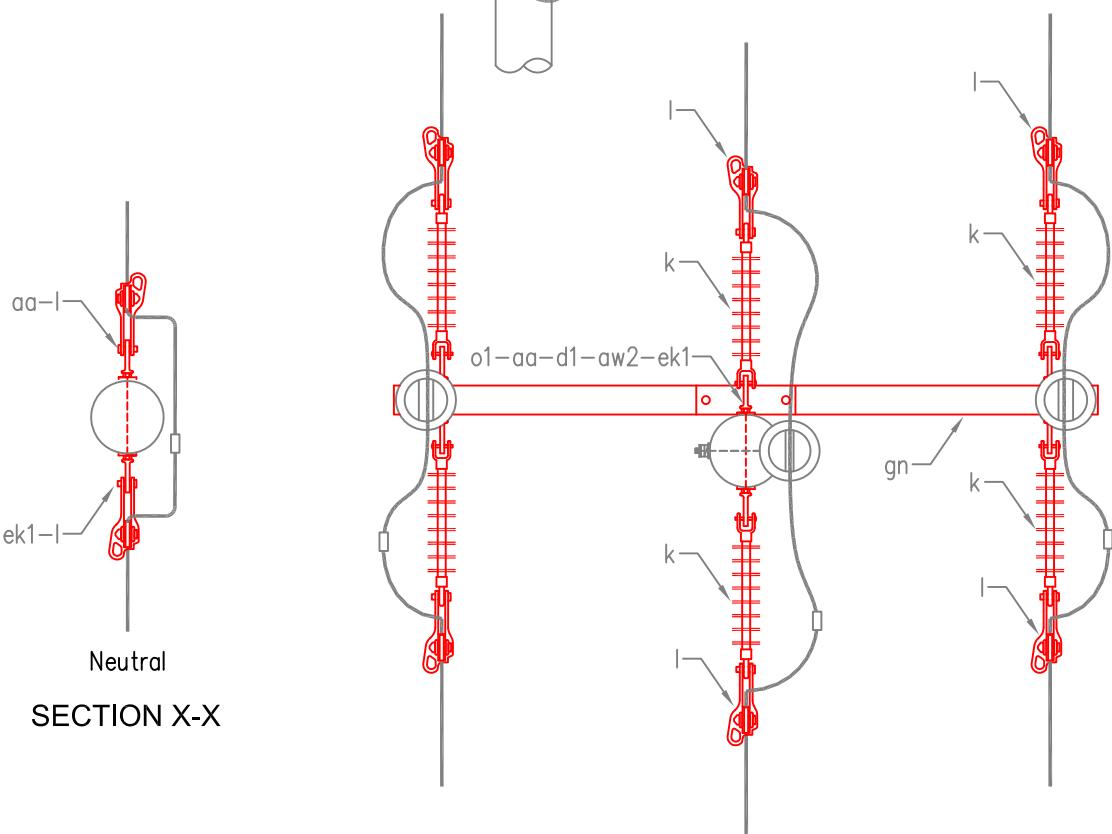
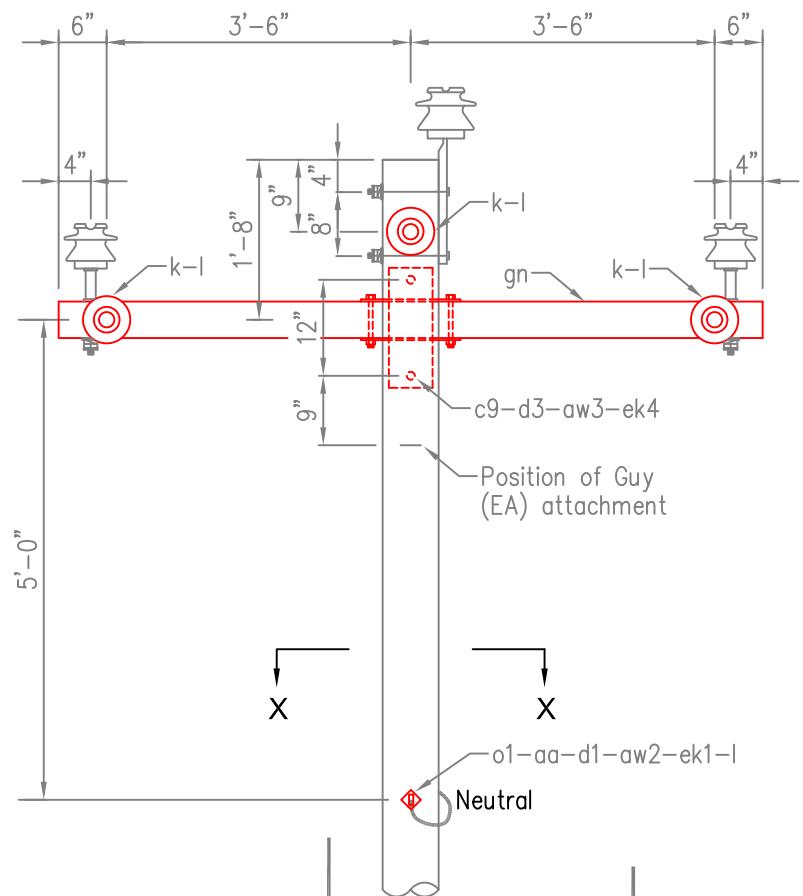
ITM.	QTY.	MAT.CODE No	MATERIAL
aa	2	4290-40-63	Nuts, ovaleye 5/8"
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
d1	2	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	4	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
gn	1	1809-09-08	Crossarm, Fiberglass 8' DA 3000-96
k	6	3428-60-60	Insulator, polymer suspension
l	8	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o1	2	0636-15-12	Bolts, ovaleye 5/8" x 12"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION DEADEND STRUCTURE (DOUBLE DEADEND)	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VC8A-F



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND STRUCTURE  
(DOUBLE DEADEND)

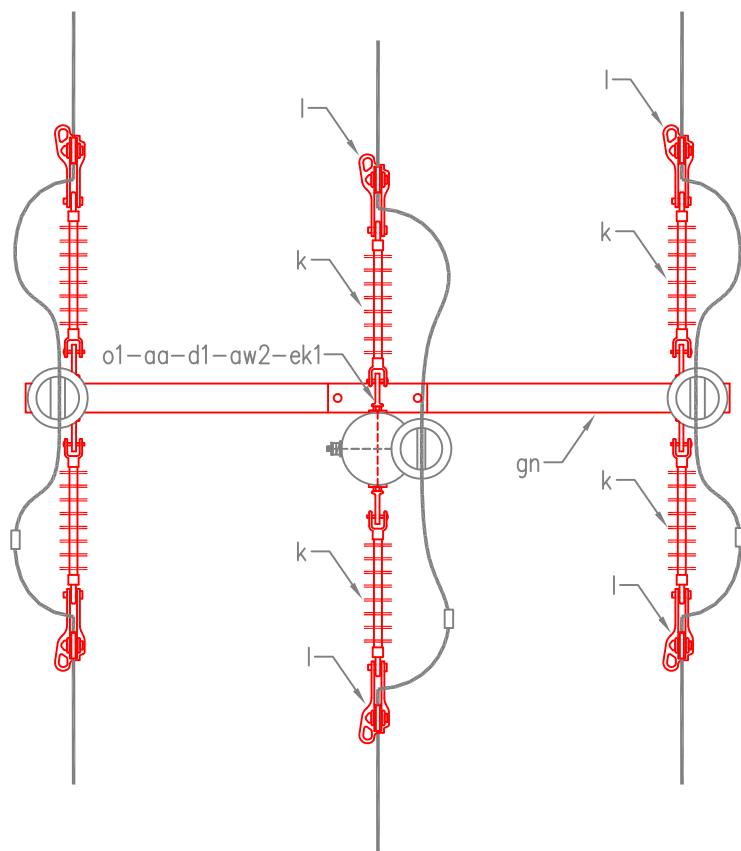
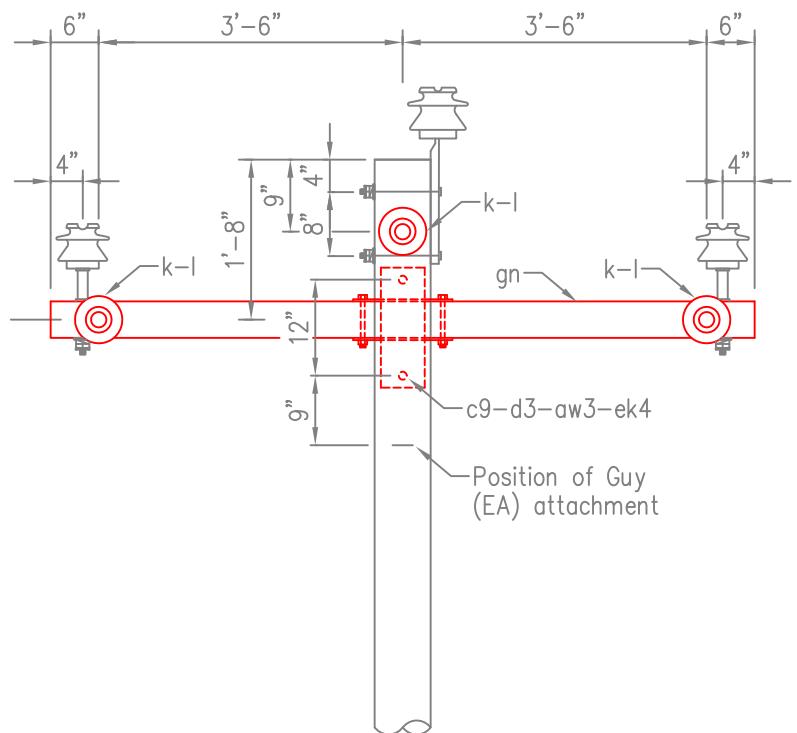
ISSUED	2/04/2008
REVISED	7/27/2011
STANDARD NUMBER	VC8A-F

ITM.	QTY.	MAT.CODE No	MATERIAL
aa	1	4290-40-63	Nuts, ovaleye 5/8"
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
d1	1	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	2	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
gn	1	1809-09-08	Crossarm, Fiberglass 8' DA 3000-96
k	6	3428-60-60	Insulator, polymer suspension
l	6	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o1	1	0636-15-12	Bolts, ovaleye 5/8" X 12"

NOTES:

1. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION DEADEND STRUCTURE (DOUBLE DEADEND) LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VC8A-LN-F	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND STRUCTURE  
(DOUBLE DEADEND)  
LESS NEUTRAL

ISSUED	2/04/2008
REVISED	7/27/2011
STANDARD NUMBER	VC8A-LN-F

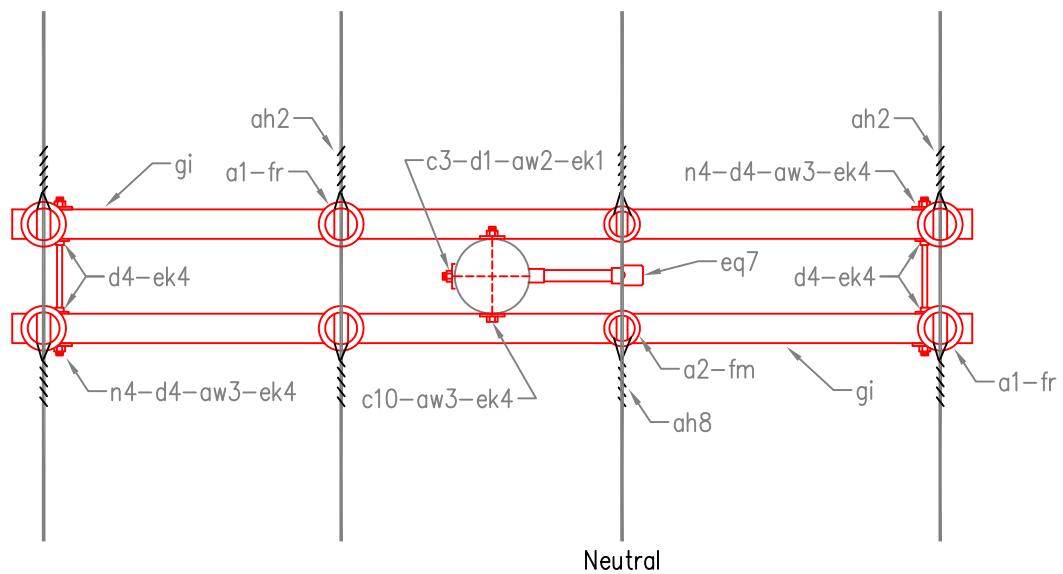
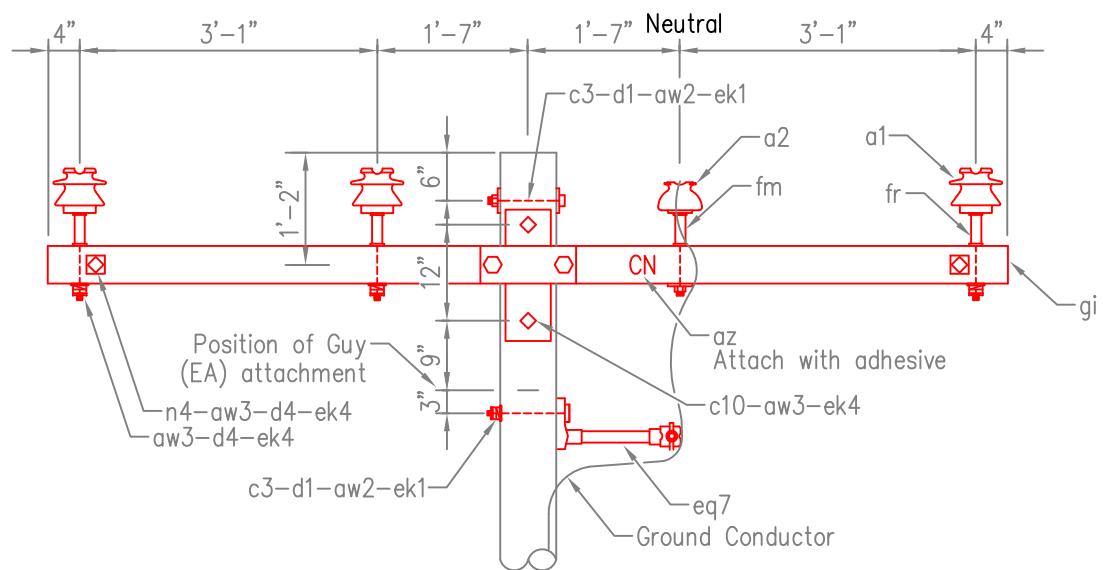
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
a2	2	3422-40-10	Insulator, 7.2 pin, white, 1" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
ah8	1	6790-XX-78	C/F double neck double support, (Specify conductor size)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	14	7108-99-51	Washers, double spring lock, 3/4"
az	2	4285-10-01	CN Stick-On Tag
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
d1	3	7102-04-91	Washers, square, 5/8"
d4	16	7102-04-51	Washers, square, 3/4"
ek1	2	4290-70-63	Locknuts 5/8"
ek4	18	4290-70-75	Locknuts 3/4"
eq7	1	0780-37-01	Bracket, downlead standoff, Fiberglass
fm	2	4541-22-32	Pin, crossarm 7.2, 3/4" shank, neutral
fr	6	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gi	2	1809-09-09	Crossarm, Fiberglass 10' TB 3000-120
n4	2	0633-06-22	Bolts, DA 3/4" x 22" (Special Order)

NOTES:

1. Maximum line angle within load limits: 20°
2. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

ENGINEERING APPROVAL ONLY

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 10' DOUBLE PRIMARY SUPPORT	ISSUED	2/04/2008
				REVISED	7/27/2011
				STANDARD NUMBER	
				VC9-F	



ENGINEERING APPROVAL ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
10' DOUBLE PRIMARY SUPPORT

ISSUED	2/04/2008
REVISED	7/27/2011
STANDARD NUMBER	VC9-F

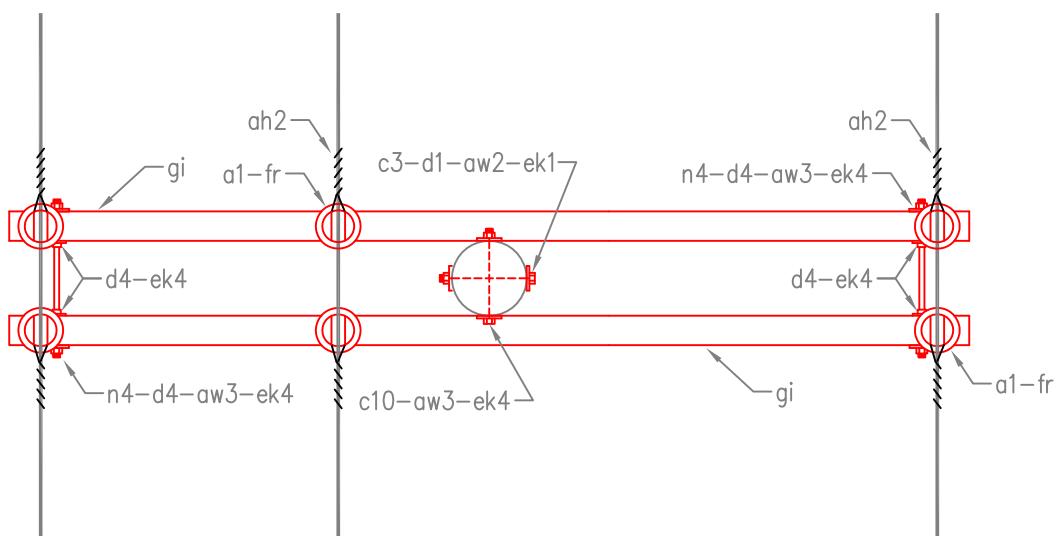
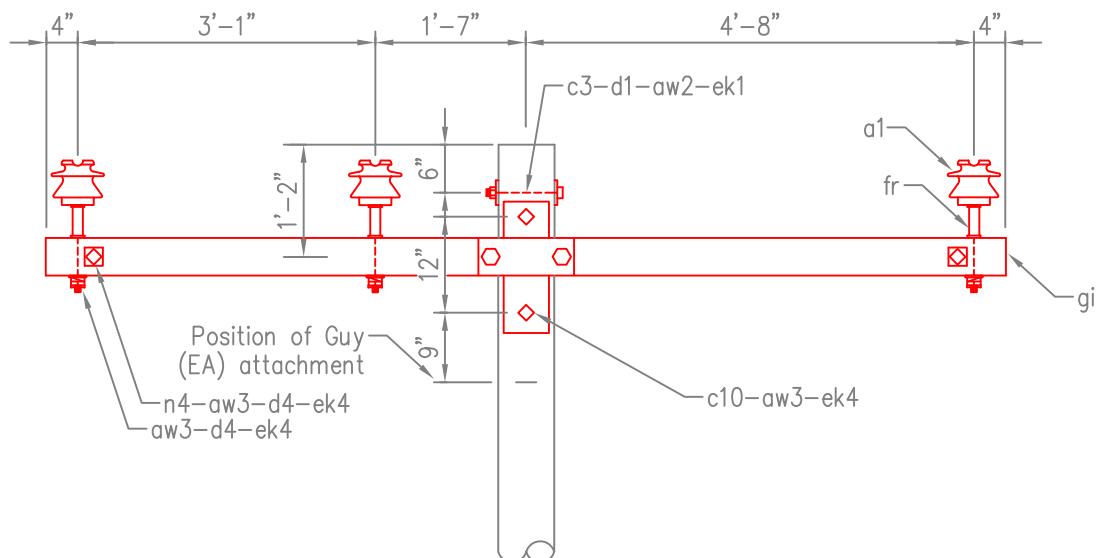
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
aw3	12	7108-99-51	Washers, double spring lock, 3/4"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
d1	2	7102-04-91	Washers, square, 5/8"
d4	14	7102-04-51	Washers, square, 3/4"
ek1	1	4290-70-63	Locknuts 5/8"
ek4	16	4290-70-75	Locknuts 3/4"
fr	6	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gi	2	1809-09-09	Crossarm, Fiberglass 10' TB 3000-120
n4	2	0633-06-22	Bolts, DA 3/4" x 22" (Special Order)

NOTES:

1. Maximum line angle within load limits: 20°
2. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 10' DOUBLE PRIMARY SUPPORT LESS NEUTRAL	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				VC9-LN-F



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
10' DOUBLE PRIMARY SUPPORT  
LESS NEUTRAL

ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VC9-LN-F

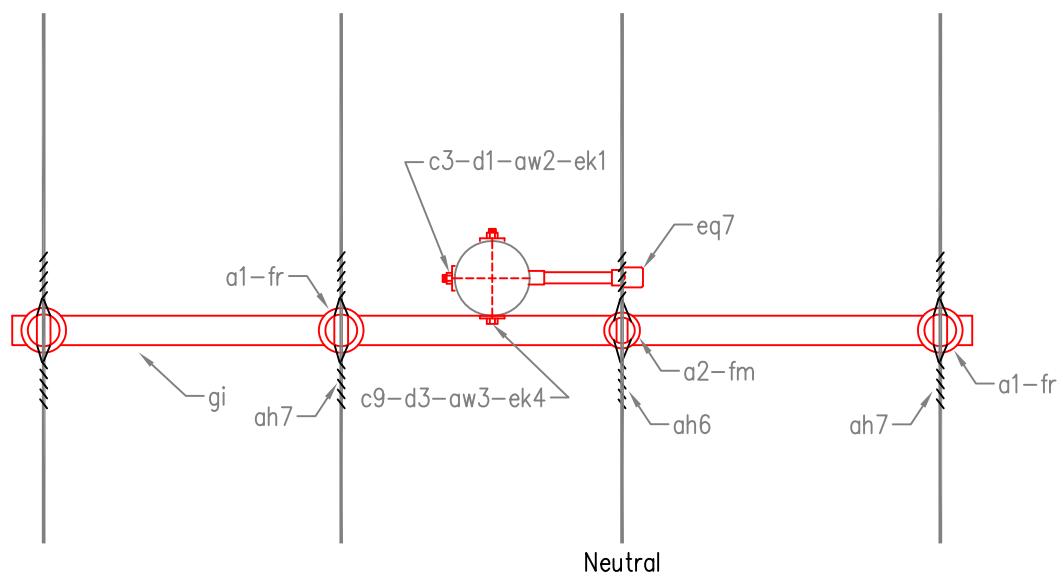
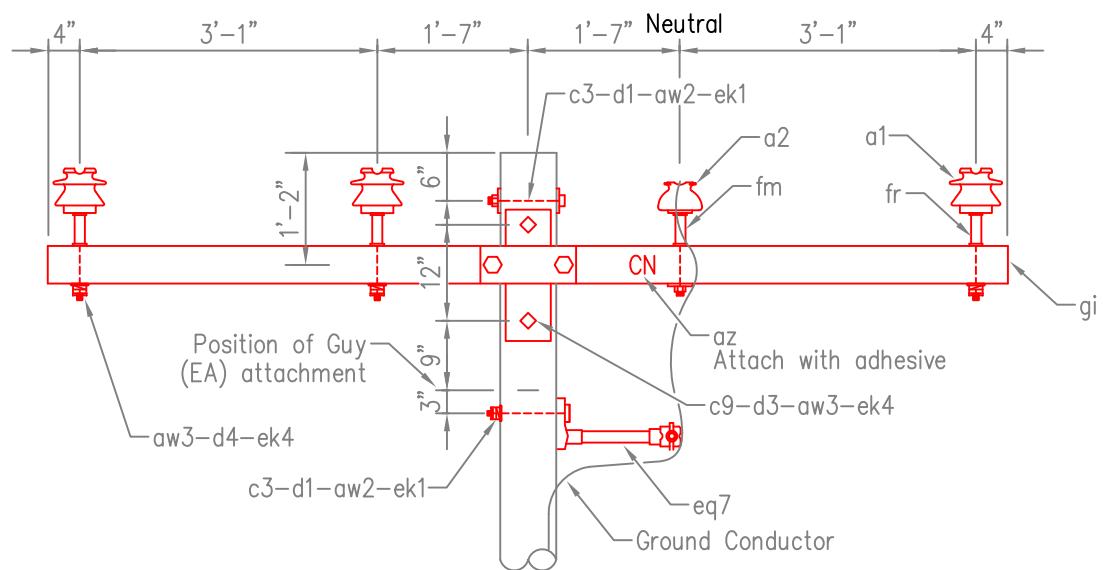
ITEM.	QTY.	MAT.CODE No	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
a2	1	3422-40-10	Insulator, 7.2 pin, white, 1" internal thread
ah6	1	6790-XX-76	C/F neck wrap lock tie, (Specify conductor size)
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	6	7108-99-51	Washers, double spring lock, 3/4"
az	2	4285-10-01	CN Stick-On Tag
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
d1	3	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	4	7102-04-51	Washers, square, 3/4"
ek1	2	4290-70-63	Locknuts 5/8"
ek4	6	4290-70-75	Locknuts 3/4"
eq7	1	0780-37-01	Bracket, download standoff, Fiberglass
fm	1	4541-22-32	Pin, crossarm 7.2, 3/4" shank, neutral
fr	3	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gi	1	1809-09-09	Crossarm, Fiberglass 10' TB 3000-120

NOTES:

1. Maximum line angle within load limits: 20°
2. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

ENGINEERING APPROVAL ONLY

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 10' SINGLE PRIMARY SUPPORT	ISSUED	2/04/2008
				REVISED	7/27/2011
				STANDARD NUMBER	
				VC9-1-F	



ENGINEERING APPROVAL ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
10' SINGLE PRIMARY SUPPORT

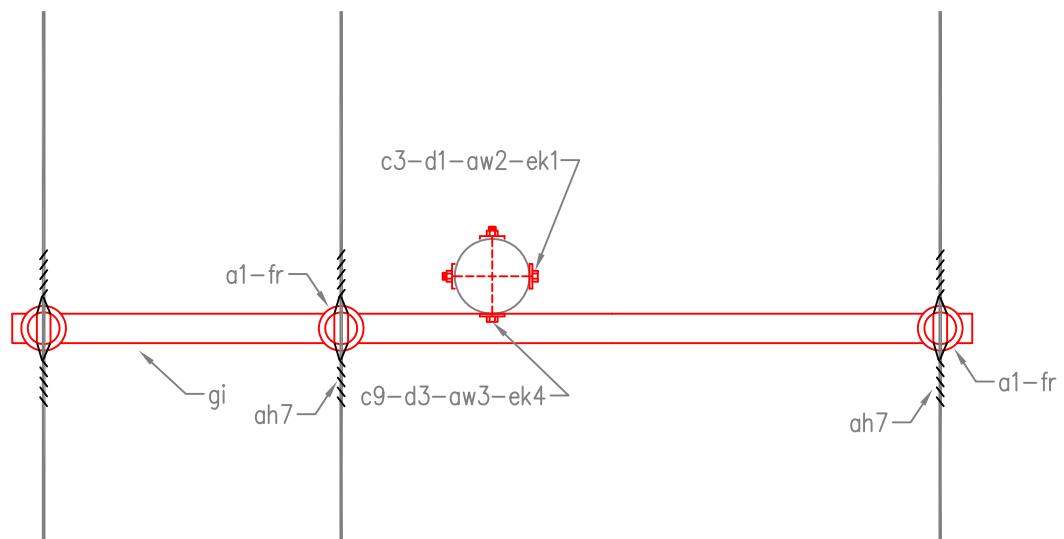
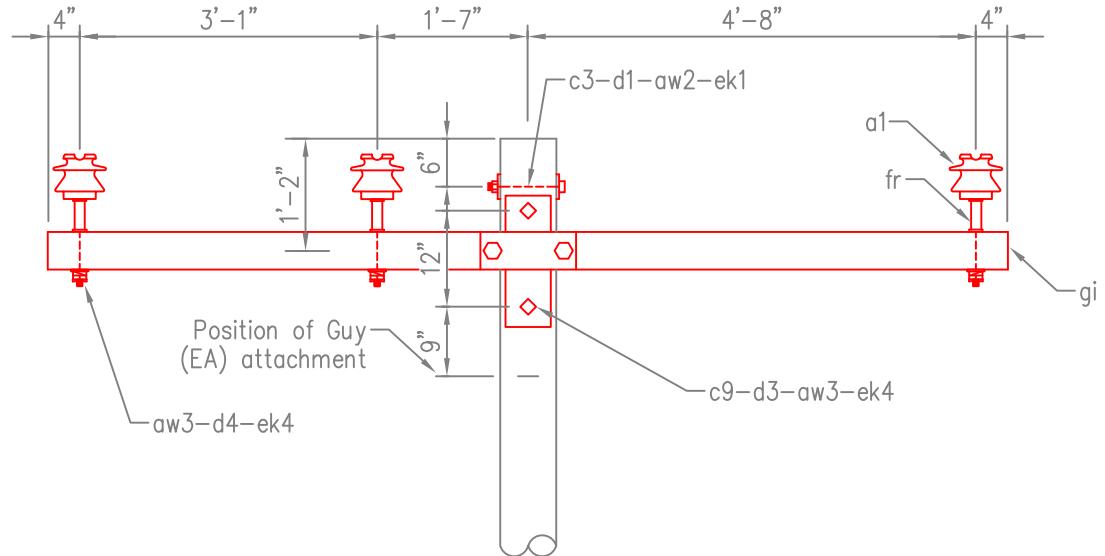
ISSUED	2/04/2008
REVISED	7/27/2011
STANDARD NUMBER	VC9-1-F

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
aw3	5	7108-99-51	Washers, double spring lock, 3/4"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
d1	2	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	3	7102-04-51	Washers, square, 3/4"
ek1	1	4290-70-63	Locknuts 5/8"
ek4	5	4290-70-75	Locknuts 3/4"
fr	3	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gi	1	1809-09-09	Crossarm, Fiberglass 10' TB 3000-120

NOTES:

1. Maximum line angle within load limits: 20°
2. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 10' SINGLE PRIMARY SUPPORT LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VC9-1-LN-F	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
10' SINGLE PRIMARY SUPPORT  
LESS NEUTRAL

ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VC9-1-LN-F

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# **Tab VABC-FG**

# **Tab VABC-FG**

**INDEX VABC-FG****3 PHASE FIBERGLASS PRIMARY FOR CONCRETE POLE TOP ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
VC1-FG	SINGLE SUPPORT – TANGENT – FIBERGLASS ON CONCRETE POLES (RETIREMENT ONLY)
VC1-LN-FG	SINGLE SUPPORT – LESS NEUTRAL TANGENT – FIBERGLASS ON CONCRETE POLES (RETIREMENT ONLY)
VC1-10-FG	SINGLE SUPPORT – TANGENT – 10' FIBERGLASS CROSSARM ON CONCRETE POLES (RETIREMENT ONLY)
VC1-10-LN-FG	SINGLE SUPPORT – TANGENT – 10' FIBERGLASS CROSSARM ON CONCRETE POLES LESS NEUTRAL (RETIREMENT ONLY)
VC1A-FG	SINGLE SUPPORT – TANGENT – 12' FIBERGLASS CROSSARM ON CONCRETE POLES
VC1-1A-FG	DOUBLE SUPPORT – TANGENT – 12' FIBERGLASS CROSSARM ON CONCRETE POLES
VC1-2-FG	DOUBLE SUPPORT – TANGENT LARGE CONDUCTOR FIBERGLASS CROSSARM ON CONCRETE POLES (RETIREMENT ONLY)
VC1-2-10-FG	DOUBLE SUPPORT – TANGENT LARGE CONDUCTOR – 10' FIBERGLASS CROSSARM ON CONCRETE POLE (RETIREMENT ONLY)
VC1-2-10-LN-FG	DOUBLE SUPPORT – TANGENT LARGE CONDUCTOR – 10' FIBERGLASS CROSSARM ON CONCRETE POLES LESS NEUTRAL (RETIREMENT ONLY)
VC1-3-FG	DOUBLE SUPPORT – TANGENT LARGE CONDUCTOR FIBERGLASS CROSSARM ON CONCRETE POLES (RETIREMENT ONLY)
VC1-3-LN-FG	DOUBLE SUPPORT – TANGENT LARGE CONDUCTOR – FIBERGLASS CROSSARM ON CONCRETE POLES LESS NEUTRAL (RETIREMENT ONLY)
VC1-3-10-FG	DOUBLE SUPPORT – TANGENT LARGE CONDUCTOR – 10' FIBERGLASS CROSSARM ON CONCRETE POLES (RETIREMENT ONLY)
VC2-2-FG	DOUBLE SUPPORT – MEDIUM ANGLE 5° TO 30° – 12' FIBERGLASS CROSSARM ON CONCRETE POLES

**INDEX VABC-FG (cont.)**

**3 PHASE FIBERGLASS PRIMARY FOR CONCRETE POLE TOP ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
VC2-2-LN-FG	DOUBLE SUPPORT – MEDIUM ANGLE 5° TO 30° – 12' FIBERGLASS CROSSARM ON CONCRETE POLES LESS NEUTRAL
VC7A-FG	SINGLE DEADEND – LARGE CONDUCTOR – 12' FIBERGLASS CROSSARM ON CONCRETE POLES
VC7A-LN-FG	SINGLE DEADEND – LARGE CONDUCTOR – 12' FIBERGLASS CROSSARM ON CONCRETE POLES LESS NEUTRAL
VC7A-L-FG	SINGLE DEADEND – LARGE CONDUCTOR FIBERGLASS CROSSARM ON CONCRETE POLES (RETIREMENT ONLY)
VC7A-L-LN-FG	SINGLE DEADEND – LARGE CONDUCTOR FIBERGLASS CROSSARM ON CONCRETE POLES LESS NEUTRAL (RETIREMENT ONLY)
VC7A-12-FG	SINGLE DEADEND – LARGE CONDUCTOR – 12' FIBERGLASS CROSSARM ON CONCRETE POLES (ENGINEERING APPROVAL ONLY)
VC7A-12-LN-FG	SINGLE DEADEND – LARGE CONDUCTOR – 12' FIBERGLASS CROSSARM ON CONCRETE POLES LESS NEUTRAL (RETIREMENT ONLY)
VC7AL-10-FG	SINGLE DEADEND – LARGE CONDUCTOR – 10' FIBERGLASS CROSSARM ON CONCRETE POLES (RETIREMENT ONLY)
VC7AL-10-LN-FG	SINGLE DEADEND – LARGE CONDUCTOR – 10' FIBERGLASS CROSSARM ON CONCRETE POLES LESS NEUTRAL (RETIREMENT ONLY)
VC7AX-FG	3Ø TAKE OFF FROM 3Ø DEADEND WITH TENSION FIBERLASS CROSSARM ON CONCRETE POLE
VC7AX-LN-FG	3Ø TAKE OFF FROM 3Ø DEADEND WITH TENSION FIBERLASS CROSSARM ON CONCRETE POLE LESS NEUTRAL
VC7AX-L-FG	3Ø TAKE OFF FROM 3Ø DEADEND WITH TENSION FIBERLASS CROSSARM ON CONCRETE POLE (RETIREMENT ONLY)

**INDEX VABC-FG (cont.)**

**3 PHASE FIBERGLASS PRIMARY FOR CONCRETE POLE TOP ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
VC7AX-L-LN-FG	3Ø TAKE OFF FROM 3Ø DEADEND WITH TENSION FIBERLASS CROSSARM ON CONCRETE POLE LESS NEUTRAL (RETIREMENT ONLY)
VC7AXS-FG	3Ø TAKE OFF FROM 3Ø DEADEND WITH REDUCED TENSION FIBERLASS CROSSARM ON CONCRETE POLE
VC7AXS-LN-FG	3Ø TAKE OFF FROM 3Ø DEADEND WITH REDUCED TENSION FIBERLASS CROSSARM ON CONCRETE POLE LESS NEUTRAL
VC8AL-10-FG	DOUBLE DEADEND – LARGE CONDUCTOR FIBERGLASS CROSSARM ON CONCRETE POLES (RETIREMENT ONLY)
VC8AL-10-LN-FG	DOUBLE DEADEND – LARGE CONDUCTOR FIBERGLASS CROSSARM ON CONCRETE POLES LESS NEUTRAL (RETIREMENT ONLY)
VC9-2-FG	DOUBLE SUPPORT – LARGE CONDUCTOR NEUTRAL ON 12' FIBERGLASS CROSSARM ON CONCRETE POLES (ENGINEERING APPROVAL ONLY)
VC9-2-LN-FG	DOUBLE SUPPORT – 12' FIBERGLASS CROSSARM ON CONCRETE POLES LESS NEUTRAL
VC9-3-FG	SINGLE SUPPORT – LARGE CONDUCTOR NEUTRAL ON 12' FIBERGLASS CROSSARM ON CONCRETE POLES (ENGINEERING APPROVAL ONLY)
VC9-3-LN-FG	SINGLE SUPPORT – LARGE CONDUCTOR ON 12' FIBERGLASS CROSSARM LESS NEUTRAL

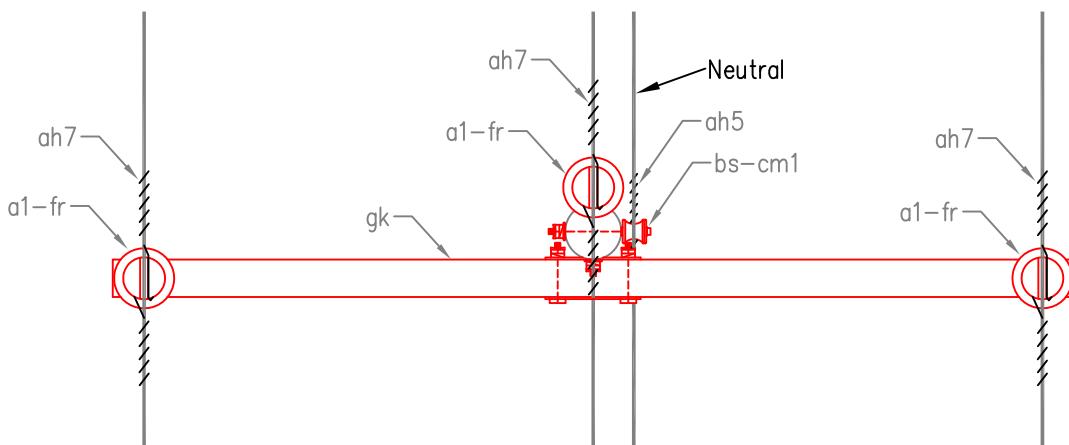
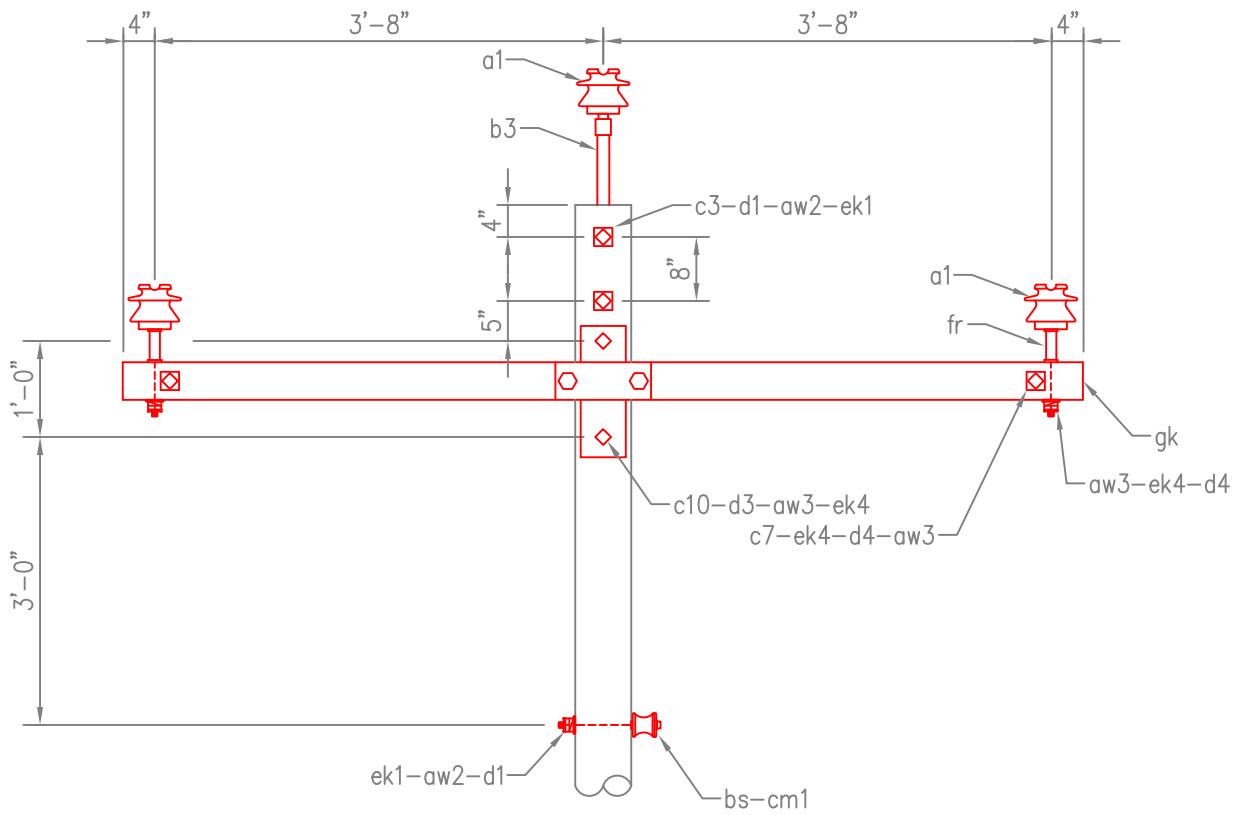
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
aw3	6	7108-99-51	Washers, double spring lock, 3/4"
b3	1	4561-43-27	Ridge pin, pole top 14.4, fiberglass 15"
bs	1	0639-05-14	Bolts, SU 5/8" x 14"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
c7	2	0638-06-06	Bolts, machine 3/4" x 6"
cm1	1	3426-20-12	Insulator, 3" spool
d1	3	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	6	7102-04-51	Washers, square, 3/4"
ek1	3	4290-70-63	Locknuts 5/8"
ek4	6	4290-70-75	Locknuts 3/4"
fr	2	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gk	1	1809-09-14	Crossarm, Fiberglass 8' TB 3000-96

NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

**FOR RETIREMENT ONLY**

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT CONCRETE POLE - LARGE CONDUCTORS	ISSUED	2/04/2008
				REVISED	8/9/2011
				STANDARD NUMBER	
				VC1-FG	



FOR RETIREMENT ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
SINGLE PRIMARY SUPPORT  
CONCRETE POLE - LARGE CONDUCTORS

ISSUED	2/04/2008
REVISED	8/9/2011
STANDARD NUMBER	VC1-FG

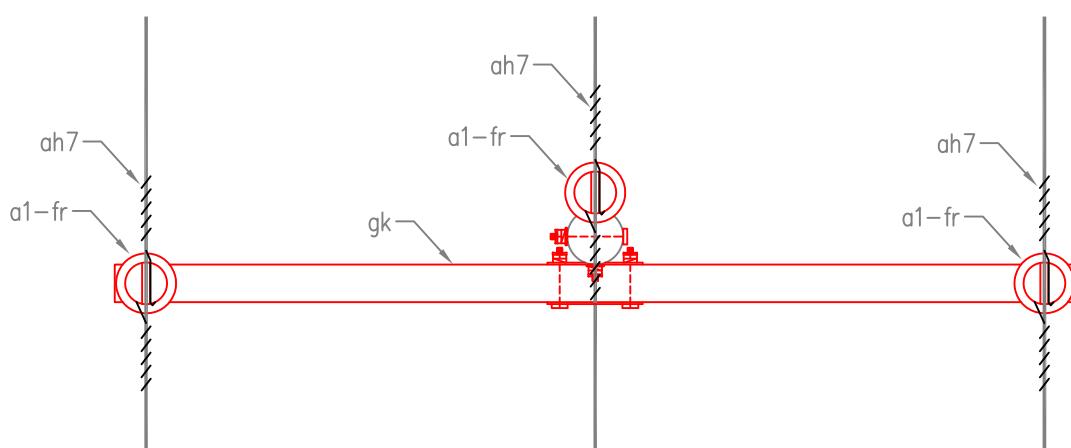
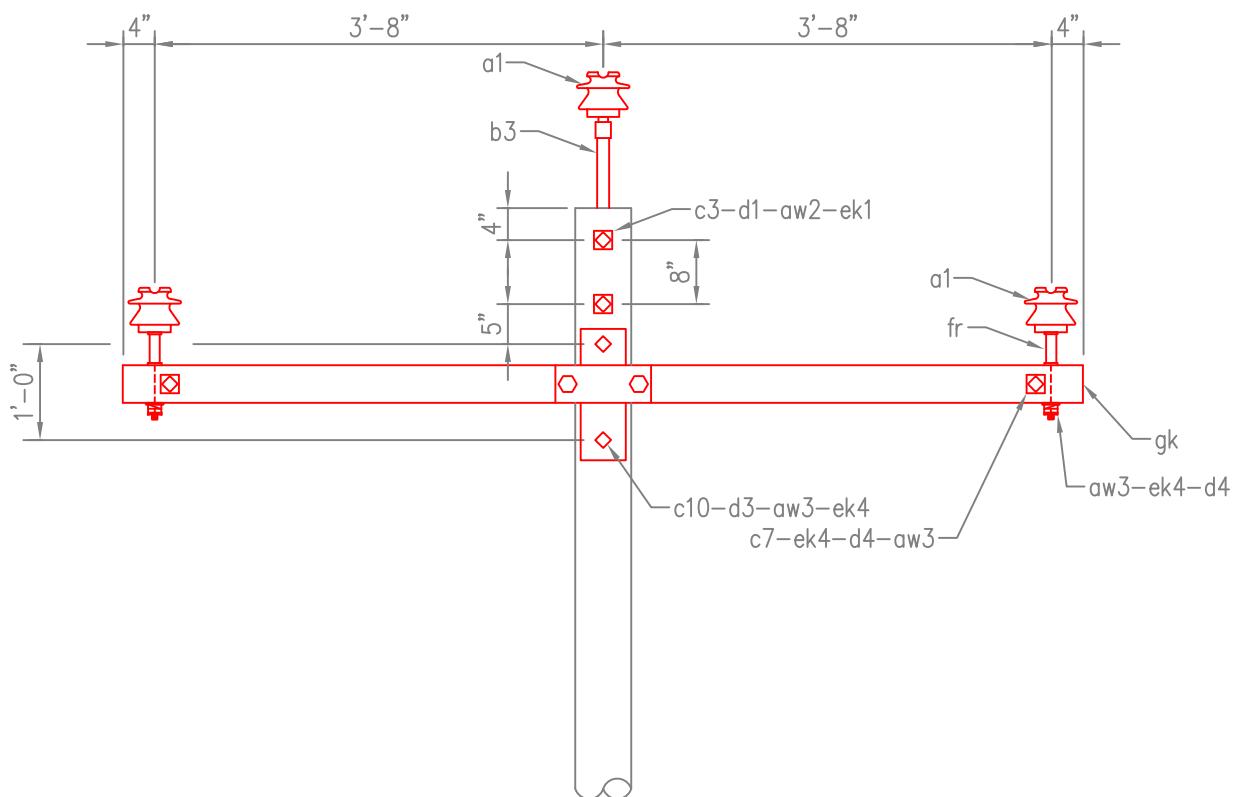
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	6	7108-99-51	Washers, double spring lock, 3/4"
b3	1	4561-43-27	Ridge pin, pole top 14.4, fiberglass 15"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
c7	2	0638-06-06	Bolts, machine 3/4" x 6"
d1	2	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	6	7102-04-51	Washers, square, 3/4"
ek1	2	4290-70-63	Locknuts 5/8"
ek4	6	4290-70-75	Locknuts 3/4"
fr	2	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gk	1	1809-09-14	Crossarm, Fiberglass 8' TB 3000-96

NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

**FOR RETIREMENT ONLY**

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT CONCRETE POLE - LARGE CONDUCTORS LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	8/9/2011
				STANDARD NUMBER	
				VC1-LN-FG	



FOR RETIREMENT ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
SINGLE PRIMARY SUPPORT  
CONCRETE POLE - LARGE CONDUCTORS  
LESS NEUTRAL

ISSUED	2/04/2008
REVISED	8/9/2011
STANDARD NUMBER	VC1-LN-FG

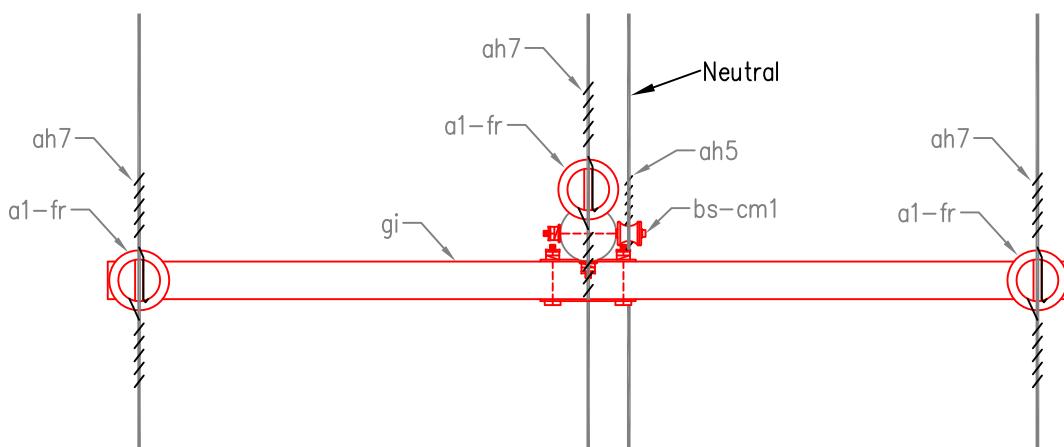
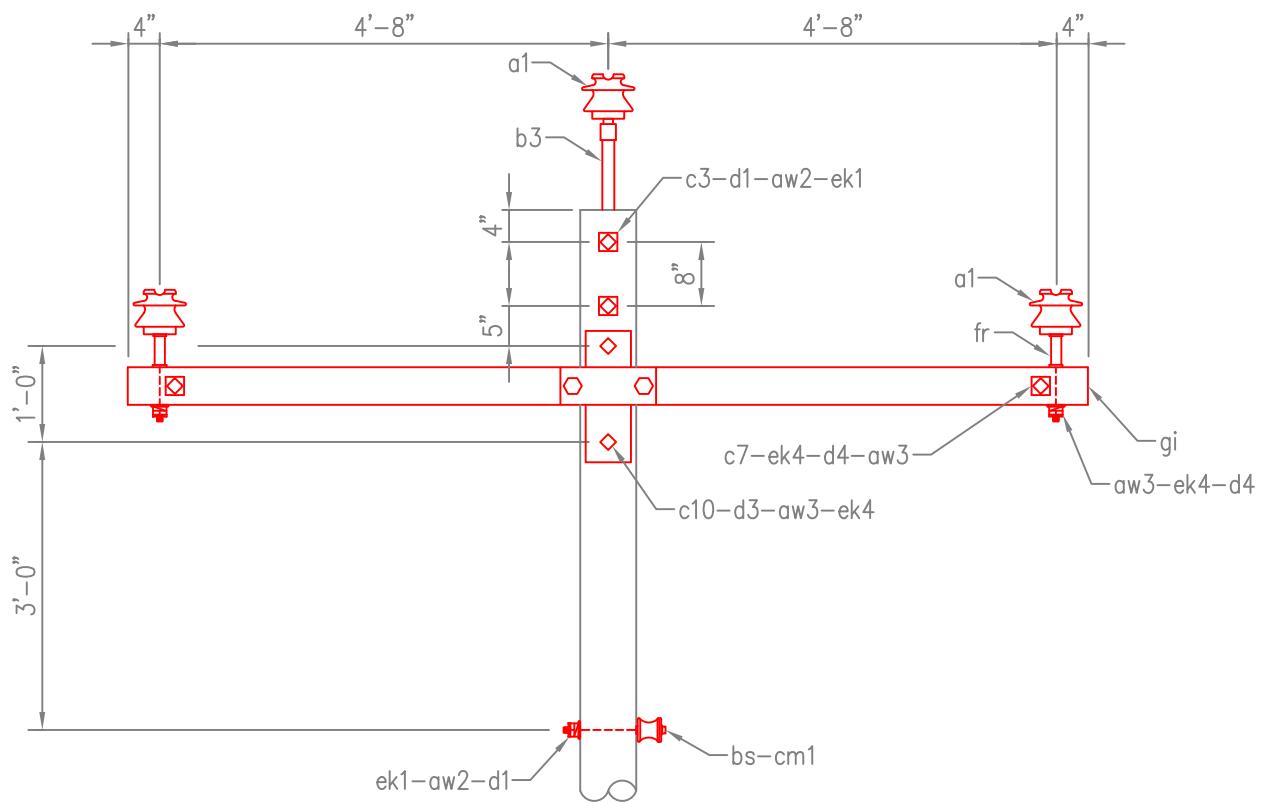
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
aw3	6	7108-99-51	Washers, double spring lock, 3/4"
b3	1	4561-43-27	Ridge pin, pole top 14.4, fiberglass 15"
bs	1	0639-05-14	Bolts, SU 5/8" x 14"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
c7	2	0638-06-06	Bolts, machine 3/4" x 6"
cm1	1	3426-20-12	Insulator, 3" spool
d1	3	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	6	7102-04-51	Washers, square, 3/4"
ek1	3	4290-70-63	Locknuts 5/8"
ek4	6	4290-70-75	Locknuts 3/4"
fr	2	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gi	1	1809-09-09	Crossarm, Fiberglass 10' TB 3000-120

NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

**FOR RETIREMENT ONLY**

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 10' SINGLE PRIMARY SUPPORT CONCRETE POLE - LARGE CONDUCTORS	ISSUED	2/04/2008
				REVISED	8/9/2011
				STANDARD NUMBER	
				VC1-10-FG	



FOR RETIREMENT ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
10' SINGLE PRIMARY SUPPORT  
CONCRETE POLE - LARGE CONDUCTORS

ISSUED	2/04/2008
REVISED	8/9/2011
STANDARD NUMBER	VC1-10-FG

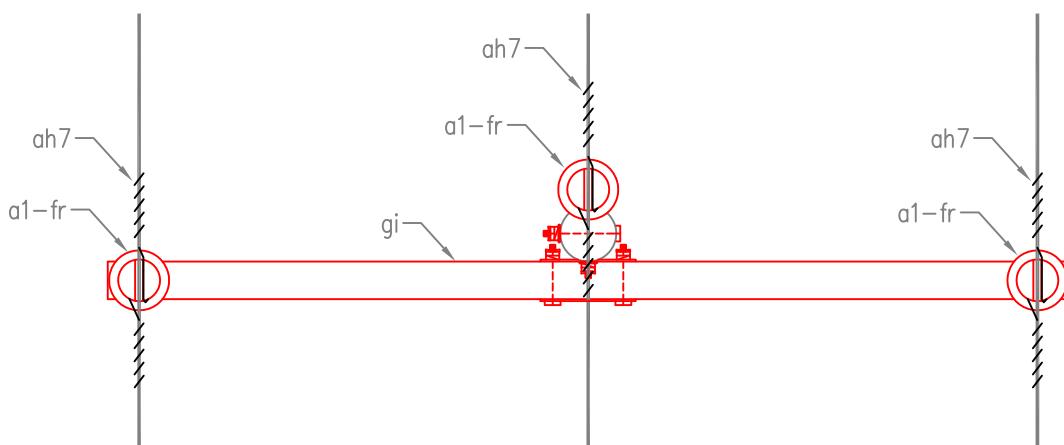
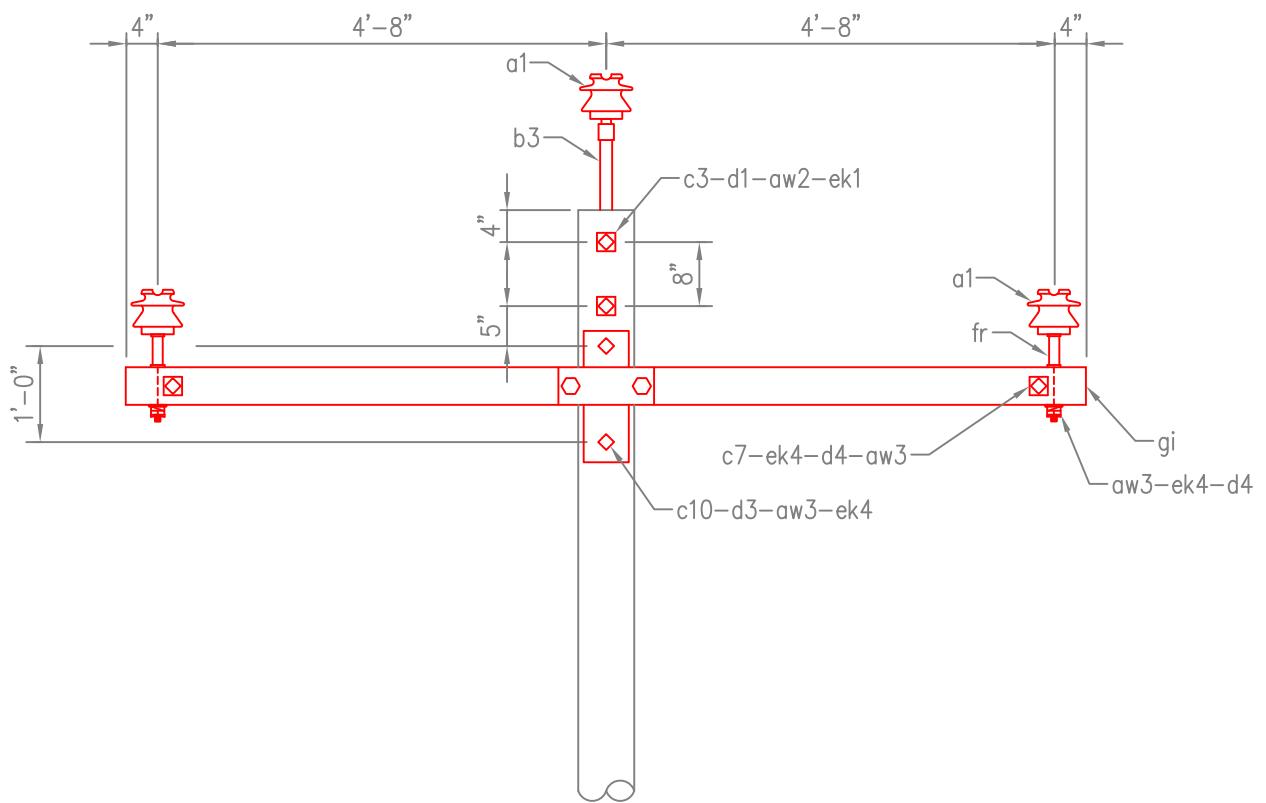
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	6	7108-99-51	Washers, double spring lock, 3/4"
b3	1	4561-43-27	Ridge pin, pole top 14.4, fiberglass 15"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
c7	2	0638-06-06	Bolts, machine 3/4" x 6"
d1	2	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	6	7102-04-51	Washers, square, 3/4"
ek1	2	4290-70-63	Locknuts 5/8"
ek4	6	4290-70-75	Locknuts 3/4"
fr	2	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gi	1	1809-09-09	Crossarm, Fiberglass 10' TB 3000-120

NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

**FOR RETIREMENT ONLY**

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 10' SINGLE PRIMARY SUPPORT CONCRETE POLE - LARGE CONDUCTORS LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	8/9/2011
				STANDARD NUMBER	
				VC1-10-LN-FG	



FOR RETIREMENT ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
10' SINGLE PRIMARY SUPPORT  
CONCRETE POLE - LARGE CONDUCTORS  
LESS NEUTRAL

ISSUED 2/04/2008  
REVISED 8/9/2011  
STANDARD NUMBER  
VC1-10-LN-FG

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
al2	1	1737-12-01	Bonding clip, 5/8", (2727)
al6	1	1737-13-02	Bonding clip, 3/4", (2718)
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
aw3	8	7108-99-51	Washers, double spring lock, 3/4"
bs	1	0639-05-14	Bolts, SU 5/8" x 14"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
c7	3	0638-06-06	Bolts, machine 3/4" x 6"
cj1	8'	7250-06-01	Wire, #6 SD Cu
cm1	1	3426-20-12	Insulator, 3" spool
d1	1	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	6	7102-04-51	Washers, square, 3/4"
ek1	1	4290-70-63	Locknuts 5/8"
ek4	8	4290-70-75	Locknuts 3/4"
fr	3	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gm	1	1809-09-10	Crossarm, Fiberglass 12' TB 3000-144

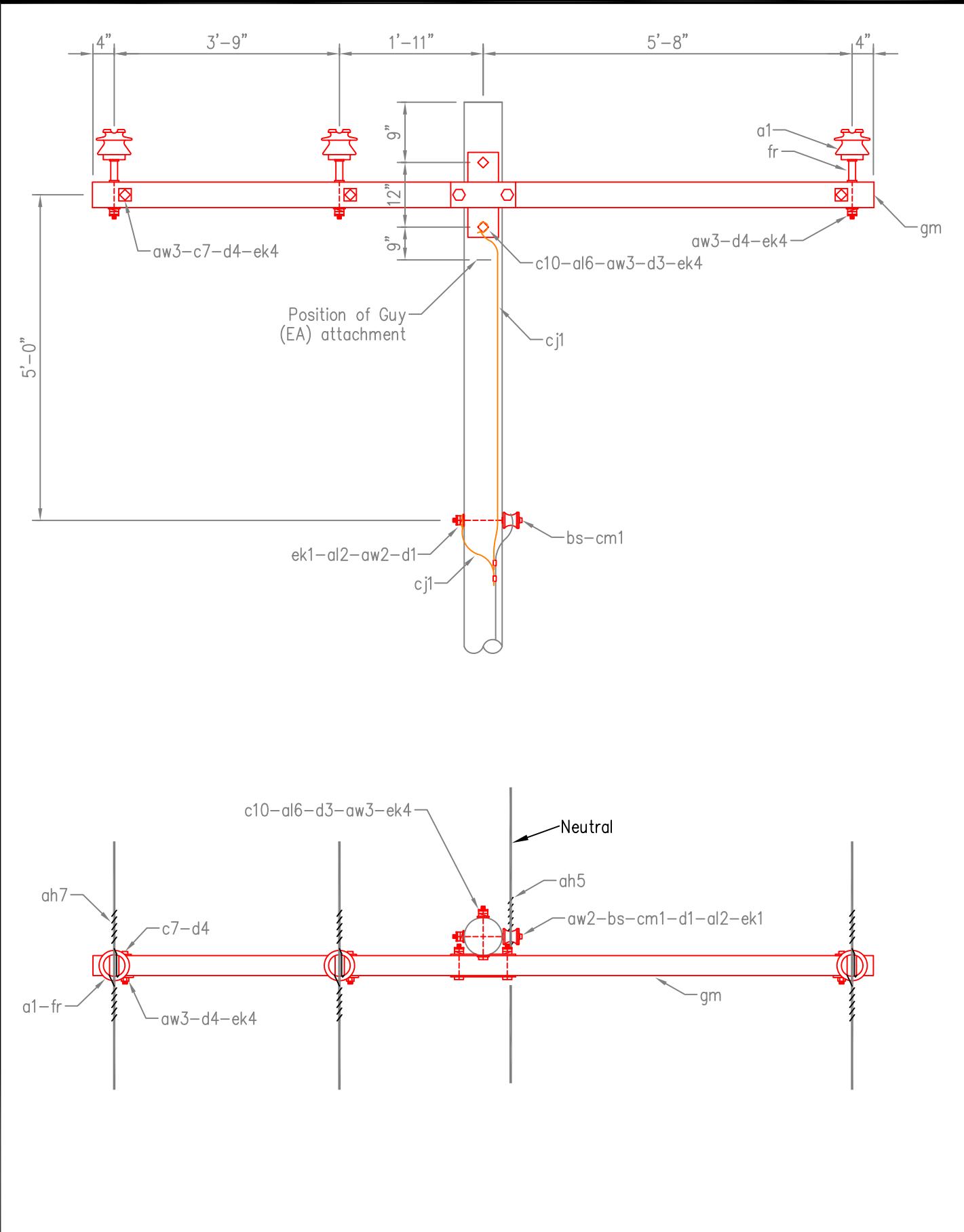
#### REFERENCED UNITS

VM5-40-2      Bonding Clip Assembly  
 VM5-41-6      Bonding Clip Assembly

#### NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 12' SINGLE PRIMARY SUPPORT 0° TO 5° ANGLE - CONCRETE POLE	ISSUED	10/17/2011
				REVISED	
				STANDARD NUMBER	
				VC1A-FG	



DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 12' SINGLE PRIMARY SUPPORT 0° TO 5° ANGLE - CONCRETE POLE		ISSUED 10/17/2011
		REVISED	STANDARD NUMBER	
CoServ Electric			VC1A-FG	

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
al2	1	1737-12-01	Bonding clip, 5/8", (2727)
al6	1	1737-13-02	Bonding clip, 3/4", (2718)
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
aw3	8	7108-99-51	Washers, double spring lock, 3/4"
bs	1	0639-05-14	Bolts, SU 5/8" x 14"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cj1	8'	7250-06-01	Wire, #6 SD Cu
cm1	1	3426-20-12	Insulator, 3" spool
d1	1	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	6	7102-04-51	Washers, square, 3/4"
ek1	1	4290-70-63	Locknuts 5/8"
ek4	8	4290-70-75	Locknuts 3/4"
fr	6	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gm	2	1809-09-10	Crossarm, Fiberglass 12' TB 3000-144
n7	4	0633-06-24	Bolts, DA 3/4" x 24" (Special Order)

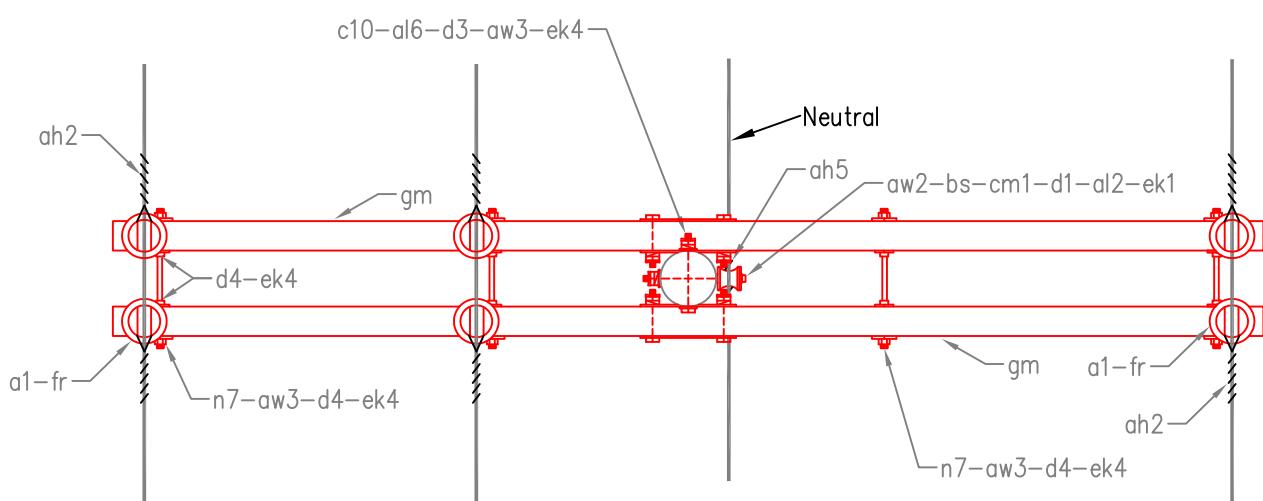
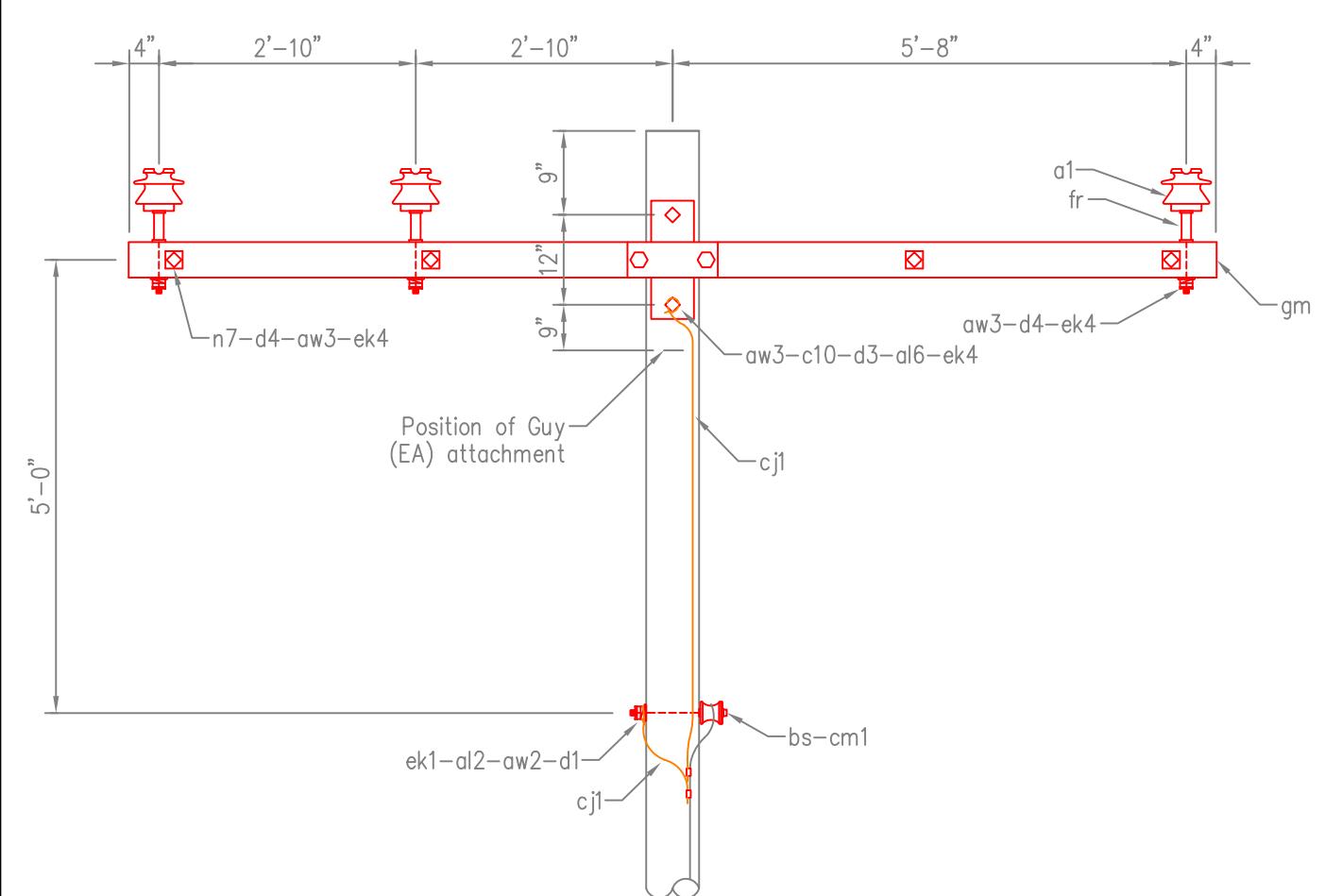
#### REFERENCED UNITS

VM5-40-2      Bonding Clip Assembly  
 VM5-41-6      Bonding Clip Assembly

#### NOTES:

- Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 12' DOUBLE PRIMARY SUPPORT CONCRETE POLE - 0° TO 5° ANGLE	ISSUED	10/17/2011
				REVISED	
				STANDARD NUMBER	
				VC1-1A-FG	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
12' DOUBLE PRIMARY SUPPORT  
CONCRETE POLE - 0° TO 5° ANGLE

ISSUED	10/17/2011
REVISED	
STANDARD NUMBER	VC1-1A-FG

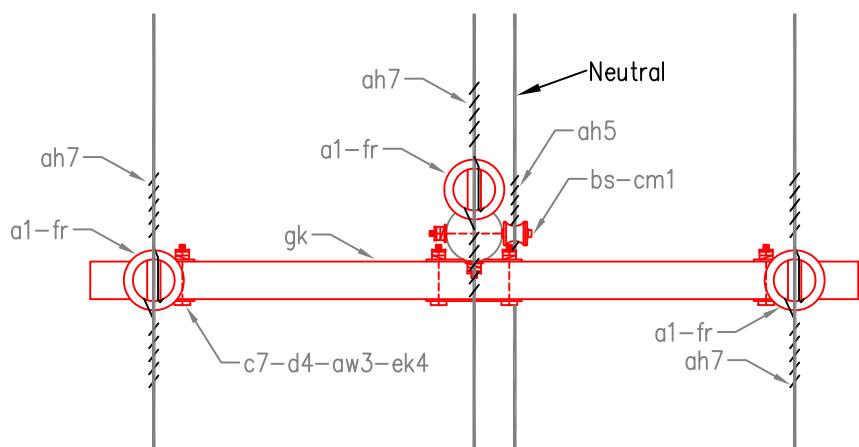
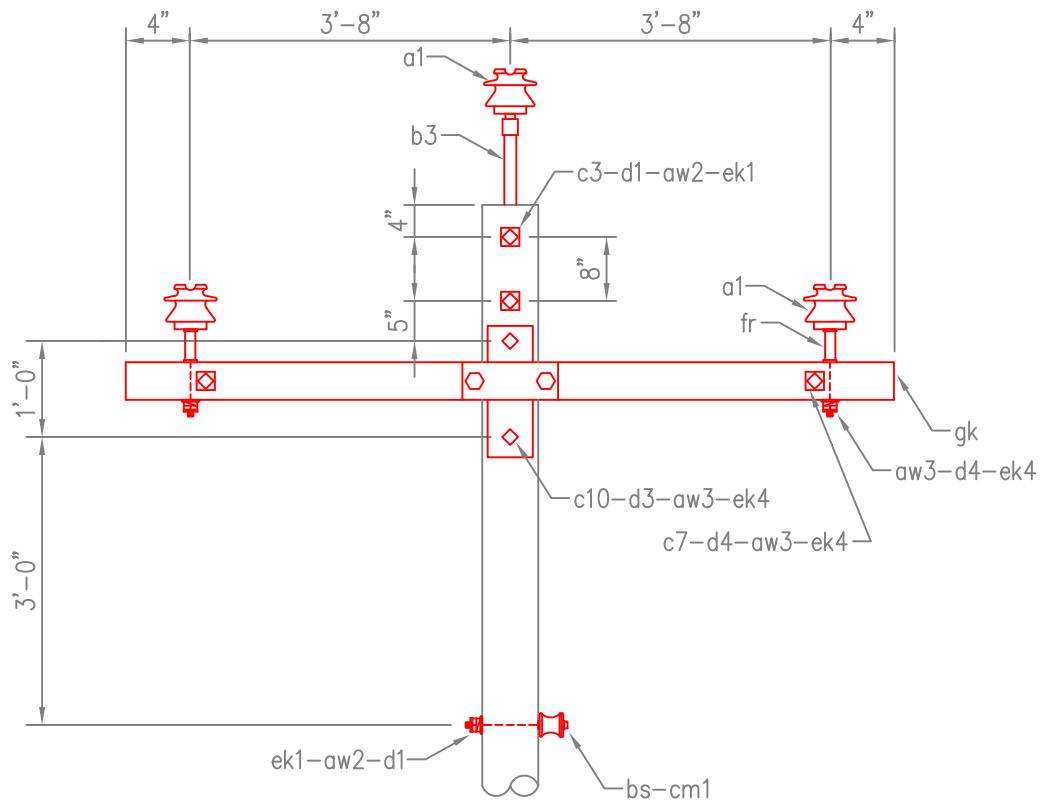
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
aw3	6	7108-99-51	Washers, double spring lock, 3/4"
b3	1	4561-43-27	Ridge pin, pole top 14.4, fiberglass 15"
bs	1	0639-05-14	Bolts, SU 5/8" x 14"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
c7	2	0638-06-06	Bolts, machine 3/4" x 6"
d1	3	7102-04-91	Washers, square, 5/8"
cm1	1	3426-20-12	Insulator, 3" Spool
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	6	7102-04-51	Washers, square, 3/4"
ek1	3	4290-70-63	Locknuts 5/8"
ek4	6	4290-70-75	Locknuts 3/4"
fr	2	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gk	1	1809-09-14	Crossarm, Fiberglass 8' TB 3000-96

NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

**FOR RETIREMENT ONLY**

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT CONCRETE POLE - LARGE CONDUCTORS	ISSUED	2/04/2008
				REVISED	8/9/2011
				STANDARD NUMBER	
				VC1-2-FG	



FOR RETIREMENT ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
SINGLE PRIMARY SUPPORT  
CONCRETE POLE - LARGE CONDUCTORS

ISSUED	2/04/2008
REVISED	8/9/2011
STANDARD NUMBER	VC1-2-FG

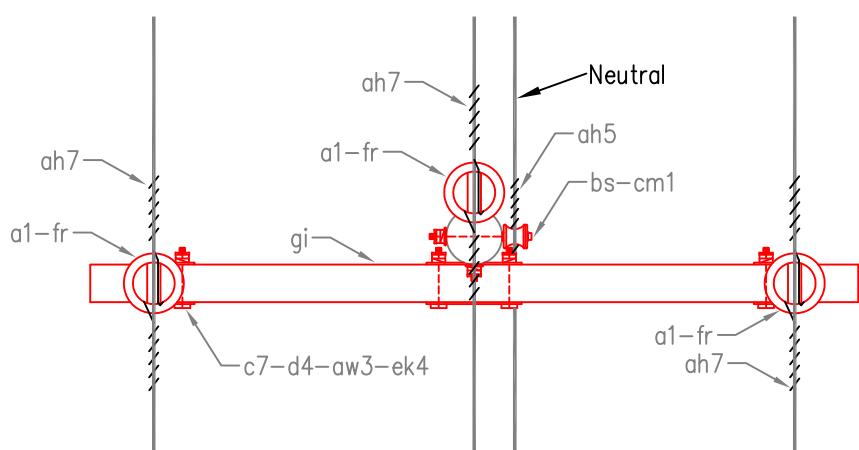
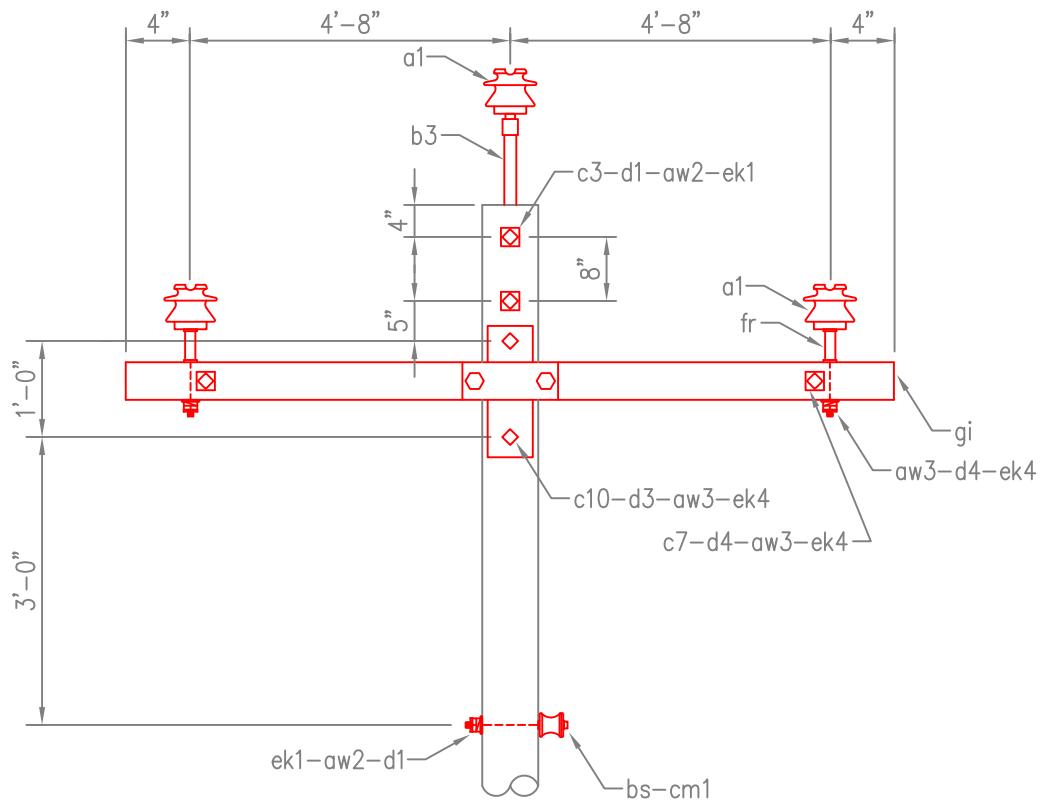
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
aw3	6	7108-99-51	Washers, double spring lock, 3/4"
b3	1	4561-43-27	Ridge pin, pole top 14.4, fiberglass 15"
bs	1	0639-05-14	Bolts, SU 5/8" x 14"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
c7	2	0638-06-06	Bolts, machine 3/4" x 6"
d1	3	7102-04-91	Washers, square, 5/8"
cm1	1	3426-20-12	Insulator, 3" Spool
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	6	7102-04-51	Washers, square, 3/4"
ek1	3	4290-70-63	Locknuts 5/8"
ek4	6	4290-70-75	Locknuts 3/4"
fr	2	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gi	1	1809-09-09	Crossarm, Fiberglass 10' TB 3000-120

NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

FOR RETIREMENT ONLY

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 10' SINGLE PRIMARY SUPPORT CONCRETE POLE - LARGE CONDUCTORS	ISSUED	2/04/2008
				REVISED	8/9/2011
				STANDARD NUMBER	
				VC1-2-10-FG	



FOR RETIREMENT ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
10' SINGLE PRIMARY SUPPORT  
CONCRETE POLE - LARGE CONDUCTORS

ISSUED	2/04/2008
REVISED	8/9/2011
STANDARD NUMBER	VC1-2-10-FG

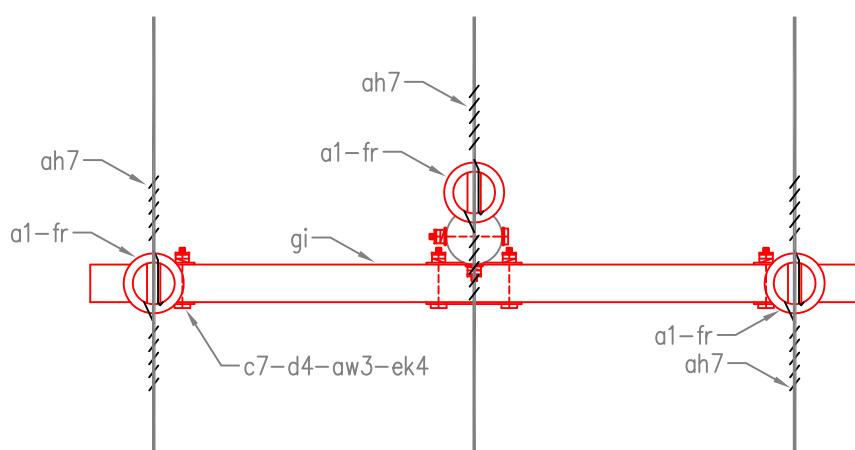
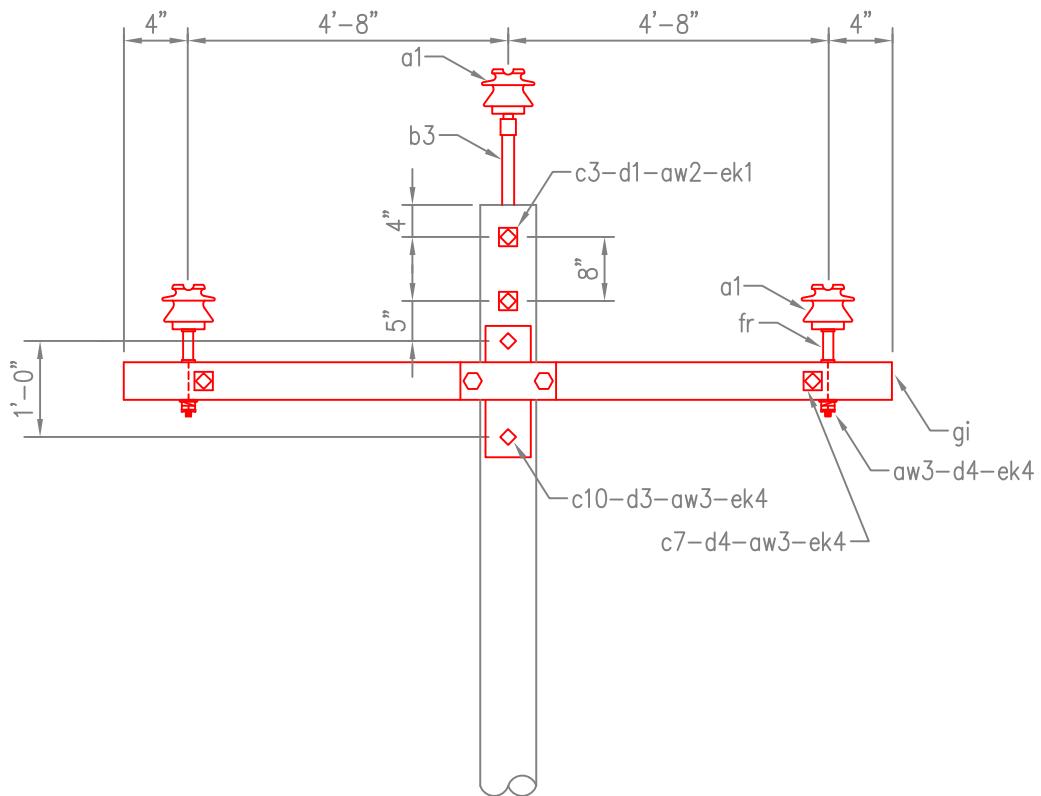
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	6	7108-99-51	Washers, double spring lock, 3/4"
b3	1	4561-43-27	Ridge pin, pole top 14.4, fiberglass 15"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
c7	2	0638-06-06	Bolts, machine 3/4" x 6"
d1	2	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	6	7102-04-51	Washers, square, 3/4"
ek1	2	4290-70-63	Locknuts 5/8"
ek4	6	4290-70-75	Locknuts 3/4"
fr	2	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gi	1	1809-09-09	Crossarm, Fiberglass 10' TB 3000-120

NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

**FOR RETIREMENT ONLY**

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 10' SINGLE PRIMARY SUPPORT CONCRETE POLE - LARGE CONDUCTORS LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	8/9/2011
				STANDARD NUMBER	
				VC1-2-10-LN-FG	



FOR RETIREMENT ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
10' SINGLE PRIMARY SUPPORT  
CONCRETE POLE - LARGE CONDUCTORS  
LESS NEUTRAL

ISSUED 2/04/2008  
REVISED 8/9/2011  
STANDARD NUMBER  
VC1-2-10-LN-FG

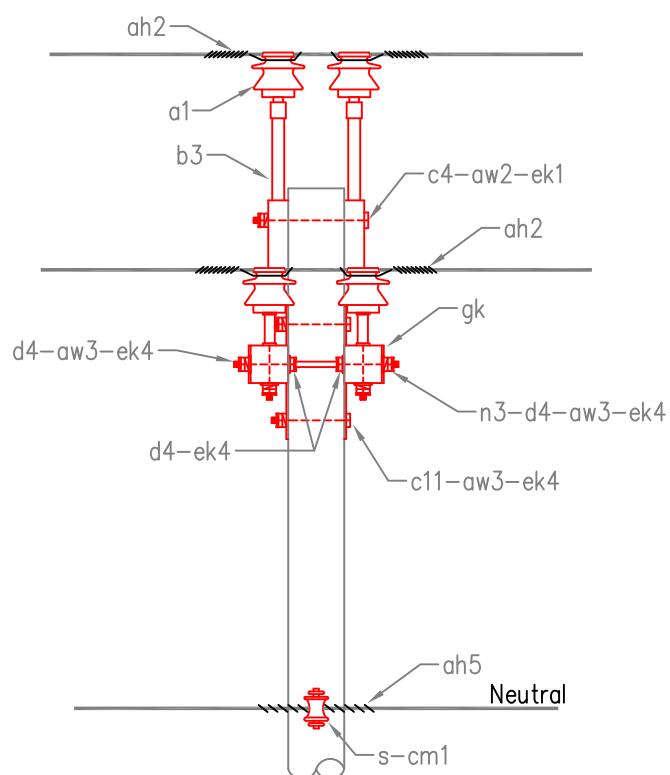
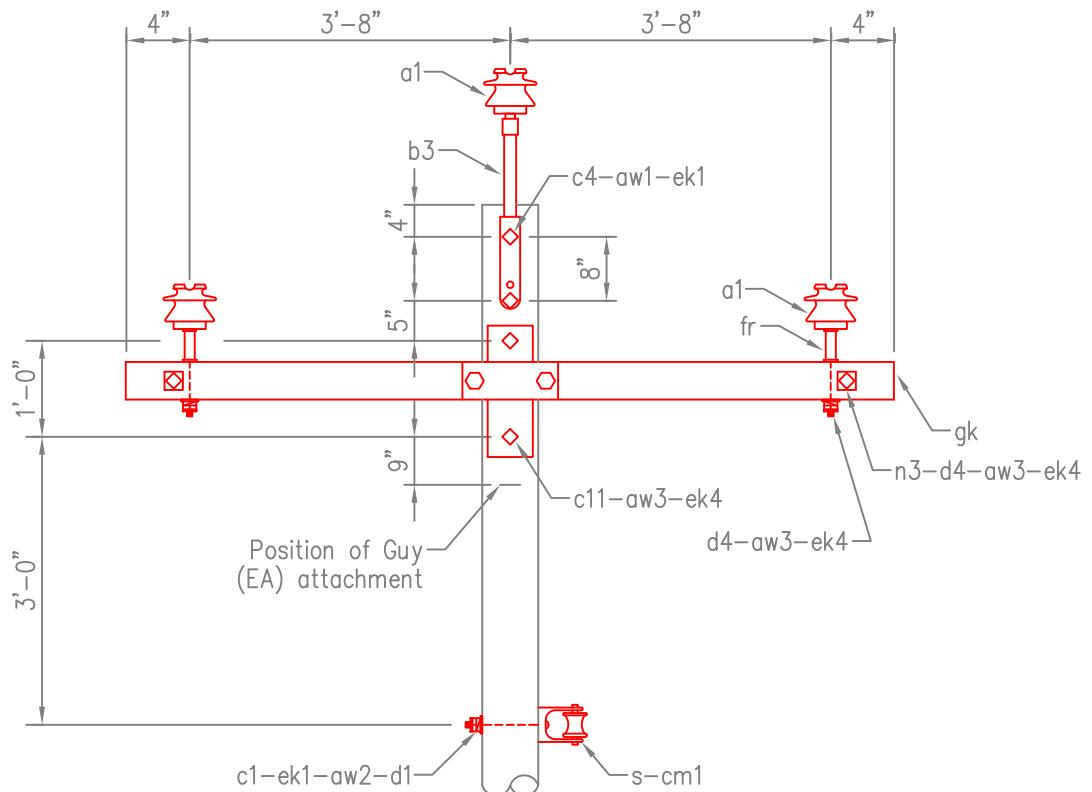
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
aw3	10	7108-99-51	Washers, double spring lock, 3/4"
b3	2	4561-43-27	Ridge pin, pole top 14.4, fiberglass 15"
c4	3	0638-05-14	Bolts, machine 5/8" x 14"
c11	2	0638-06-16	Bolts, machine 3/4" x 16"
cm1	1	3426-20-12	Insulator, 3" Spool
d1	1	7102-04-91	Washers, square, 5/8"
d4	12	7102-04-51	Washers, square, 3/4"
ek1	3	4290-70-63	Locknuts 5/8"
ek4	14	4290-70-75	Locknuts 3/4"
fr	4	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gk	2	1809-09-14	Crossarm, Fiberglass 8' TB 3000-96
n3	2	0633-06-24	Bolts, DA 3/4" x 24" (Special Order)
sr	1	1230-17-01	Clevis, rigid (D-bracket)

NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

**FOR RETIREMENT ONLY**

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT CONCRETE POLE - LARGE CONDUCTORS	ISSUED	2/04/2008
				REVISED	8/9/2011
				STANDARD NUMBER	
				VC1-3-FG	



FOR RETIREMENT ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT  
CONCRETE POLE - LARGE CONDUCTORS

ISSUED	2/04/2008
REVISED	8/9/2011
STANDARD NUMBER	VC1-3-FG

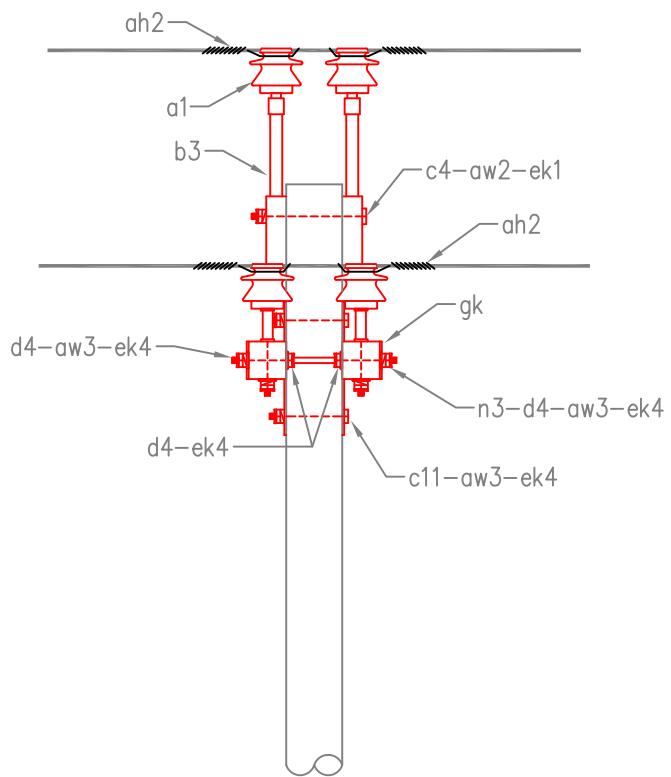
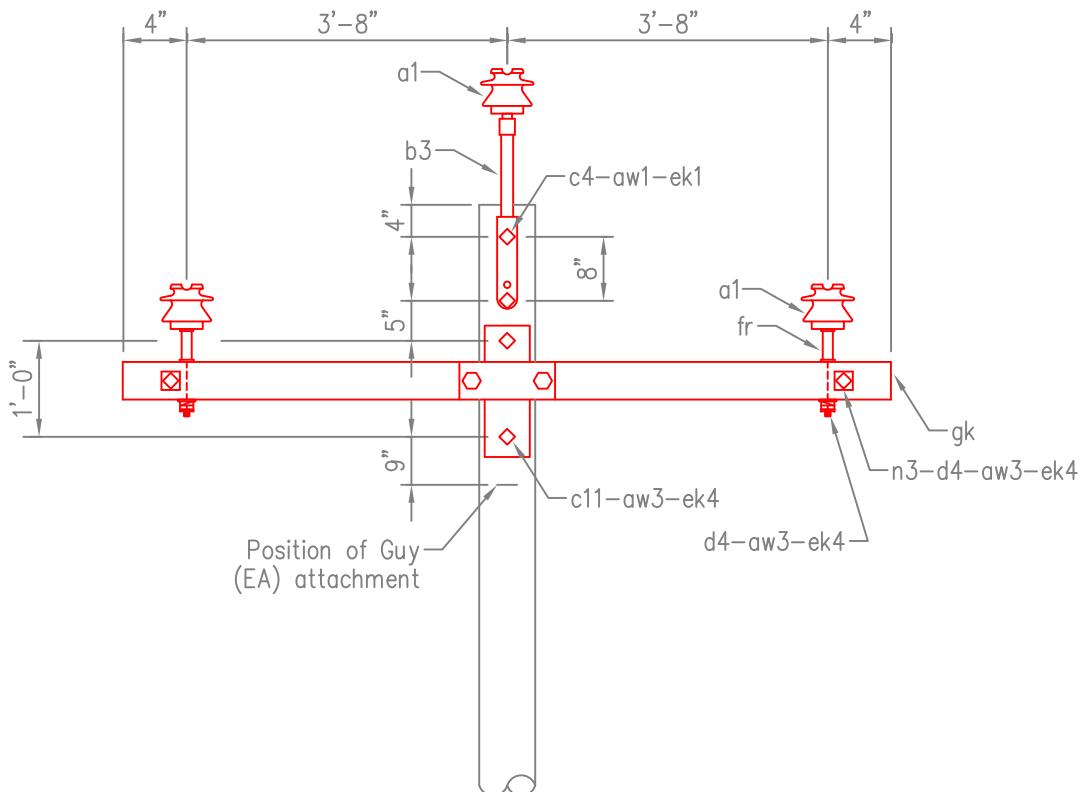
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	10	7108-99-51	Washers, double spring lock, 3/4"
b3	2	4561-43-27	Ridge pin, pole top 14.4, fiberglass 15"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
c11	2	0638-06-16	Bolts, machine 3/4" x 16"
d4	12	7102-04-51	Washers, square, 3/4"
ek1	2	4290-70-63	Locknuts 5/8"
ek4	14	4290-70-75	Locknuts 3/4"
fr	4	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gk	2	1809-09-14	Crossarm, Fiberglass 8' TB 3000-96
n3	2	0633-06-24	Bolts, DA 3/4" x 24" (Special Order)

NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

**FOR RETIREMENT ONLY**

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT CONCRETE POLE - LARGE CONDUCTORS LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	8/9/2011
				STANDARD NUMBER	
				VC1-3-LN-FG	



**FOR RETIREMENT ONLY**



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT  
CONCRETE POLE - LARGE CONDUCTORS  
LESS NEUTRAL

ISSUED 2/04/2008  
REVISED 8/9/2011  
STANDARD NUMBER  
VC1-3-LN-FG

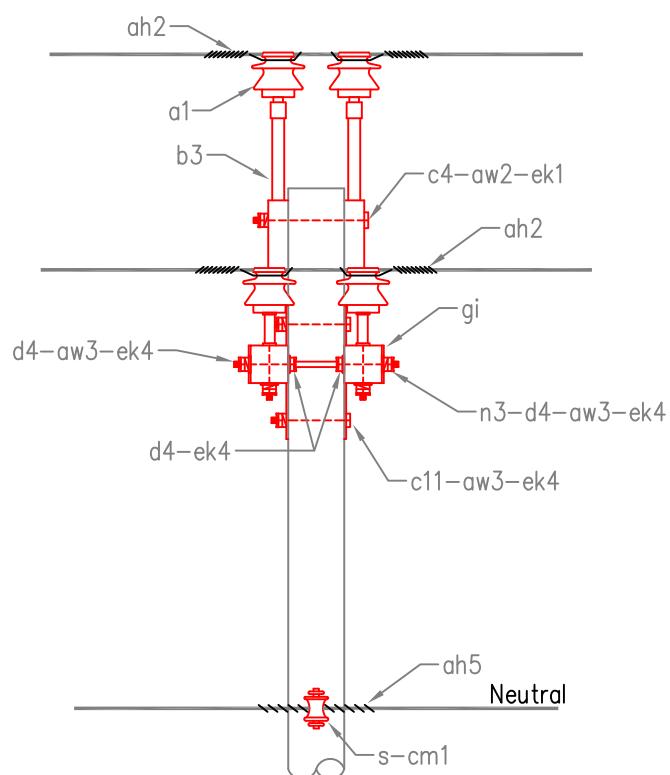
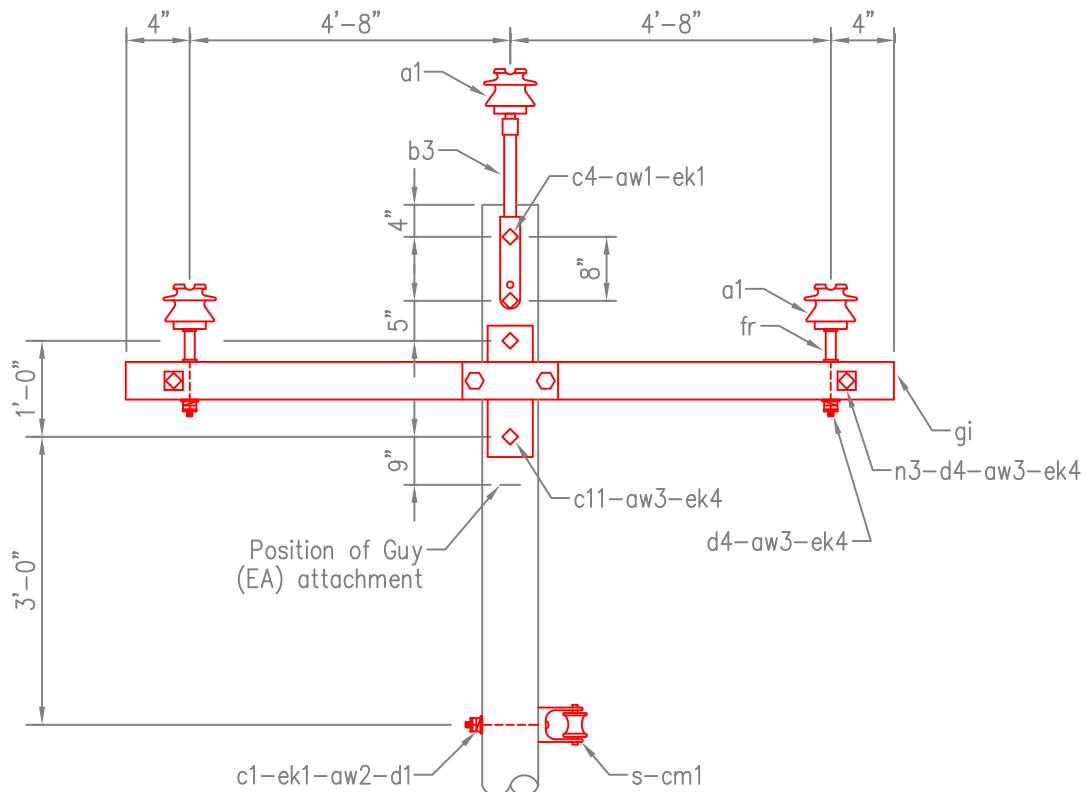
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
aw3	10	7108-99-51	Washers, double spring lock, 3/4"
b3	2	4561-43-27	Ridge pin, pole top 14.4, fiberglass 15"
c4	3	0638-05-14	Bolts, machine 5/8" x 14"
c11	2	0638-06-16	Bolts, machine 3/4" x 16"
cm1	1	3426-20-12	Insulator, 3" Spool
d1	1	7102-04-91	Washers, square, 5/8"
d4	12	7102-04-51	Washers, square, 3/4"
ek1	3	4290-70-63	Locknuts 5/8"
ek4	14	4290-70-75	Locknuts 3/4"
fr	4	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gi	2	1809-09-09	Crossarm, Fiberglass 10' TB 3000-120
n3	2	0633-06-24	Bolts, DA 3/4" x 24" (Special Order)
sr	1	1230-17-01	Clevis, rigid (D-bracket)

NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

**FOR RETIREMENT ONLY**

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 10' DOUBLE PRIMARY SUPPORT CONCRETE POLE - LARGE CONDUCTORS	ISSUED	2/04/2008
				REVISED	8/9/2011
				STANDARD NUMBER	
				VC1-3-10-FG	



FOR RETIREMENT ONLY



DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 10' DOUBLE PRIMARY SUPPORT CONCRETE POLE - LARGE CONDUCTORS	ISSUED	2/04/2008
			REVISED	8/9/2011
			STANDARD NUMBER	VC1-3-10-FG

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah1	3	6790-XX-22	Double side tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
al2	1	1737-12-01	Bonding clip, 5/8", (2727)
al6	1	1737-13-02	Bonding clip, 3/4", (2718)
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
aw3	16	7108-99-51	Washers, double spring lock, 3/4"
c4	1	0638-05-14	Bolts, machine 5/8" x 14"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cj1	8'	7250-06-01	Wire, #6 SD Cu
cm1	1	3426-20-12	Insulator, 3" spool
d1	1	7102-04-91	Washers, square, 5/8"
d4	22	7102-04-51	Washers, square, 3/4"
ek1	1	4290-70-63	Locknuts 5/8"
ek4	24	4290-70-75	Locknuts 3/4"
fr	6	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gm	2	1809-09-10	Crossarm, Fiberglass 12' TB 3000-144
n3	4	0633-06-24	Bolts, DA 3/4" x 24" (Special Order)
sr	1	1230-17-01	Clevis, rigid (D-bracket)

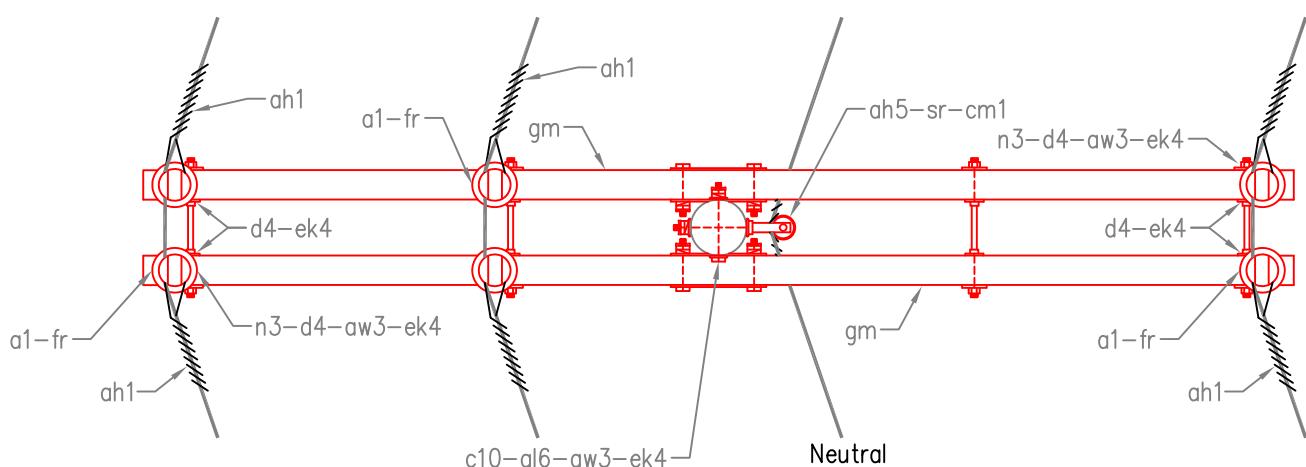
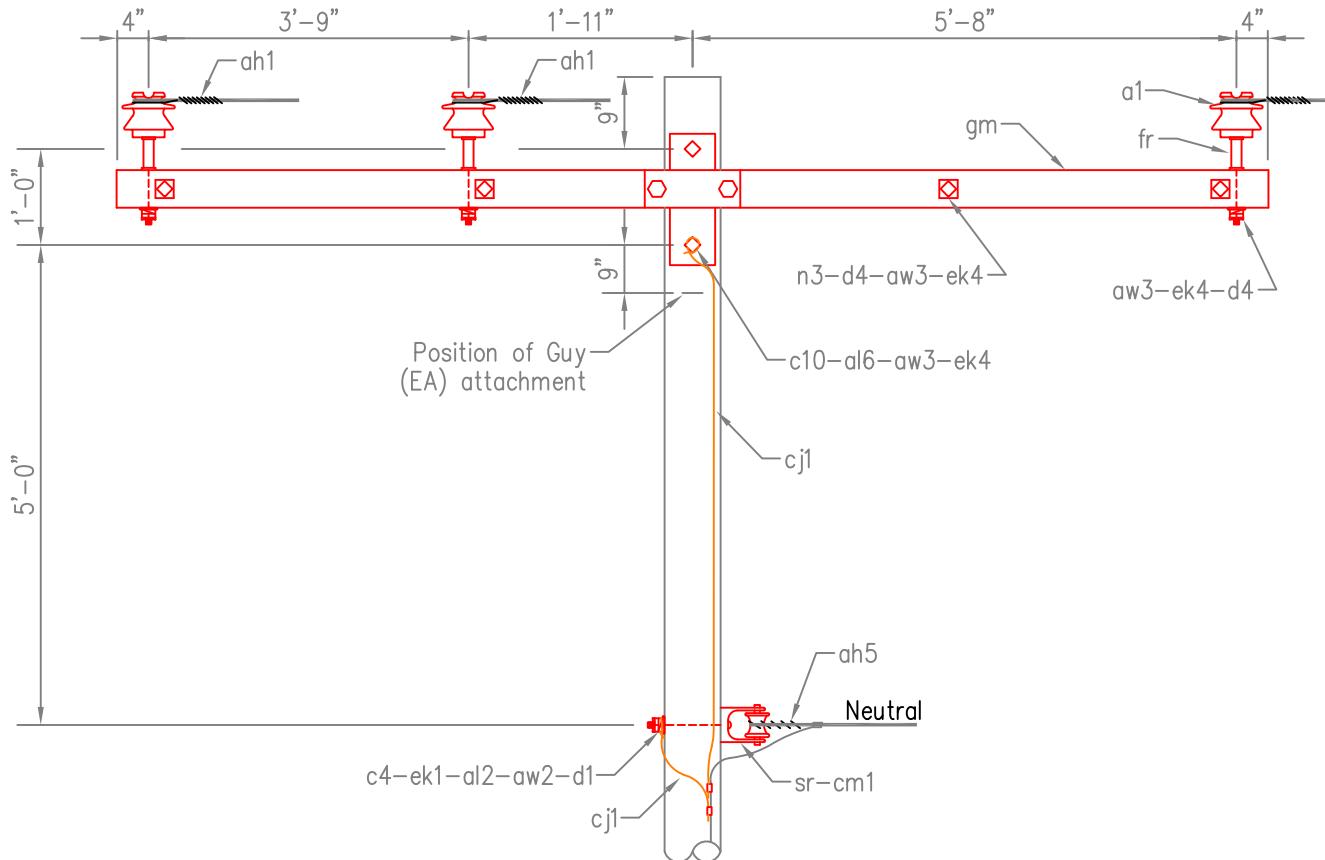
#### REFERENCED UNITS

VM5-40-2      Bonding Clip Assembly  
 VM5-41-6      Bonding Clip Assembly

#### NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 12' DOUBLE PRIMARY SUPPORT CONCRETE POLE - LARGE CONDUCTORS	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VC2-2-FG	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
12' DOUBLE PRIMARY SUPPORT  
CONCRETE POLE - LARGE CONDUCTORS

ISSUED	2/04/2008
REVISED	7/28/2011
STANDARD NUMBER	VC2-2-FG

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah1	3	6790-XX-22	Double side tie, (Specify conductor size)
al6	1	1737-13-02	Bonding clip, 3/4", (2718)
aw3	16	7108-99-51	Washers, double spring lock, 3/4"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cj1	2'	7250-06-01	Wire, #6 SD Cu
d4	22	7102-04-51	Washers, square, 3/4"
ek4	24	4290-70-75	Locknuts 3/4"
fr	6	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gm	2	1809-09-10	Crossarm, Fiberglass 12' TB 3000-144
n3	4	0633-06-24	Bolts, DA 3/4" x 24" (Special Order)

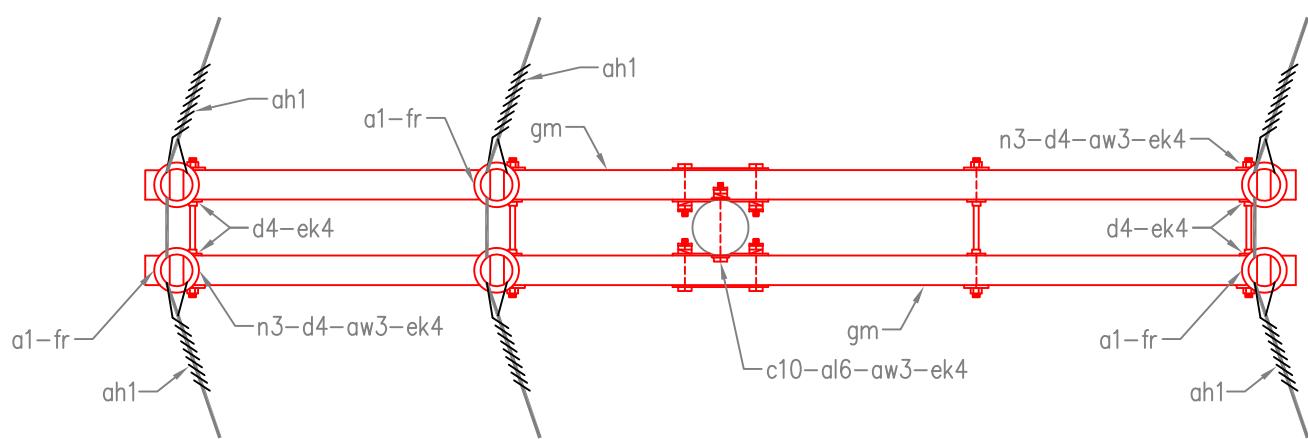
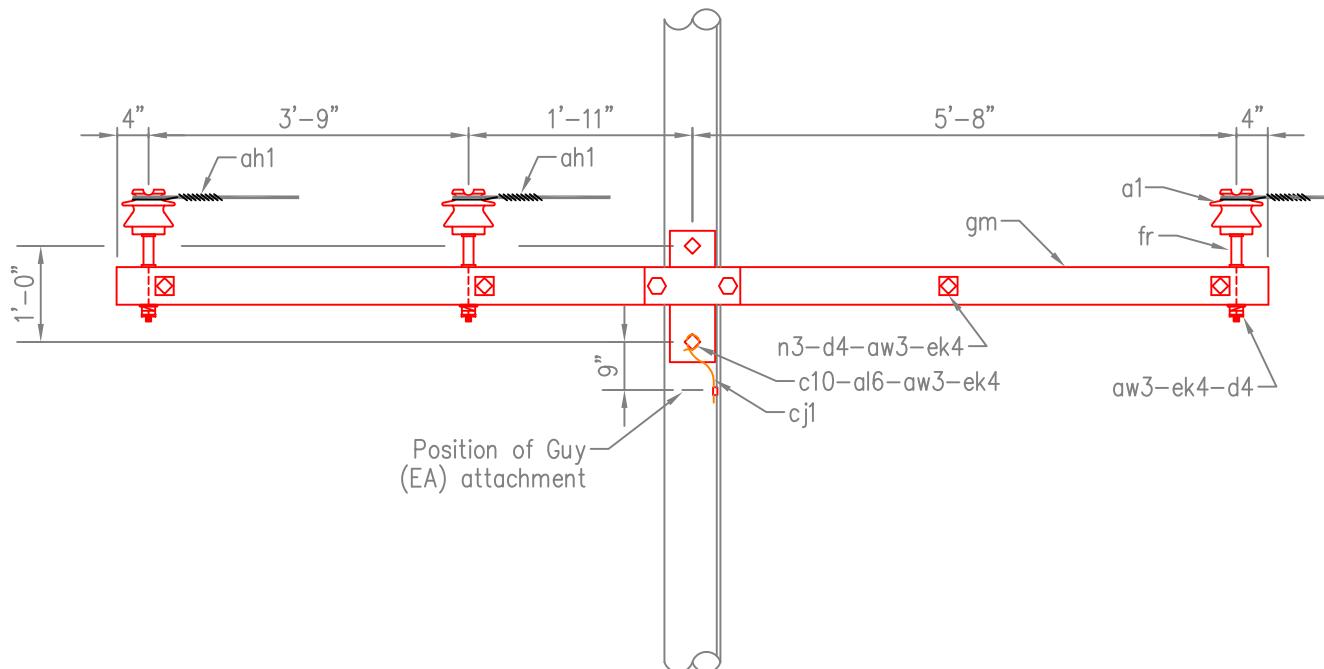
#### REFERENCED UNITS

VM5-41-6      Bonding Clip Assembly

#### NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 12' DOUBLE PRIMARY SUPPORT CONCRETE POLE - LARGE CONDUCTORS LESS NEUTRAL	ISSUED	8/10/2011
				REVISED	
				STANDARD NUMBER	
				VC2-2-LN-FG	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
12' DOUBLE PRIMARY SUPPORT  
CONCRETE POLE - LARGE CONDUCTORS  
LESS NEUTRAL

ISSUED 8/10/2011  
REVISED  
STANDARD NUMBER  
VC2-2-LN-FG

ITM.	QTY.	MAT.CODE No	MATERIAL
al2	2	1737-12-01	Bonding clip, 5/8", (2727)
al6	1	1737-13-02	Bonding clip, 3/4", (2718)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	2	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	2	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
eu2	1	3427-75-30	Link, F.G. primary extension, clevis-eye, 18"
gp	1	1809-09-11	Crossarm, Fiberglass 12' DA 3200-144
k	3	3428-60-60	Insulator, polymer suspension
l	4	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o4	2	0636-15-14	Bolts, ovaleye 5/8" x 14"

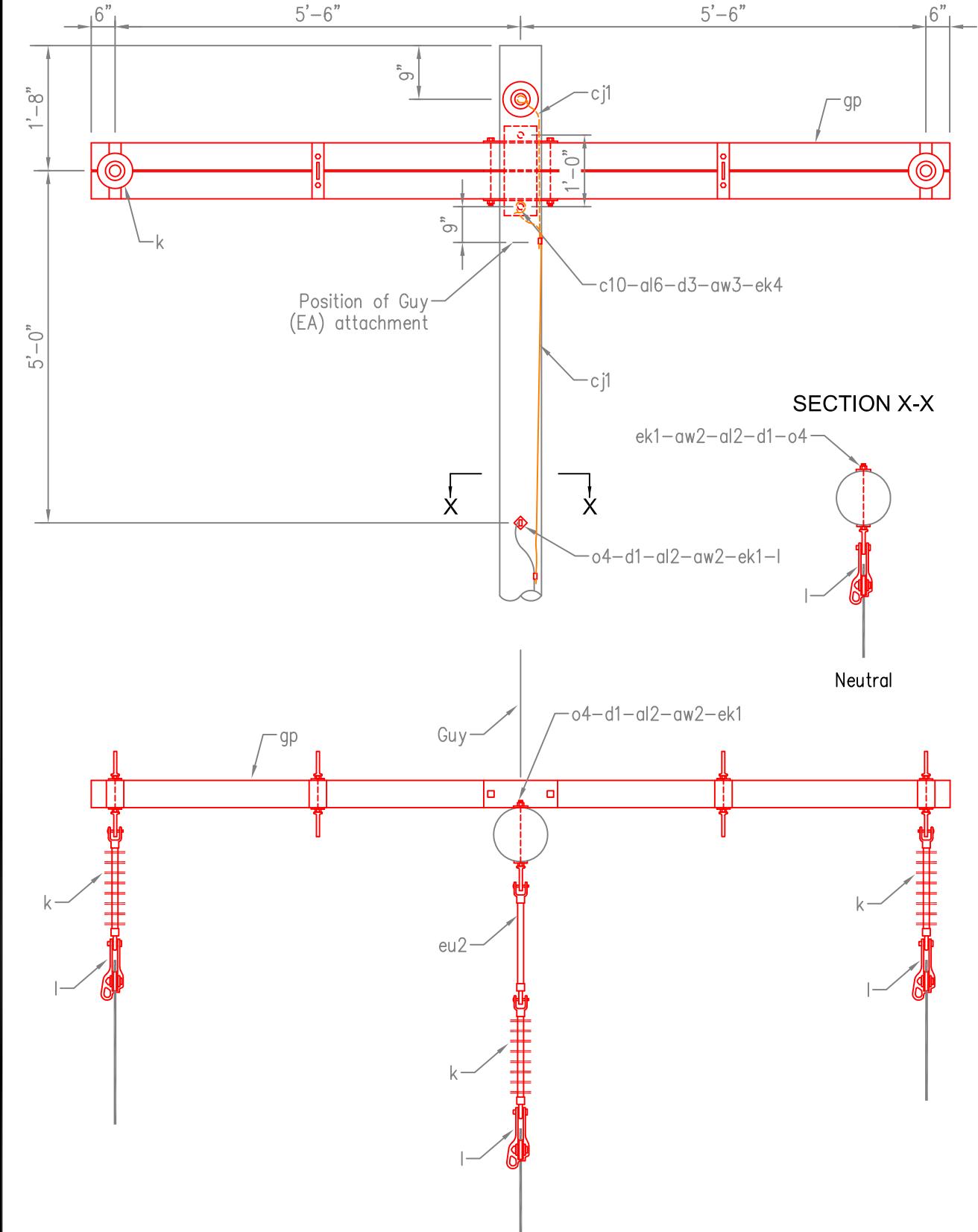
#### REFERENCED UNITS

VM5-40-2      Bonding Clip Assembly  
 VM5-41-6      Bonding Clip Assembly

#### NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 12' DEADEND (SINGLE) STRUCTURE CONCRETE POLE	ISSUED	8/9/2011
				REVISED	
				STANDARD NUMBER	
				VC7A-FG	



DATE	REVISION

14.4/24.9 KV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
12' DEADEND (SINGLE) STRUCTURE  
CONCRETE POLE

ISSUED 8/9/2011  
REVISED  
STANDARD NUMBER  
VC7A-FG

ITM.	QTY.	MAT. CODE No	MATERIAL
al2	1	1737-12-01	Bonding clip, 5/8", (2727)
al6	1	1737-13-02	Bonding clip, 3/4", (2718)
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cj1	6'	7250-06-01	Wire, #6 SD Cu
d1	1	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	1	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
eu2	1	3427-75-30	Link, F.G. primary extension, clevis-eye, 18"
gp	1	1809-09-11	Crossarm, Fiberglass 12' DA 3200-144
k	3	3428-60-60	Insulator, polymer suspension
l	3	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o4	1	0636-15-14	Bolts, ovaleye 5/8" x 14"

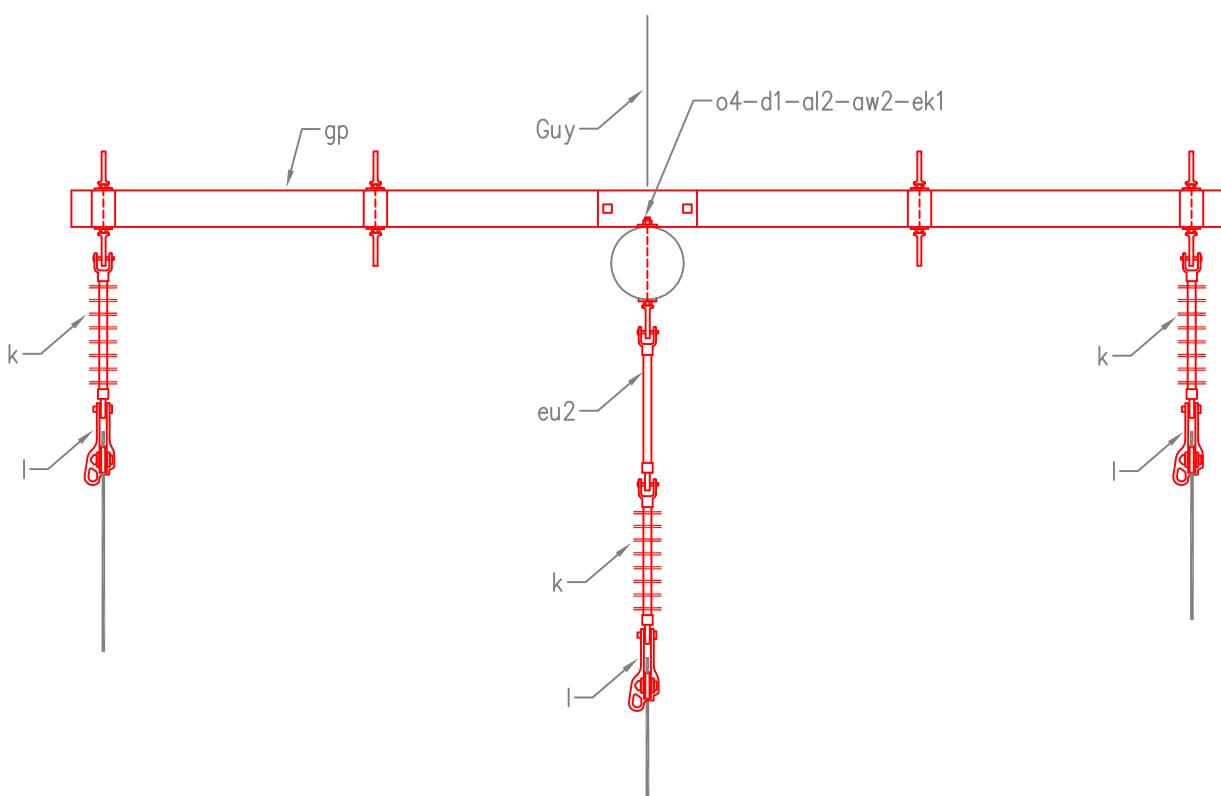
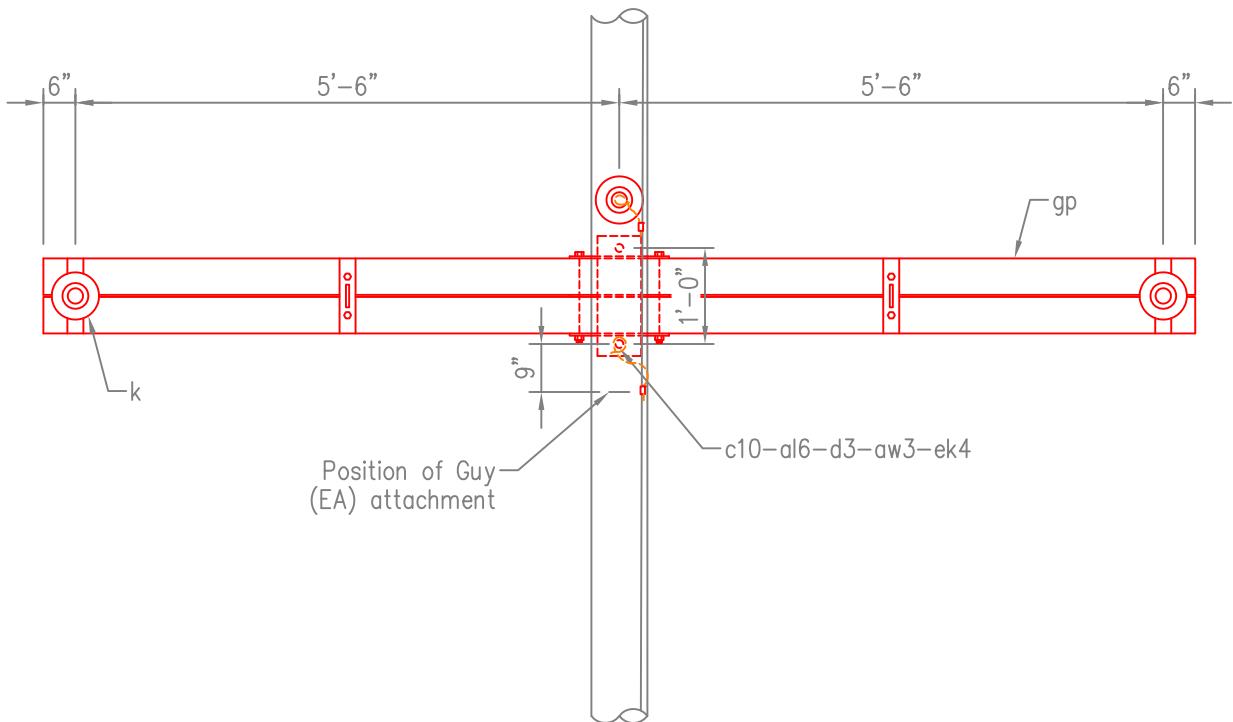
#### REFERENCED UNITS

VM5-40-2      Bonding Clip Assembly  
 VM5-41-6      Bonding Clip Assembly

#### NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 12' DEADEND (SINGLE) STRUCTURE CONCRETE POLE - LESS NEUTRAL	ISSUED	8/9/2011
				REVISED	
				STANDARD NUMBER	
				VC7A-LN-FG	



DATE	REVISION

14.4/24.9 KV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
12' DEADEND (SINGLE) STRUCTURE  
CONCRETE POLE - LESS NEUTRAL

ISSUED 8/9/2011  
REVISED  
STANDARD NUMBER  
VC7A-LN-FG

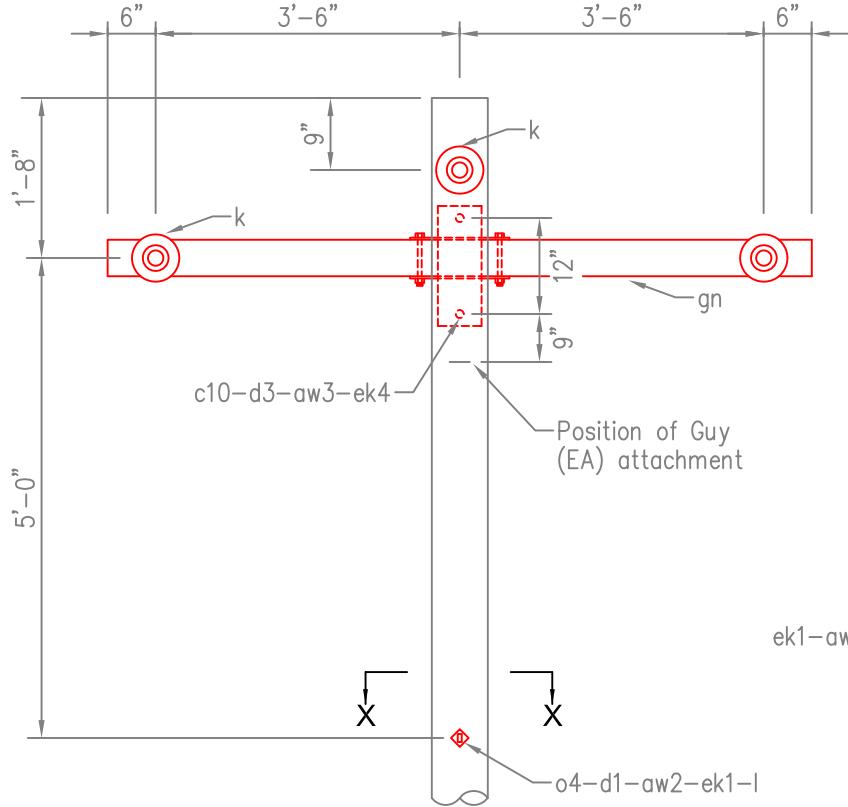
ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
d1	2	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	2	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
eu	1	3427-70-30	Link, F.G. primary extension, clevis-eye, 12"
gn	1	1809-09-08	Crossarm, Fiberglass 8' DA 3000-96
k	3	3428-60-60	Insulator, polymer suspension
l	4	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o4	2	0636-15-14	Bolts, ovaleye 5/8" x 14"

NOTES:

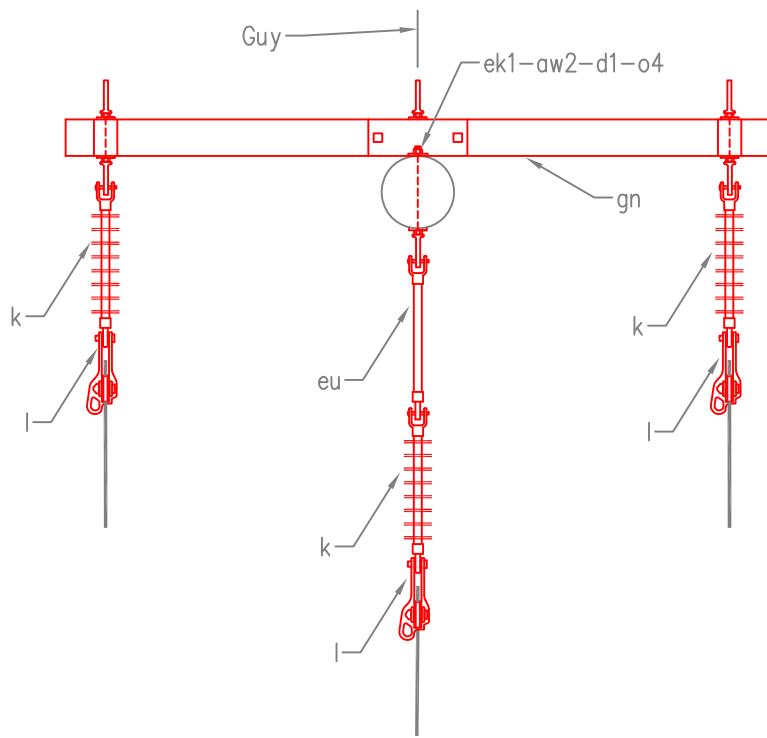
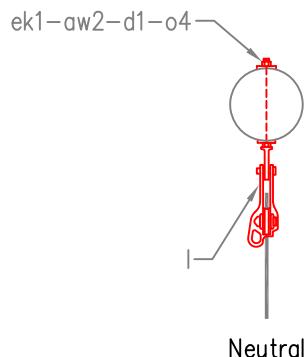
1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

**FOR RETIREMENT ONLY**

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION DEADEND (SINGLE) STRUCTURE CONCRETE POLE	ISSUED	2/04/2008
				REVISED	8/9/2011
				STANDARD NUMBER	
				VC7A-L-FG	



SECTION X-X



FOR RETIREMENT ONLY



DATE	REVISION

14.4/24.9 KV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND (SINGLE) STRUCTURE  
CONCRETE POLE

ISSUED	2/04/2008
REVISED	8/9/2011
STANDARD NUMBER	VC7A-L-FG

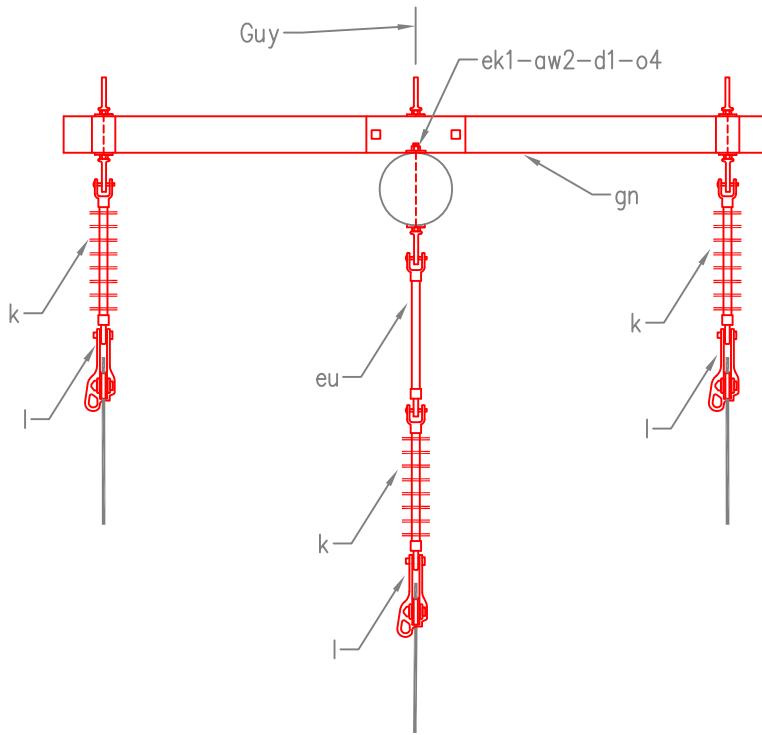
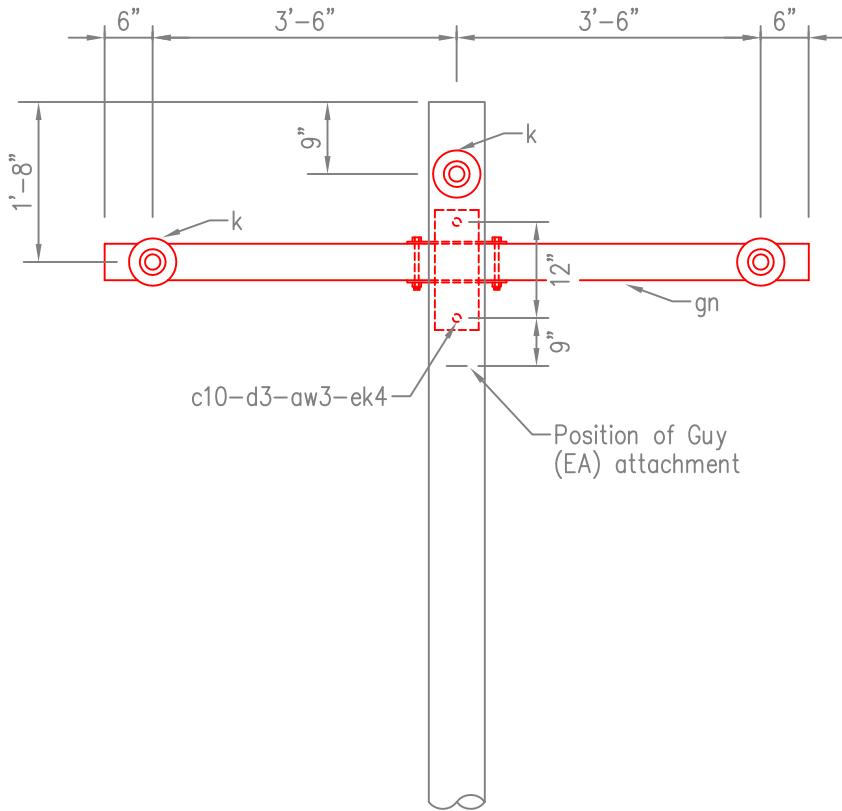
ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
d1	1	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	1	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
eu	1	3427-70-30	Link, F.G. primary extension, clevis-eye, 12"
gn	1	1809-09-08	Crossarm, Fiberglass 8' DA 3000-96
k	3	3428-60-60	Insulator, polymer suspension
l	3	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o4	1	0636-15-14	Bolts, ovaleye 5/8" x 14"

NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

**FOR RETIREMENT ONLY**

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION DEADEND (SINGLE) STRUCTURE CONCRETE POLE - LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	8/9/2011
				STANDARD NUMBER	
				VC7A-L-LN-FG	



FOR RETIREMENT ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND (SINGLE) STRUCTURE  
CONCRETE POLE - LESS NEUTRAL

ISSUED	2/04/2008
REVISED	8/9/2011
STANDARD NUMBER	VC7A-L-LN-FG

ITM.	QTY.	MAT.CODE No	MATERIAL
al2	1	1737-12-01	Bonding clip, 5/8", (2727)
al6	1	1737-13-02	Bonding clip, 3/4", (2718)
aw2	1	7108-99-41	Washer, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
az	2	4285-10-01	CN Stick-on Tag
c4	1	0638-05-14	Bolt, Machine 5/8" x 14"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	1	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	1	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
eq7	1	0780-37-01	Bracket, download standoff, Fiberglass
gp	1	1809-09-11	Crossarm, Fiberglass 12' DA 3200-144
k	3	3428-60-60	Insulator, polymer suspension
l	4	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

#### REFERENCED UNITS

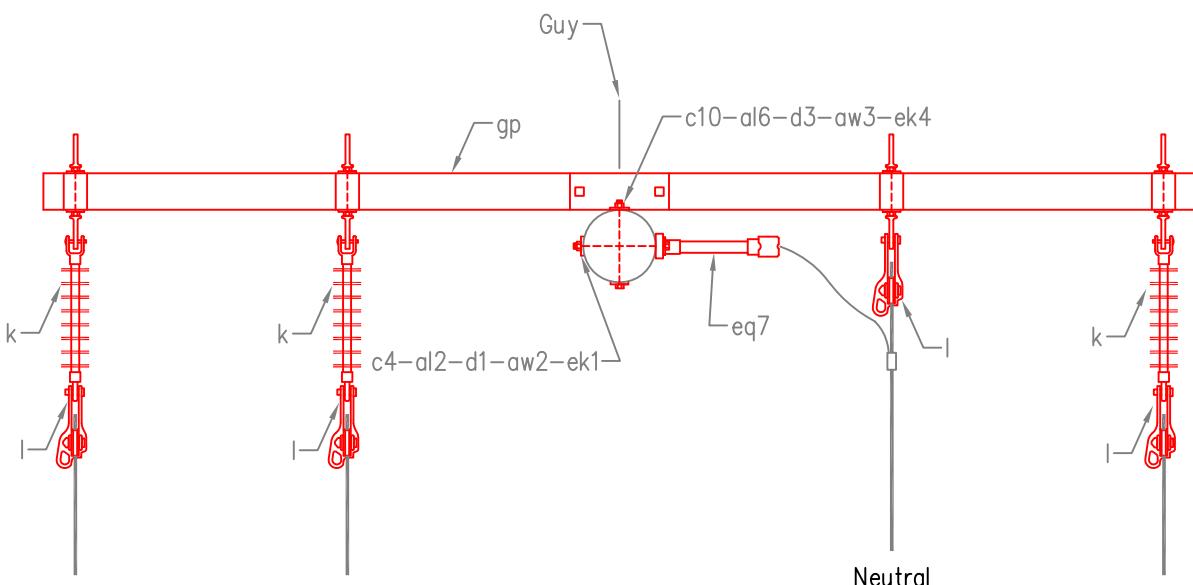
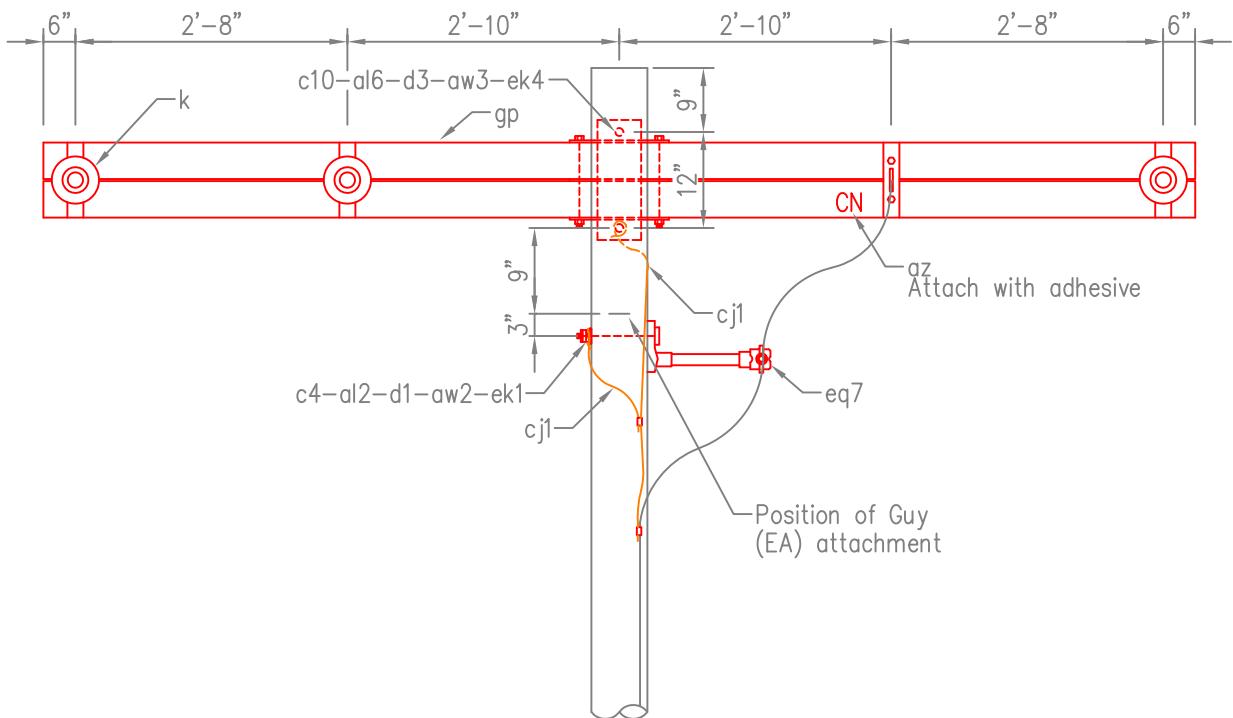
VM5-40-2      Bonding Clip Assembly  
 VM5-41-6      Bonding Clip Assembly

#### NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

#### ENGINEERING APPROVAL ONLY

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 12' DEADEND (SINGLE) STRUCTURE CONCRETE POLE	ISSUED	2/04/2008
				REVISED	8/9/2011
				STANDARD NUMBER	
				VC7A-12-FG	



ENGINEERING APPROVAL ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
12' DEADEND (SINGLE) STRUCTURE  
CONCRETE POLE

ISSUED	2/04/2008
REVISED	8/9/2011
STANDARD NUMBER	VC7A-12-FG

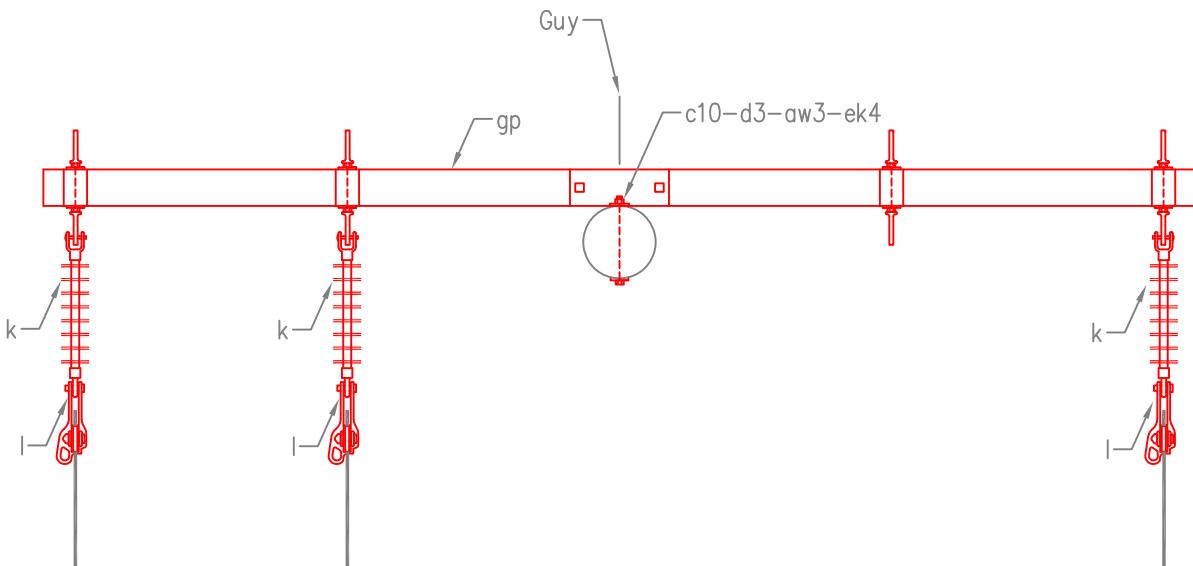
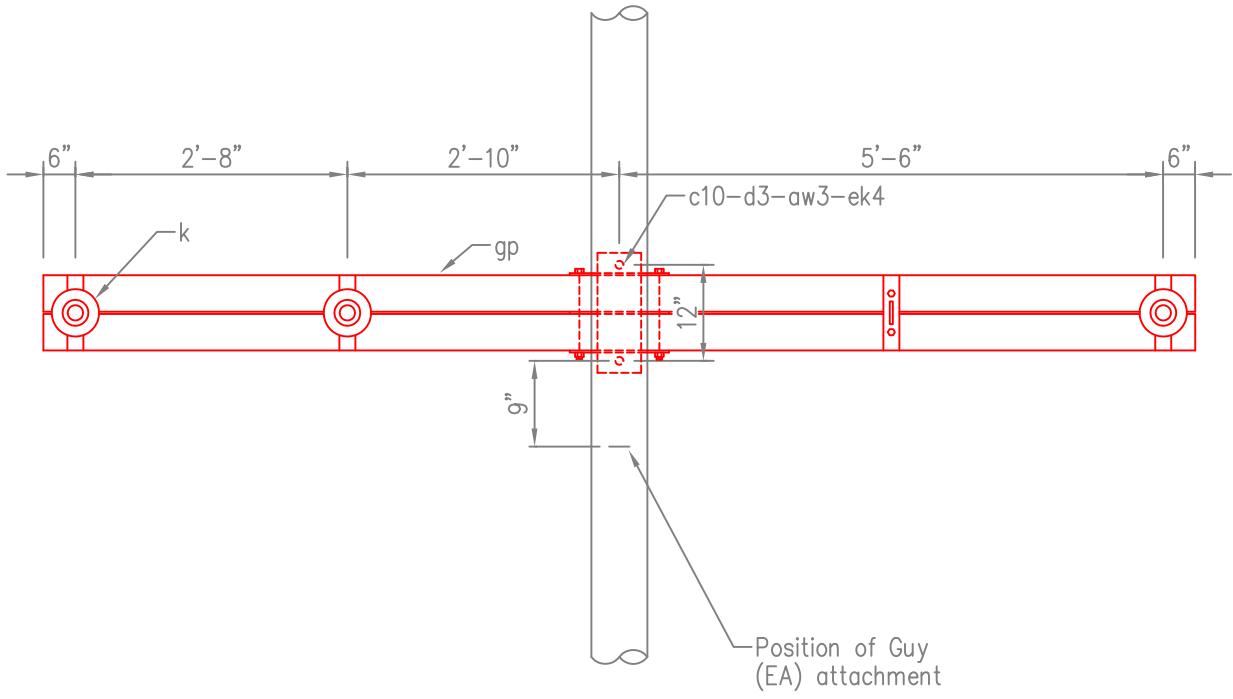
ITM.	QTY.	MAT. CODE No	MATERIAL
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek4	2	4290-70-75	Locknuts 3/4"
gp	1	1809-09-11	Crossarm, Fiberglass 12' DA 3200-144
k	3	3428-60-60	Insulator, polymer suspension
l	3	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

FOR RETIREMENT ONLY

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 12' DEADEND (SINGLE) STRUCTURE CONCRETE POLE - LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	8/9/2011
				STANDARD NUMBER	
				VC7A-12-LN-FG	



**FOR RETIREMENT ONLY**



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
12' DEADEND (SINGLE) STRUCTURE  
CONCRETE POLE - LESS NEUTRAL

ISSUED 2/04/2008

REVISED 8/9/2011

STANDARD NUMBER

VC7A-12-LN-FG

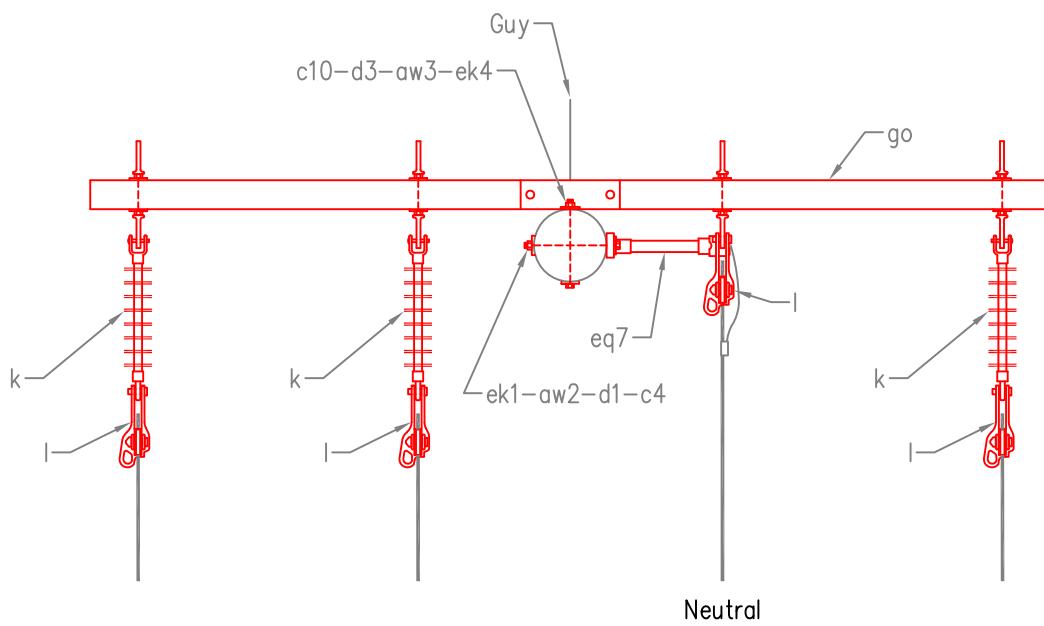
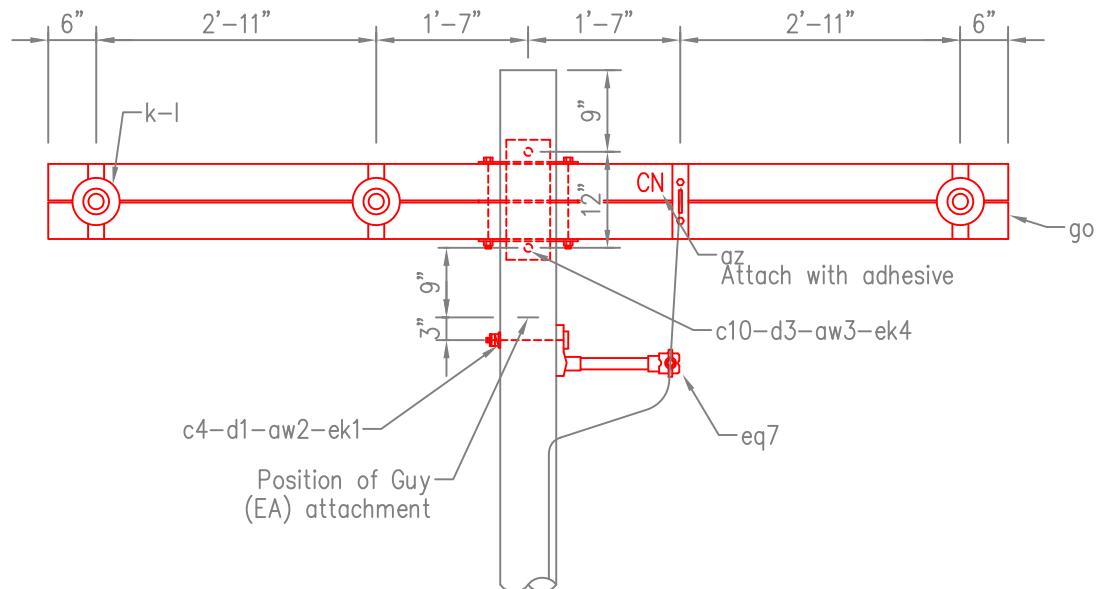
ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	1	7108-99-41	Washer, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
az	2	4285-10-01	CN Stick-on Tag
c4	1	0638-05-14	Bolt, Machine 5/8" x 14"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
d1	1	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	1	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
eq7	1	0780-37-01	Bracket, downlead standoff, Fiberglass
go	1	1809-09-17	Crossarm, Fiberglass 10' DA 3200-120
k	3	3428-60-60	Insulator, polymer suspension
l	4	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

**FOR RETIREMENT ONLY**

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 10' DEADEND (SINGLE) STRUCTURE CONCRETE POLE - LARGE CONDUCTORS	ISSUED	2/04/2008
				REVISED	8/9/2011
				STANDARD NUMBER	
				VC7AL-10-FG	



FOR RETIREMENT ONLY



DATE	REVISION

14.4/24.9 KV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
10' DEADEND (SINGLE) STRUCTURE  
CONCRETE POLE - LARGE CONDUCTORS

ISSUED 2/04/2008  
REVISED 8/9/2011  
STANDARD NUMBER  
VC7AL-10-FG

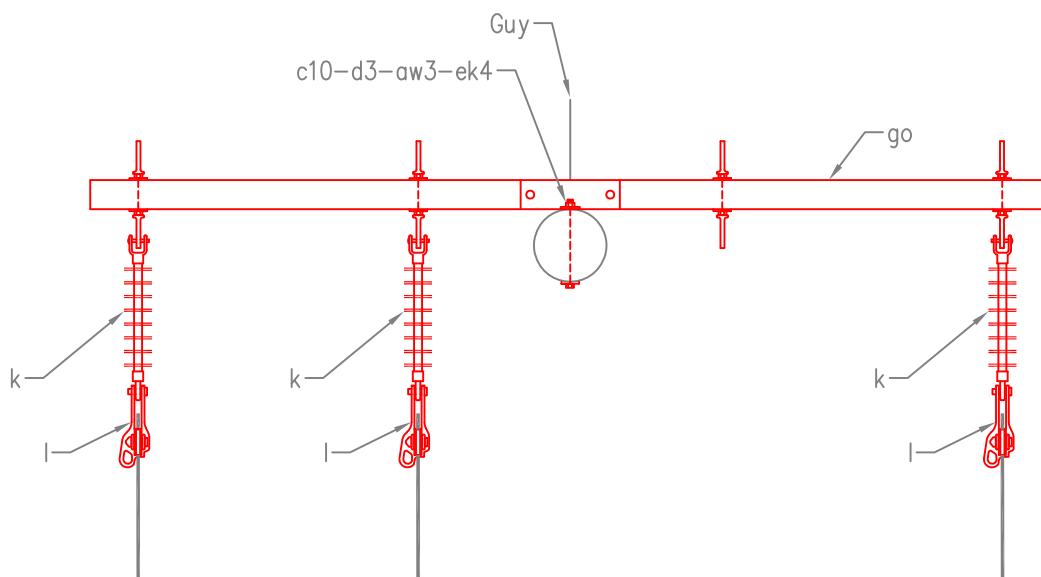
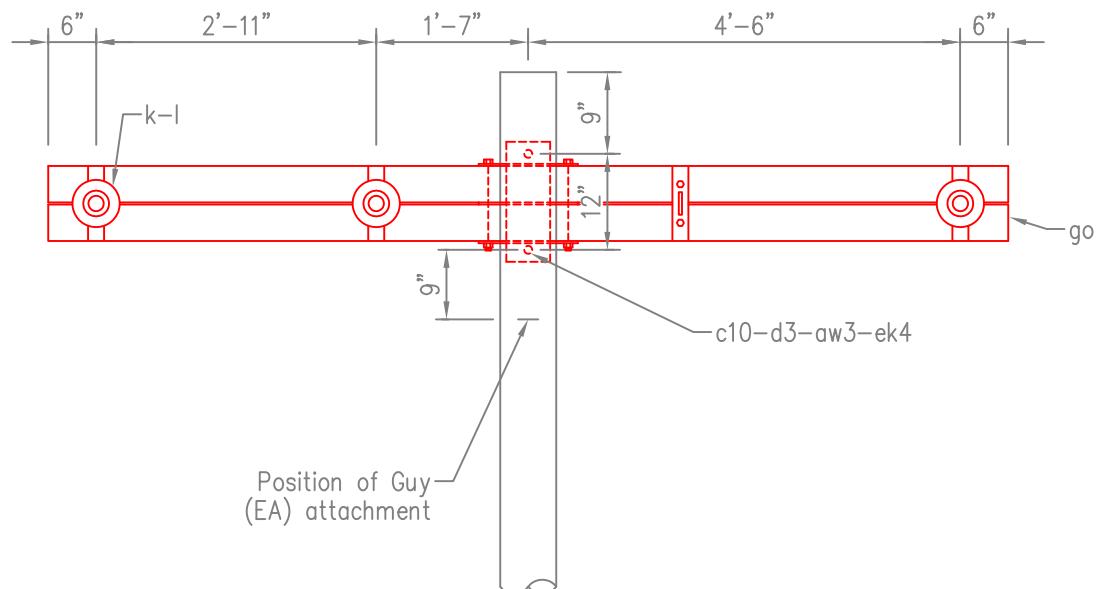
ITM.	QTY.	MAT. CODE No	MATERIAL
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek4	2	4290-70-75	Locknuts 3/4"
go	1	1809-09-17	Crossarm, Fiberglass 10', DA 3200-120
k	3	3428-60-60	Insulator, polymer suspension
l	3	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

**FOR RETIREMENT ONLY**

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 10' DEADEND (SINGLE) STRUCTURE CONCRETE POLE - LARGE CONDUCTORS LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	8/9/2011
				STANDARD NUMBER	VC7AL-10-LN-FG



**FOR RETIREMENT ONLY**

DATE	REVISION	14.4/24.9 KV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 10' DEADEND (SINGLE) STRUCTURE CONCRETE POLE - LARGE CONDUCTORS LESS NEUTRAL	ISSUED	2/04/2008
			REVISED	8/9/2011
			STANDARD NUMBER	
			VC7AL-10-LN-FG	



ITM.	QTY.	MAT. CODE No	MATERIAL
aa	2	4290-40-63	Nuts, oval eye 5/8"
al2	2	1737-12-01	Bonding clip, 5/8", (2727)
ek1	2	4290-70-63	Locknuts 5/8"
eu2	1	3427-75-30	Link, F.G. primary extension, clevis-eye, 18"
k	3	3428-60-60	Insulator, polymer suspension
l	4	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

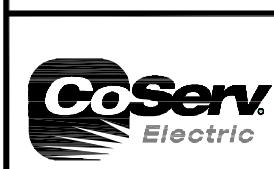
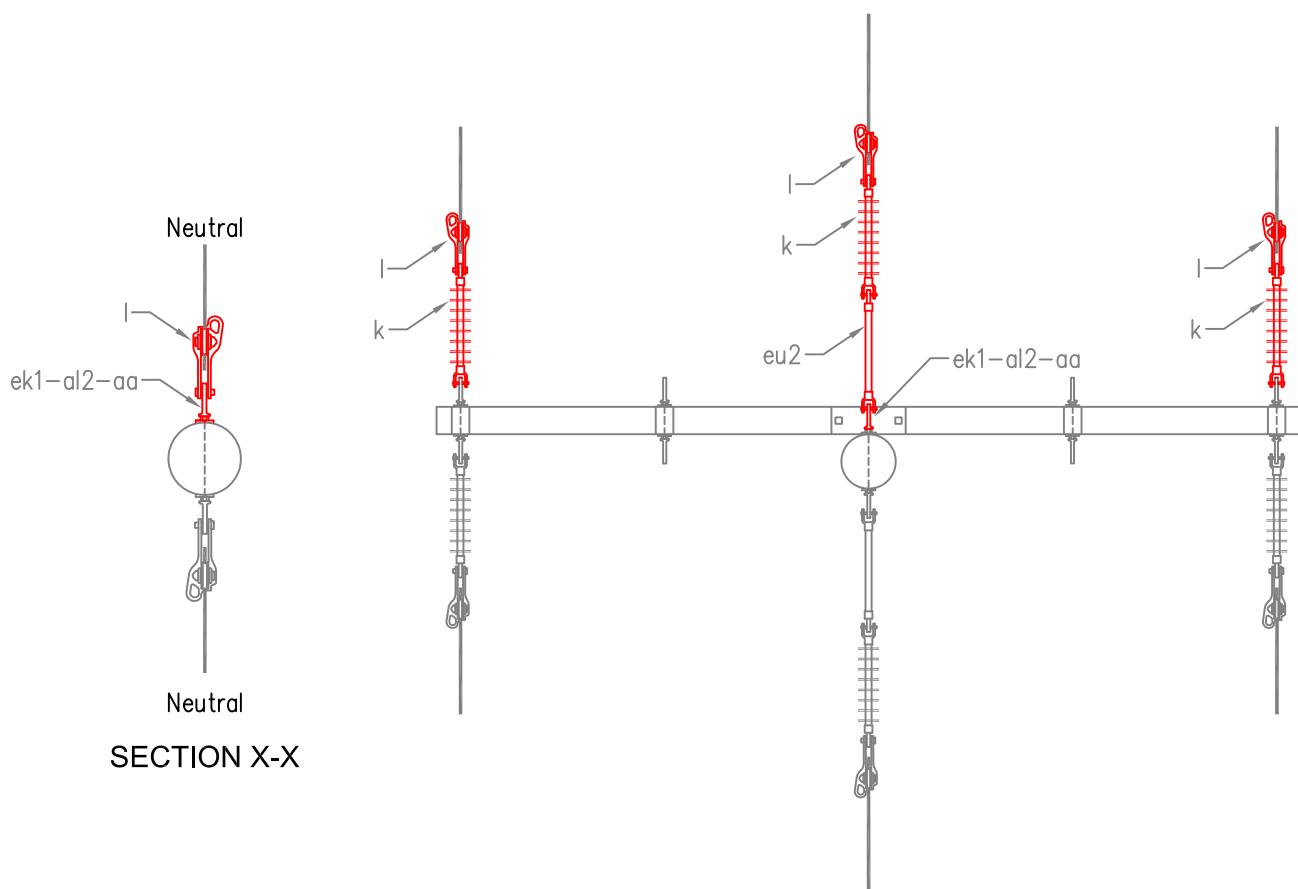
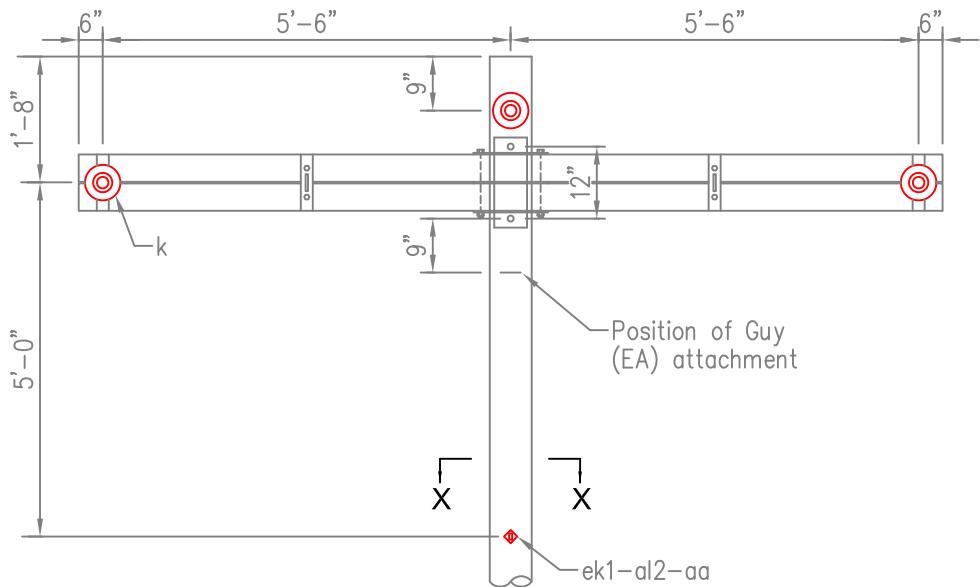
REFERENCED UNITS

VM5-40-2      Bonding Clip Assembly

NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION DEADEND TAKEOFF FOR SPAN WITH TENSION CONCRETE POLE	ISSUED	8/9/2011
				REVISED	
				STANDARD NUMBER	
				VC7AX-FG	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND TAKEOFF FOR  
SPAN WITH TENSION  
CONCRETE POLE

ISSUED 8/9/2011  
REVISED  
STANDARD NUMBER  
VC7AX-FG

ITM.	QTY.	MAT. CODE No	MATERIAL
aa	1	4290-40-63	Nuts, oval eye 5/8"
al2	1	1737-12-01	Bonding clip, 5/8", (2727)
ek1	1	4290-70-63	Locknuts 5/8"
eu2	1	3427-75-30	Link, F.G. primary extension, clevis-eye, 18"
k	3	3428-60-60	Insulator, polymer suspension
l	3	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

#### REFERENCED UNITS

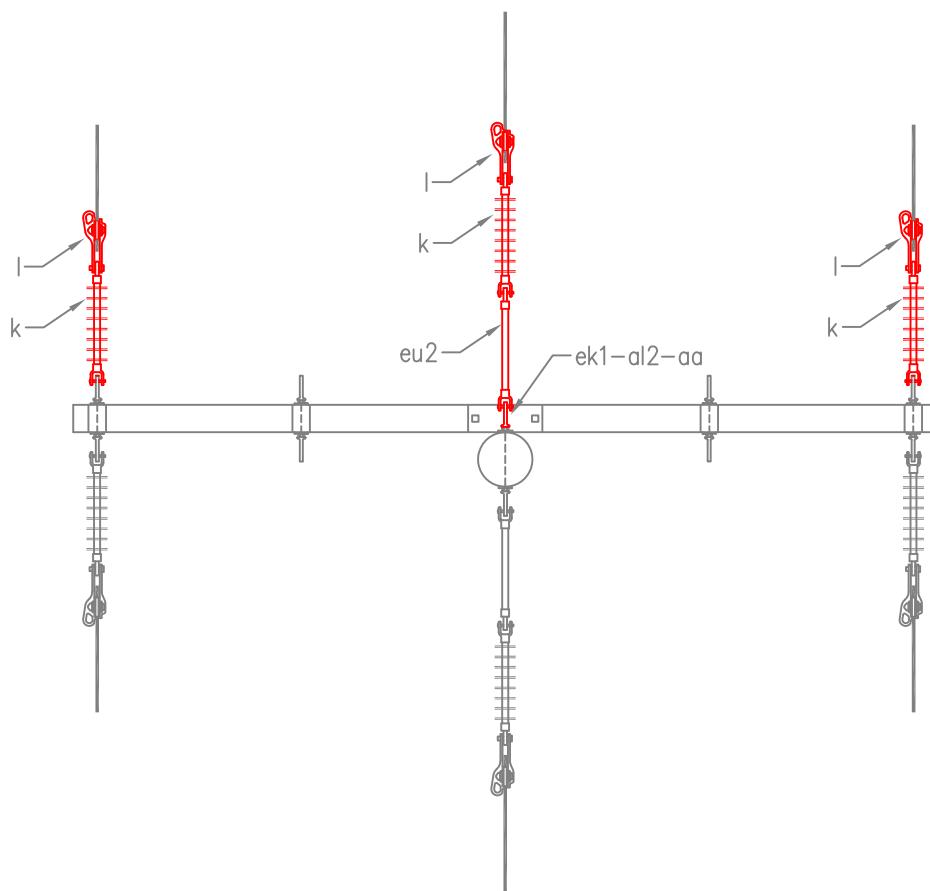
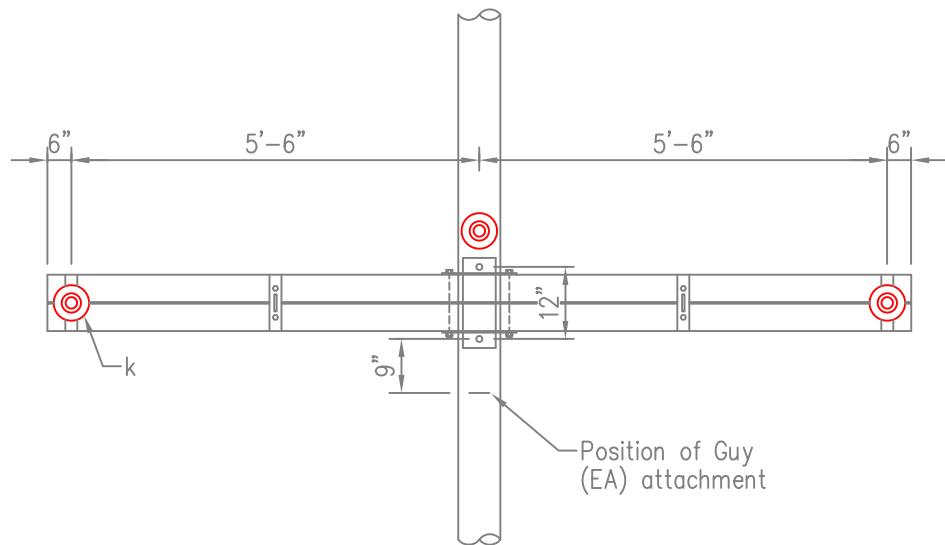
VM5-40-2      Bonding Clip Assembly

#### NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.



DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION DEADEND TAKEOFF FOR SPAN WITH TENSION CONCRETE POLE - LESS NEUTRAL	ISSUED	8/9/2011
			REVISED	
			STANDARD NUMBER	
			VC7AX-LN-FG	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND TAKEOFF FOR  
SPAN WITH TENSION  
CONCRETE POLE - LESS NEUTRAL

ISSUED 8/9/2011  
REVISED  
STANDARD NUMBER  
VC7AX-LN-FG

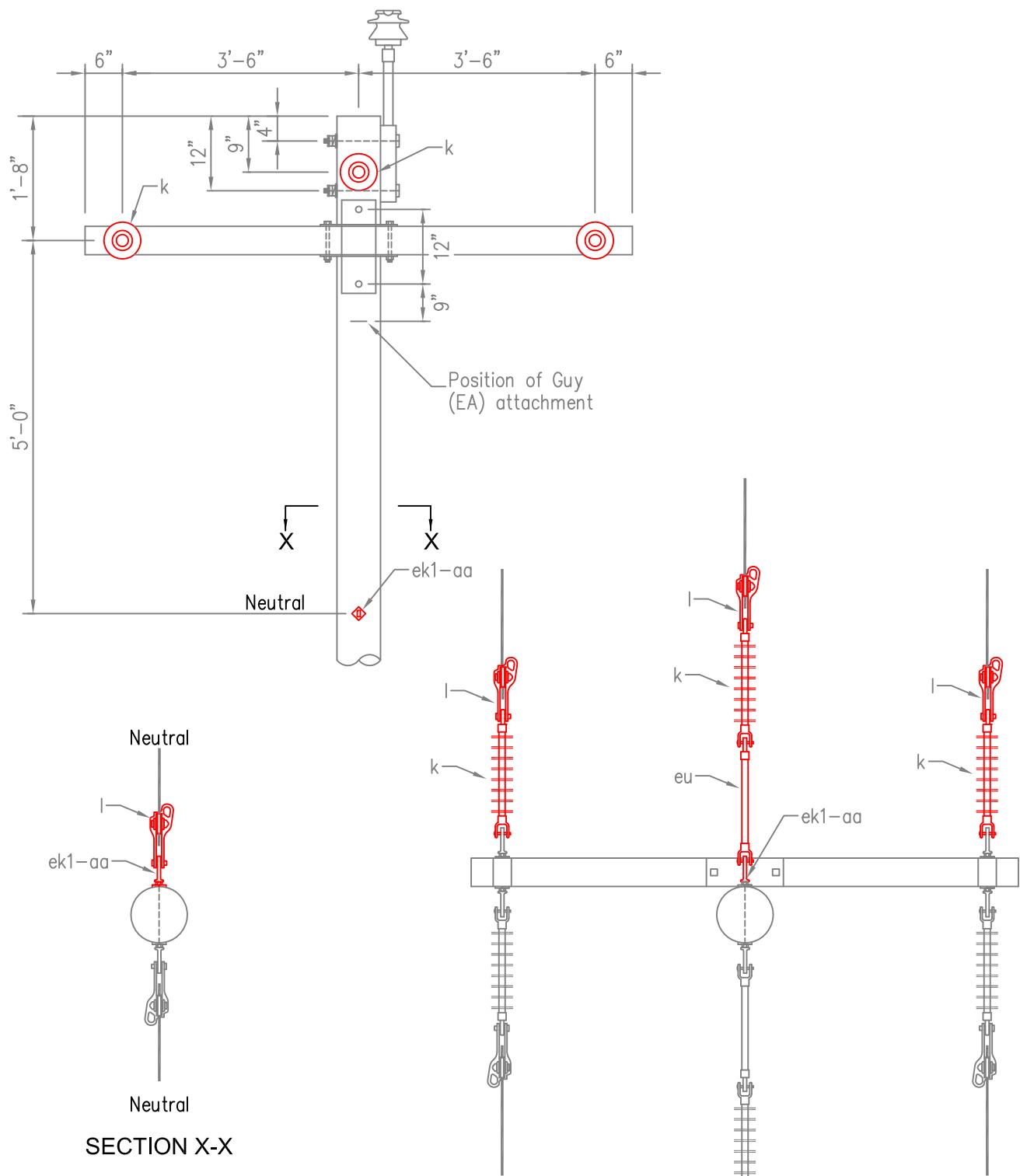
ITM.	QTY.	MAT. CODE No	MATERIAL
aa	2	4290-40-63	Nuts, oval eye 5/8"
ek1	2	4290-70-63	Locknuts 5/8"
eu	1	3427-70-30	Link, F.G. primary extension, clevis-eye, 12"
k	3	3428-60-60	Insulator, polymer suspension
l	4	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

NOTES:

- Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

FOR RETIREMENT ONLY

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION DEADEND TAKEOFF FOR SPAN WITH TENSION CONCRETE POLE	ISSUED	2/04/2008
				REVISED	8/9/2011
				STANDARD NUMBER	VC7AX-L-FG



FOR RETIREMENT ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND TAKEOFF FOR  
SPAN WITH TENSION  
CONCRETE POLE

ISSUED	2/04/2008
REVISED	8/9/2011
STANDARD NUMBER	VC7AX-L-FG

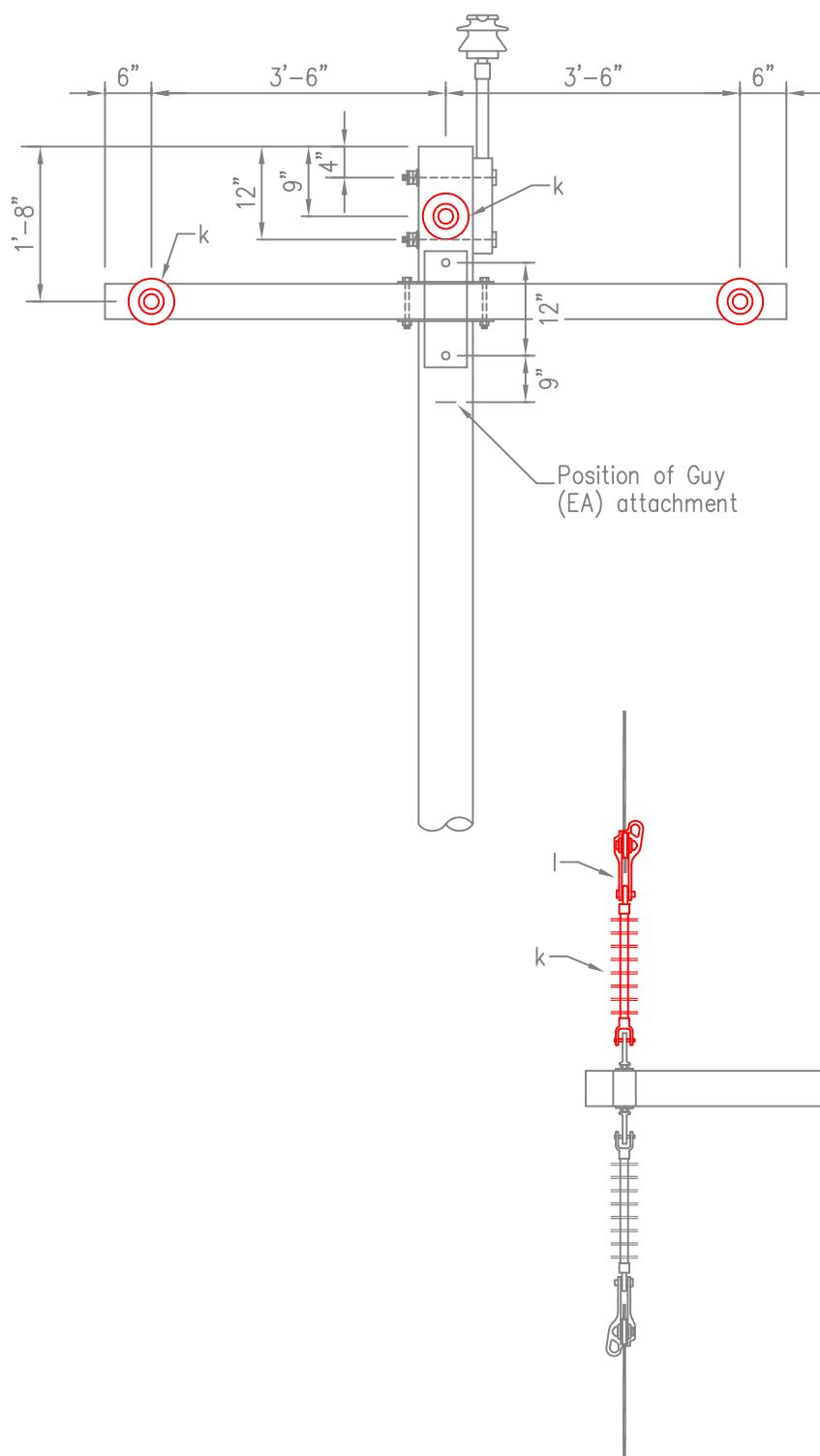
ITM.	QTY.	MAT. CODE No	MATERIAL
aa	1	4290-40-63	Nuts, oval eye 5/8"
ek1	1	4290-70-63	Locknuts 5/8"
eu	1	3427-70-30	Link, F.G. primary extension, clevis-eye, 12"
k	3	3428-60-60	Insulator, polymer suspension
l	3	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

NOTES:

- Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

FOR RETIREMENT ONLY

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION DEADEND TAKEOFF FOR SPAN WITH TENSION CONCRETE POLE - LESS NEUTRAL	ISSUED	11/10/2009
				REVISED	8/9/2011
					STANDARD NUMBER
					VC7AX-L-LN-FG



**FOR RETIREMENT ONLY**



DATE	REVISION	14.4/24.9 KV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION DEADEND TAKEOFF FOR SPAN WITH TENSION CONCRETE POLE - LESS NEUTRAL	ISSUED	11/10/2009
			REVISED	8/9/2011
				STANDARD NUMBER
				VC7AX-L-LN-FG

ITM.	QTY.	MAT. CODE No	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah9	3	6790-XX-88	Slack span deadend tie, (Specify conductor size)
al2	1	1737-12-01	Bonding clip, 5/8", (2727)
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
aw3	3	7108-99-51	Washers, double spring lock, 3/4"
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
cjl	2'	7250-06-01	Wire, #6 SD Cu
cm1	1	3426-20-12	Insulator, 3" spool
d1	1	7102-04-91	Washers, square, 5/8"
d4	3	7102-04-51	Washers, square, 3/4"
ek1	1	4290-70-63	Locknuts 5/8"
ek4	3	4290-70-75	Locknuts 3/4"
fr	3	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase

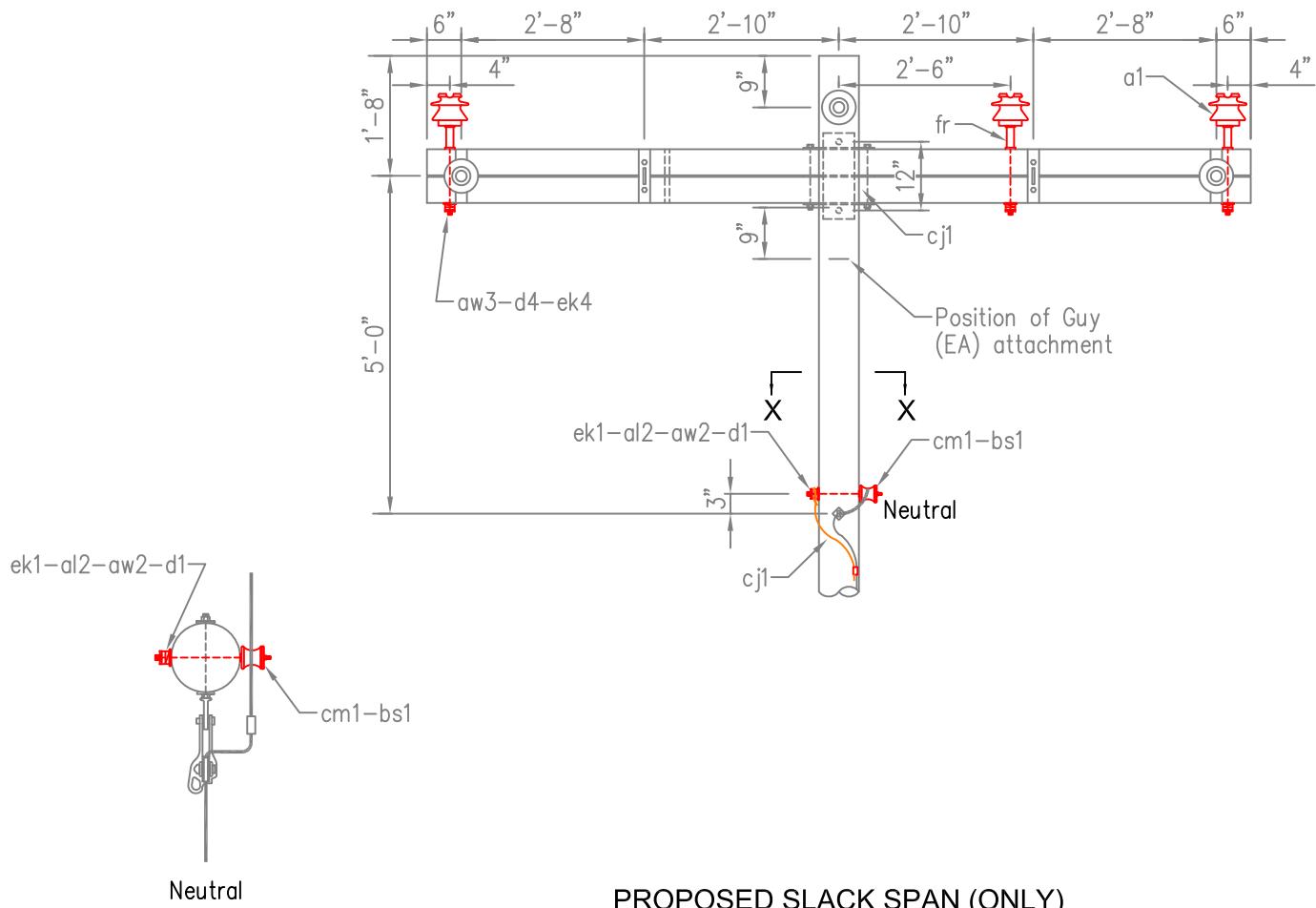
#### REFERENCED UNITS

VM5-40-2      Bonding Clip Assembly

#### NOTES:

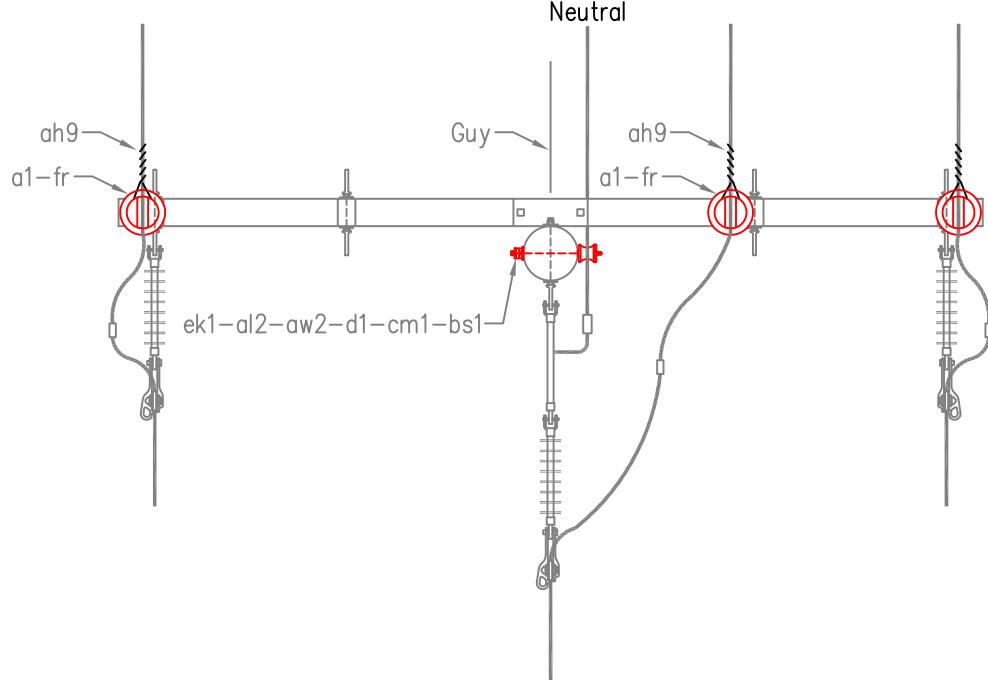
1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION DEADEND TAKEOFF FOR SPAN WITH REDUCED TENSION CONCRETE POLE	ISSUED	6/11/2012
				REVISED	
				STANDARD NUMBER	
				VC7AXS-FG	



SECTION X-X

PROPOSED SLACK SPAN (ONLY)



EXISTING FULL TENSION DEADEND



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND TAKEOFF FOR  
SPAN WITH REDUCED TENSION  
CONCRETE POLE

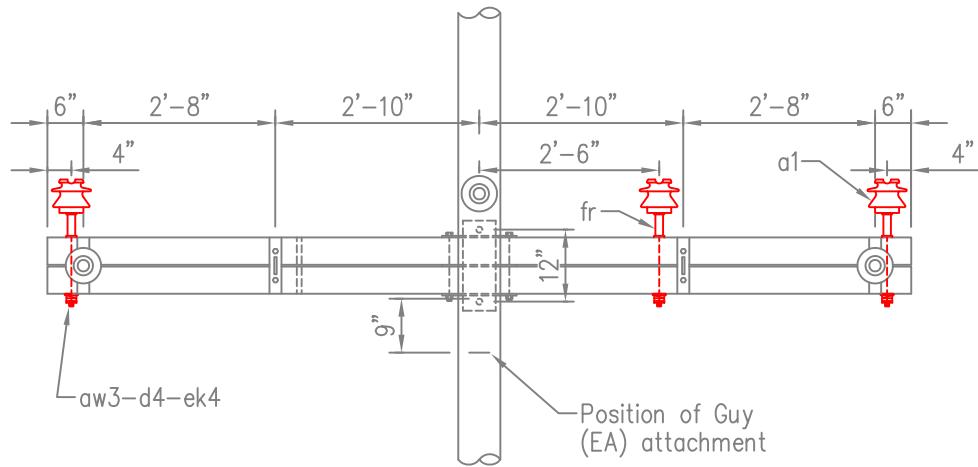
ISSUED	6/11/2012
REVISED	
STANDARD NUMBER	VC7AXS-FG

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah9	3	6790-XX-88	Slack span deadend tie, (Specify conductor size)
aw3	3	7108-99-51	Washers, double spring lock, 3/4"
d4	3	7102-04-51	Washers, square, 3/4"
ek4	3	4290-70-75	Locknuts 3/4"
fr	3	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase

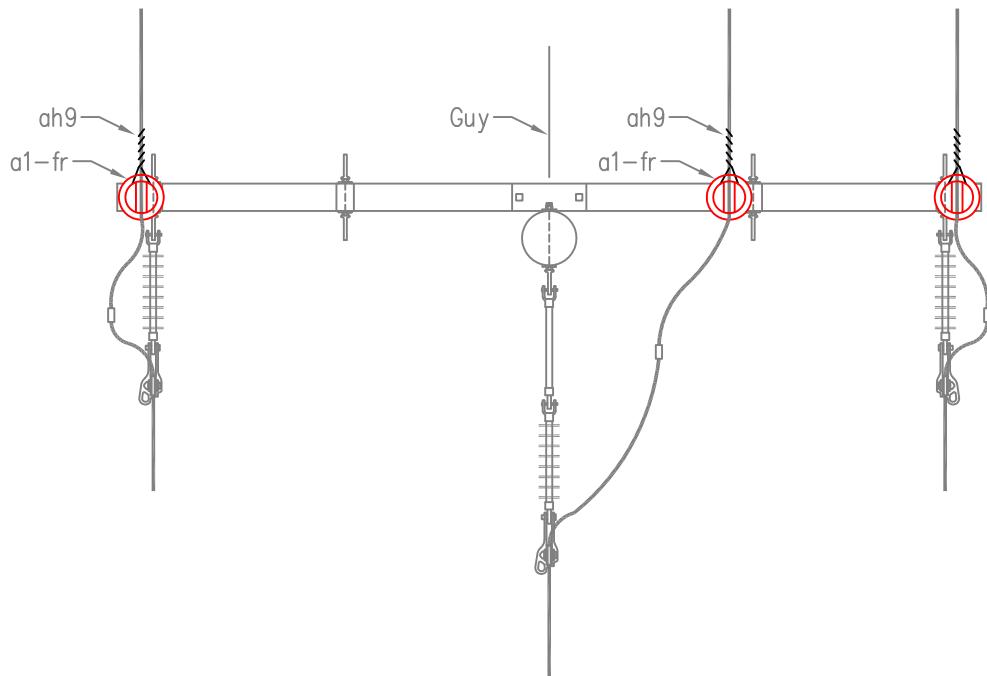
NOTES:

- Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION DEADEND TAKEOFF FOR SPAN WITH REDUCED TENSION CONCRETE POLE - LESS NEUTRAL	ISSUED	6/11/2012
				REVISED	
				STANDARD NUMBER	
				VC7AXS-LN-FG	



### PROPOSED SLACK SPAN (ONLY)



### EXISTING FULL TENSION DEADEND

DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION DEADEND TAKEOFF FOR SPAN WITH REDUCED TENSION CONCRETE POLE - LESS NEUTRAL	ISSUED
			6/11/2012
		REVISED	
		STANDARD NUMBER	VC7AXS-LN-FG



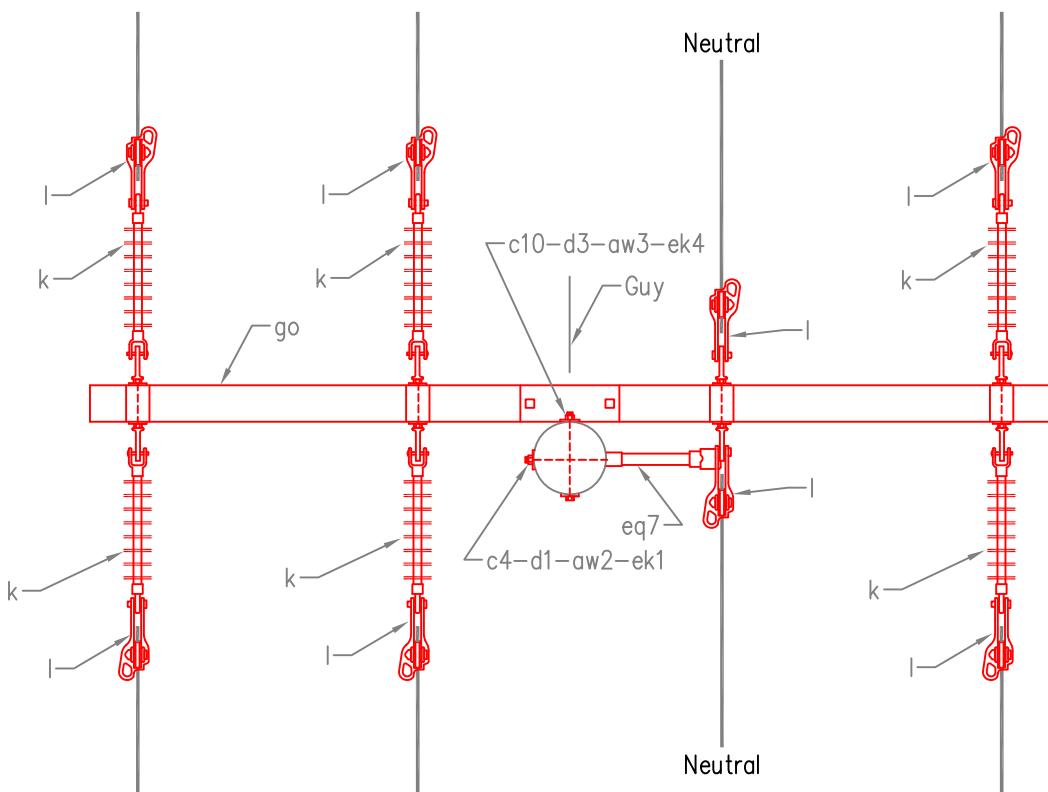
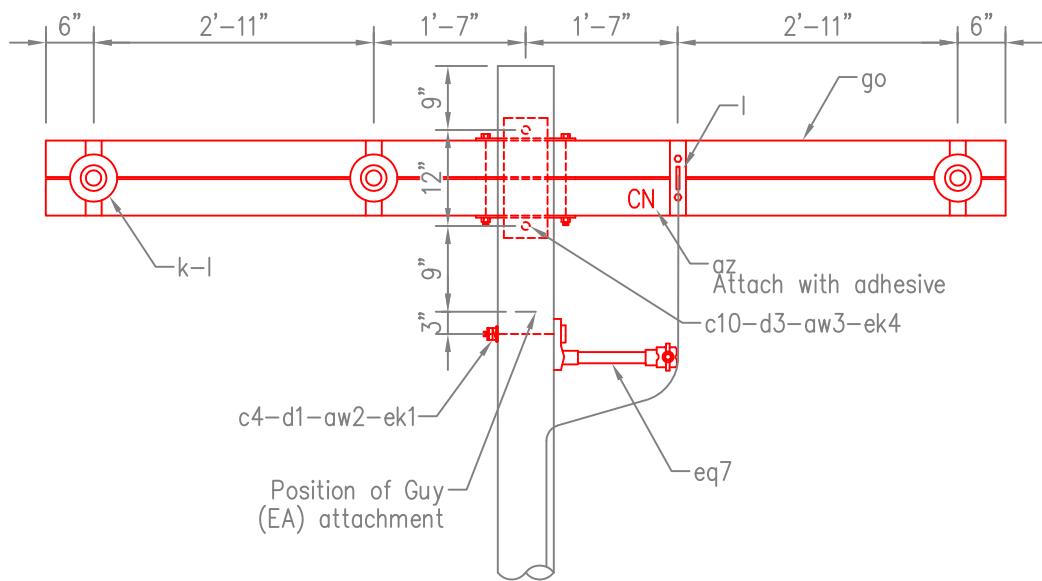
ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	1	7108-99-41	Washer, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
az	2	4285-10-01	CN Stick-on Tag
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
c4	1	0638-05-14	Bolts, Machine 5/8" x 14"
d1	1	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	1	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
eq7	1	0780-37-01	Bracket, download standoff, Fiberglass
go	1	1809-09-17	Crossarm, Fiberglass 10' DA 3200-120
k	6	3428-60-60	Insulator, polymer suspension
l	8	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

**FOR RETIREMENT ONLY**

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 10' DEADEND (DOUBLE) STRUCTURE CONCRETE POLE - LARGE CONDUCTORS	ISSUED	2/04/2008
				REVISED	8/9/2011
				STANDARD NUMBER	
				VC8AL-10-FG	



FOR RETIREMENT ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
10' DEADEND (DOUBLE) STRUCTURE  
CONCRETE POLE - LARGE CONDUCTORS

ISSUED 2/04/2008  
REVISED 8/9/2011  
STANDARD NUMBER  
VC8AL-10-FG

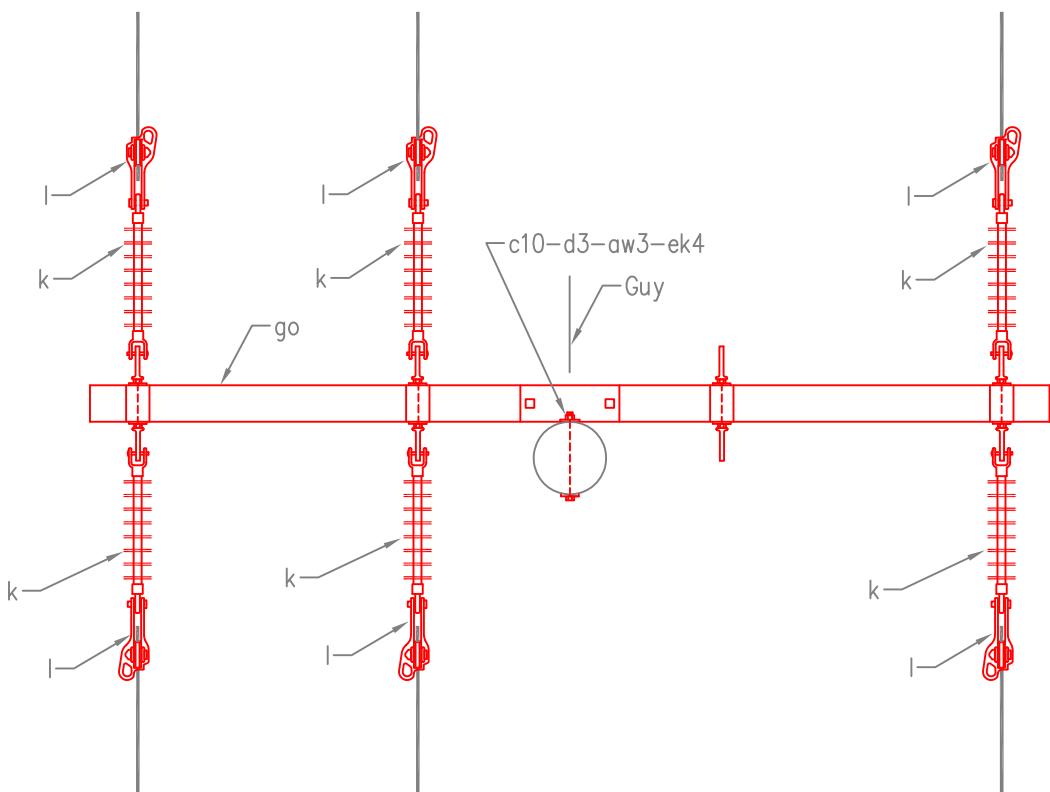
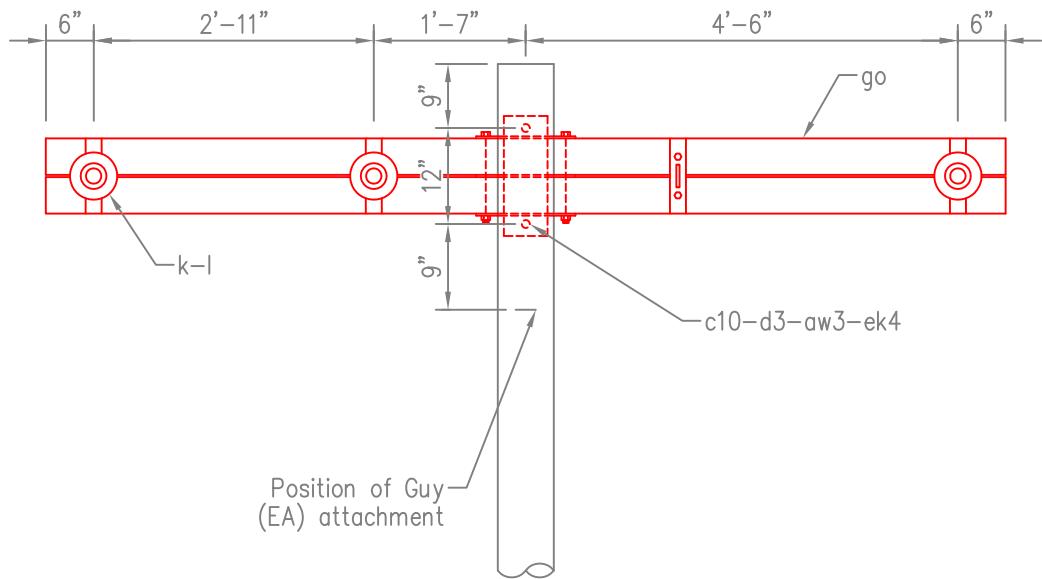
ITM.	QTY.	MAT. CODE No	MATERIAL
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek4	2	4290-70-75	Locknuts 3/4"
go	1	1809-09-17	Crossarm, Fiberglass 10' DA 3200-120
k	6	3428-60-60	Insulator, polymer suspension
l	6	1172-8X-XX	Shoe, deadend, (Specify conductor & size)

NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

**FOR RETIREMENT ONLY**

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 10' DEADEND (DOUBLE) STRUCTURE CONCRETE POLE - LARGE CONDUCTORS LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	8/9/2011
				STANDARD NUMBER	
				VC8AL-10-LN-FG	



FOR RETIREMENT ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
10' DEADEND (DOUBLE) STRUCTURE  
CONCRETE POLE - LARGE CONDUCTORS  
LESS NEUTRAL

ISSUED 2/04/2008  
REVISED 8/9/2011  
STANDARD NUMBER  
VC8AL-10-LN-FG

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
a2	2	3422-40-10	Insulator, 7.2 pin, white, 1" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
dh8	1	6790-XX-78	C/F double neck double support tie, (Specify conductor size)
al2	1	1737-12-01	Bonding clip, 5/8", (2727)
al6	1	1737-13-02	Bonding clip, 3/4", (2718)
aw2	1	7108-99-41	Washer, double spring lock, 5/8"
aw3	18	7108-99-51	Washers, double spring lock, 3/4"
az	2	4285-10-01	CN Stick-ON Tag
c4	1	0638-05-14	Bolt, Machine 5/8" x 14"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	1	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	24	7102-04-51	Washers, square, 3/4"
ek1	1	4290-70-63	Locknuts 5/8"
ek4	26	4290-70-75	Locknuts 3/4"
eq7	1	0780-37-01	Bracket, downlead standoff, Fiberglass
fm	2	4541-22-32	Pin, crossarm 7.2, 3/4" shank, neutral
fr	6	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gm	2	1809-09-10	Crossarm, Fiberglass 12' TB 3000-144
n7	4	0633-06-24	Bolts, DA 3/4" x 24" (Special Order)

#### REFERENCED UNITS

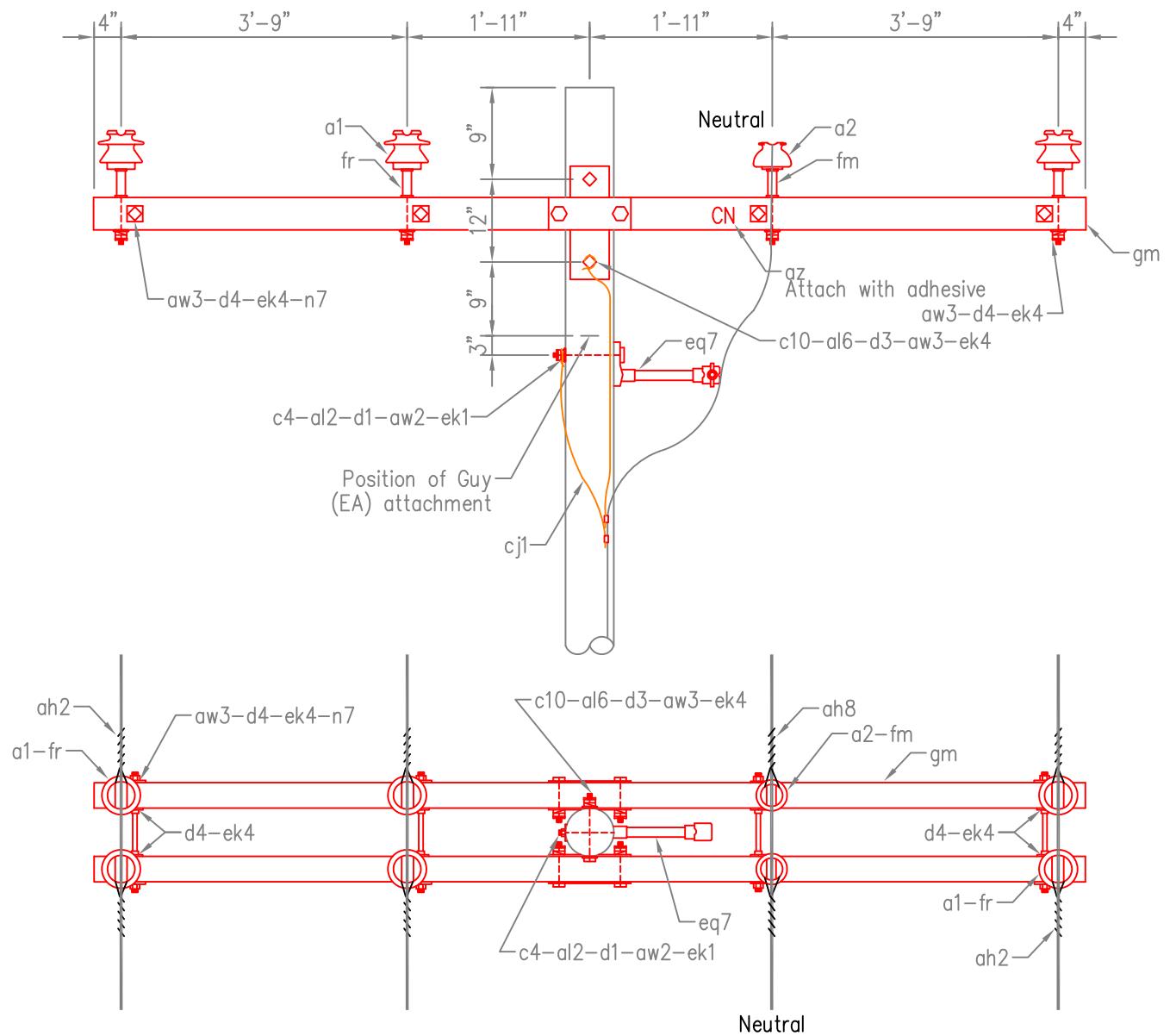
VM5-40-2      Bonding Clip Assembly  
 VM5-41-6      Bonding Clip Assembly

#### NOTES:

- Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

#### ENGINEERING APPROVAL ONLY

	DATE	REVISION	14.4/24.9 kV, THREE PHASE <b>FIBERGLASS CROSSARM CONSTRUCTION</b> 12' DOUBLE PRIMARY SUPPORT CONCRETE POLE - LARGE CONDUCTORS	ISSUED	2/04/2008
				REVISED	8/23/2011
				STANDARD NUMBER	
				VC9-2-FG	



ENGINEERING APPROVAL ONLY



DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 12' DOUBLE PRIMARY SUPPORT CONCRETE POLE - LARGE CONDUCTORS	ISSUED	2/04/2008
			REVISED	8/23/2011
			STANDARD NUMBER	VC9-2-FG

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	3	6790-XX-33	Double support tie, (Specify conductor size)
al6	1	1737-13-02	Bonding clip, 3/4", (2718)
aw3	16	7108-99-51	Washers, double spring lock, 3/4"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cj1	2'	7250-06-01	Wire, #6 SD Cu
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	22	7102-04-51	Washers, square, 3/4"
ek4	24	4290-70-75	Locknuts 3/4"
fr	6	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gm	2	1809-09-10	Crossarm, Fiberglass 12' TB 3000-144
n7	4	0633-06-24	Bolts, DA 3/4" x 24" (Special Order)

#### REFERENCED UNITS

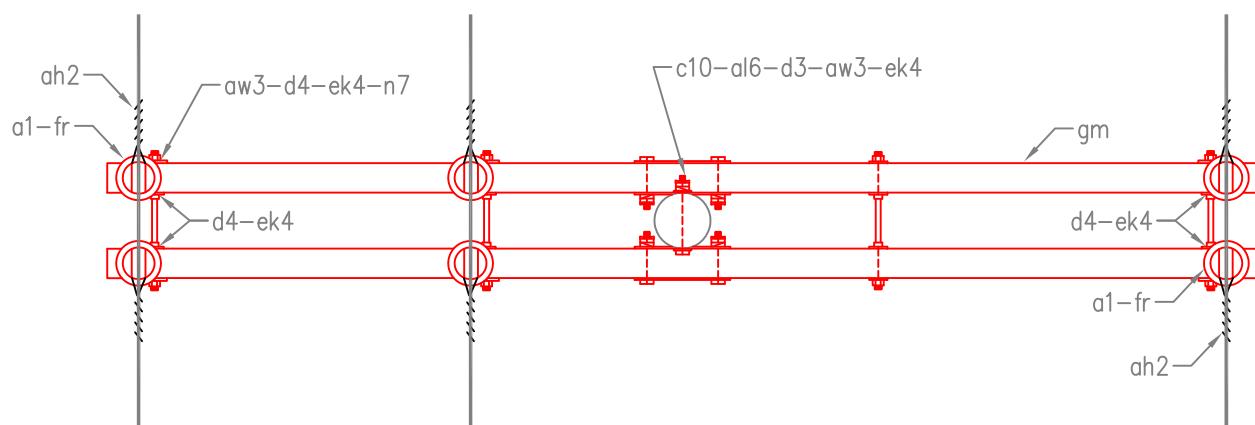
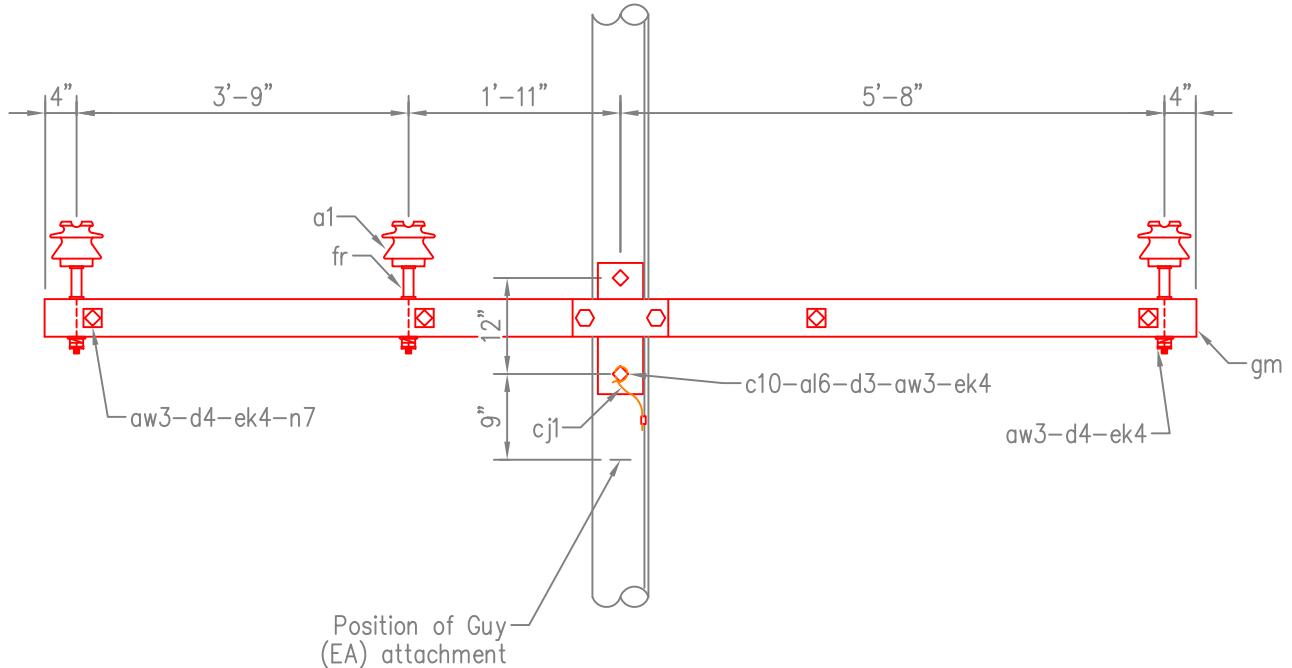
VM5-41-6      Bonding Clip Assembly

#### NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.



DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 12' DOUBLE PRIMARY SUPPORT CONCRETE POLE - LARGE CONDUCTORS LESS NEUTRAL	ISSUED	2/04/2008
			REVISED	8/23/2011
			STANDARD NUMBER	VC9-2-LN-FG



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
12' DOUBLE PRIMARY SUPPORT  
CONCRETE POLE - LARGE CONDUCTORS  
LESS NEUTRAL

ISSUED **2/04/2008**  
REVISED **8/23/2011**  
STANDARD NUMBER  
**VC9-2-LN-FG**

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
a2	1	3422-40-10	Insulator, 7.2 pin, white, 1" internal thread
ah6	1	6790-XX-76	C/F neck wrap lock tie, (Specify conductor size)
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
al2	1	1737-12-01	Bonding clip, 5/8", (2727)
al6	1	1737-13-02	Bonding clip, 3/4", (2718)
aw2	1	7108-99-41	Washer, double spring lock, 5/8"
aw3	10	7108-99-51	Washers, double spring lock, 3/4"
az	2	4285-10-01	CN Stick-ON Tag
c4	1	0638-05-14	Bolt, Machine 5/8" x 14"
c7	4	0638-06-06	Bolts, machine 3/4" x 6"
c10	2	0638-06-14	Bolts, machine 3/4" x 14
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	1	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	12	7102-04-51	Washers, square, 3/4"
ek1	1	4290-70-63	Locknuts 5/8"
ek4	10	4290-70-75	Locknuts 3/4"
eq7	1	0780-37-01	Bracket, downlead standoff, Fiberglass
fm	1	4541-22-32	Pin, crossarm 7.2, 3/4" shank, neutral
fr	3	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gm	1	1809-09-10	Crossarm, Fiberglass 12' TB 3000-144

#### REFERENCED UNITS

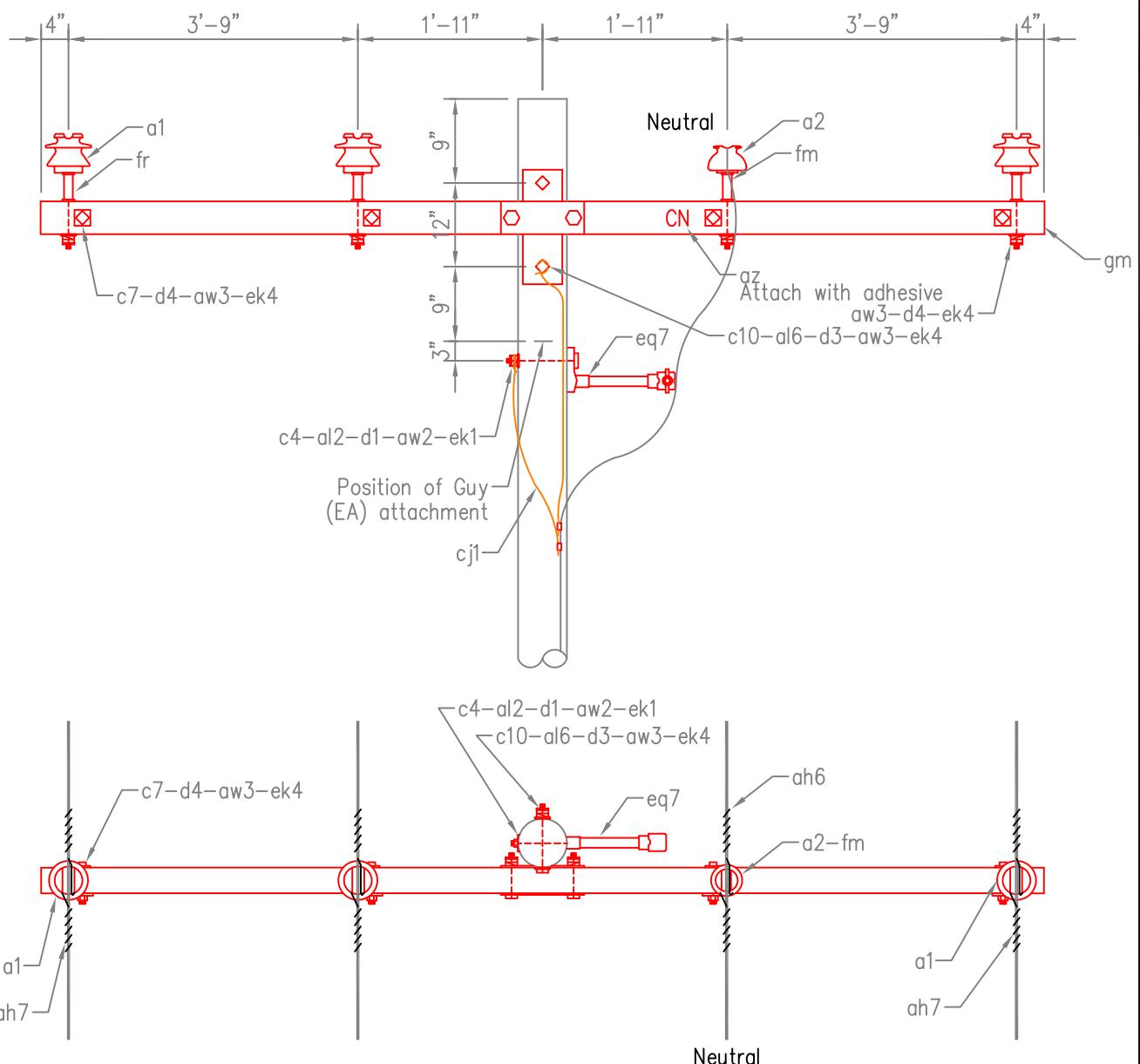
VM5-40-2      Bonding Clip Assembly  
 VM5-41-6      Bonding Clip Assembly

#### NOTES:

- Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

ENGINEERING APPROVAL ONLY

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 12' SINGLE PRIMARY SUPPORT CONCRETE POLE - LARGE CONDUCTORS	ISSUED	2/04/2008
				REVISED	8/23/2011
				STANDARD NUMBER	
				VC9-3-FG	



ENGINEERING APPROVAL ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
12' SINGLE PRIMARY SUPPORT  
CONCRETE POLE - LARGE CONDUCTORS

ISSUED 2/04/2008  
REVISED 8/23/2011  
STANDARD NUMBER  
VC9-3-FG

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	3	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah7	3	6790-XX-77	Wrap lock tie, (Specify conductor size)
al6	1	1737-13-02	Bonding clip, 3/4", (2718)
aw3	8	7108-99-51	Washers, double spring lock, 3/4"
c10	2	0638-06-14	Bolts, machine 3/4" x 14
c7	3	0638-06-06	Bolts, machine 3/4" x 6"
cj1	2'	7250-06-01	Wire, #6 SD Cu
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d4	9	7102-04-51	Washers, square, 3/4"
ek4	8	4290-70-75	Locknuts 3/4"
fr	3	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gm	1	1809-09-10	Crossarm, Fiberglass 12' TB 3000-144

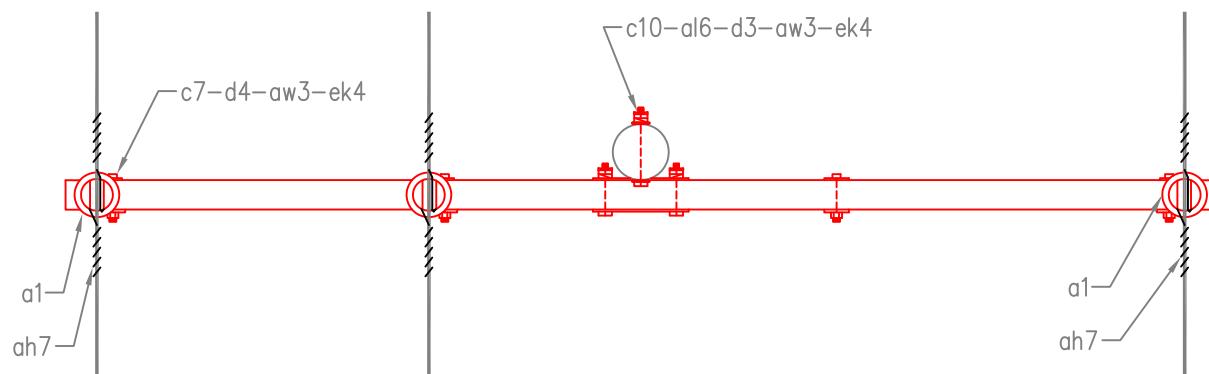
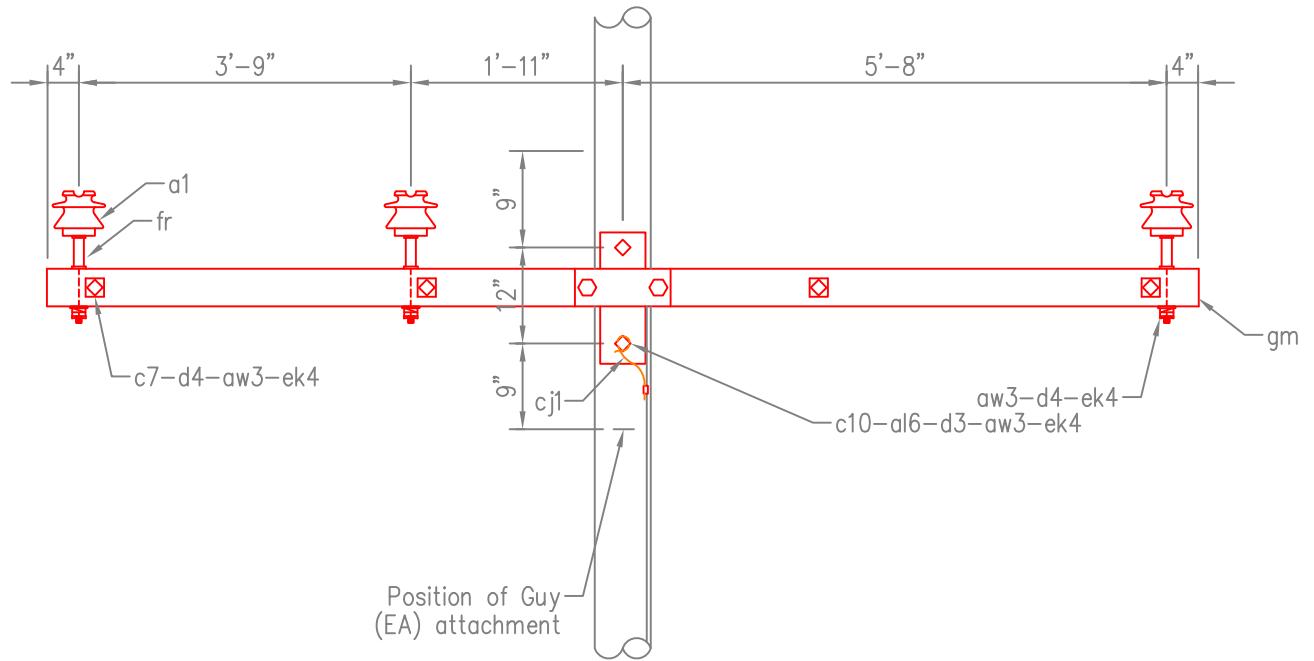
#### REFERENCED UNITS

VM5-41-6      Bonding Clip Assembly

#### NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIBERGLASS CROSSARM CONSTRUCTION 12' SINGLE PRIMARY SUPPORT CONCRETE POLE - LARGE CONDUCTORS LESS NEUTRAL	ISSUED	2/04/2008
				REVISED	8/23/2011
				STANDARD NUMBER	
				VC9-3-LN-FG	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIBERGLASS CROSSARM CONSTRUCTION  
12' SINGLE PRIMARY SUPPORT  
CONCRETE POLE - LARGE CONDUCTORS  
LESS NEUTRAL

ISSUED 2/04/2008  
REVISED 8/23/2011  
STANDARD NUMBER  
VC9-3-LN-FG

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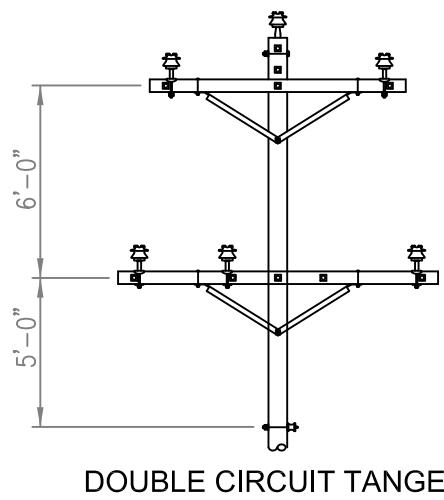
## **Tab''FE/Y**

## **Tab''FE/Y**

**INDEX DC-W****DOUBLE CIRCUIT PRIMARY WOOD POLE TOP ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
DC-W GUIDE	DOUBLE CIRCUIT – GUIDE FOR WOOD POLES
DC-VC1-2	DOUBLE CIRCUIT – TANGENT SINGLE SUPPORT CROSSARM ON WOOD POLES
DC-VC1-3	DOUBLE CIRCUIT – TANGENT DOUBLE SUPPORT CROSSARM ON WOOD POLES
DC-VC2-2	DOUBLE CIRCUIT – MEDIUM ANGLE 5° TO 30° DOUBLE SUPPORT CROSSARM ON WOOD POLES
DC-VC7A-F	DOUBLE CIRCUIT – SINGLE SUPPORT DEADEND FIBERGLASS CROSSARM ON WOOD POLES
DC-VC7B-F	DOUBLE CIRCUIT – SINGLE SUPPORT DEADEND FIBERGLASS CROSSARM WITH BUCK ARMS ON WOOD POLES
DC-VC33-7	DOUBLE CIRCUIT – DOUBLE SUPPORT CROSSARM WITH ALLEY ARM

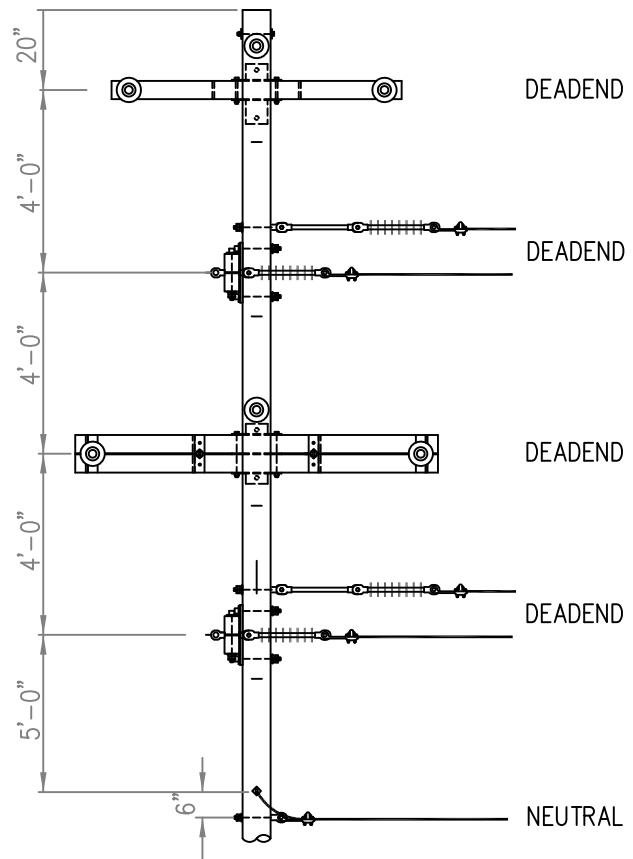
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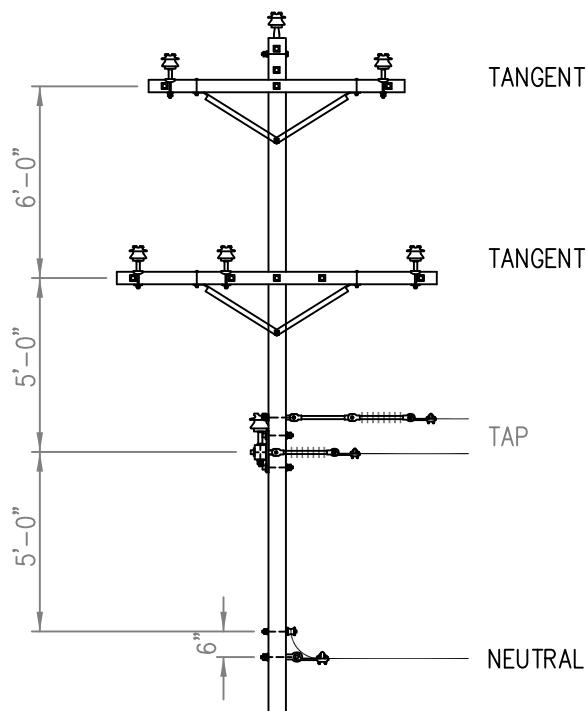
DOUBLE CIRCUIT TANGENT

TANGENT

TANGENT



DOUBLE CIRCUIT WITH BUCK ARMS



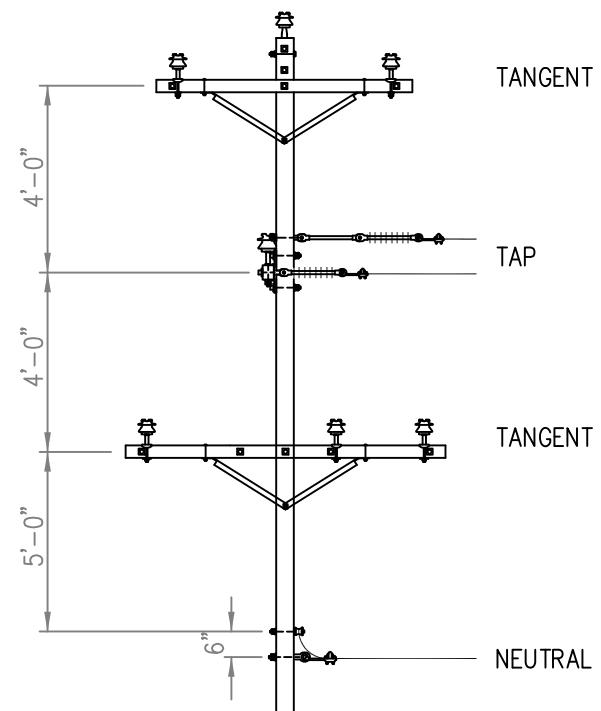
DOUBLE CIRCUIT TANGENT WITH TAP

TANGENT

TANGENT

TAP

NEUTRAL



DOUBLE CIRCUIT TANGENT WITH TAP  
WITH ENGINEERING APPROVAL ONLY

REVISION



DATE

14.4/24.9 kV, THREE PHASE DOUBLE CIRCUIT  
CROSSARM CONSTRUCTION - GUIDE

ISSUED 9/1/2011  
REVISED  
STANDARD NUMBER  
DC-W GUIDE

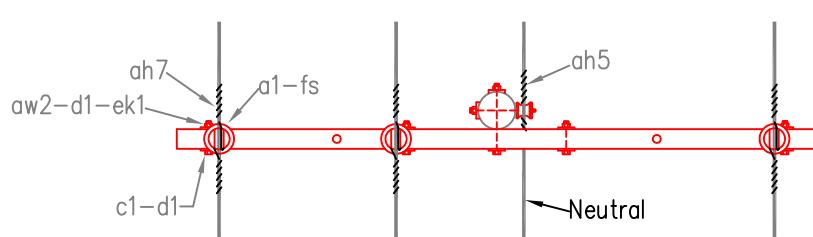
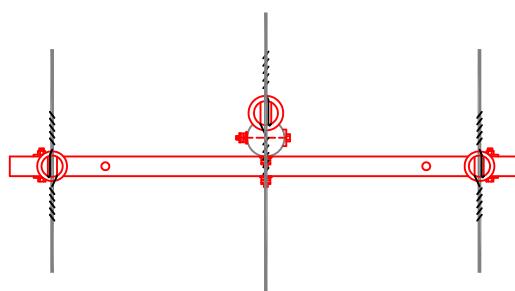
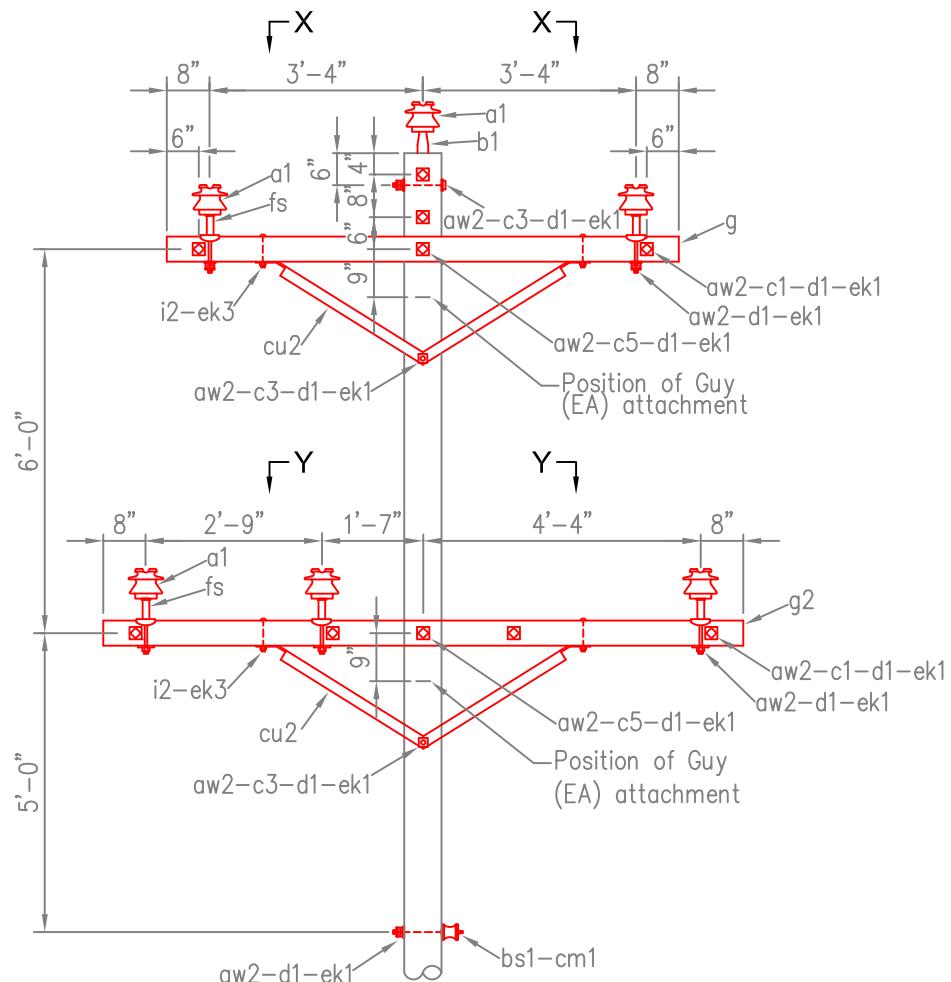
ITEM.	QTY.	CATALOG No.	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	6	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	19	7108-99-41	Washers, double spring lock, 5/8"
b1	1	4561-23-20	Pin, pole top 14.4
bs1	1	0639-05-12	Bolts, SU 5/8" x 12"
c1	6	0638-05-06	Bolts, machine 5/8" x 6"
c3	5	0638-05-12	Bolts, machine 5/8" x 12"
c5	2	0638-05-16	Bolts, machine 5/8" x 16"
cm1	1	3426-20-12	Insulator, 3" spool
cu2	2	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	27	7102-04-91	Washers, square, 5/8"
ek1	19	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
fs	5	4541-11-13	Pin, saddle crossarm 14.4, phase
g	1	1809-01-01	Crossarm, Wood 8'
g2	1	1809-01-03	Crossarm, Wood 10'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"

NOTES:

1. This construction required for all conductors having a breaking strength of more than 4500 pounds.
2. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE DOUBLE CIRCUIT CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT 0° TO 2° MAX. LINE ANGLE LARGE CONDUCTORS	ISSUED	9/1/2011
			REVISED	
			STANDARD NUMBER	
				DC-VC1-2



DATE	REVISION

14.4/24.9 KV, THREE PHASE DOUBLE CIRCUIT  
CROSSARM CONSTRUCTION  
SINGLE PRIMARY SUPPORT  
0° TO 2° MAX. LINE ANGLE  
LARGE CONDUCTORS

ISSUED	9/1/2011
REVISED	
STANDARD NUMBER	DC-VC1-2

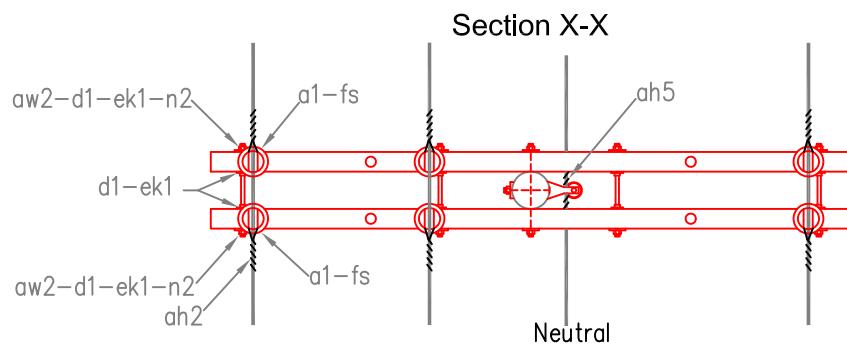
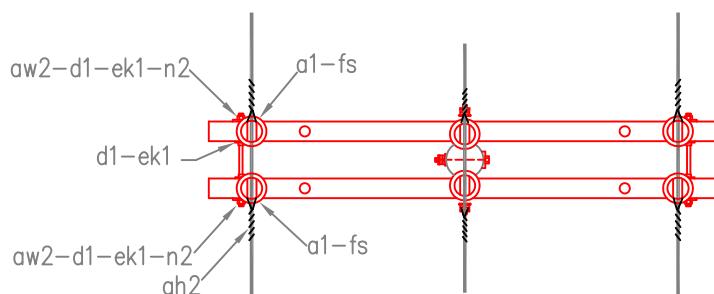
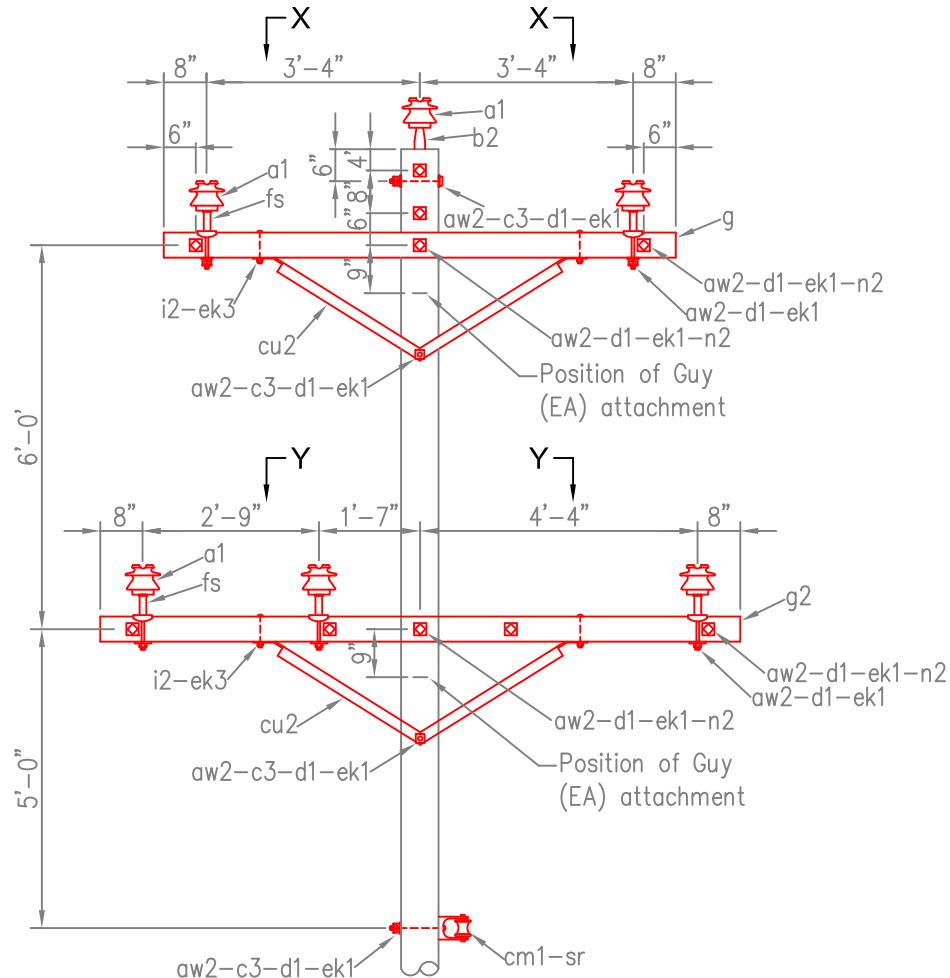
ITEM.	QTY.	CATALOG No.	MATERIAL
a1	12	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	6	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	28	7108-99-41	Washers, double spring lock, 5/8"
b2	2	4561-33-21	Pin, offset pole top 14.4
c3	6	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
cu2	4	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	45	7102-04-91	Washers, square, 5/8"
ek1	45	4290-70-63	Locknuts 5/8"
ek3	8	4290-70-50	Locknuts 1/2"
fs	10	4541-11-13	Pin, saddle crossarm 14.4, phase
g	2	1809-01-01	Crossarm, Wood 8'
g2	2	1809-01-03	Crossarm, Wood 10'
i2	8	0631-04-06	Bolts, carriage 1/2" x 6"
n2	8	0633-05-22	Bolts, DA 5/8" x 22"
sr	1	1230-17-01	Clevis, rigid (D-bracket)

NOTES:

1. This construction required for all conductors having a breaking strength of more than 4500 pounds.
2. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE DOUBLE CIRCUIT CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT 0° TO 5° MAX. LINE ANGLE LARGE CONDUCTORS	ISSUED	9/1/2011
			REVISED	
			STANDARD NUMBER	
				DC-VC1-3



Section Y-Y



DATE	REVISION

14.4/24.9 KV, THREE PHASE DOUBLE CIRCUIT  
CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT  
0° TO 5° MAX. LINE ANGLE  
LARGE CONDUCTORS

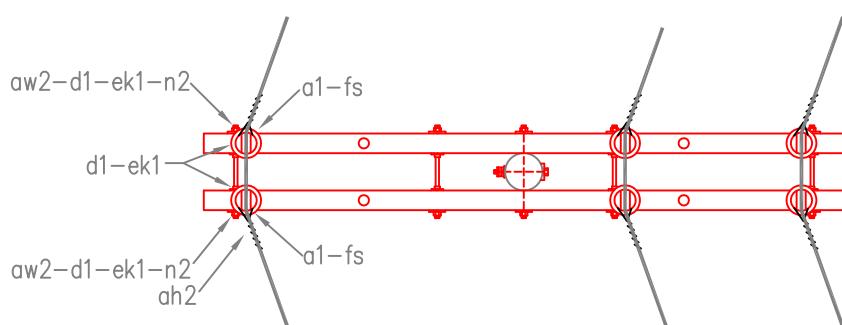
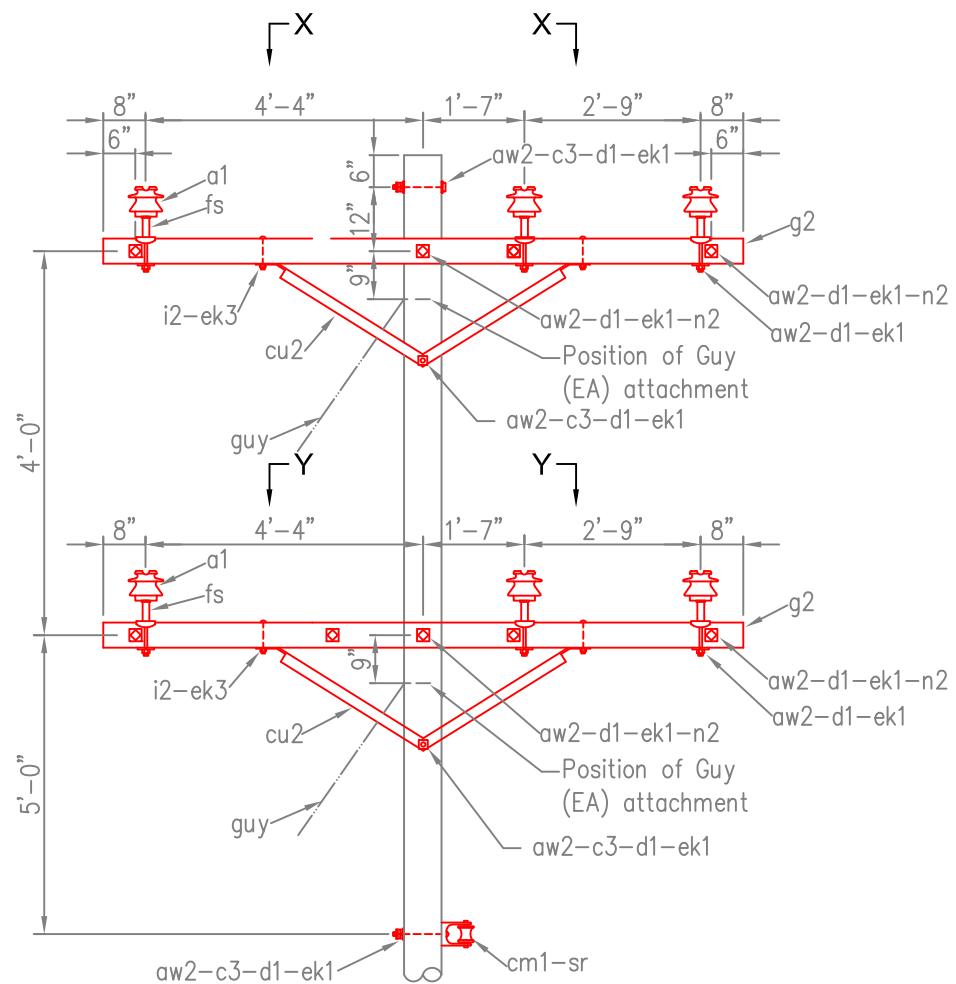
ISSUED	9/1/2011
REVISED	
STANDARD NUMBER	DC-VC1-3

ITEM.	QTY.	CATALOG No.	MATERIAL
a1	12	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	6	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	36	7108-99-41	Washers, double spring lock, 5/8"
c3	4	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
cu2	4	0753-51-68	Brace, crossarm 60" Span 18" Drop (pair)
d1	52	7102-04-91	Washers, square, 5/8"
ek1	52	4290-70-63	Locknuts 5/8"
ek3	8	4290-70-50	Locknuts 1/2"
fs	12	4541-11-13	Pin, saddle crossarm 14.4, phase
g2	4	1809-01-03	Crossarm, Wood 10'
i2	8	0631-04-06	Bolts, carriage 1/2" x 6"
n2	10	0633-05-22	Bolts, DA 5/8" x 22"
sr	1	1230-17-01	Clevis, rigid (D-bracket)

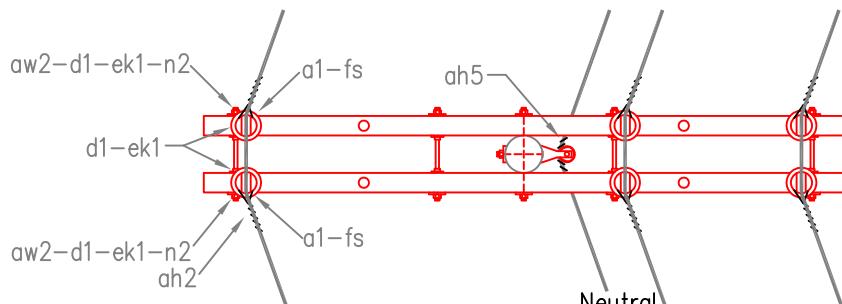
NOTES:

1. Side groove of insulator must always be larger than the overall diameter of conductor including armor rods when required.
2. Center phase wire or neutral wire may be located on the opposite of the pole where necessary to avoid crossing of wires in midspan.
3. This construction required for all conductors having a breaking strength of more than 4,500 pounds.
4. For guy attachment, bolts required: 1-12" & 1-14", Bolts, machine 3/4".
5. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE DOUBLE CIRCUIT CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT 5° TO 30° MAX. LINE ANGLE LARGE CONDUCTORS	ISSUED	9/1/2011
				REVISED	
				STANDARD NUMBER	
				DC-VC2-2	



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DATE	REVISION

14.4/24.9 KV, THREE PHASE DOUBLE CIRCUIT  
CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT  
5° TO 30° MAX. LINE ANGLE  
LARGE CONDUCTORS

ISSUED	9/1/2011
REVISED	
STANDARD NUMBER	DC-VC2-2

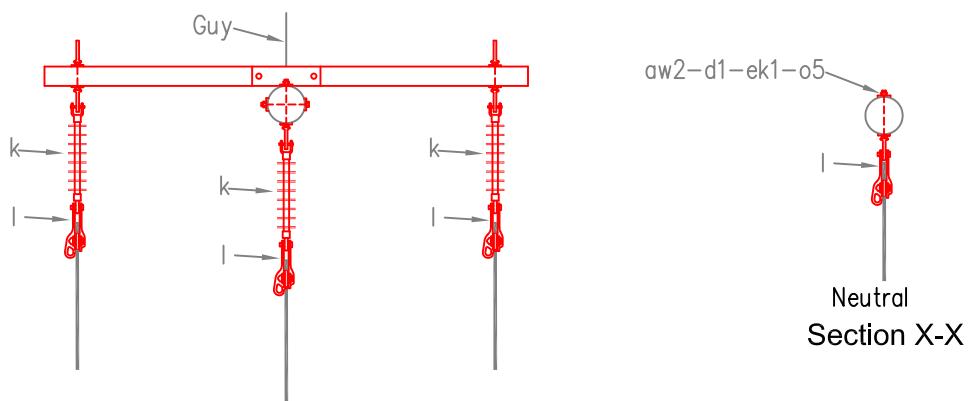
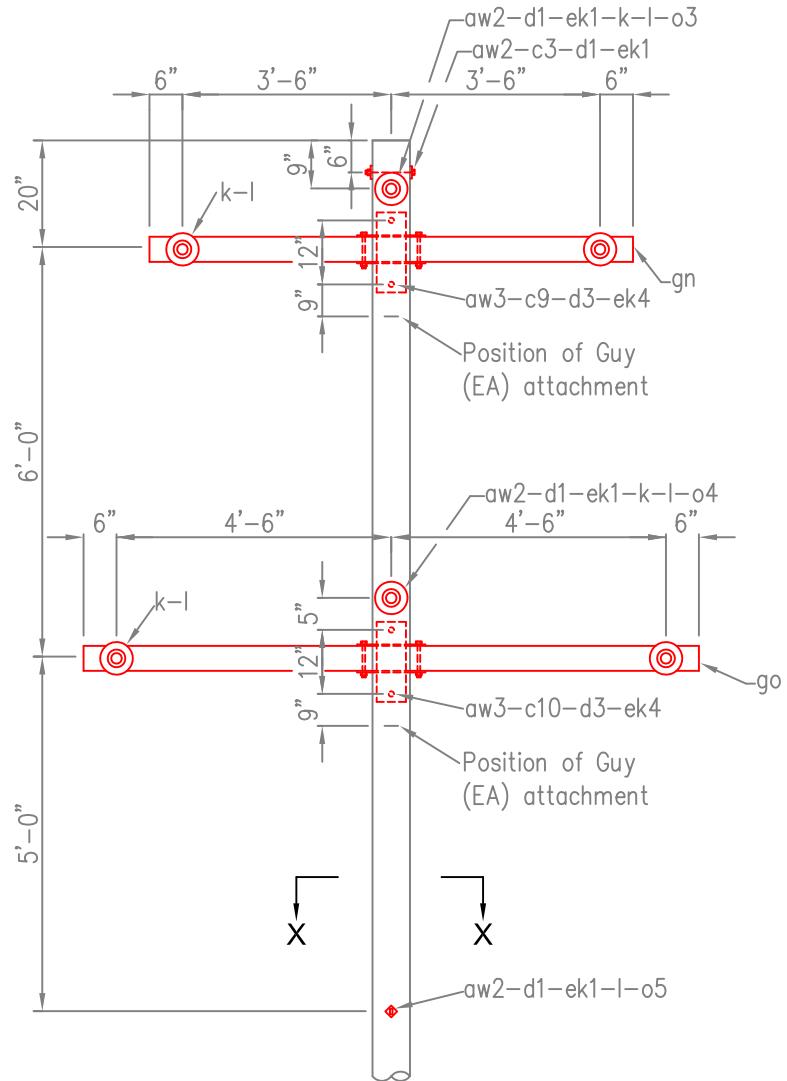
ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
aw3	4	7108-99-51	Washers, double spring lock, 3/4"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
d1	4	7102-04-91	Washers, square, 5/8"
d3	4	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	4	4290-70-63	Locknuts 5/8"
ek4	4	4290-70-75	Locknuts 3/4"
gn	1	1809-09-08	Crossarm, Fiberglass 8' DA 3000-96
go	1	1809-09-17	Crossarm, Fiberglass 10' DA 3000-120
k	6	3428-60-60	Insulator, polymer suspension
l	7	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o3	1	0636-15-12	Bolts, ovaleye 5/8" x 12"
o4	1	0636-15-14	Bolts, ovaleye 5/8" x 14"
o5	1	0636-15-16	Bolts, ovaleye 5/8" x 16"

NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 KV, THREE PHASE DOUBLE CIRCUIT FIBERGLASS CROSSARM CONSTRUCTION DEADEND STRUCTURE	ISSUED	9/1/2011
			REVISED	
			STANDARD NUMBER	
			DC-VC7A-F	



DATE	REVISION

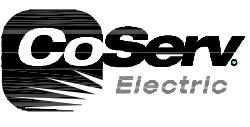
14.4/24.9 kV, THREE PHASE DOUBLE CIRCUIT  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND STRUCTURE

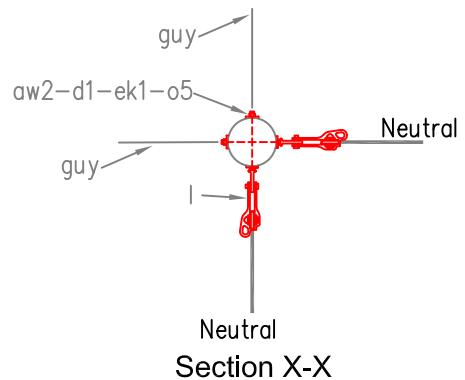
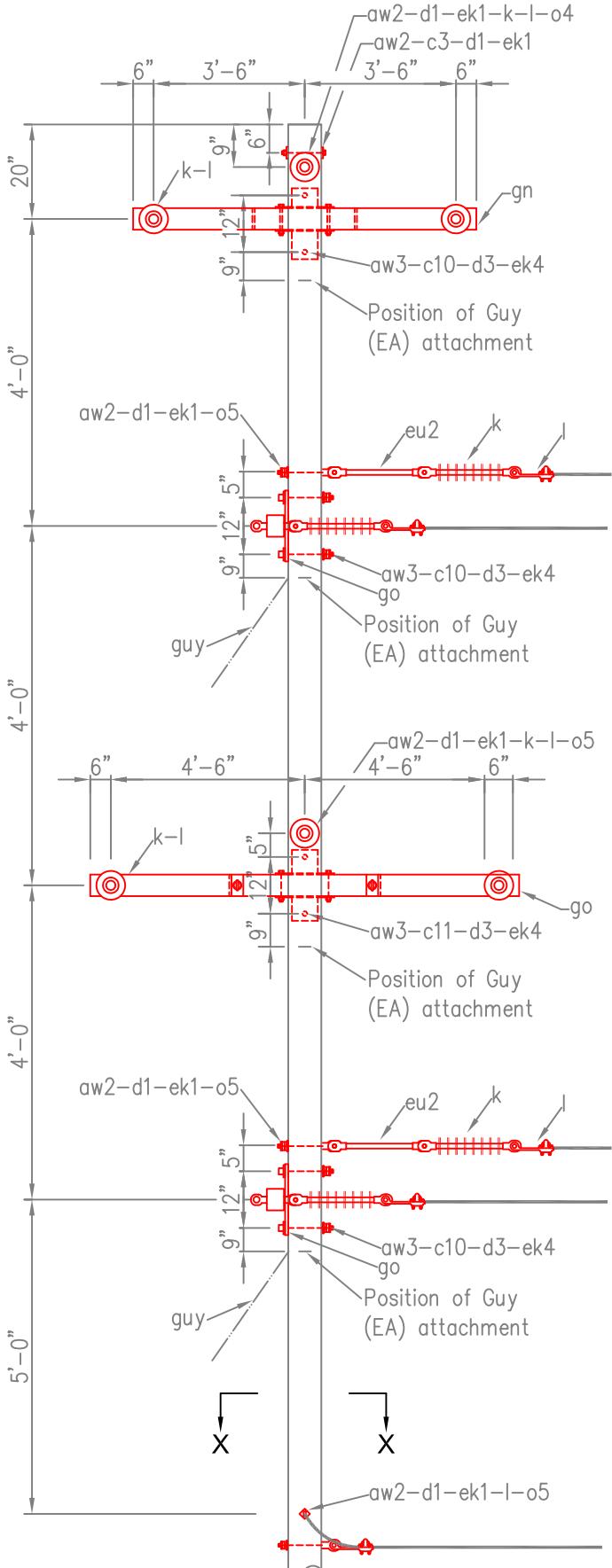
ISSUED 9/1/2011  
REVISED  
STANDARD NUMBER  
DC-VC7A-F

ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	8	7108-99-41	Washers, double spring lock, 5/8"
aw3	8	7108-99-51	Washers, double spring lock, 3/4"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c10	4	0638-06-14	Bolts, machine 3/4" x 14"
c11	4	0638-06-16	Bolts, machine 3/4" x 16"
d1	8	7102-04-91	Washers, square, 5/8"
d3	8	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	8	4290-70-63	Locknuts 5/8"
ek4	8	4290-70-75	Locknuts 3/4"
gn	1	1809-09-08	Crossarm, Fiberglass 8' DA 3000-96
go	3	1809-09-17	Crossarm, Fiberglass 10' DA 3000-120
k	12	3428-60-60	Insulator, polymer suspension
l	14	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o4	2	0636-15-14	Bolts, ovaleye 5/8" x 14"
o5	4	0636-15-16	Bolts, ovaleye 5/8" x 16"

NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 KV, THREE PHASE DOUBLE CIRCUIT FIBERGLASS CROSSARM CONSTRUCTION DEADEND STRUCTURE WITH BUCK ARMS	ISSUED	9/1/2011
				REVISED	
				STANDARD NUMBER	
				DC-VC7B-F	



DATE	REVISION

14.4/24.9 kV, THREE PHASE DOUBLE CIRCUIT  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND STRUCTURE WITH BUCK ARMS

ISSUED	9/1/2011
REVISED	
STANDARD NUMBER	DC-VC7B-F

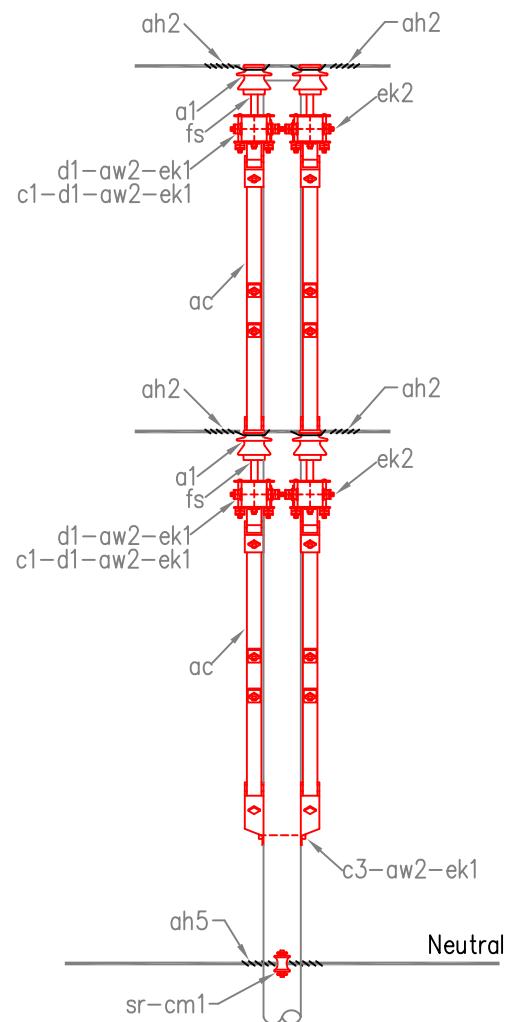
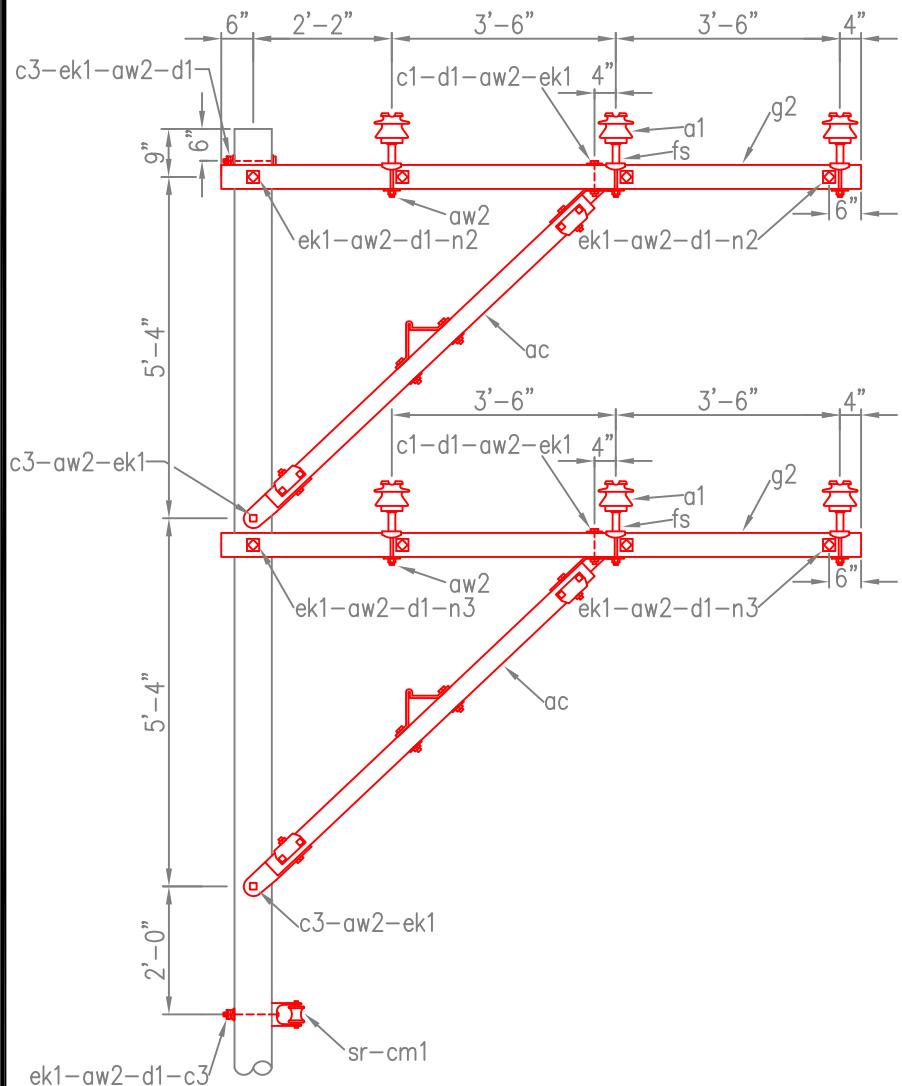
ITEM.	QTY.	CATALOG No.	MATERIAL
a1	12	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ac	4	0755-51-84	Brace, alley arm, 84"
ah2	6	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
aw2	49	7108-99-41	Washers, double spring lock, 5/8"
c1	4	0638-05-06	Bolts, machine 5/8" x 6"
c3	4	0638-05-12	Bolts, machine 5/8" x 12"
cm1	1	3426-20-12	Insulator, 3" spool
d1	37	7102-04-91	Washers, square, 5/8"
ek1	61	4290-70-63	Locknuts 5/8"
fs	12	4541-11-13	Pin, saddle crossarm 14.4, phase
g2	4	1809-01-03	Crossarm, Wood 10'
n2	4	0633-05-22	Bolts, DA 5/8" x 22"
n3	4	0633-05-24	Bolts, DA 5/8" x 24"
sr	1	1230-17-01	Clevis, rigid (D-bracket)

NOTES:

1. Use of any alley arm assembly must be determined on a case by case basis. Each case will be designed based on conductor size, span length, & other design parameters.
2. For 42" phase spacing on circuits:
  - #2 or larger maximum sag limit = 225"
  - Smaller than #2 maximum sag limit = 96"
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE PHASE DOUBLE CIRCUIT CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT ALLEY ARM	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
				DC-VC33-7



DATE	REVISION

14.4/24.9 kV, THREE PHASE DOUBLE CIRCUIT  
CROSSARM CONSTRUCTION  
DOUBLE PRIMARY SUPPORT  
ALLEY ARM

ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
DC-VC33-7

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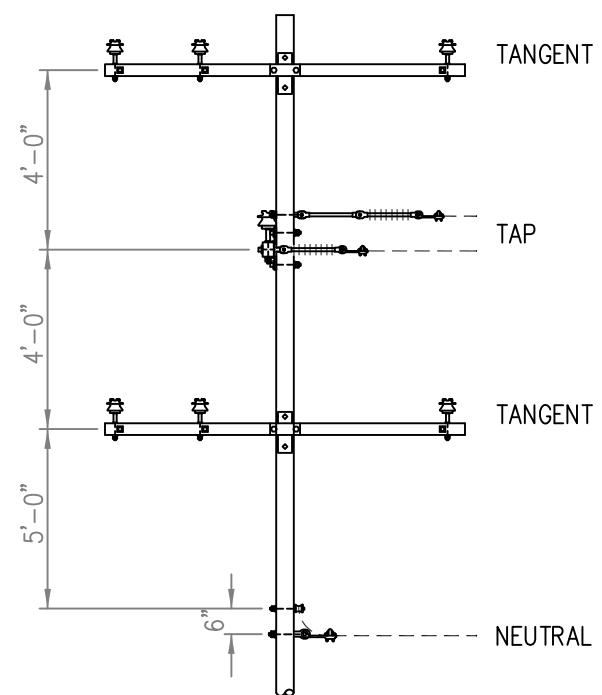
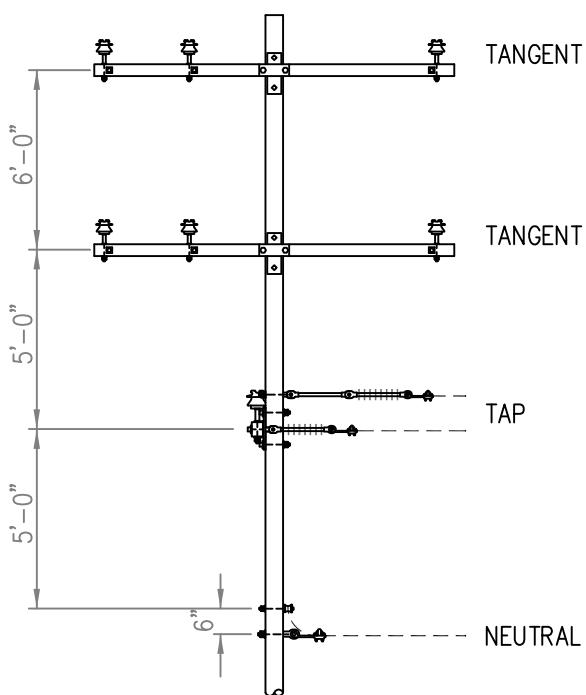
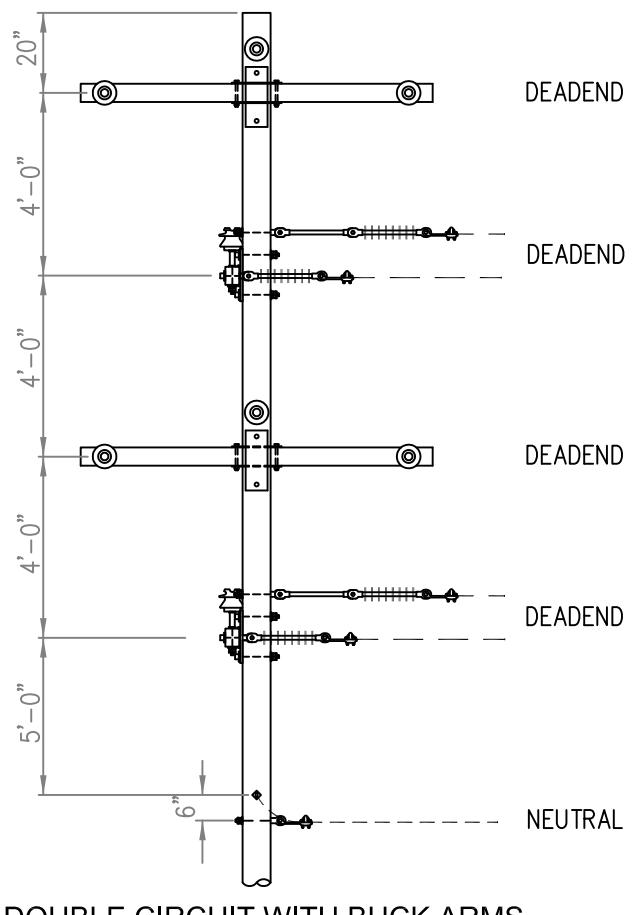
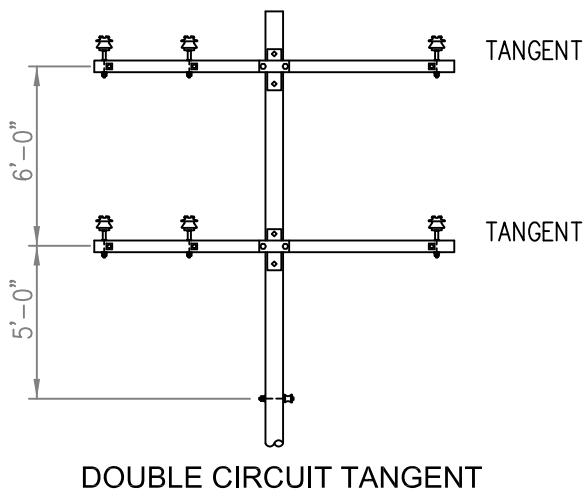
# **Tab''FE/HI**

# **Tab''FE/HI**

**INDEX DC-FG****DOUBLE CIRCUIT PRIMARY CONCRETE POLE TOP ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
DC-FG GUIDE	DOUBLE CIRCUIT – GUIDE FOR CONCRETE POLES
DC-VC1A-FG	DOUBLE CIRCUIT – SINGLE SUPPORT TANGENT 12' FIBERGLASS CROSSARM ON CONCRETE POLES
DC-VC1-1A-FG	DOUBLE CIRCUIT – DOUBLE SUPPORT TANGENT 12' FIBERGLASS CROSSARM ON CONCRETE POLES
DC-VC1-2-FG	DOUBLE CIRCUIT – SINGLE SUPPORT FIBERGLASS CROSSARM ON CONCRETE POLES (RETIREMENT ONLY)
DC-VC1-3-FG	DOUBLE CIRCUIT – DOUBLE SUPPORT FIBERGLASS CROSSARM ON CONCRETE POLES (RETIREMENT ONLY)
DC-VC2-2-FG	DOUBLE CIRCUIT – MEDIUM ANGLE 5° TO 30° DOUBLE SUPPORT 12' FIBERGLASS CROSSARM ON CONCRETE POLES
DC-VC7A-FG	DOUBLE CIRCUIT – DEADEND STRUCTURE 12' FIBERGLASS CROSSARM ON CONCRETE POLES
DC-VC7B-FG	DOUBLE CIRCUIT – DEADEND STRUCTURE WITH BUCK ARMS 12' FIBERGLASS CROSSARM ON CONCRETE POLES

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DATE	REVISION

14.4/24.9 kV, THREE PHASE DOUBLE CIRCUIT  
FIBERGLASS CROSSARM CONSTRUCTION  
CONCRETE POLE - GUIDE

ISSUED 4/7/2011  
REVISED  
STANDARD NUMBER  
DC-FG GUIDE

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
ah7	6	6790-XX-77	Wrap lock tie, (Specify conductor size)
al2	1	1737-12-01	Bonding clip, 5/8", (2727)
al6	2	1737-13-02	Bonding clip, 3/4", (2718)
aw2	1	7108-99-41	Washer, double spring lock, 5/8"
aw3	18	7108-99-51	Washers, double spring lock, 3/4"
bs	1	0639-05-14	Bolts, SU 5/8" x 14"
c7	6	0638-06-06	Bolts, machine 3/4" x 6"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
c11	2	0638-06-16	Bolts, machine 3/4" x 16"
cj1	15'	7250-06-01	Wire, #6 SD Cu
cm1	1	3426-20-12	Insulator, 3" spool
d1	1	7102-04-91	Washers, square, 5/8"
d3	4	7101-30-91	Washers, heavy duty, 3/4" curved
d4	21	7102-04-51	Washers, square, 3/4"
ek1	1	4290-70-63	Locknuts 5/8"
ek4	18	4290-70-75	Locknuts 3/4"
fr	6	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gm	2	1809-09-10	Crossarm, Fiberglass 12' TB 3000-144

#### REFERENCED UNITS

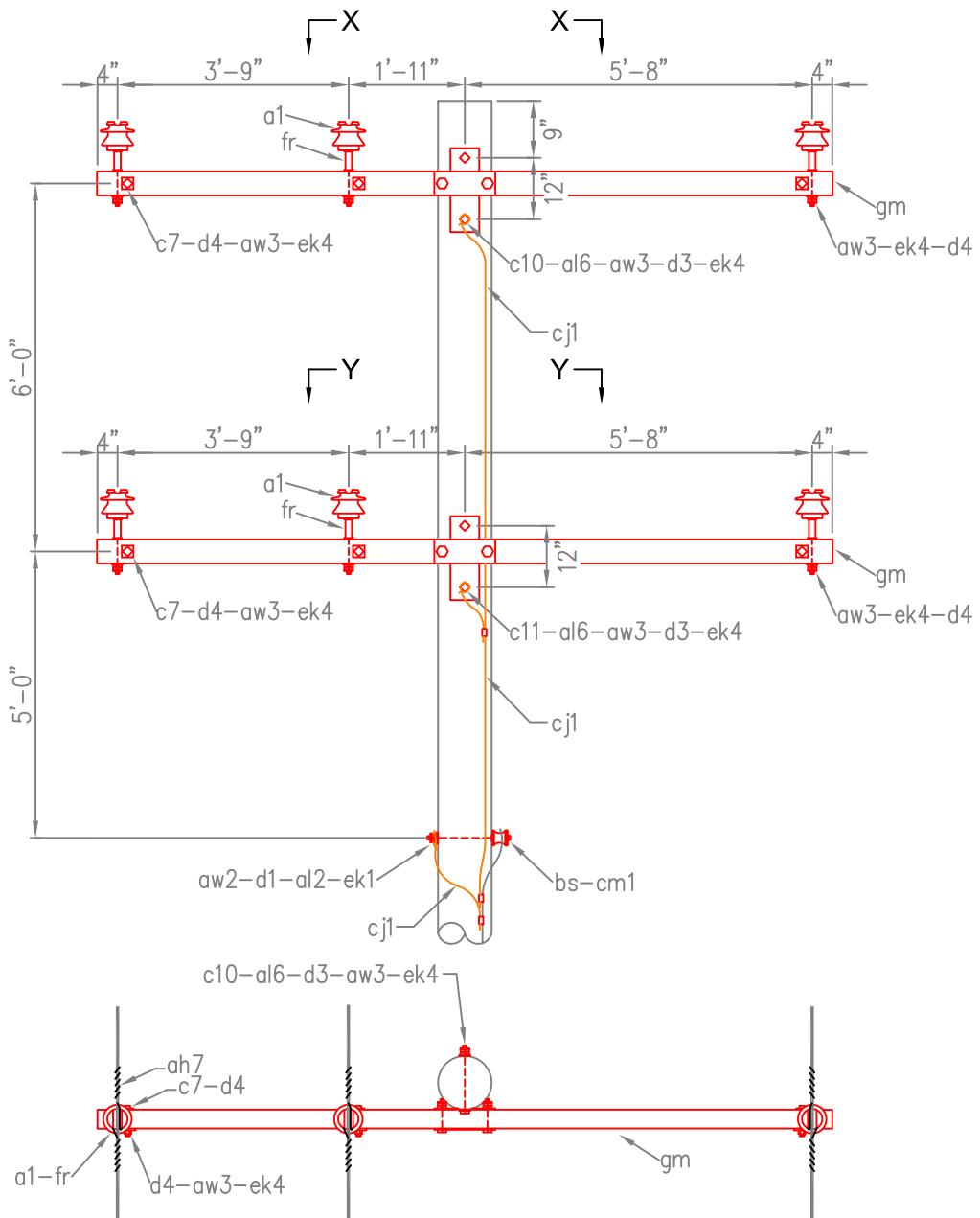
VM5-40-2      Bonding Clip Assembly  
 VM5-41-6      Bonding Clip Assembly

#### NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.



DATE	REVISION	14.4/24.9 kV, THREE PHASE DOUBLE CIRCUIT FIBERGLASS CROSSARM CONSTRUCTION 12' SINGLE PRIMARY SUPPORT 0° TO 5° MAX. LINE ANGLE CONCRETE POLE - LARGE CONDUCTORS	ISSUED	8/23/2011
			REVISED	
			STANDARD NUMBER	DC-VC1A-FG



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DATE	REVISION	14.4/24.9 kV, THREE PHASE DOUBLE CIRCUIT FIBERGLASS CROSSARM CONSTRUCTION 12' SINGLE PRIMARY SUPPORT 0° TO 5° MAX. LINE ANGLE CONCRETE POLE - LARGE CONDUCTORS	ISSUED	8/23/2011
			REVISED	
			STANDARD NUMBER	DC-VC1A-FG

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	12	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah2	6	6790-XX-33	Double support tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
al2	1	1737-12-01	Bonding clip, 5/8", (2727)
al6	2	1737-13-02	Bonding clip, 3/4", (2718)
aw2	1	7108-99-41	Washer, double spring lock, 5/8"
aw3	34	7108-99-51	Washers, double spring lock, 3/4"
bs	1	0639-05-14	Bolts, SU 5/8" x 14"
c4	1	0638-05-14	Bolt, Machine 5/8" x 14"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
c11	2	0638-06-16	Bolts, machine 3/4" x 16"
cj1	15'	7250-06-01	Wire, #6 SD Cu
cm1	1	3426-20-12	Insulator, 3" spool
d1	1	7102-04-91	Washers, square, 5/8"
d3	4	7101-30-91	Washers, heavy duty, 3/4" curved
d4	50	7102-04-51	Washers, square, 3/4"
ek1	1	4290-70-63	Locknuts 5/8"
ek4	34	4290-70-75	Locknuts 3/4"
fr	12	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gm	4	1809-09-10	Crossarm, Fiberglass 12' TB 3000-144
n7	8	0633-06-24	Bolts, DA 3/4" x 24" (Special Order)

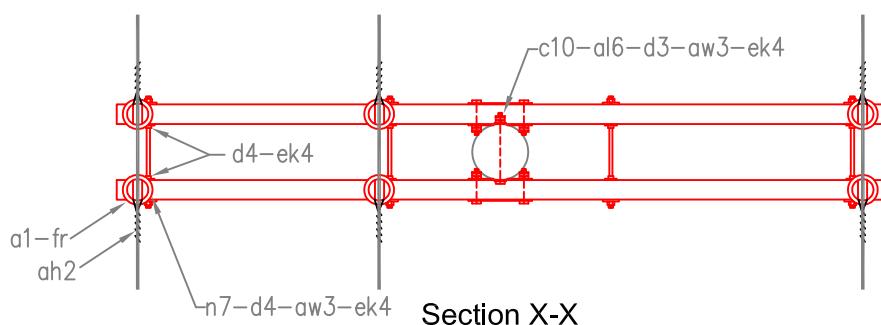
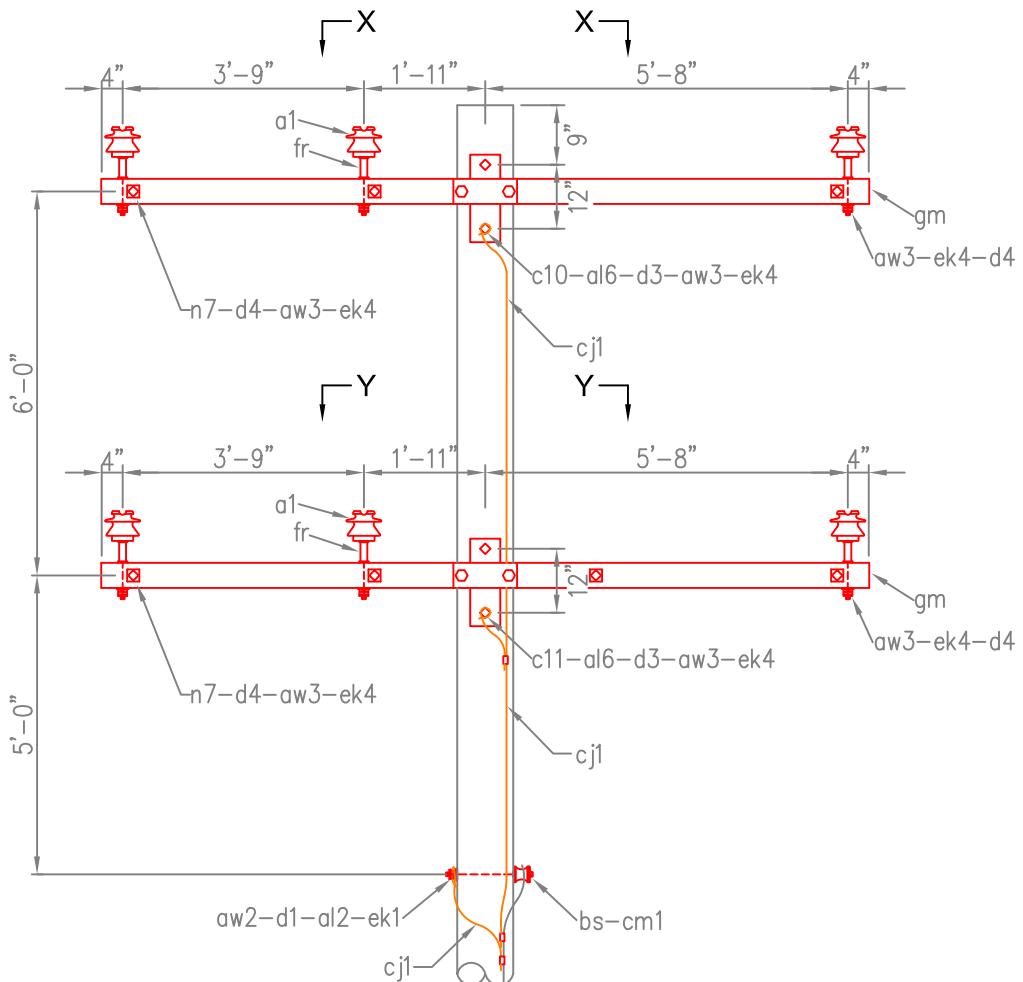
#### REFERENCED UNITS

VM5-40-2      Bonding Clip Assembly  
 VM5-41-6      Bonding Clip Assembly

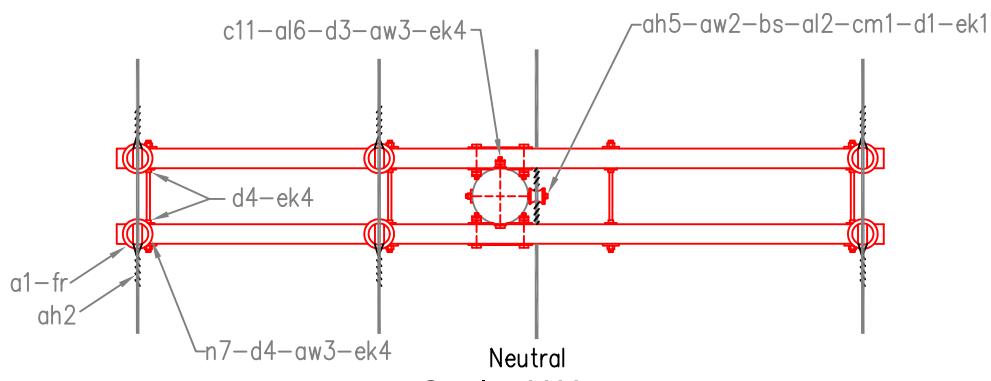
#### NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE DOUBLE CIRCUIT FIBERGLASS CROSSARM CONSTRUCTION 12' DOUBLE PRIMARY SUPPORT 0° TO 5° MAX. LINE ANGLE CONCRETE POLE - LARGE CONDUCTORS	ISSUED	8/23/2011
				REVISED	
					STANDARD NUMBER
					DC-VC1-1A-FG



**Section X-X**



**Section Y-Y**



DATE	REVISION

14.4/24.9 KV, THREE PHASE DOUBLE CIRCUIT  
FIBERGLASS CROSSARM CONSTRUCTION  
12' DOUBLE PRIMARY SUPPORT  
0° TO 5° MAX. LINE ANGLE  
CONCRETE POLE - LARGE CONDUCTORS

ISSUED 8/23/2011  
REVISED  
STANDARD NUMBER  
DC-VC1-1A-FG

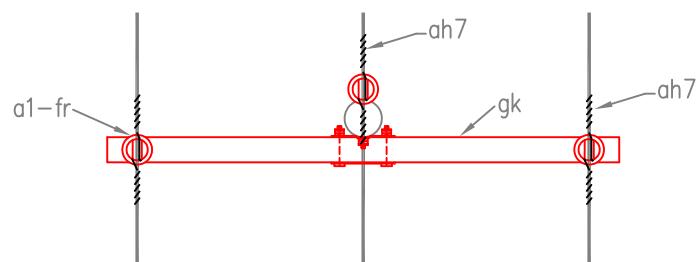
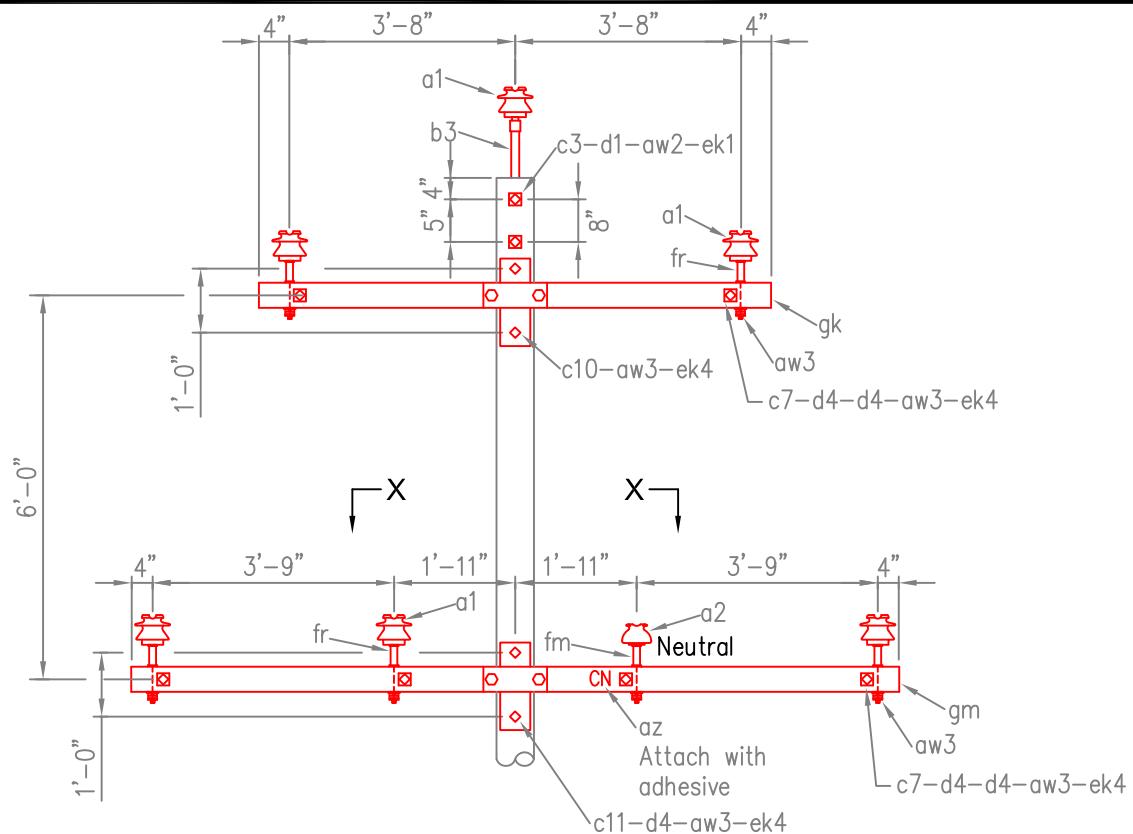
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	6	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
a2	1	3422-40-10	Insulator, 7.2 pin, white, 1" internal thread
ah6	1	6790-XX-76	C/F neck wrap lock tie, (Specify conductor size)
ah7	6	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	16	7108-99-51	Washers, double spring lock, 3/4"
az	2	4285-10-01	CN Stick-on Tags
b3	1	4561-43-27	Ridge pin, pole top 14.4, fiberglass 15"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
c7	6	0638-06-06	Bolts, machine 3/4" x 6"
d1	2	7102-04-91	Washers, square, 5/8"
d3	4	7101-30-91	Washers, heavy duty, 3/4" curved
d4	18	7102-04-51	Washers, square, 3/4"
ek1	2	4290-70-63	Locknuts 5/8"
ek4	16	4290-70-75	Locknuts 3/4"
fm	1	4541-22-32	Pin, crossarm 7.2, 3/4" shank, neutral
fr	6	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gk	1	1809-09-14	Crossarm, Fiberglass 8' TB 3000-96
gm	1	1809-09-10	Crossarm, Fiberglass 12' TB 3000-144
c11	2	0638-06-16	Bolts, machine 3/4" x 16"

NOTES:

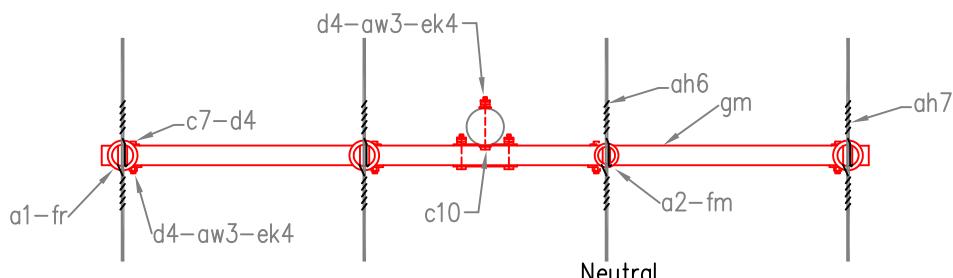
1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

**FOR RETIREMENT ONLY**

	DATE	REVISION	14.4/24.9 kV, THREE PHASE DOUBLE CIRCUIT FIBERGLASS CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT CONCRETE POLE - LARGE CONDUCTORS	ISSUED	2/04/2008
				REVISED	11/11/2011
				STANDARD NUMBER	DC-VC1-2-FG



Plan



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FOR RETIREMENT ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE DOUBLE CIRCUIT  
FIBERGLASS CROSSARM CONSTRUCTION  
SINGLE PRIMARY SUPPORT  
CONCRETE POLE - LARGE CONDUCTORS

ISSUED	2/04/2008
REVISED	11/11/2011
STANDARD NUMBER	DC-VC1-2-FG

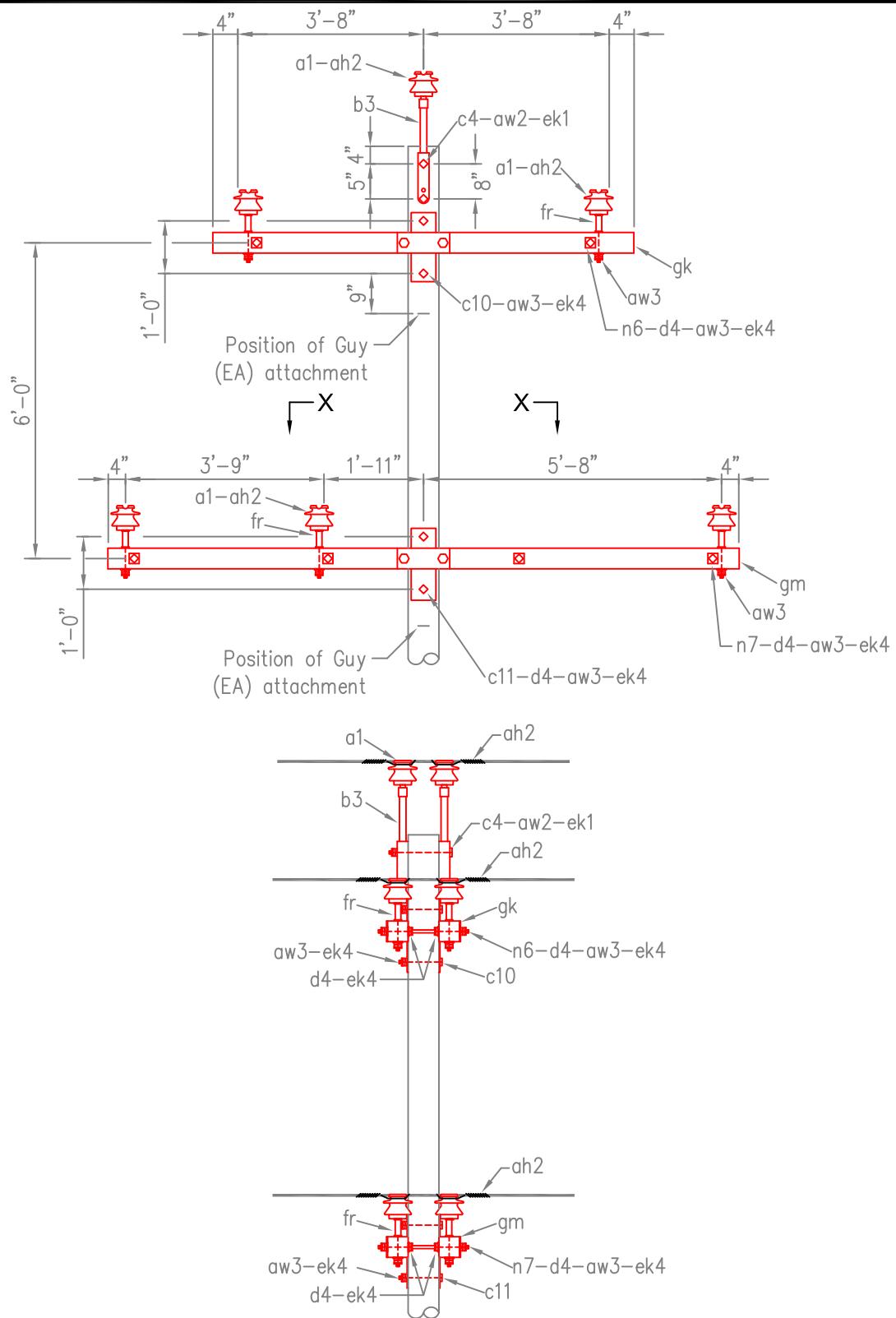
ITM.	QTY.	MAT.CODE No	MATERIAL
a1	12	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
a2	2	3422-40-10	Insulator, 7.2 pin, white, 1" internal thread
ah2	6	6790-XX-33	Double support tie, (Specify conductor size)
ah8	1	6790-XX-78	C/F double neck double support tie, (Specify conductor size)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	28	7108-99-51	Washers, double spring lock, 3/4"
az	2	4285-10-01	CN Stick-on Tags
b3	2	4561-43-27	Ridge pin, pole top 14.4, fiberglass 15"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
c11	2	0638-06-16	Bolts, machine 3/4" x 16"
d4	36	7102-04-51	Washers, square, 3/4"
ek1	2	4290-70-63	Locknuts 5/8"
ek4	40	4290-70-75	Locknuts 3/4"
fm	2	4541-22-32	Pin, crossarm 7.2, 3/4" shank, neutral
fr	10	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gk	2	1809-09-14	Crossarm, Fiberglass 8' TB 3000-96
gm	2	1809-09-10	Crossarm, Fiberglass 12' TB 3000-144
n6	2	0633-06-22	Bolts, DA 3/4" x 22" (Special Order)
n7	4	0633-06-24	Bolts, DA 3/4" x 24" (Special Order)

NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

FOR RETIREMENT ONLY

	DATE	REVISION	14.4/24.9 kV, THREE PHASE DOUBLE CIRCUIT FIBERGLASS CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT CONCRETE POLE - LARGE CONDUCTORS	ISSUED	2/04/2008
				REVISED	11/11/2011
				STANDARD NUMBER	DC-VC1-3-FG



FOR RETIREMENT ONLY



DATE	REVISION	14.4/24.9 kV, THREE PHASE DOUBLE CIRCUIT FIBERGLASS CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT CONCRETE POLE - LARGE CONDUCTORS	ISSUED	2/04/2008
			REVISED	11/11/2011
			STANDARD NUMBER	DC-VC1-3-FG

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	12	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ah1	6	6790-XX-22	Double side tie, (Specify conductor size)
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)
al2	1	1737-12-01	Bonding clip, 5/8", (2727)
al6	2	1737-13-02	Bonding clip, 3/4", (2718)
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
aw3	36	7108-99-51	Washers, double spring lock, 3/4"
c4	1	0638-05-14	Bolts, machine 5/8" x 14"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
c11	2	0638-06-16	Bolts, machine 3/4" x 16"
cj1	15'	7250-06-01	Wire, #6 SD Cu
cm1	1	3426-20-12	Insulator, 3" spool
d1	1	7102-04-91	Washers, square, 5/8"
d3	4	7101-30-91	Washers, heavy duty, 3/4" curved
d4	44	7102-04-51	Washers, square, 3/4"
ek1	1	4290-70-63	Locknuts 5/8"
ek4	48	4290-70-75	Locknuts 3/4"
fr	12	4541-23-34	Pin, crossarm 14.4, 3/4" shank, phase
gm	4	1809-09-10	Crossarm, Fiberglass 12' TB 3000-144
n3	8	0633-06-24	Bolts, DA 3/4" x 24" (Special Order)
sr	1	1230-17-01	Clevis, rigid (D-bracket)

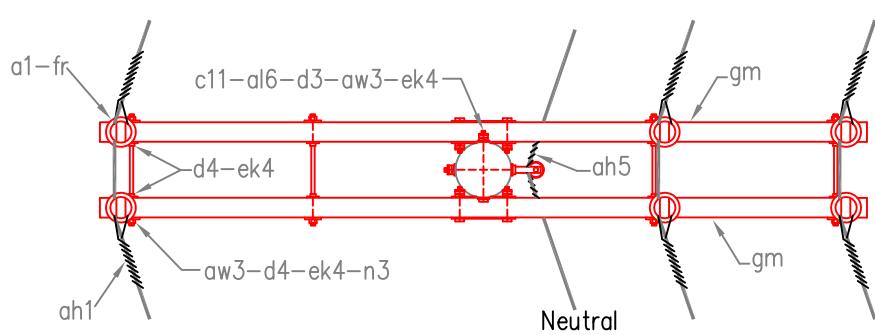
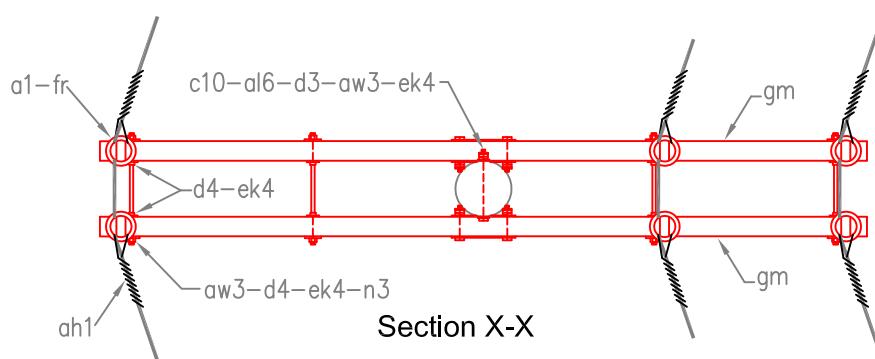
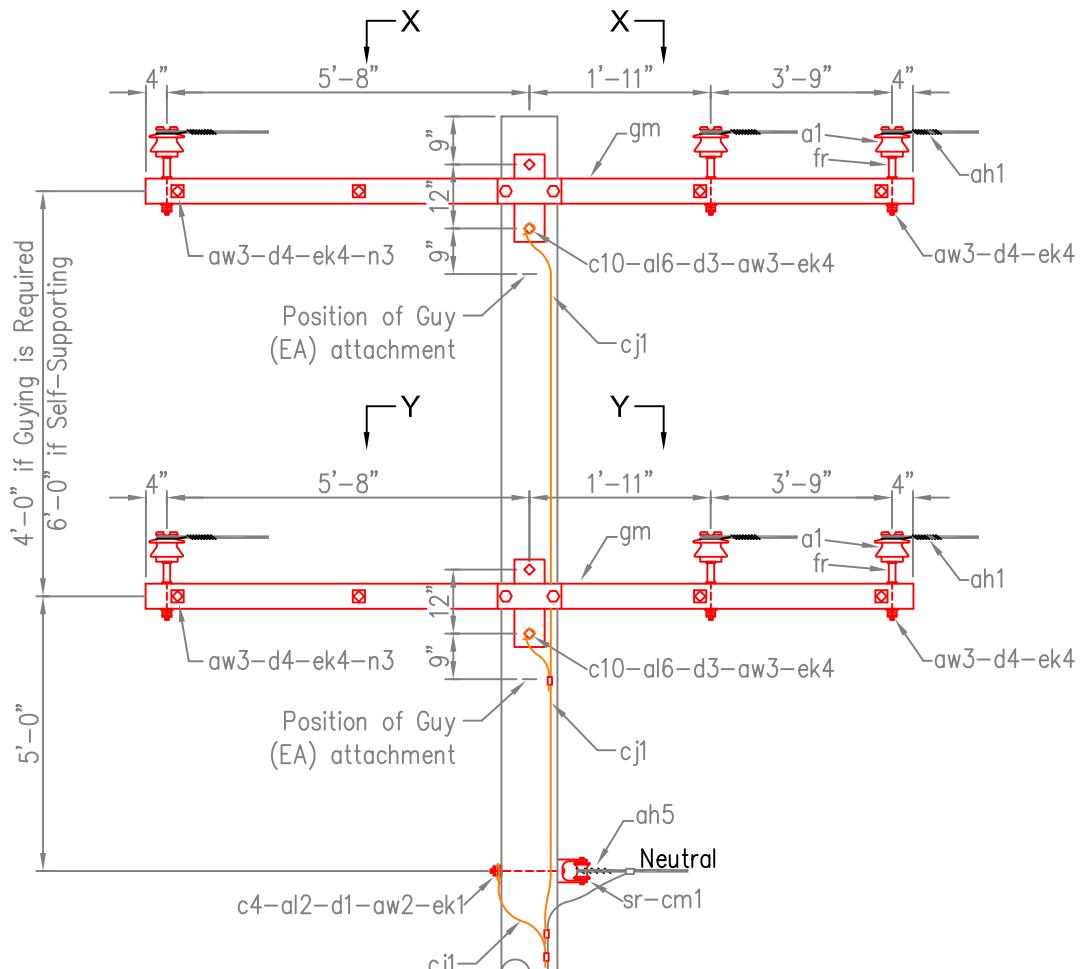
#### REFERENCED UNITS

VM5-40-2      Bonding Clip Assembly  
 VM5-41-6      Bonding Clip Assembly

#### NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

	DATE	REVISION	14.4/24.9 KV, THREE PHASE DOUBLE CIRCUIT FIBERGLASS CROSSARM CONSTRUCTION 12' DOUBLE PRIMARY SUPPORT 5° TO 30° MAX. LINE ANGLE CONCRETE POLE - LARGE CONDUCTORS	ISSUED	8/23/2011
				REVISED	
				STANDARD NUMBER	
				DC-VC2-2-FG	



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DATE	REVISION	14.4/24.9 kV, THREE PHASE DOUBLE CIRCUIT FIBERGLASS CROSSARM CONSTRUCTION 12' DOUBLE PRIMARY SUPPORT 5° TO 30° MAX. LINE ANGLE CONCRETE POLE - LARGE CONDUCTORS	ISSUED	8/23/2011
			REVISED	
			STANDARD NUMBER	DC-VC2-2-FG

ITM.	QTY.	MAT. CODE No	MATERIAL
al2	3	1737-12-01	Bonding clip, 5/8", (2727)
al6	2	1737-13-02	Bonding clip, 3/4", (2718)
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
aw3	4	7108-99-51	Washers, double spring lock, 3/4"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
c11	2	0638-06-16	Bolts, machine 3/4" x 16"
cj1	15'	7250-06-01	Wire, #6 SD Cu
d1	3	7102-04-91	Washers, square, 5/8"
d3	4	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	3	4290-70-63	Locknuts 5/8"
ek4	4	4290-70-75	Locknuts 3/4"
eu2	2	3427-75-30	Link, F.G. primary extension, clevis-eye, 18"
gp	2	1809-09-11	Crossarm, Fiberglass 12' DA 3200-144
k	6	3428-60-60	Insulator, polymer suspension
l	7	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o4	1	0636-15-14	Bolts, ovaleye 5/8" x 14"
o5	2	0636-15-16	Bolts, ovaleye 5/8" x 16"

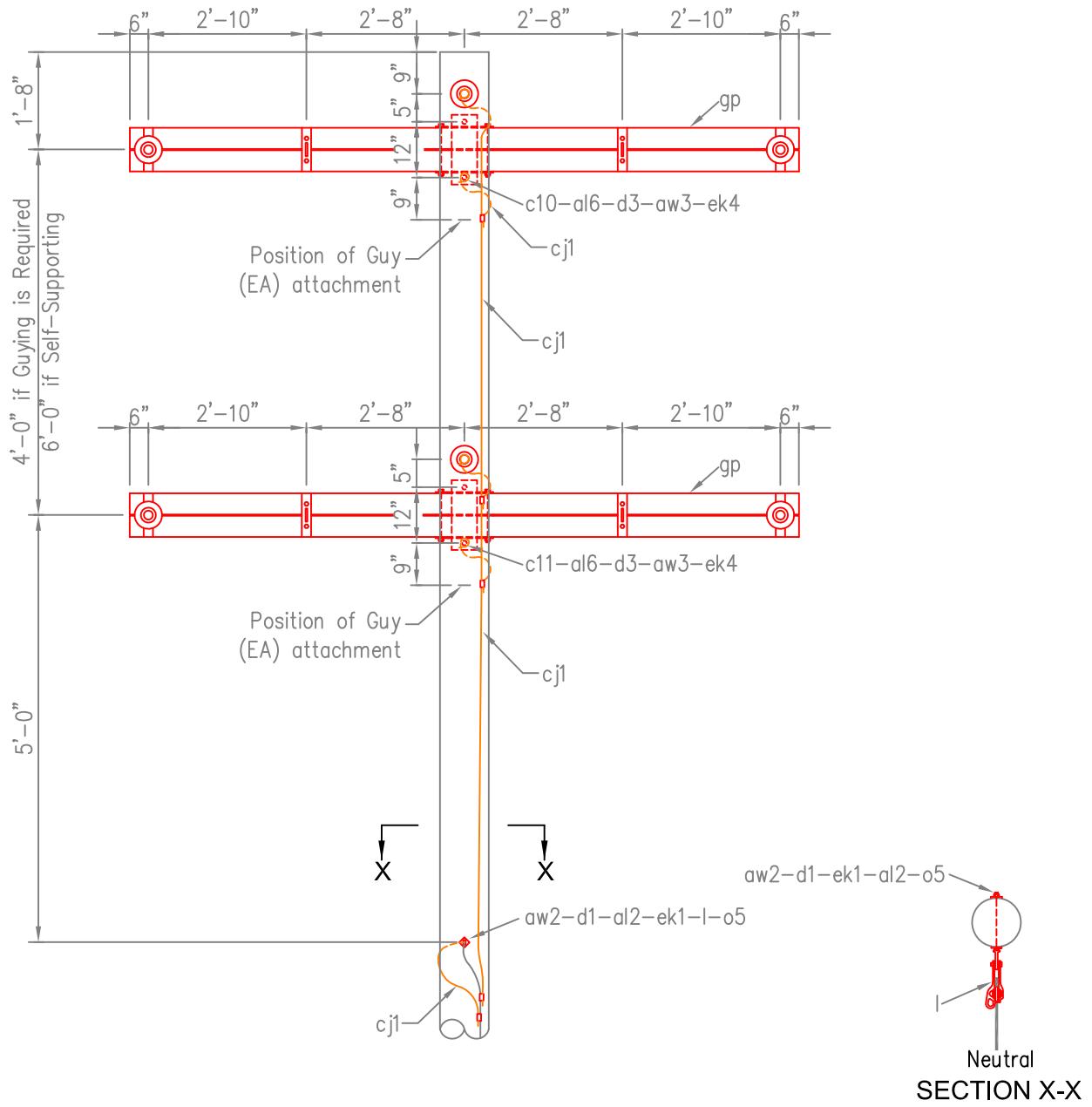
#### REFERENCED UNITS

VM5-40-2      Bonding Clip Assembly  
 VM5-41-6      Bonding Clip Assembly

#### NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

	DATE	REVISION	14.4/24.9 KV, THREE PHASE DOUBLE CIRCUIT FIBERGLASS CROSSARM CONSTRUCTION DEADEND STRUCTURE CONCRETE POLE	ISSUED	8/24/2011
				REVISED	
				STANDARD NUMBER	
				DC-VC7A-FG	



14.4/24.9 kV, THREE PHASE DOUBLE CIRCUIT  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND STRUCTURE  
CONCRETE POLE

ISSUED	8/24/2011
REVISED	
STANDARD NUMBER	
DC-VC7A-FG	

ITM.	QTY.	MAT. CODE No	MATERIAL
al2	6	1737-12-01	Bonding clip, 5/8", (2727)
al6	4	1737-13-02	Bonding clip, 3/4", (2718)
aw2	6	7108-99-41	Washers, double spring lock, 5/8"
aw3	8	7108-99-51	Washers, double spring lock, 3/4"
c10	4	0638-06-14	Bolts, machine 3/4" x 14"
c11	4	0638-06-16	Bolts, machine 3/4" x 16"
cj1	50'	7250-06-01	Wire, #6 SD Cu
d1	6	7102-04-91	Washers, square, 5/8"
d3	8	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	6	4290-70-63	Locknuts 5/8"
ek4	8	4290-70-75	Locknuts 3/4"
eu2	4	3427-75-30	Link, F.G. primary extension, clevis-eye, 18"
gp	4	1809-09-11	Crossarm, Fiberglass 12' DA 3200-144
k	12	3428-60-60	Insulator, polymer suspension
l	14	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
o4	2	0636-15-14	Bolts, ovaleye 5/8" x 14"
o5	4	0636-15-16	Bolts, ovaleye 5/8" x 16"

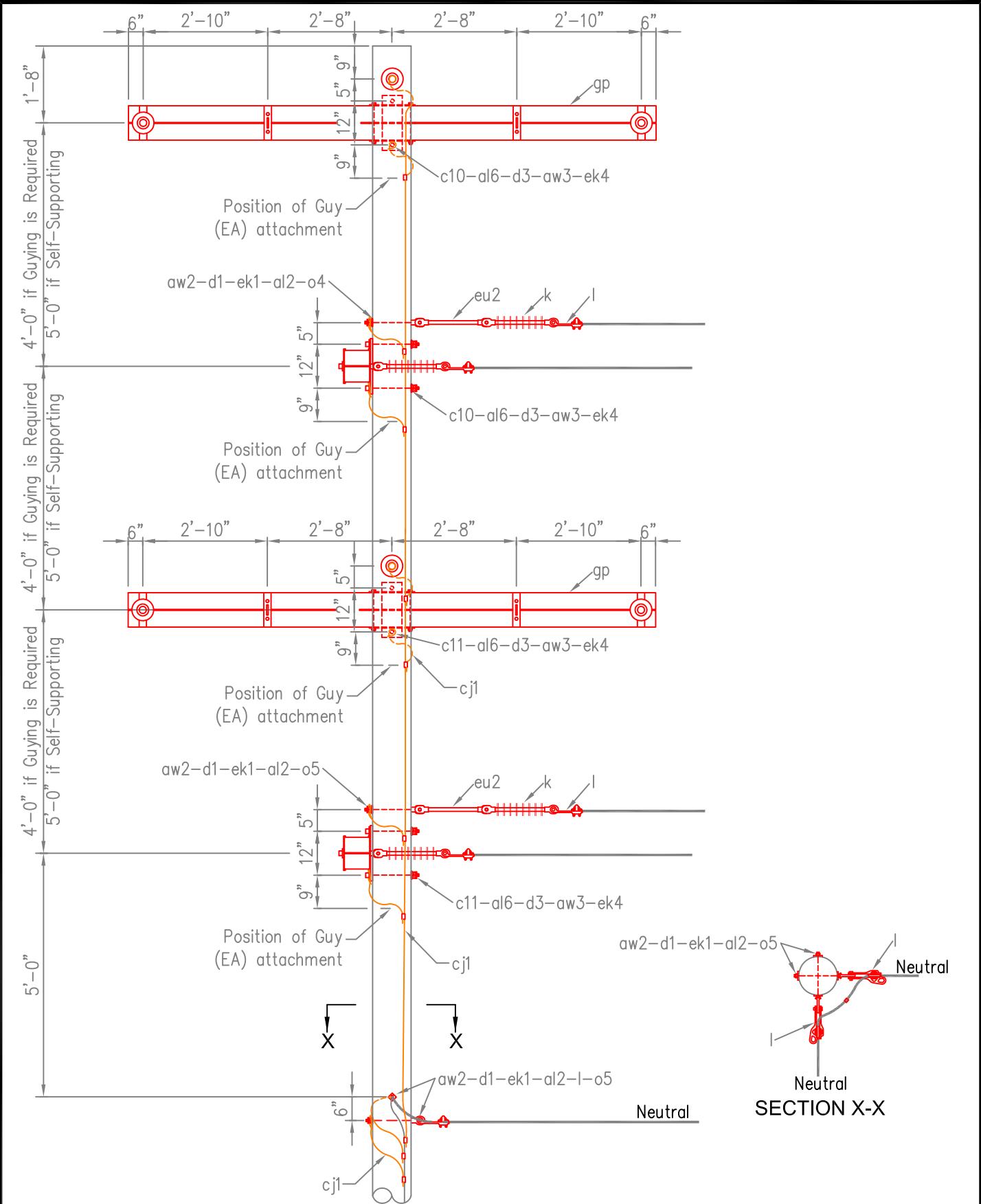
#### REFERENCED UNITS

VM5-40-2      Bonding Clip Assembly  
 VM5-41-6      Bonding Clip Assembly

#### NOTES:

1. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

	DATE	REVISION	14.4/24.9 KV, THREE PHASE DOUBLE CIRCUIT FIBERGLASS CROSSARM CONSTRUCTION DEADEND STRUCTURE WITH BUCK ARMS CONCRETE POLE	ISSUED	8/24/2011
				REVISED	
				STANDARD NUMBER	
				DC-VC7B-FG	



DATE	REVISION

14.4/24.9 kV, THREE PHASE DOUBLE CIRCUIT  
FIBERGLASS CROSSARM CONSTRUCTION  
DEADEND STRUCTURE WITH BUCK ARMS  
CONCRETE POLE

ISSUED 8/24/2011  
REVISED  
STANDARD NUMBER  
**DC-VC7B-FG**

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## **Tab E**

## **Tab E**

**INDEX E****GUYING ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
SPECS	CONSTRUCTION SPECIFICATIONS FOR GUYS
E1-2PP-60	DOWN GUY – POLE PLATE – 60° INSULATOR -12,500 Lbs. MAXIMUM GUY LOADING
E2-2PP	OVERHEAD GUY – 12,500 lbs. MAXIMUM GUY LOADING
E3-10	GUY MARKER
E3-10X-60	DOWN GUY – POLE PLATE – 12,500 lbs. MAXIMUM GUY LOADING
E5-2PP	DOULBE OVERHEAD GUY – 27,720 lbs. MAXIMUM GUY LOADING
E12PP	DOWN GUY – POLE PLATE – 27,270 lbs. MAXIMUM GUY LOADING
E13PP	DOWN GUY – POLE PLATE – 30,800 MAXIMUM GUY LOADING
CHART	GUYING CHART
DIAGRAM	GUYING DIAGRAM – SMALL CONDUCTORS (#4 ACSR – 1/0 ACSR)
DIAGRAM	GUYING DIAGRAM – LARGE CONDUCTORS (4/0 ACSR – 477 ACSR)

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## **CONSTRUCTION SPECIFICATIONS FOR GUYS**

Guys shall be placed before the conductors are strung and shall be attached to the pole as shown in the construction drawings.

The grade of construction of the guys shall be the same as the structure or the highest grade required for any other conductors supported by the pole or structure.

Deadend structure guys shall be installed in line with the pull of conductors as nearly as practical. Bi-sector guys at an angle structure shall be installed as nearly as practical to the true bi-sector of the line angle.

A 1:1 slope for guy leads is recommended, especially on deadend structures. Minimum guy leads are not recommended.

The applicable NESC safety factors have not been but must be applied to determine the “allowable guy wire tension” as denoted in the design parameters of the guying assembly units.

ITEM.	QTY.	CATALOG No.	MATERIAL
at	1	2930-08-55	Guy marker
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c9	1	0638-06-12	Bolts, machine 3/4" x 12"
c10	1	0638-06-14	Bolts, machine 3/4" x 14"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek4	2	4290-70-75	Locknuts 3/4"
u	2	1177-20-85	Preform, 3/8" guy grip
v1	1	0215-07-00	Pole eye plate
w1	1	3427-91-30	Link, F.G. extension 60"
y	1	7380-83-01	Guy wire 3/8"

NOTES:

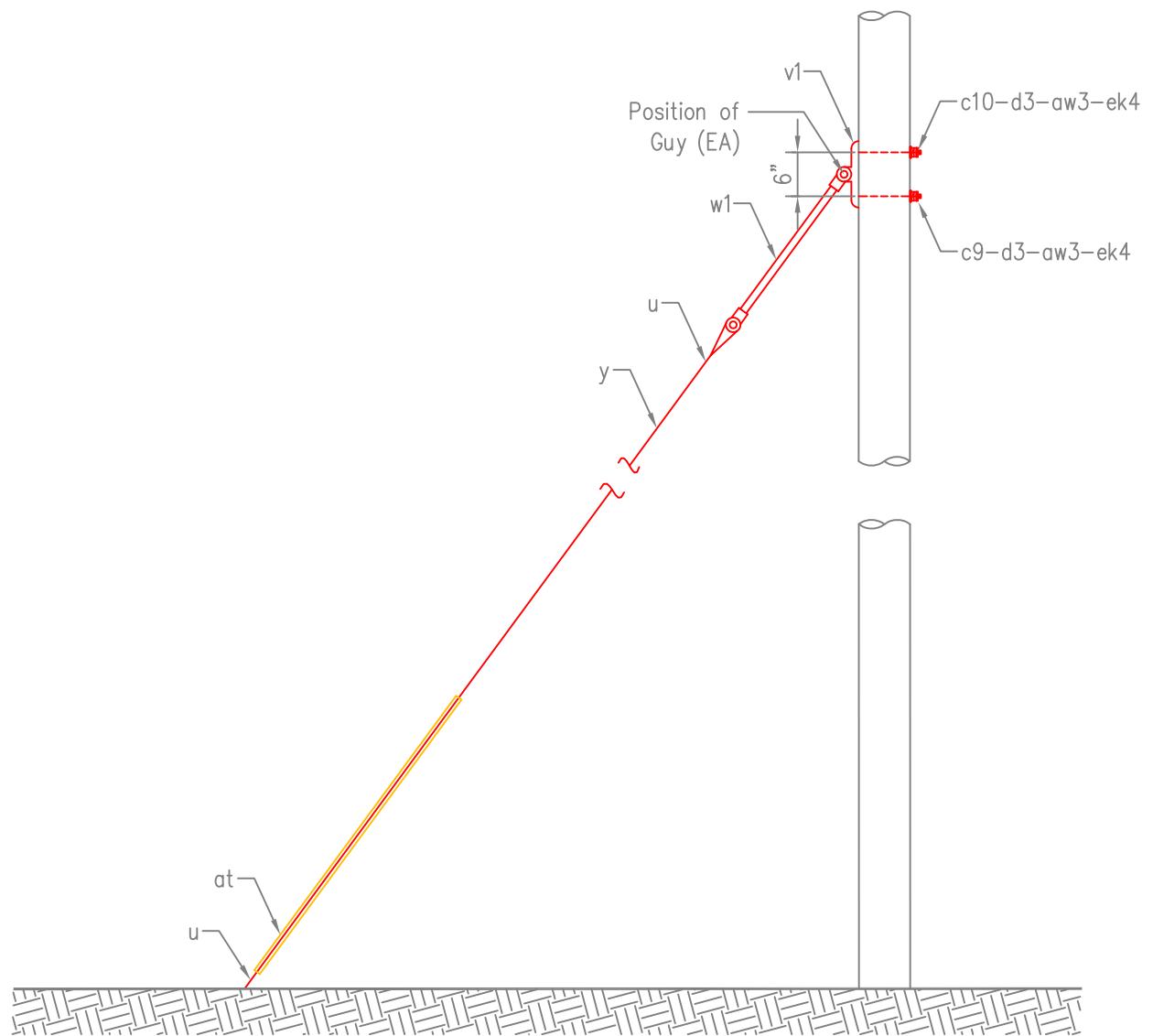
1. Call for E1-2 to exclude guy attachment.
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

DOWN GUY  
POLE PLATE TYPE  
MAX. GUY LOADING: 12,500 LBS.

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	E1-2PP-60



DATE

REVISION

DOWN GUY  
POLE PLATE TYPE  
MAX. GUY LOADING: 12,500 LBS.

ISSUED

2/04/2008

REVISED

STANDARD NUMBER

E1-2PP-60

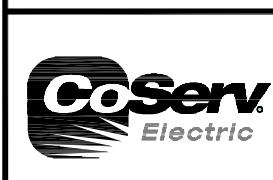
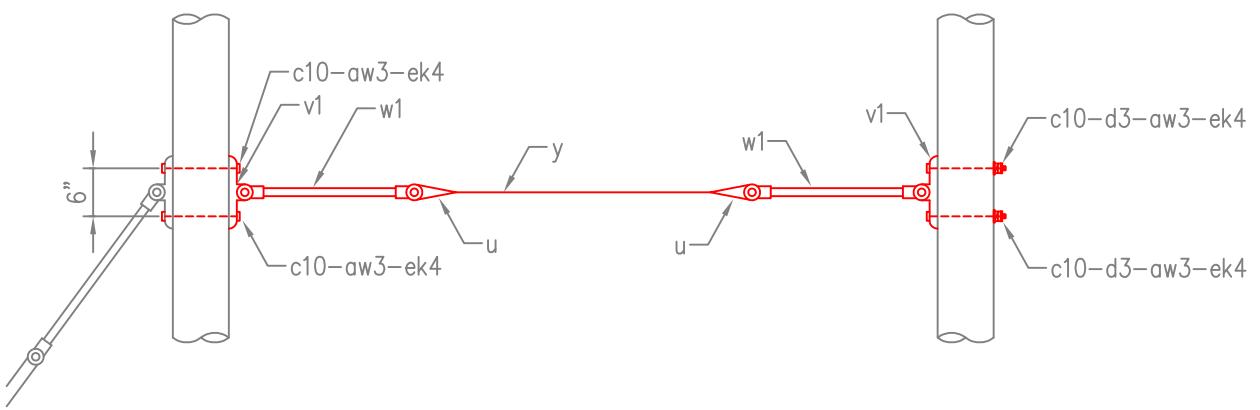
ITEM.	QTY.	CATALOG No.	MATERIAL
aw3	4	7108-99-51	Washers, double spring lock, 3/4"
c10	4	0638-06-14	Bolts, machine 3/4" x 14"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek4	4	4290-70-75	Locknuts 3/4"
u	2	1177-20-85	Preform, 3/8" guy grip
v1	2	0215-07-00	Pole eye plate
w1	2	3427-91-30	Link, F.G. extension 60"
y	1	7380-83-01	Guy wire 3/8"

## NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	OVERHEAD GUY MAX. GUY LOADING: 12,500 LBS.	ISSUED	2/04/2008
			REVISED	
				STANDARD NUMBER
				E2-2PP



DATE	REVISION

OVERHEAD GUY  
MAX. GUY LOADING: 12,500 LBS.

ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
E2-2PP

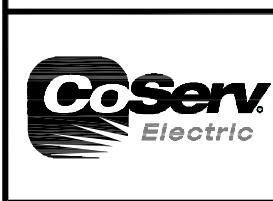
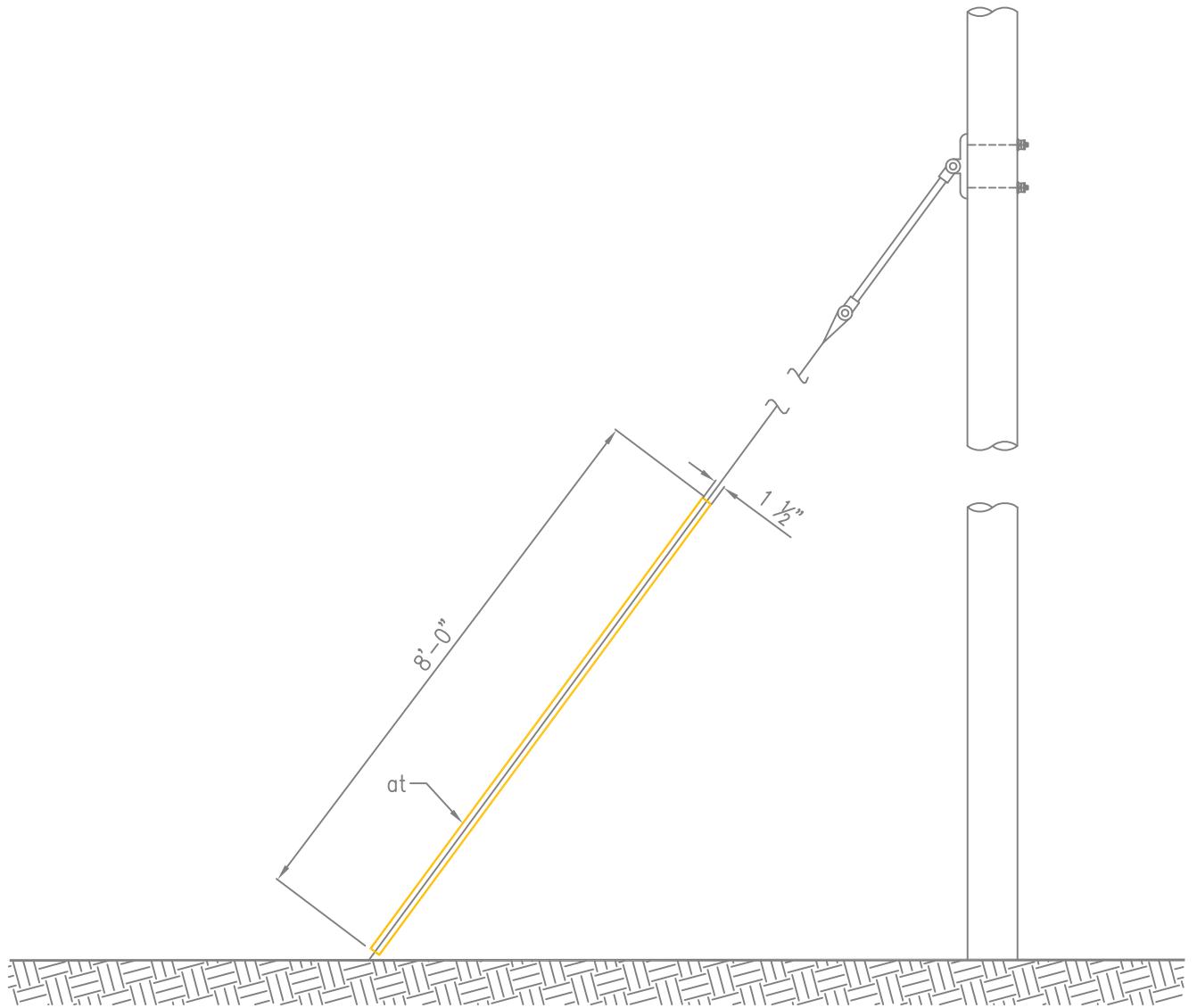
ITM.	QTY.	CATALOG No.	MATERIAL
at	1	2930-08-55	Guy marker



DATE	REVISION

DOWN GUY  
GUY MARKER

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	E3-10



DATE

REVISION

DOWN GUY  
GUY MARKER

ISSUED 2/04/2008

REVISED

STANDARD NUMBER

E3-10

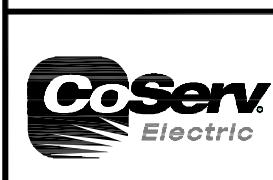
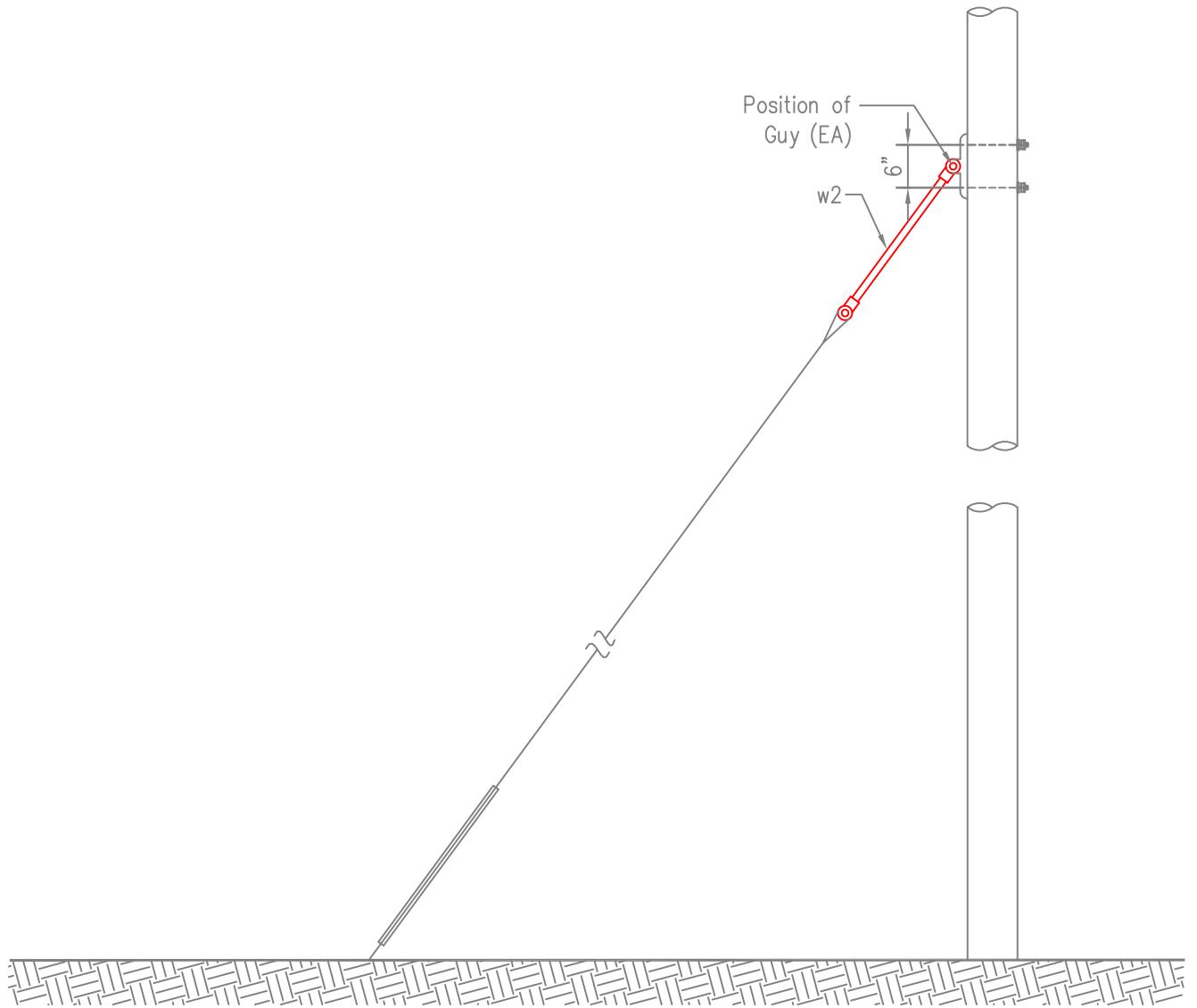
ITEM.	QTY.	CATALOG No.	MATERIAL
w2	1	3427-80-30	Link, F.G. extension 60", single-eye



DATE	REVISION

DOWN GUY  
 60" FIBERGLASS LINK - CLEVIS/EYE  
 MAX. GUY LOADING: 12,500 LBS.

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	E3-10X-60



DATE	REVISION

DOWN GUY  
60" FIBERGLASS LINK - CLEVIS/EYE  
MAX. GUY LOADING: 12,500 LBS.

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	E3-10X-60

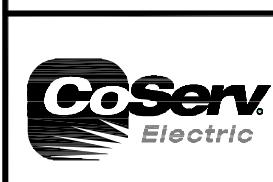
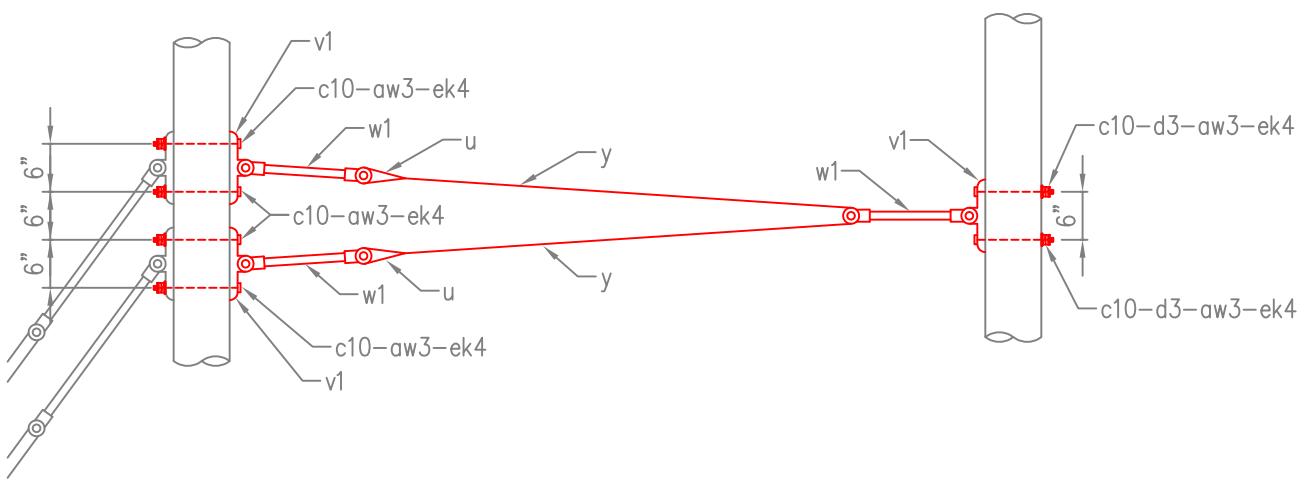
ITEM.	QTY.	CATALOG No.	MATERIAL
aw3	6	7108-99-51	Washers, double spring lock, 3/4"
c10	6	0638-06-14	Bolts, machine 3/4" x 14"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek4	6	4290-70-75	Locknuts 3/4"
u	2	1177-20-85	Preform, 3/8" guy grip
v1	3	0215-07-00	Pole eye plate
w1	3	3427-91-30	Link, F.G. extension 60"
y	1	7380-83-01	Guy wire 3/8"

## NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	DOUBLE OVERHEAD GUY MAX. GUY LOADING: 27,720 LBS.	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
			E5-2PP	



DATE	REVISION

DOUBLE OVERHEAD GUY  
MAX. GUY LOADING: 27,720 LBS.

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	E5-2PP

ITM.	QTY.	CATALOG No.	MATERIAL
at	1	2930-08-55	Guy marker
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c9	1	0638-06-12	Bolts, machine 3/4" x 12"
c10	1	0638-06-14	Bolts, machine 3/4" x 14"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek4	2	4290-70-75	Locknuts 3/4"
u	2	1177-20-85	Preform, 3/8" guy grip
v1	1	0215-07-00	Pole eye plate
w1	1	3427-91-30	Link, F.G. extension 60"
y	1	7380-83-01	Guy wire 3/8"

NOTES:

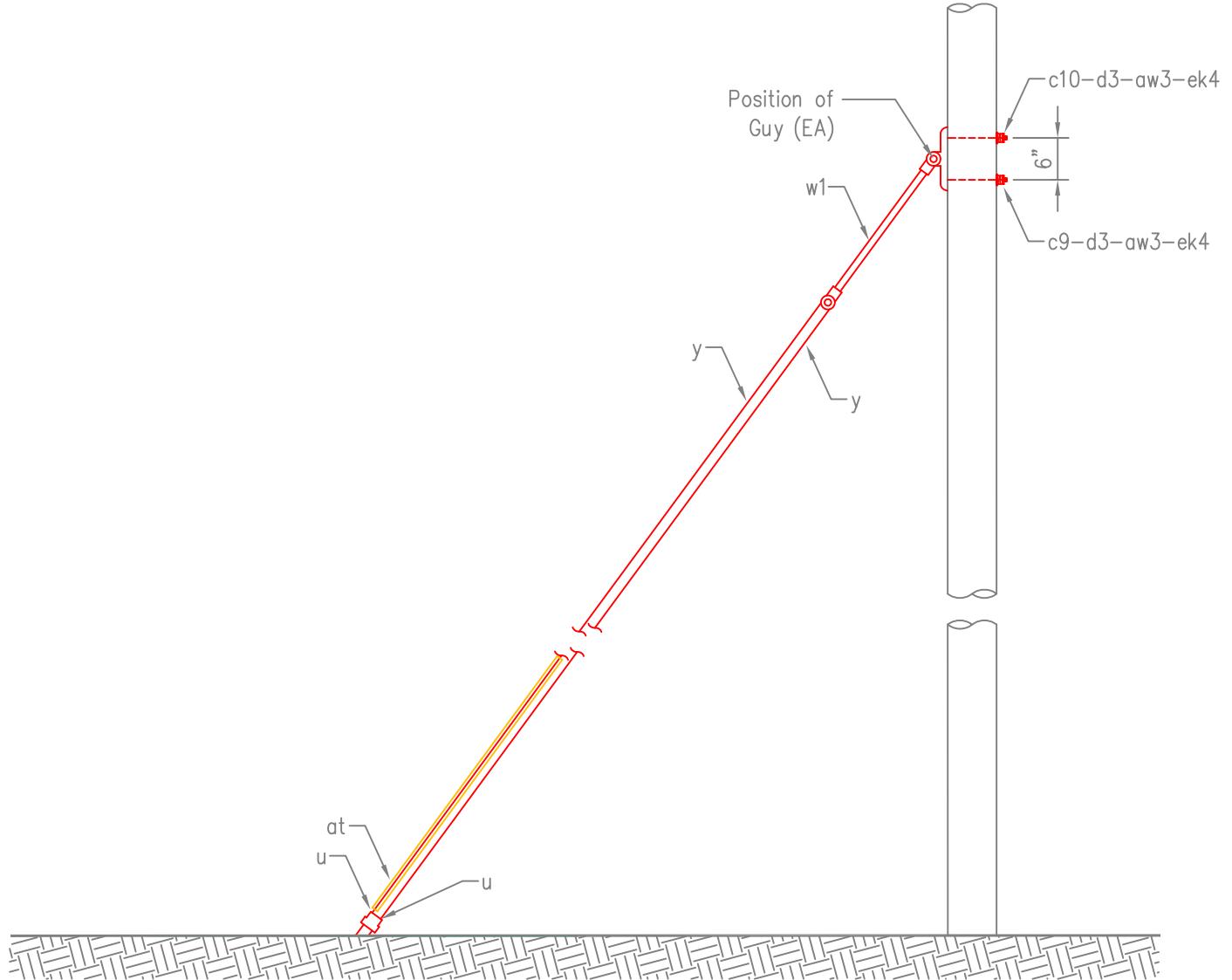
1. Call for E12 to exclude guy attachment.
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

DOWN GUY  
POLE PLATE TYPE  
MAX. GUY LOADING: 27,720 LBS.

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	E12PP



DATE	REVISION

DOWN GUY  
POLE PLATE TYPE  
MAX. GUY LOADING: 27,720 LBS.

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	E12PP

ITM.	QTY.	CATALOG No.	MATERIAL
at	2	2930-08-55	Guy marker
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c9	1	0638-06-12	Bolts, machine 3/4" x 12"
c10	1	0638-06-14	Bolts, machine 3/4" x 14"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek4	2	4290-70-75	Locknuts 3/4"
u	4	1177-20-85	Preform, 3/8" guy grip
v2	1	0215-08-00	Pole eye plate, double guy attachment
w1	2	3427-91-30	Link, F.G. extension 60"
y	1	7380-83-01	Guy wire 3/8"

NOTES:

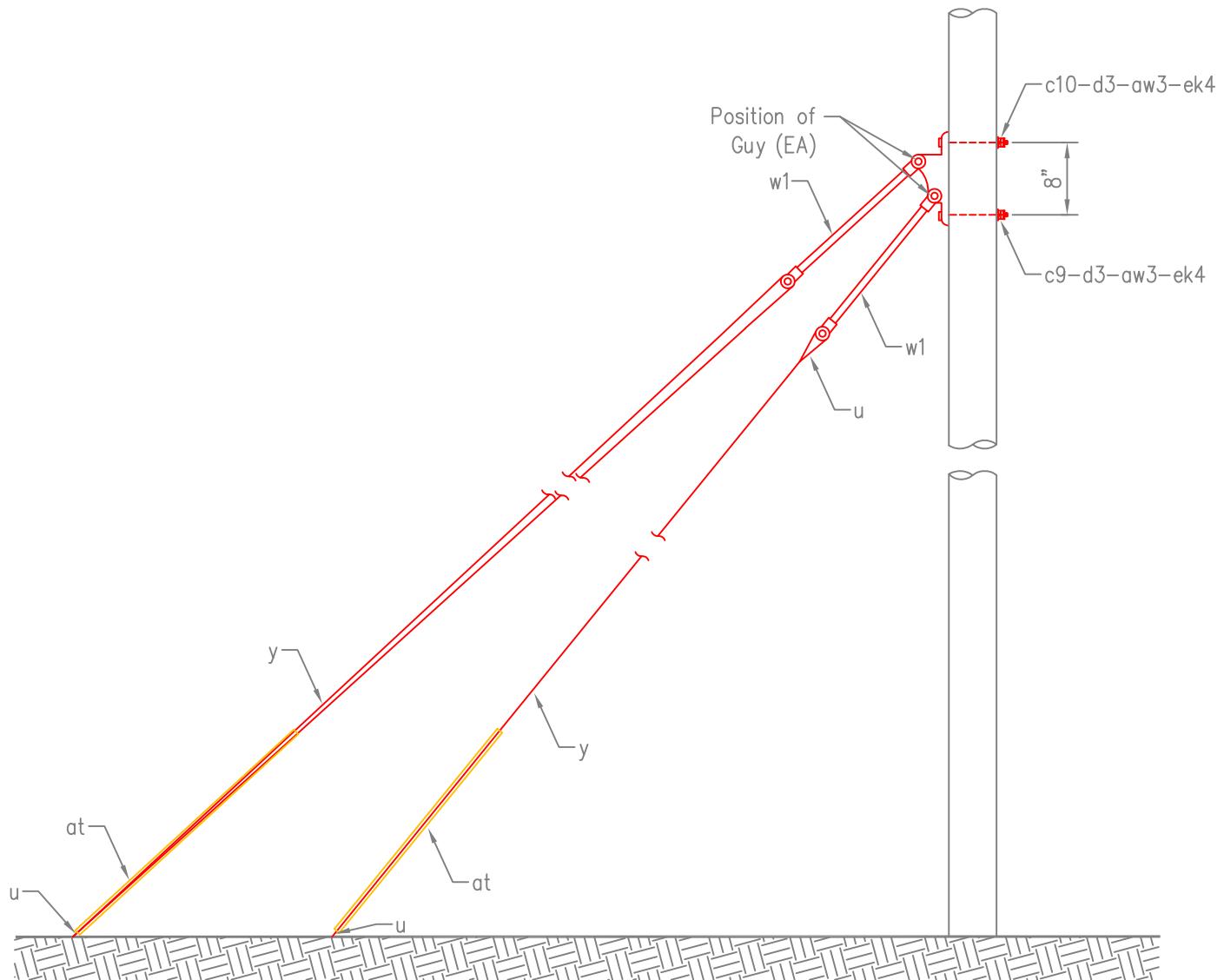
1. Call for E13 to exclude guy attachment.
2. Bolt lengths will be determined by the pole diameter at the position of guy attachment location.
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

DOUBLE DOWN GUY  
POLE PLATE TYPE  
MAX. GUY LOADING: 30,800 LBS.

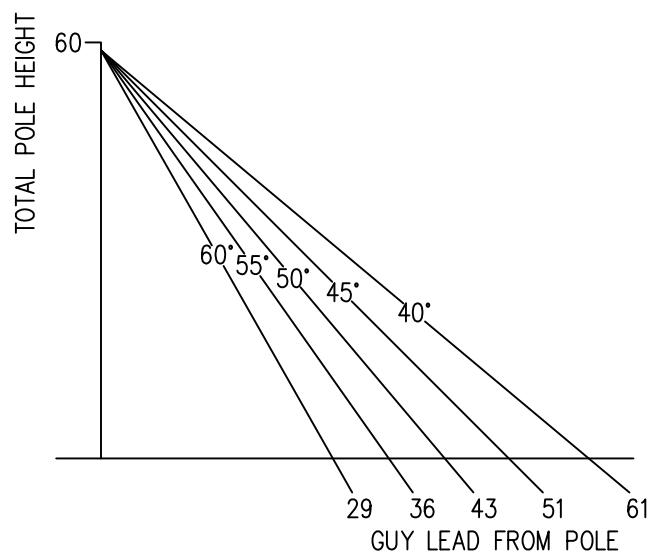
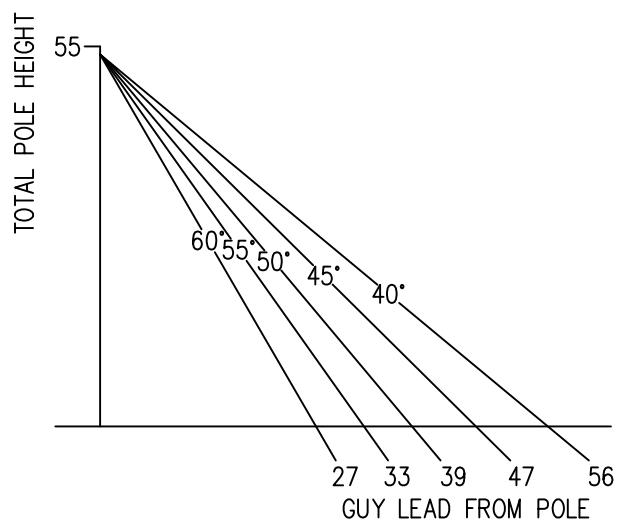
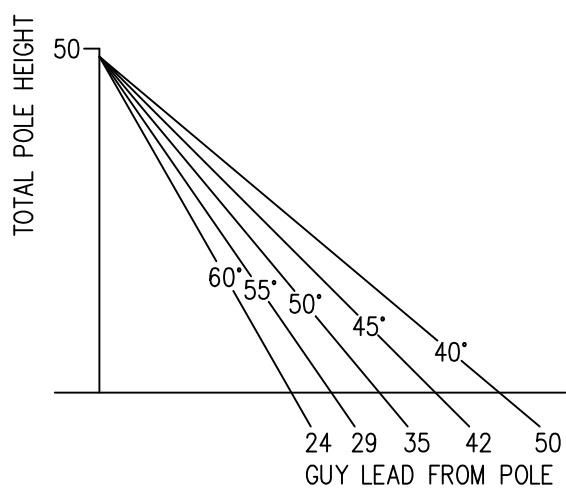
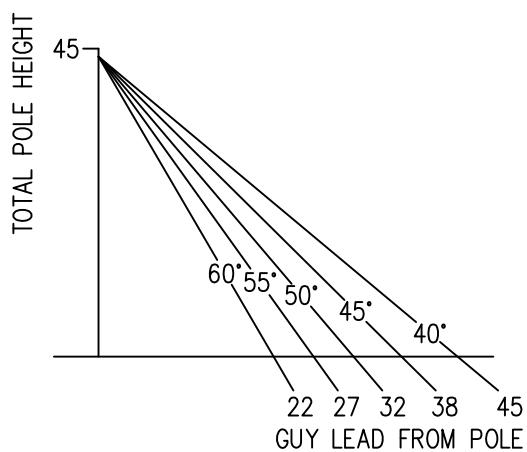
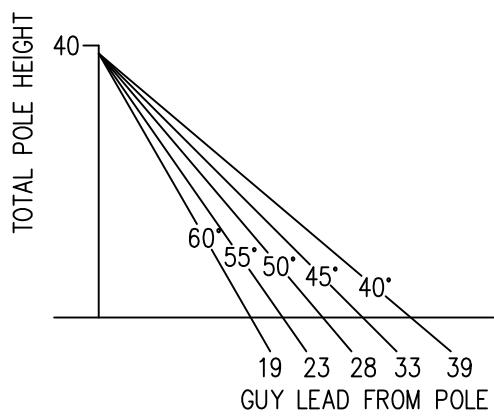
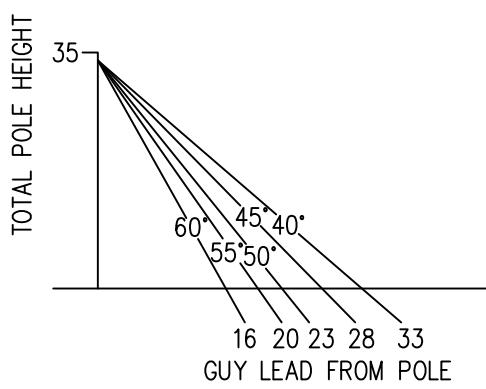
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	E13PP



DATE	REVISION

DOUBLE DOWN GUY  
POLE PLATE TYPE  
MAX. GUY LOADING: 30,800 LBS.

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	E13PP



USE GUYING CHART ON REVERSE SIDE FOR THE FIGURES TO THESE DIAGRAMS.

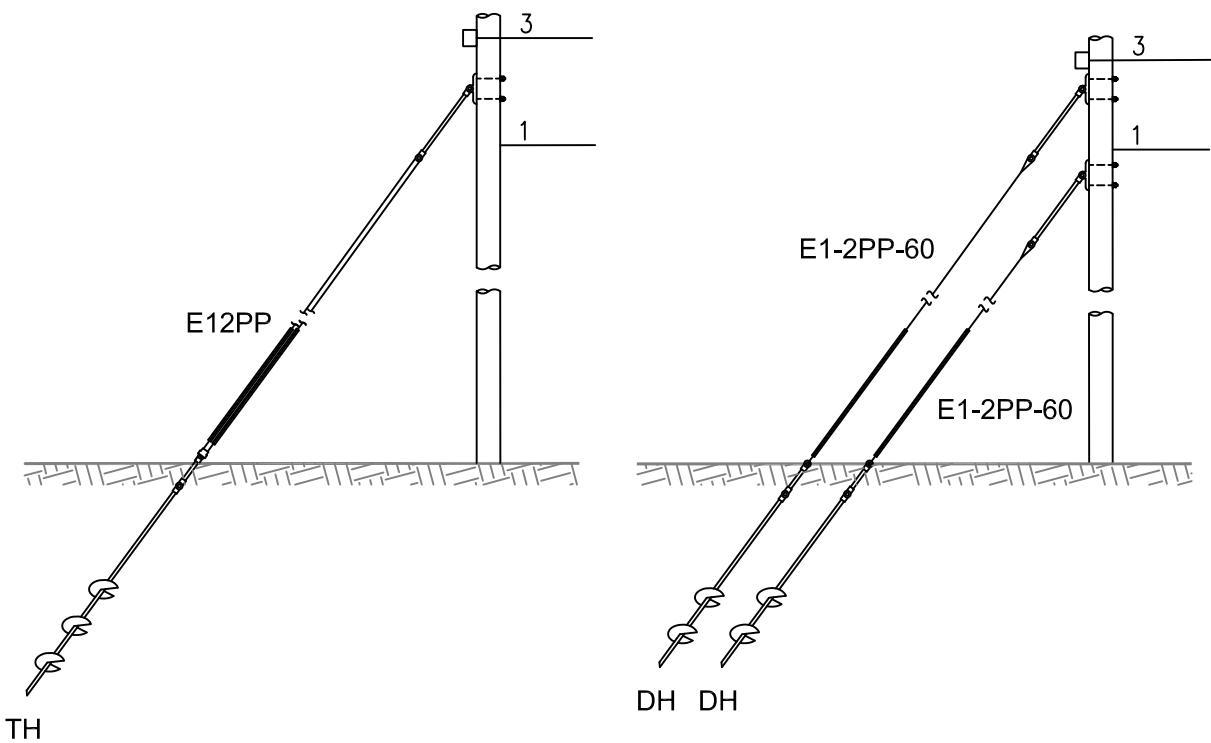


DATE	REVISION

#### GUYING CHART DIAGRAM

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	

GUYING CHART



DATE

REVISION

GUYING CHART DIAGRAM  
SMALL CONDUCTORS  
#4 ACSR - 1/0 ACSR

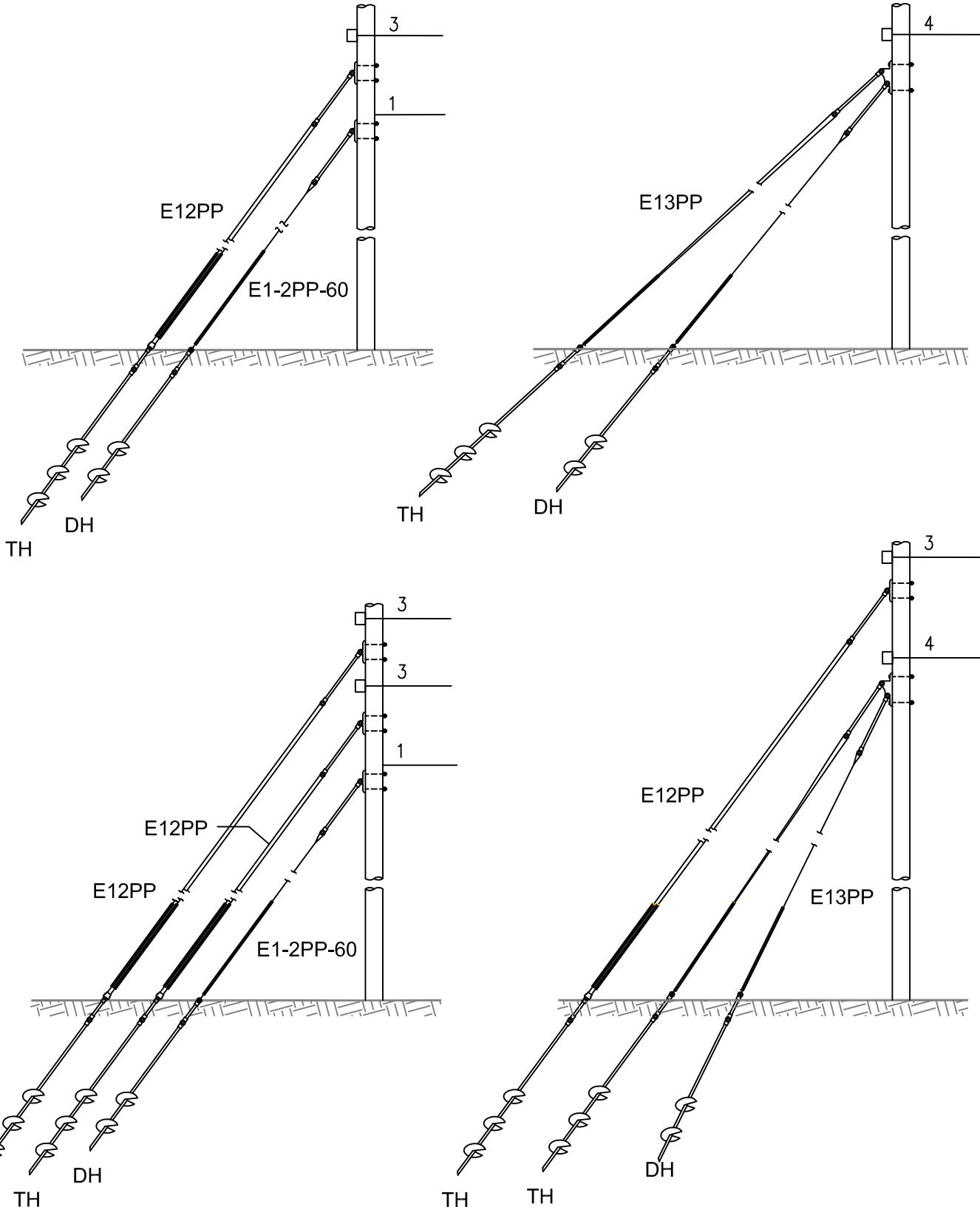
ISSUED

2/04/2008

REVISED

STANDARD NUMBER

GUYING CHART



DATE	REVISION

GUYING CHART DIAGRAM  
LARGE CONDUCTORS  
4/0 ACSR - 477 ACSR

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	GUYING CHART

**Tab''H**

**Tab''H**

**INDEX F****ANCHOR ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
SPECS	CONSTRUCTION SPECIFICATIONS FOR ANCHORS
F1-4	ANCHOR EXPANDING
F1-4S DH	ANCHOR SCREW – DOUBLE HELIX
F1-4S TH	ANCHOR SCREW – TRIPLE HELIX
F1-4S QH	ANCHOR SCREW – QUAD HELIX

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**INDEX F (cont.)****CONSTRUCTION SPECIFICATIONS FOR ANCHORS**

Soil Class Description	
Soil Class	
1	Solid Rock
2	Dense sand, hard silts, coarse gravel
3	Compacted clay & gravel mixed, shale hardpan
4	Compacted sand, claypan, compacted gravel
5	Loose sand, gravel & clay, compacted coarse sand
6	Clay loam, loose sand fines, wet clay, miscellaneous fill
7	Dense sand, hard silts, course gravel

Designated Maximum Holding Power						
Helix Anchor	Soil Anchor Holding Strengths - (lbs.) vs. Soil Class					
	Class 7	Class 6	Class 5	Class 4	Class 3	Class 2
F1-4S-DH	19,000	23,000	27,000	32,000	36,000	41,000
F1-4S-TH	26,000	32,000	39,000	46,000	51,000	58,000
F1-4S-QH	31,000	40,000	49,000	58,000	67,000	

## NOTES:

1. Holding capacities are based on average test data and are offered as an application guide only (RUS Accepted).
2. Typical working torque is 5,500 ft-lb. and minimum ultimate tension strength is 70,000 lb. Ultimate strength ratings apply to properly installed anchors only. Failure to install within 10° of alignment with guy load may significantly lower strength..

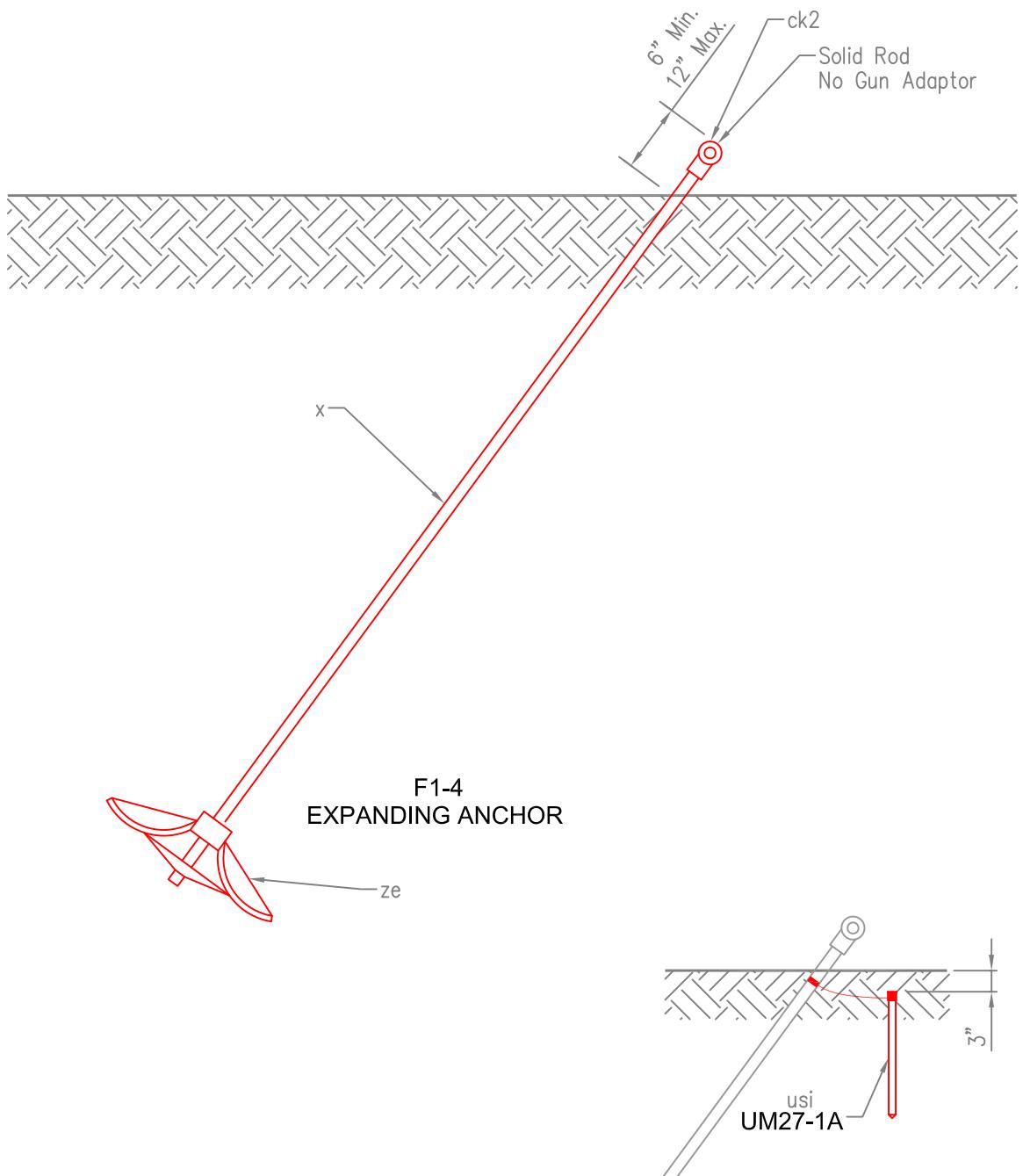
ITEM.	QTY.	CATALOG No.	MATERIAL
ck2	1	1171-21-23	Anchor bonding clamp, Double eye
x	1	5362-43-08	Double eye anchor rod 3/4" x 8'
ze	1	0093-31-80	Anchor, expanding

## NOTES:

1. Due to soil conditions, additional rod extensions may be required.



DATE	REVISION	EXPANDING ANCHOR ASSEMBLY 3/4" ROUND SHAFT	ISSUED	2/04/2008
			REVISED	11/11/2011
			STANDARD NUMBER	
			F1-4	



**NOTE:**

Anode "UM27-1A" required only when down guy insulated links are not installed. Anode is to be driven into the ground 3" below grade. Do not hit the lead wire connected to anode. attach clamp below grade to the anchor.



DATE	REVISION

**EXPANDING ANCHOR ASSEMBLY  
3/4" ROUND SHAFT**

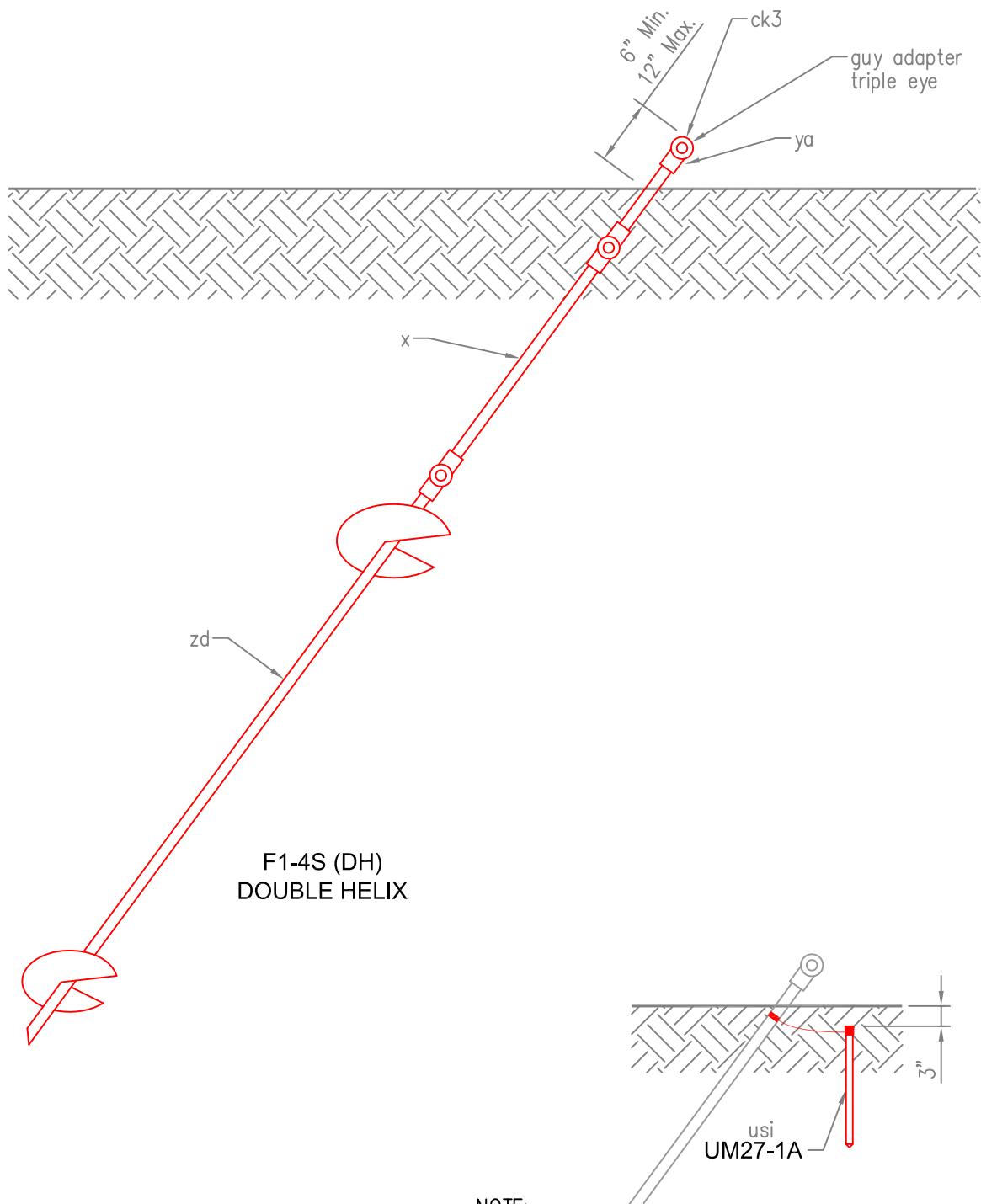
ISSUED	2/04/2008
REVISED	11/11/2011
STANDARD NUMBER	F1-4

ITM.	QTY.	CATALOG No.	MATERIAL
ck3	1	1171-21-34	Anchor bonding clamp, Triple eye
x	2	5367-86-03	Rod, extension 3'-6", (SEE NOTE 2)
ya	1	0097-31-00	Guy adapter, triple eye
zd	1	0097-31-22	Anchor, screw double helix

NOTES:

1. For Designated Maximum Holding Power, see "Construction Specifications for Anchors."
2. Due to soil conditions, additional rod extensions may be required.

	DATE	REVISION	DOUBLE HELIX SCREW ANCHOR ASSEMBLY 1.5" SQUARE SHAFT	ISSUED	2/04/2008
				REVISED	11/11/2011
				STANDARD NUMBER	
				F1-4S DH	



DATE	REVISION

**DOUBLE HELIX  
SCREW ANCHOR ASSEMBLY  
1.5" SQUARE SHAFT**

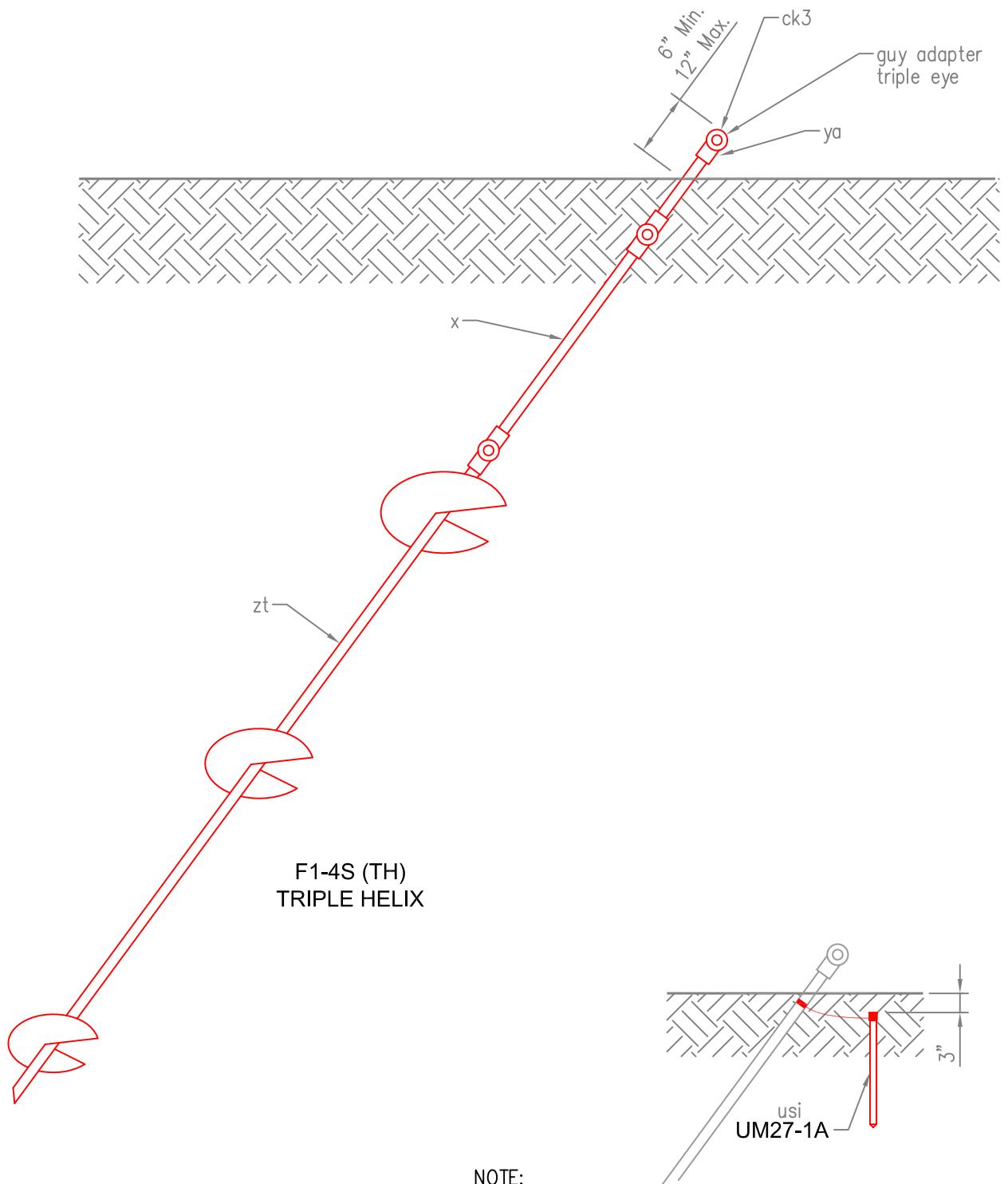
ISSUED	2/04/2008
REVISED	11/11/2011
STANDARD NUMBER	F1-4S DH

ITM.	QTY.	CATALOG No.	MATERIAL
ck3	1	1171-21-34	Anchor bonding clamp, Triple eye
x	2	5367-86-03	Rod, extension 3'-6", (SEE NOTE 2)
ya	1	0097-31-00	Guy adapter, triple eye
zt	1	0097-31-23	Anchor, screw triple helix

NOTES:

1. For Designated Maximum Holding Power, see "Construction Specifications for Anchors."
2. Due to soil conditions, additional rod extensions may be required.

	DATE	REVISION	<b>TRIPLE HELIX SCREW ANCHOR ASSEMBLY 1.5" SQUARE SHAFT</b>	ISSUED	2/04/2008
				REVISED	11/11/2011
				STANDARD NUMBER	
				F1-4S TH	



NOTE:

Anode "UM27-1A" required only when down guy insulated links are not installed. Anode is to be driven into the ground 3" below grade. Do not hit the lead wire connected to anode. attach clamp below grade to the anchor.



DATE	REVISION

TRIPLE HELIX  
SCREW ANCHOR ASSEMBLY  
1.5" SQUARE SHAFT

ISSUED 2/04/2008

REVISED 11/11/2011

STANDARD NUMBER

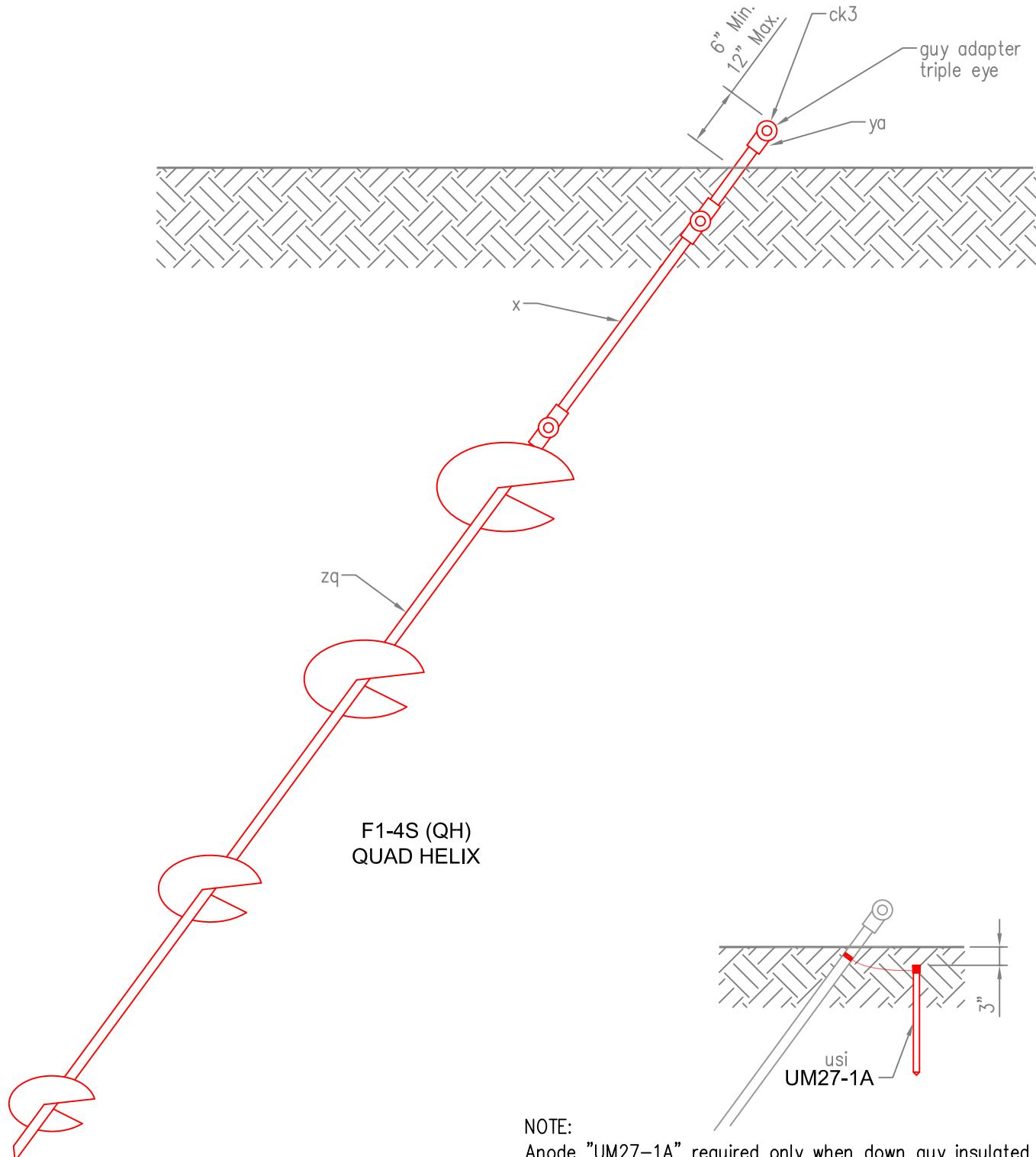
F1-4S TH

ITEM.	QTY.	CATALOG No.	MATERIAL
ck3	1	1171-21-34	Anchor bonding clamp, Triple eye
x	2	5367-86-03	Rod, extension 3'-6", (SEE NOTE 2)
ya	1	0097-31-00	Guy adapter, triple eye
zq	1	0097-31-24	Anchor, screw quad helix

NOTES:

1. For Designated Maximum Holding Power, see "Construction Specifications for Anchors."
2. Due to soil conditions, additional rod extensions may be required.

	DATE	REVISION	<b>QUAD HELIX SCREW ANCHOR ASSEMBLY 1.5" SQUARE SHAFT</b>	ISSUED	2/04/2008
				REVISED	11/11/2011
				STANDARD NUMBER	
				F1-4S QH	



DATE

REVISION

**QUAD HELIX  
SCREW ANCHOR ASSEMBLY  
1.5" SQUARE SHAFT**

ISSUED 2/04/2008

REVISED 11/11/2011

STANDARD NUMBER

F1-4S QH

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# **Tab VG**

# **Tab VG**

**INDEX VG****TRANSFORMER ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
SPECS	CONSTRUCTION SPECIFICATIONS FOR TAPS, JUMPERS, AND ARRESTERS
VG10	1Ø CONVENTIONAL TRANSFORMER – DEADEND
DVG10	1Ø, DUAL VOLTAGE, CONVENTIONAL TRANSFORMER – DEADEND
VG19	1Ø CONVENTIONAL TRANSFORMER – TANGENT
DVG19	1Ø, DUAL VOLTAGE, CONVENTIONAL TRANSFORMER – TANGENT
VG105	1Ø CSP TRANSFORMER – TANGENT (RETIREMENT OR TRANSFER ONLY)
DVG105	1Ø, DUAL VOLTAGE, CSP TRANSFORMER – TANGENT (RETIREMENT OR TRANSFER ONLY)
VG106	1Ø CSP TRANSFORMER – DEADEND (RETIREMENT OR TRANSFER ONLY)
DVG106	1Ø, DUAL VOLTAGE, CSP TRANSFORMER – DEADEND (RETIREMENT OR TRANSFER ONLY)
VG136	1Ø CONVENTIONAL TRANSFORMER - 3Ø TANGENT
DVG136	1Ø, DUAL VOLTAGE, CONVENTIONAL TRANSFORMER - 3Ø TANGENT
VG136-LC	1Ø CONVENTIONAL TRANSFORMER - 3Ø TANGENT LESS CUTOUT
DVG136-LC	1Ø, DUAL VOLTAGE, CONVENTIONAL TRANSFORMER - 3Ø TANGENT LESS CUTOUT
VG210	2Ø CONVENTIONAL TRANSFORMER BANK – OPEN WYE PRIMARY, OPEN WYE DELTA, 4 WIRE SECONDARY
DVG210	2Ø, DUAL VOLTAGE, CONVENTIONAL TRANSFORMER BANK – OPEN WYE PRIMARY, OPEN WYE DELTA, 4 WIRE SECONDARY
VG310	3Ø CONVENTIONAL TRANSFORMER BANK – UNDERGROUND WYE DELTA, 240/480V & 120/240 POWER LOADS

**INDEX VG (cont.)**

**TRANSFORMER ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
DVG310	3Ø, DUAL VOLTAGE, CONVENTIONAL TRANSFORMER BANK – UNDERGROUND WYE DELTA, 240/480V & 120/240 POWER LOADS
VG311	3Ø CONVENTIONAL TRANSFORMER BANK – UNDERGROUND WYE DELTA, 240 OR 480V POWER LOADS WITH CORNER GROUNDED
DVG311	3Ø, DUAL VOLTAGE, CONVENTIONAL TRANSFORMER BANK –UNDERGROUND WYE DELTA, 240 OR 480V POWER LOADS WITH CORNER GROUNDED
VG312	3Ø CONVENTIONAL TRANSFORMER BANK – 4 WIRE GROUNDED WYE GROUNDED, WYE FOR 277/480V OR 120/208V POWER LOADS
DVG312	3Ø, DUAL VOLTAGE, CONVENTIONAL TRANSFORMER BANK – 4 WIRE GROUNDED WYE GROUNDED, WYE FOR 277/480V OR 120/208V POWER LOADS
G-GUIDE	TRANSFORMER GROUNDING GUIDE

## **INDEX VG**

### **CONSTRUCTION SPECIFICATIONS FOR TAPS, JUMPERS AND ARRESTERS**

Jumpers and other leads connected to line conductors shall have sufficient slack to allow free movement of the conductors. Where slack is not shown on the construction drawing, it will be provided by at least two (2) bends in a vertical plane, or one (1) in a horizontal plane, or the equivalent. In areas where aeolian vibration occurs, special measures to minimize the effect of jumper breaks shall be used as may be specified.

All leads on equipment, such as transformers, reclosers, etc., shall be a minimum of #6 copper conductivity. Where aluminum jumpers are used, a connection to an unplated bronze terminal shall be made by splicing a short stub of copper to the aluminum jumpers using a compression connector suitable for the bimetallic connection.

Where applicable, the external gap electrodes of surge arresters, combination arrester cutout units, and transformers mounted arresters shall be adjusted to the manufacturer's recommended spacing. Care shall be taken so that the adjusted gap is not disturbed when the equipment is installed.

It may be necessary, and is permissible, to lower the neutral attachment on standard construction pole top assemblies and additional distance not exceeding 2 feet to provide adequate clearance between cutout and single phase, conventional distribution transformers.

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	1	0152-19-32	Arrester, 14.4 lightning, 18kV
af1	1	1831-22-12	Cutout 14.4, fuse (No Bracket)
an1	1	693X-XX-XX	Transformer, conventional (Primary & Secondary voltage needed) (SEE TABLES BELOW)
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
c3	4	0638-05-12	Bolts, machine 5/8" x 12"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	4	7102-04-91	Washers, square, 5/8"
ek1	4	4290-70-63	Locknuts 5/8"
eq1	1	0780-32-01	Bracket, standoff, Fiberglass, 1Ø, double position
ggg	1	1721-20-00	Connectors, Transformer case ground
pl	1	1781-17-80	Connectors, Lightning arrester

### 120/240V

<b>VG10-1.5 (120/240V)</b>	6933-11-02	TRAN 1.5kVA 14.4/24.9GY 120/240V PT 1B
<b>VG10-3 (120/240V)</b>	6933-11-04	TRAN 3kVA 14.4/24.9GY 120/240V PT 1B
<b>VG10-10 (120/240V)</b>	6933-11-11	TRAN 10kVA 14.4/24.9GY 120/240V PT 1B
<b>VG10-15 (120/240V)</b>	6933-11-13	TRAN 15kVA 14.4/24.9GY 120/240V PT 1B
<b>VG10-25 (120/240V)</b>	6933-11-15	TRAN 25kVA 14.4/24.9GY 120/240V PT 1B
<b>VG10-37.5 (120/240V)</b>	6933-11-17	TRAN 37.5kVA 14.4/24.9GY 120/240V PT 1B
<b>VG10-50 (120/240V)</b>	6933-11-19	TRAN 50kVA 14.4/24.9GY 120/240V PT 1B
<b>VG10-75 (120/240V)</b>	6933-11-21	TRAN 75kVA 14.4/24.9GY 120/240V PT 1B

### 240/480V

<b>VG10-10 (240/480V)</b>	6937-21-11	TRAN 10kVA 14.4/24.9GY 240/480V PT 2B
<b>VG10-15 (240/480V)</b>	6937-21-13	TRAN 15kVA 14.4/24.9GY 240/480V PT 2B
<b>VG10-25 (240/480V)</b>	6937-21-15	TRAN 25kVA 14.4/24.9GY 240/480V PT 2B
<b>VG10-37.5 (240/480V)</b>	6937-21-17	TRAN 37.5kVA 14.4/24.9GY 240/480V PT 2B
<b>VG10-50 (240/480V)</b>	6937-21-19	TRAN 50kVA 14.4/24.9GY 240/480V PT 2B
<b>VG10-75 (240/480V)</b>	6937-21-21	TRAN 75kVA 14.4/24.9GY 240/480V PT 2B

### ADDITIONAL UNITS REQUIRED

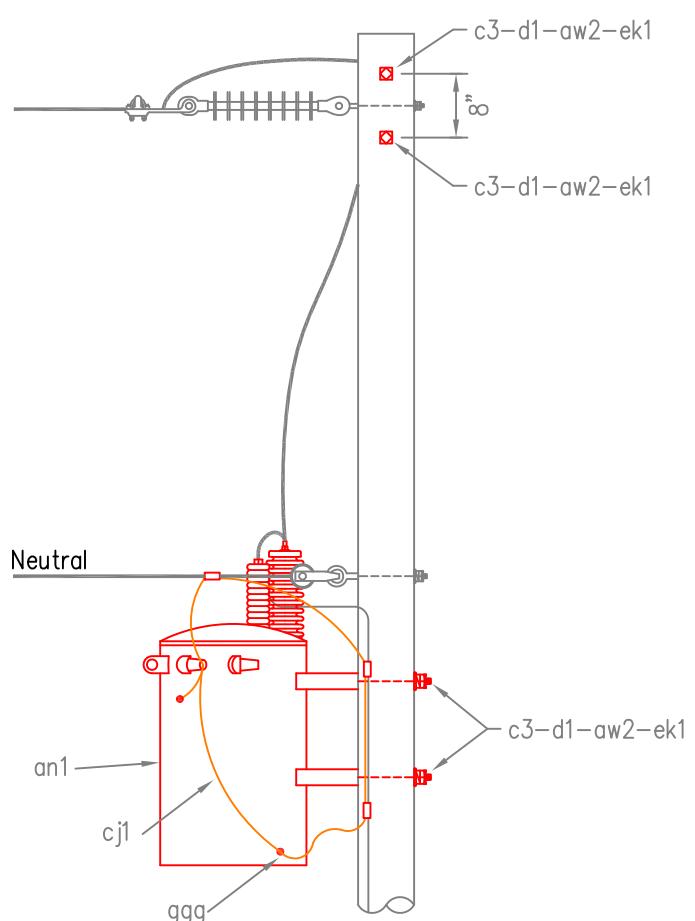
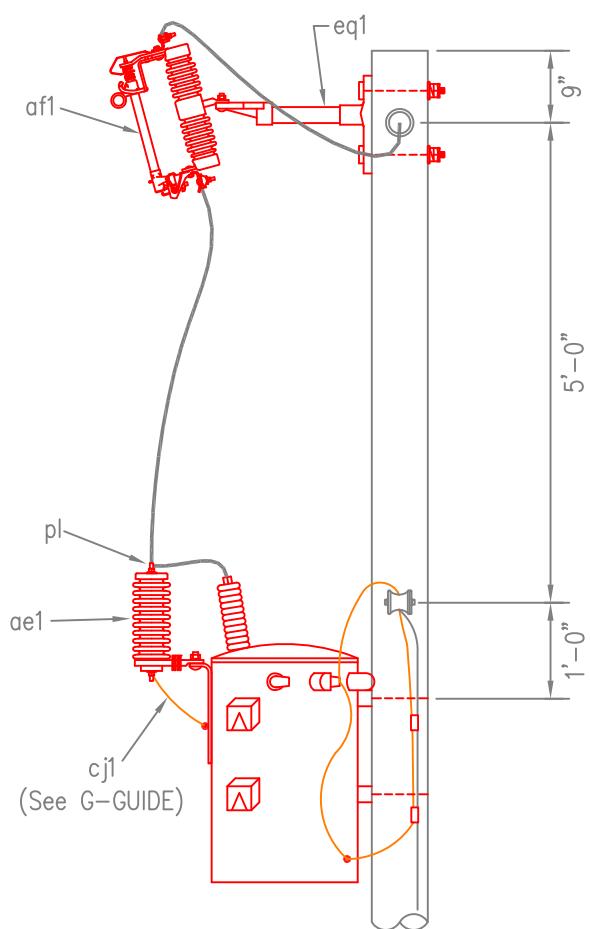
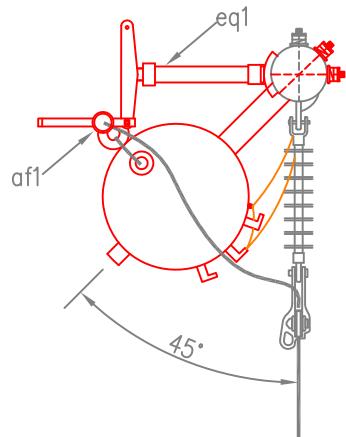
VM2-11 or VUM6-6-6

GROUNDING ASSEMBLY

NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, SINGLE PHASE TRANSFORMER AT DEADEND	ISSUED	2/04/2008
				REVISED	5/11/2011
				STANDARD NUMBER	VG10



DATE	REVISION

14.4/24.9 kV,  
SINGLE PHASE TRANSFORMER  
AT DEADEND

ISSUED	2/04/2008
REVISED	5/11/2011
STANDARD NUMBER	VG10

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	1	0152-19-32	Arrester, 14.4 lightning, 18kV
af1	1	1831-22-12	Cutout 14.4, fuse (No Bracket)
an1	1	693X-XX-XX	Transformer, conventional (Primary & Secondary voltage needed) (SEE TABLES BELOW)
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
c3	4	0638-05-12	Bolts, machine 5/8" x 12"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	4	7102-04-91	Washers, square, 5/8"
ek1	4	4290-70-63	Locknuts 5/8"
eq1	1	0780-32-01	Bracket, standoff, Fiberglass, 1Ø, double position
ggg	1	1721-20-00	Connectors, Transformer case ground
pl	1	1781-17-80	Connectors, Lightning arrester

### 120/240V

DVG10-1.5 (120/240V)	6934-11-02	TRAN 1.5kVA 7200X14400 120/240V PT 1B
DVG10-3 (120/240V)	6934-11-04	TRAN 3kVA 7200X14400 120/240V PT 1B
DVG10-10 (120/240V)	6934-11-11	TRAN 10kVA 7200X14400 120/240V PT 1B
DVG10-15 (120/240V)	6934-11-13	TRAN 15kVA 7200X14400 120/240V PT 1B
DVG10-25 (120/240V)	6934-11-15	TRAN 25kVA 7200X14400 120/240V PT 1B
DVG10-37.5 (120/240V)	6934-11-17	TRAN 37.5kVA 7200X14400 120/240V PT 1B
DVG10-50 (120/240V)	6934-11-19	TRAN 50kVA 7200X14400 120/240V PT 1B
DVG10-75 (120/240V)	6934-11-21	TRAN 75kVA 7200X14400 120/240V PT 1B

### 240/480V

DVG10-10 (240/480V)	6938-21-11	TRAN 10kVA 7200X14400 240/480V PT 2B
DVG10-15 (240/480V)	6938-21-13	TRAN 15kVA 7200X14400 240/480V PT 2B
DVG10-25 (240/480V)	6938-21-15	TRAN 25kVA 7200X14400 240/480V PT 2B
DVG10-37.5 (240/480V)	6938-21-17	TRAN 37.5kVA 7200X14400 240/480V PT 2B
DVG10-50 (240/480V)	6938-21-19	TRAN 50kVA 7200X14400 240/480V PT 2B
DVG10-75 (240/480V)	6938-21-21	TRAN 75kVA 7200X14400 240/480V PT 2B

### ADDITIONAL UNITS REQUIRED

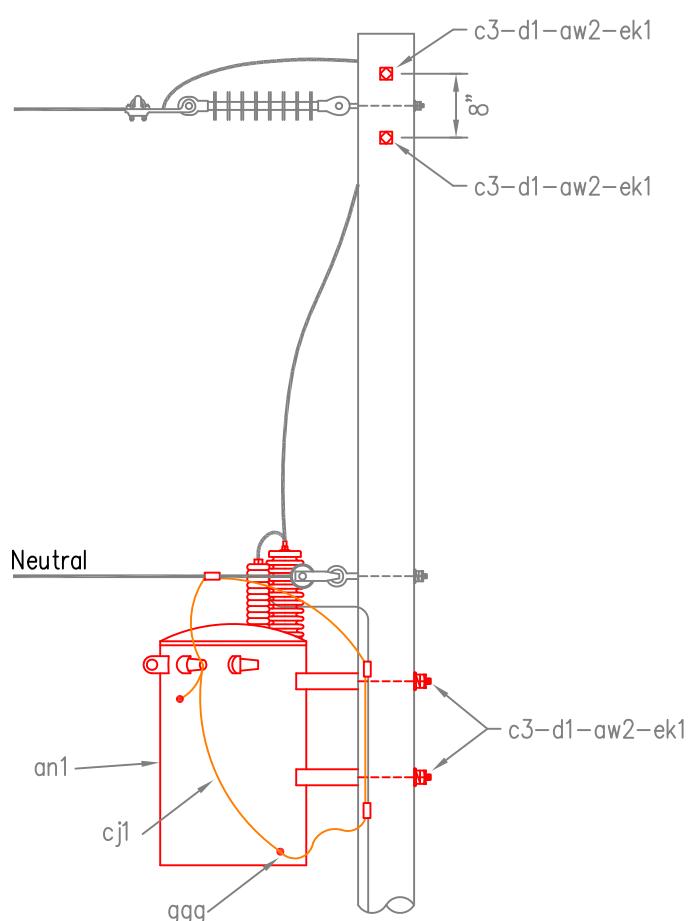
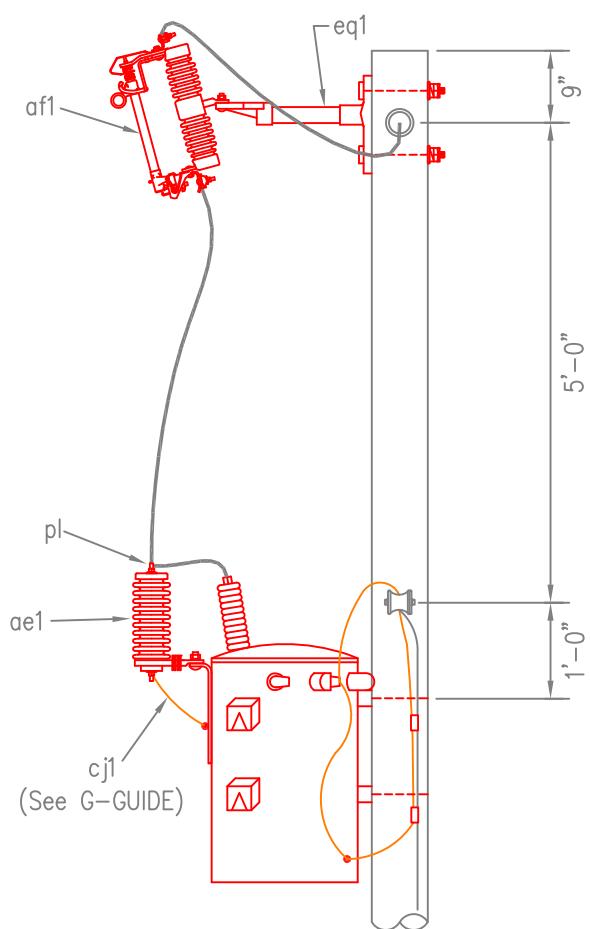
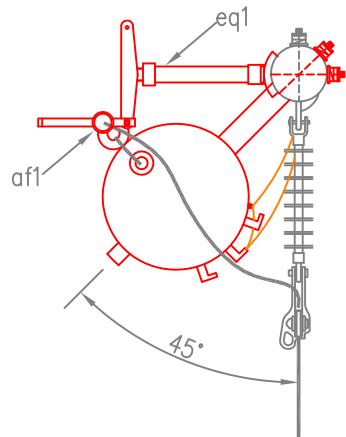
VM2-11 or VUM6-6-6

GROUNDING ASSEMBLY

NOTES:

- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

CoServ Electric	DATE	REVISION	7.2/14.4 kV, SINGLE PHASE TRANSFORMER AT DEADEND	ISSUED	2/04/2008
				REVISED	5/11/2011
				STANDARD NUMBER	DVG10



DATE	REVISION

7.2/14.4 kV,  
SINGLE PHASE TRANSFORMER  
AT DEADEND

ISSUED	2/04/2008
REVISED	5/11/2011
STANDARD NUMBER	DVG10

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	1	0152-19-32	Arrester, 14.4 lightning, 18kV
af1	1	1831-22-12	Cutout 14.4, fuse (No Bracket)
an1	1	693X-XX-XX	Transformer, conventional (Primary & Secondary voltage needed) (SEE TABLES BELOW)
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
c3	4	0638-05-12	Bolts, machine 5/8" x 12"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	4	7102-04-91	Washers, square, 5/8"
ek1	4	4290-70-63	Locknuts 5/8"
eq1	1	0780-32-01	Bracket, standoff, Fiberglass, 1Ø, double position
999	1	1721-20-00	Connectors, Transformer case ground
pl	1	1781-17-80	Connectors, Lightning arrester

### 120/240V

<b>VG19-1.5 (120/240V)</b>	6933-11-02	TRAN 1.5kVA 14.4/24.9GY 120/240V PT 1B
<b>VG19-3 (120/240V)</b>	6933-11-04	TRAN 3kVA 14.4/24.9GY 120/240V PT 1B
<b>VG19-10 (120/240V)</b>	6933-11-11	TRAN 10kVA 14.4/24.9GY 120/240V PT 1B
<b>VG19-15 (120/240V)</b>	6933-11-13	TRAN 15kVA 14.4/24.9GY 120/240V PT 1B
<b>VG19-25 (120/240V)</b>	6933-11-15	TRAN 25kVA 14.4/24.9GY 120/240V PT 1B
<b>VG19-37.5 (120/240V)</b>	6933-11-17	TRAN 37.5kVA 14.4/24.9GY 120/240V PT 1B
<b>VG19-50 (120/240V)</b>	6933-11-19	TRAN 50kVA 14.4/24.9GY 120/240V PT 1B
<b>VG19-75 (120/240V)</b>	6933-11-21	TRAN 75kVA 14.4/24.9GY 120/240V PT 1B

### 240/480V

<b>VG19-10 (240/480V)</b>	6937-21-11	TRAN 10kVA 14.4/24.9GY 240/480V PT 2B
<b>VG19-15 (240/480V)</b>	6937-21-13	TRAN 15kVA 14.4/24.9GY 240/480V PT 2B
<b>VG19-25 (240/480V)</b>	6937-21-15	TRAN 25kVA 14.4/24.9GY 240/480V PT 2B
<b>VG19-37.5 (240/480V)</b>	6937-21-17	TRAN 37.5kVA 14.4/24.9GY 240/480V PT 2B
<b>VG19-50 (240/480V)</b>	6937-21-19	TRAN 50kVA 14.4/24.9GY 240/480V PT 2B
<b>VG19-75 (240/480V)</b>	6937-21-21	TRAN 75kVA 14.4/24.9GY 240/480V PT 2B

### ADDITIONAL UNITS REQUIRED

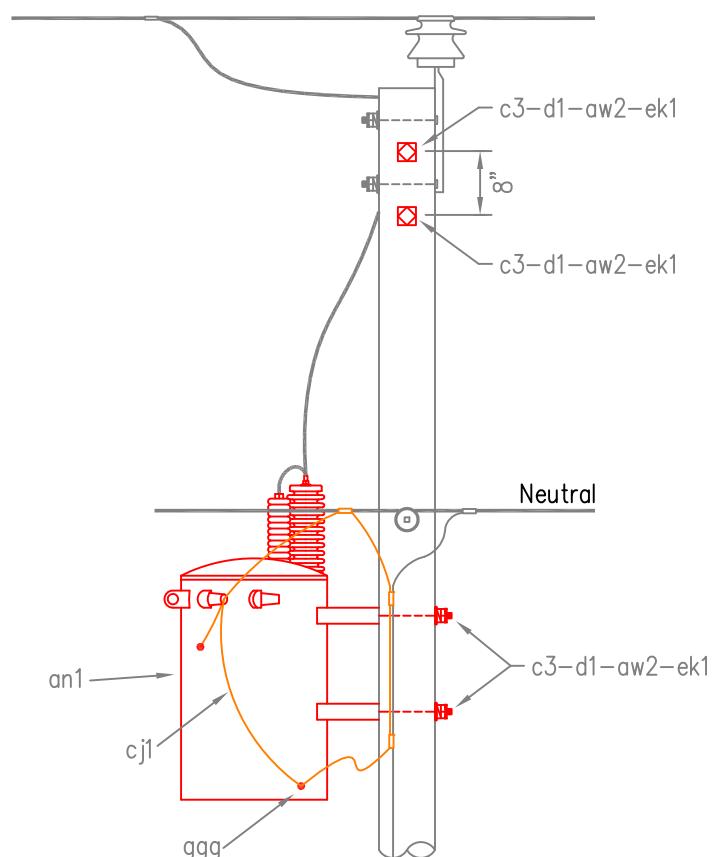
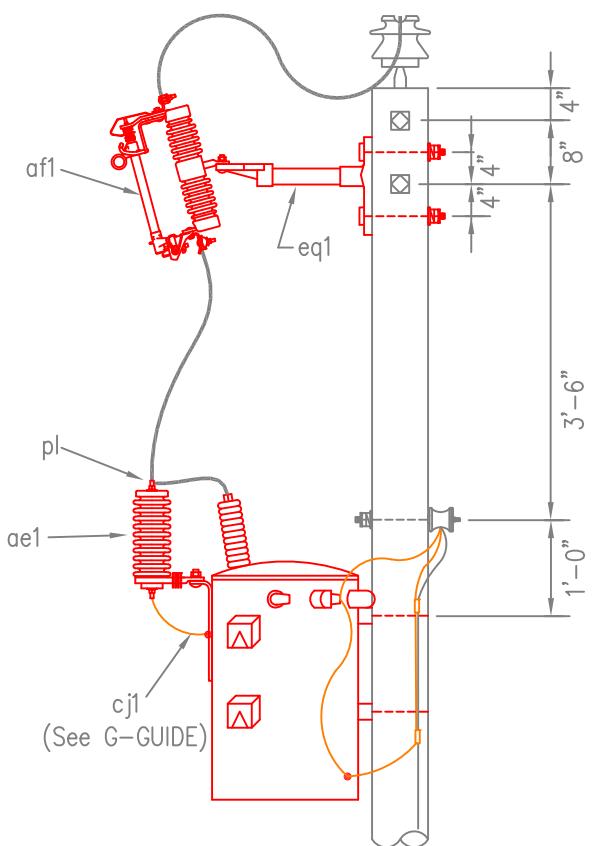
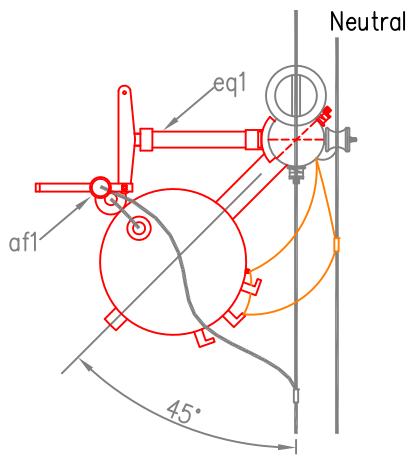
VM2-11 or VUM6-6-6

GROUNDING ASSEMBLY

NOTES:

- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

CoServ Electric	DATE	REVISION	14.4/24.9 kV, SINGLE PHASE TRANSFORMER AT SINGLE PHASE TANGENT	ISSUED	2/04/2008
				REVISED	5/11/2011
				STANDARD NUMBER	VG19



DATE	REVISION

14.4/24.9 kV,  
SINGLE PHASE TRANSFORMER  
AT SINGLE PHASE TANGENT

ISSUED	2/04/2008
REVISED	5/11/2011
STANDARD NUMBER	VG19

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	1	0152-19-32	Arrester, 14.4 lightning, 18kV
af1	1	1831-22-12	Cutout 14.4, fuse (No Bracket)
an1	1	693X-XX-XX	Transformer, conventional (Primary & Secondary voltage needed) (SEE TABLES BELOW)
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
c3	4	0638-05-12	Bolts, machine 5/8" x 12"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	4	7102-04-91	Washers, square, 5/8"
ek1	4	4290-70-63	Locknuts 5/8"
eq1	1	0780-32-01	Bracket, standoff, Fiberglass, 1Ø, double position
999	1	1721-20-00	Connectors, Transformer case ground
pl	1	1781-17-80	Connectors, Lightning arrester

### 120/240V

DVG19-1.5 (120/240V)	6934-11-02	TRAN 1.5kVA 7200X14400 120/240V PT 1B
DVG19-3 (120/240V)	6934-11-04	TRAN 3kVA 7200X14400 120/240V PT 1B
DVG19-10 (120/240V)	6934-11-11	TRAN 10kVA 7200X14400 120/240V PT 1B
DVG19-15 (120/240V)	6934-11-13	TRAN 15kVA 7200X14400 120/240V PT 1B
DVG19-25 (120/240V)	6934-11-15	TRAN 25kVA 7200X14400 120/240V PT 1B
DVG19-37.5 (120/240V)	6934-11-17	TRAN 37.5kVA 7200X14400 120/240V PT 1B
DVG19-50 (120/240V)	6934-11-19	TRAN 50kVA 7200X14400 120/240V PT 1B
DVG19-75 (120/240V)	6934-11-21	TRAN 75kVA 7200X14400 120/240V PT 1B

### 240/480V

DVG19-10 (240/480V)	6938-21-11	TRAN 10kVA 7200X14400 240/480V PT 2B
DVG19-15 (240/480V)	6938-21-13	TRAN 15kVA 7200X14400 240/480V PT 2B
DVG19-25 (240/480V)	6938-21-15	TRAN 25kVA 7200X14400 240/480V PT 2B
DVG19-37.5 (240/480V)	6938-21-17	TRAN 37.5kVA 7200X14400 240/480V PT 2B
DVG19-50 (240/480V)	6938-21-19	TRAN 50kVA 7200X14400 240/480V PT 2B
DVG19-75 (240/480V)	6938-21-21	TRAN 75kVA 7200X14400 240/480V PT 2B

### ADDITIONAL UNITS REQUIRED

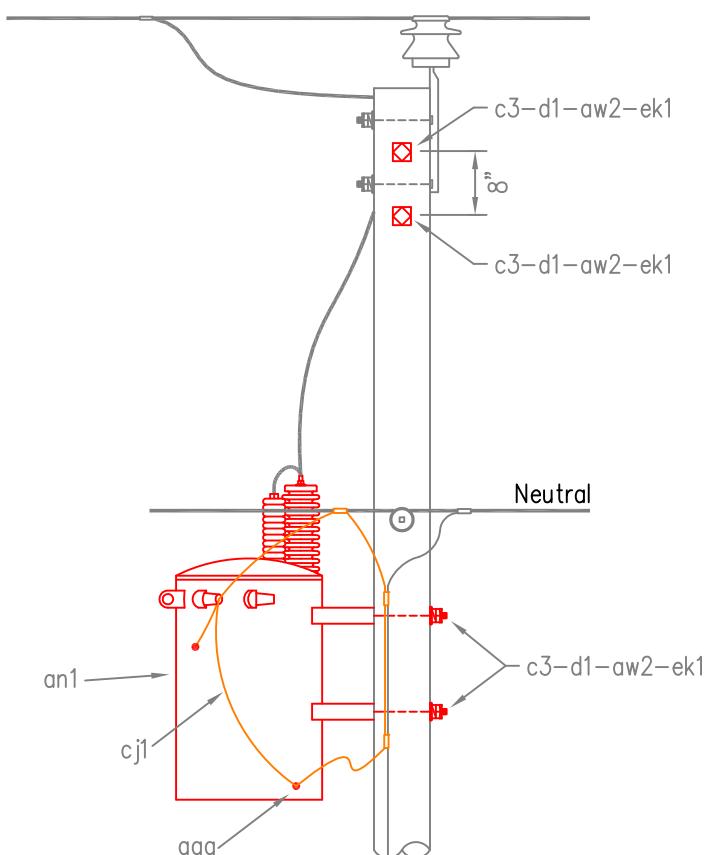
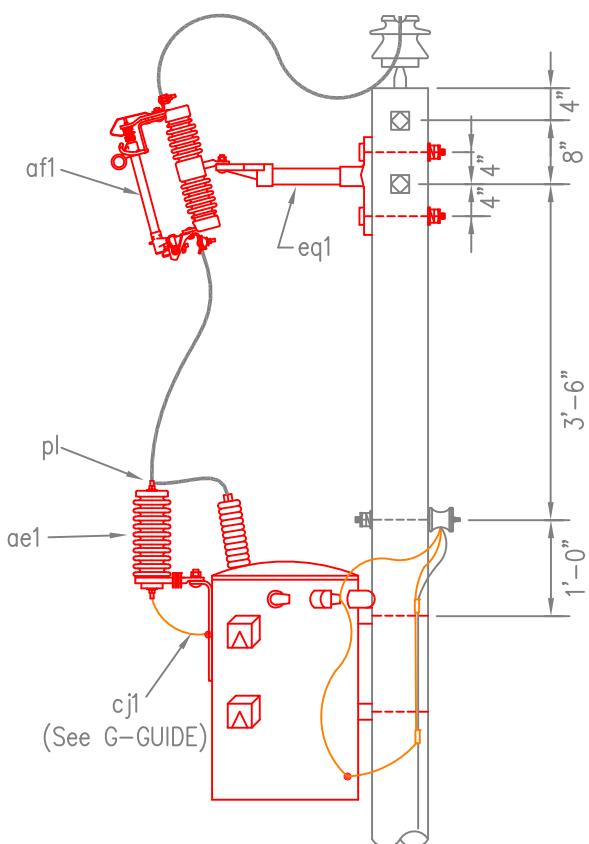
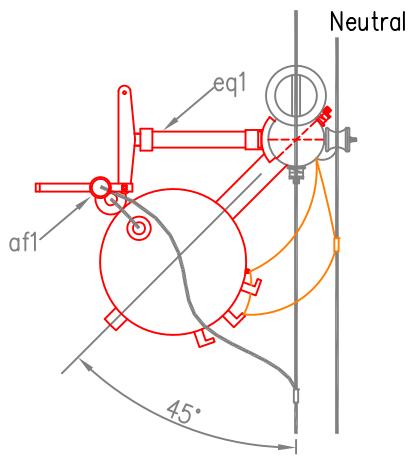
VM2-11 or VUM6-6-6

GROUNDING ASSEMBLY

NOTES:

- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

CoServ Electric	DATE	REVISION	7.2/14.4 kV, SINGLE PHASE TRANSFORMER AT SINGLE PHASE TANGENT	ISSUED	2/04/2008
				REVISED	5/11/2011
				STANDARD NUMBER	
					DVG19



DATE	REVISION

7.2/14.4 kV,  
SINGLE PHASE TRANSFORMER  
AT SINGLE PHASE TANGENT

ISSUED	2/04/2008
REVISED	5/11/2011
STANDARD NUMBER	DVG19

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	1	0152-19-32	Arrester, 14.4 lightning, 18kV
an1	1	693X-XX-XX	Transformer, (Primary & Secondary voltage needed) (SEE TABLES BELOW)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	2	7102-04-91	Washers, square, 5/8"
ek1	2	4290-70-63	Locknuts 5/8"
ggg	1	1721-20-00	Connectors, Transformer case ground
pl	1	1781-17-80	Connectors, Lightning arrester

### 120/240V

<b>VG105-1.5 (120/240V)</b>	6933-11-02	TRAN 1.5kVA 14.4/24.9GY 120/240V PT 1B
<b>VG105-3 (120/240V)</b>	6933-11-04	TRAN 3kVA 14.4/24.9GY 120/240V PT 1B
<b>VG105-10 (120/240V)</b>	6933-11-11	TRAN 10kVA 14.4/24.9GY 120/240V PT 1B
<b>VG105-15 (120/240V)</b>	6933-11-13	TRAN 15kVA 14.4/24.9GY 120/240V PT 1B
<b>VG105-25 (120/240V)</b>	6933-11-15	TRAN 25kVA 14.4/24.9GY 120/240V PT 1B
<b>VG105-37.5 (120/240V)</b>	6933-11-17	TRAN 37.5kVA 14.4/24.9GY 120/240V PT 1B
<b>VG105-50 (120/240V)</b>	6933-11-19	TRAN 50kVA 14.4/24.9GY 120/240V PT 1B

### 240/480V

<b>VG105-10 (240/480V)</b>	6937-21-11	TRAN 10kVA 14.4/24.9GY 240/480V PT 2B
<b>VG105-15 (240/480V)</b>	6937-21-13	TRAN 15kVA 14.4/24.9GY 240/480V PT 2B
<b>VG105-25 (240/480V)</b>	6937-21-15	TRAN 25kVA 14.4/24.9GY 240/480V PT 2B
<b>VG105-37.5 (240/480V)</b>	6937-21-17	TRAN 37.5kVA 14.4/24.9GY 240/480V PT 2B
<b>VG105-50 (240/480V)</b>	6937-21-19	TRAN 50kVA 14.4/24.9GY 240/480V PT 2B

### ADDITIONAL UNITS REQUIRED FOR TRANSFER

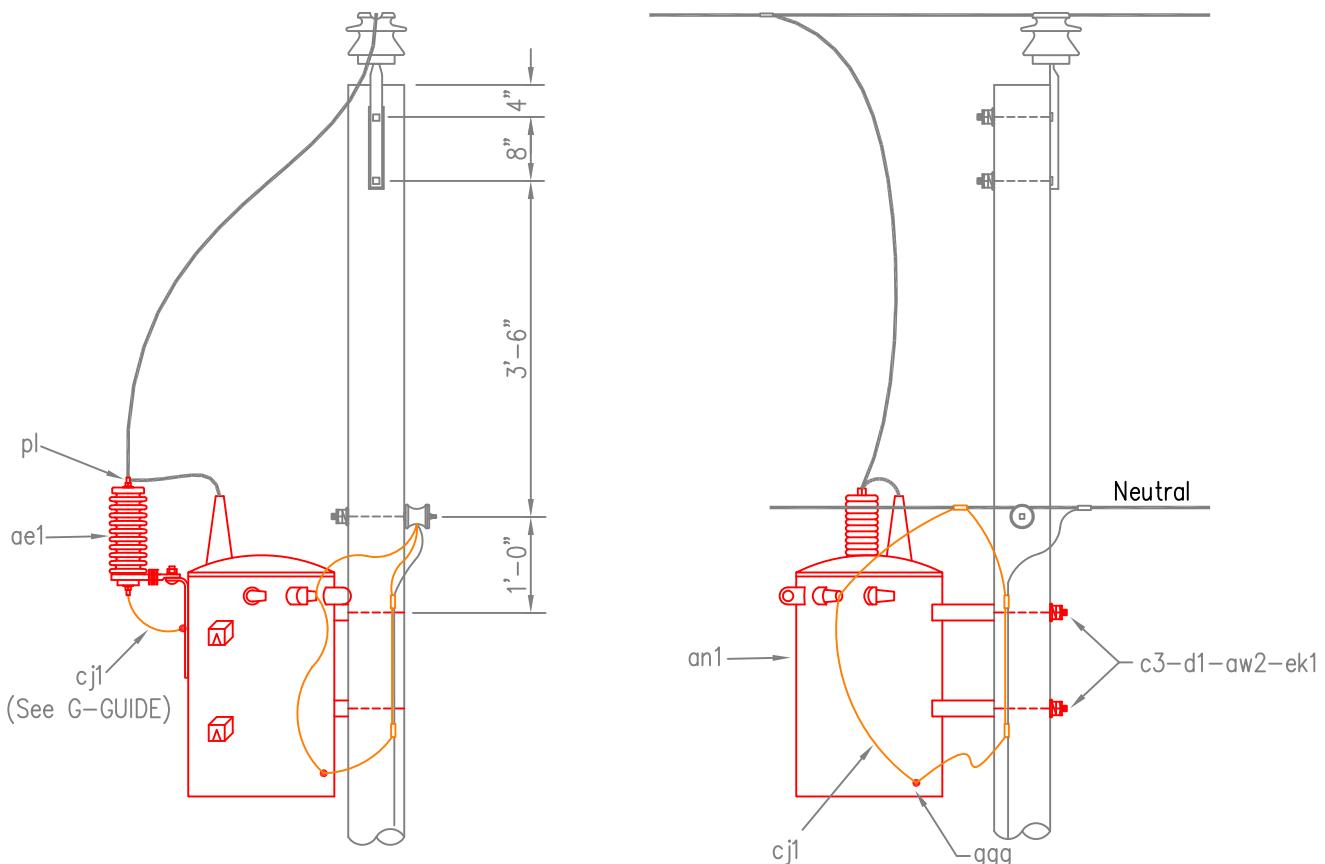
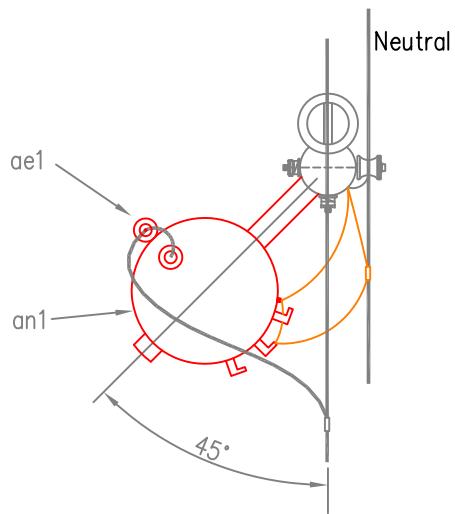
VM5-9B CUTOUT  
VM5-25 STANDOFF BRACKET

#### NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

FOR RETIREMENT OR TRANSFER ONLY

	DATE	REVISION	14.4/24.9 kV, SINGLE PHASE TRANSFORMER AT SINGLE PHASE TANGENT	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VG105



**FOR RETIREMENT OR TRANSFER ONLY**



DATE	REVISION

14.4/24.9 kV,  
SINGLE PHASE TRANSFORMER  
AT SINGLE PHASE TANGENT

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VG105

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	1	0152-19-32	Arrester, 14.4 lightning, 18kV
an1	1	693X-XX-XX	Transformer, (Primary & Secondary voltage needed) (SEE TABLES BELOW)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	2	7102-04-91	Washers, square, 5/8"
ek1	2	4290-70-63	Locknuts 5/8"
ggg	1	1721-20-00	Connectors, Transformer case ground
pl	1	1781-17-80	Connectors, Lightning arrester

### 120/240V

DVG105-1.5 (120/240V)	6934-11-02	TRAN 1.5kVA 7200X14400 120/240V PT 1B
DVG105-3 (120/240V)	6934-11-04	TRAN 3kVA 7200X14400 120/240V PT 1B
DVG105-10 (120/240V)	6934-11-11	TRAN 10kVA 7200X14400 120/240V PT 1B
DVG105-15 (120/240V)	6934-11-13	TRAN 15kVA 7200X14400 120/240V PT 1B
DVG105-25 (120/240V)	6934-11-15	TRAN 25kVA 7200X14400 120/240V PT 1B
DVG105-37.5 (120/240V)	6934-11-17	TRAN 37.5kVA 7200X14400 120/240V PT 1B
DVG105-50 (120/240V)	6934-11-19	TRAN 50kVA 7200X14400 120/240V PT 1B

### 240/480V

DVG105-10 (240/480V)	6938-21-11	TRAN 10kVA 7200X14400 240/480V PT 2B
DVG105-15 (240/480V)	6938-21-13	TRAN 15kVA 7200X14400 240/480V PT 2B
DVG105-25 (240/480V)	6938-21-15	TRAN 25kVA 7200X14400 240/480V PT 2B
DVG105-37.5 (240/480V)	6938-21-17	TRAN 37.5kVA 7200X14400 240/480V PT 2B
DVG105-50 (240/480V)	6938-21-19	TRAN 50kVA 7200X14400 240/480V PT 2B

### ADDITIONAL UNITS REQUIRED FOR TRANSFER

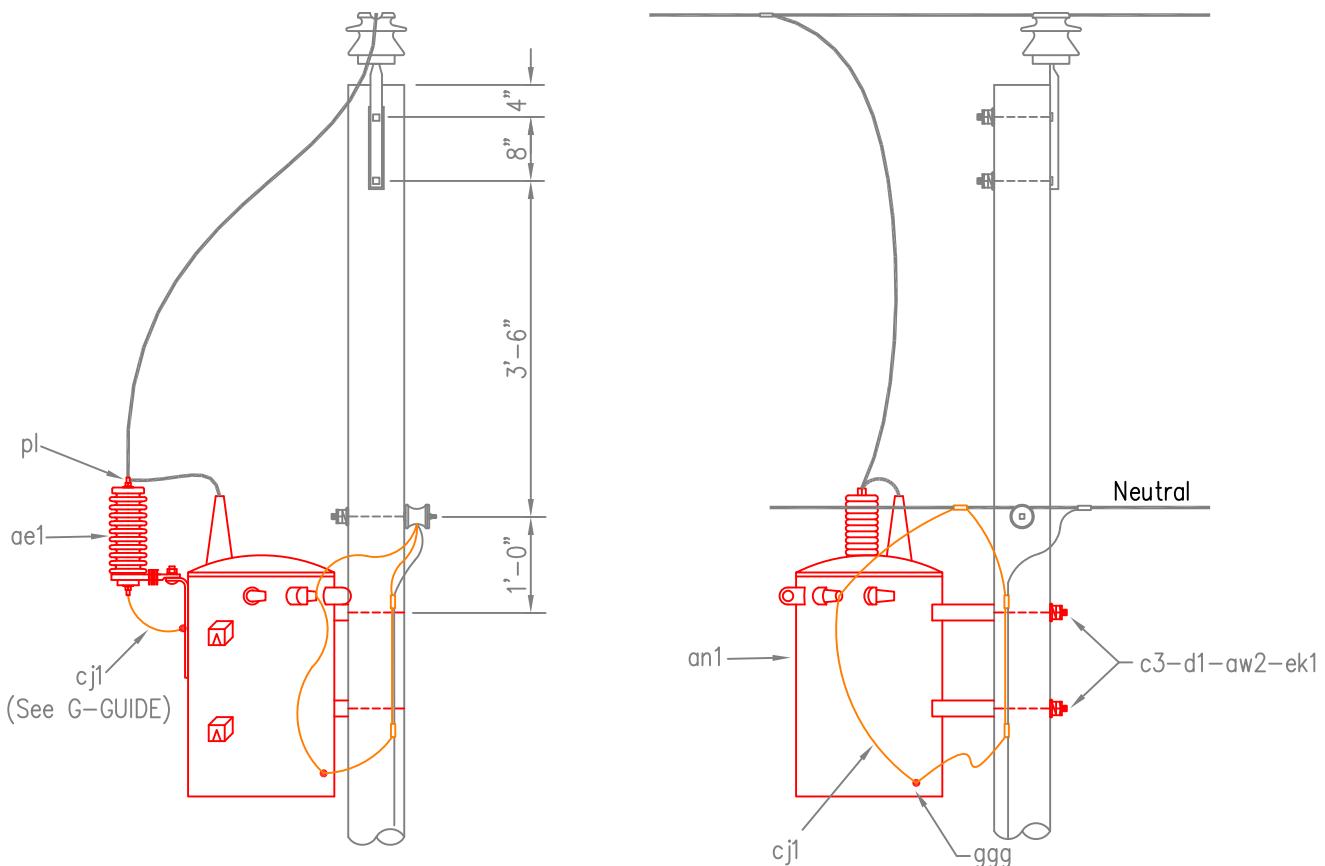
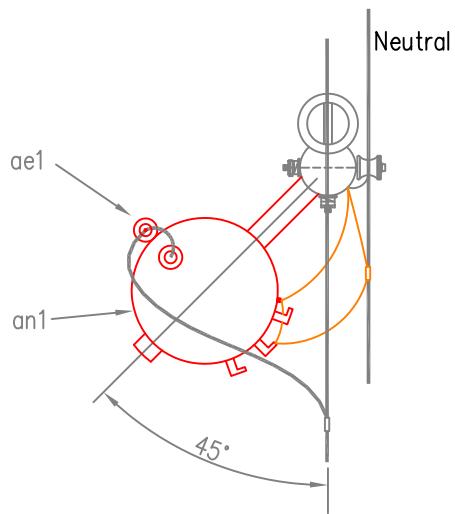
VM5-9B CUTOUT  
VM5-25 STANDOFF BRACKET

#### NOTES:

- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

FOR RETIREMENT OR TRANSFER ONLY

CoServ Electric	DATE	REVISION	7.2/14.4 kV, SINGLE PHASE TRANSFORMER AT SINGLE PHASE TANGENT	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					DVG105



**FOR RETIREMENT OR TRANSFER ONLY**



DATE	REVISION

7.2/14.4 kV,  
SINGLE PHASE TRANSFORMER  
AT SINGLE PHASE TANGENT

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	DVG105

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	1	0152-19-32	Arrester, 14.4 lightning, 18kV
an1	1	693X-XX-XX	Transformer, (Primary & Secondary voltage needed) (SEE TABLES BELOW)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	2	7102-04-91	Washers, square, 5/8"
ek1	2	4290-70-63	Locknuts 5/8"
ggg	1	1721-20-00	Connectors, Transformer case ground
pl	1	1781-17-80	Connectors, Lightning arrester

### 120/240V

<b>VG106-1.5 (120/240V)</b>	6933-11-02	TRAN 1.5kVA 14.4/24.9GY 120/240V PT 1B
<b>VG106-3 (120/240V)</b>	6933-11-04	TRAN 3kVA 14.4/24.9GY 120/240V PT 1B
<b>VG106-10 (120/240V)</b>	6933-11-11	TRAN 10kVA 14.4/24.9GY 120/240V PT 1B
<b>VG106-15 (120/240V)</b>	6933-11-13	TRAN 15kVA 14.4/24.9GY 120/240V PT 1B
<b>VG106-25 (120/240V)</b>	6933-11-15	TRAN 25kVA 14.4/24.9GY 120/240V PT 1B
<b>VG106-37.5 (120/240V)</b>	6933-11-17	TRAN 37.5kVA 14.4/24.9GY 120/240V PT 1B
<b>VG106-50 (120/240V)</b>	6933-11-19	TRAN 50kVA 14.4/24.9GY 120/240V PT 1B

### 240/480V

<b>VG106-10 (240/480V)</b>	6937-21-11	TRAN 10kVA 14.4/24.9GY 240/480V PT 2B
<b>VG106-15 (240/480V)</b>	6937-21-13	TRAN 15kVA 14.4/24.9GY 240/480V PT 2B
<b>VG106-25 (240/480V)</b>	6937-21-15	TRAN 25kVA 14.4/24.9GY 240/480V PT 2B
<b>VG106-37.5 (240/480V)</b>	6937-21-17	TRAN 37.5kVA 14.4/24.9GY 240/480V PT 2B
<b>VG106-50 (240/480V)</b>	6937-21-19	TRAN 50kVA 14.4/24.9GY 240/480V PT 2B

### ADDITIONAL UNITS REQUIRED FOR TRANSFER

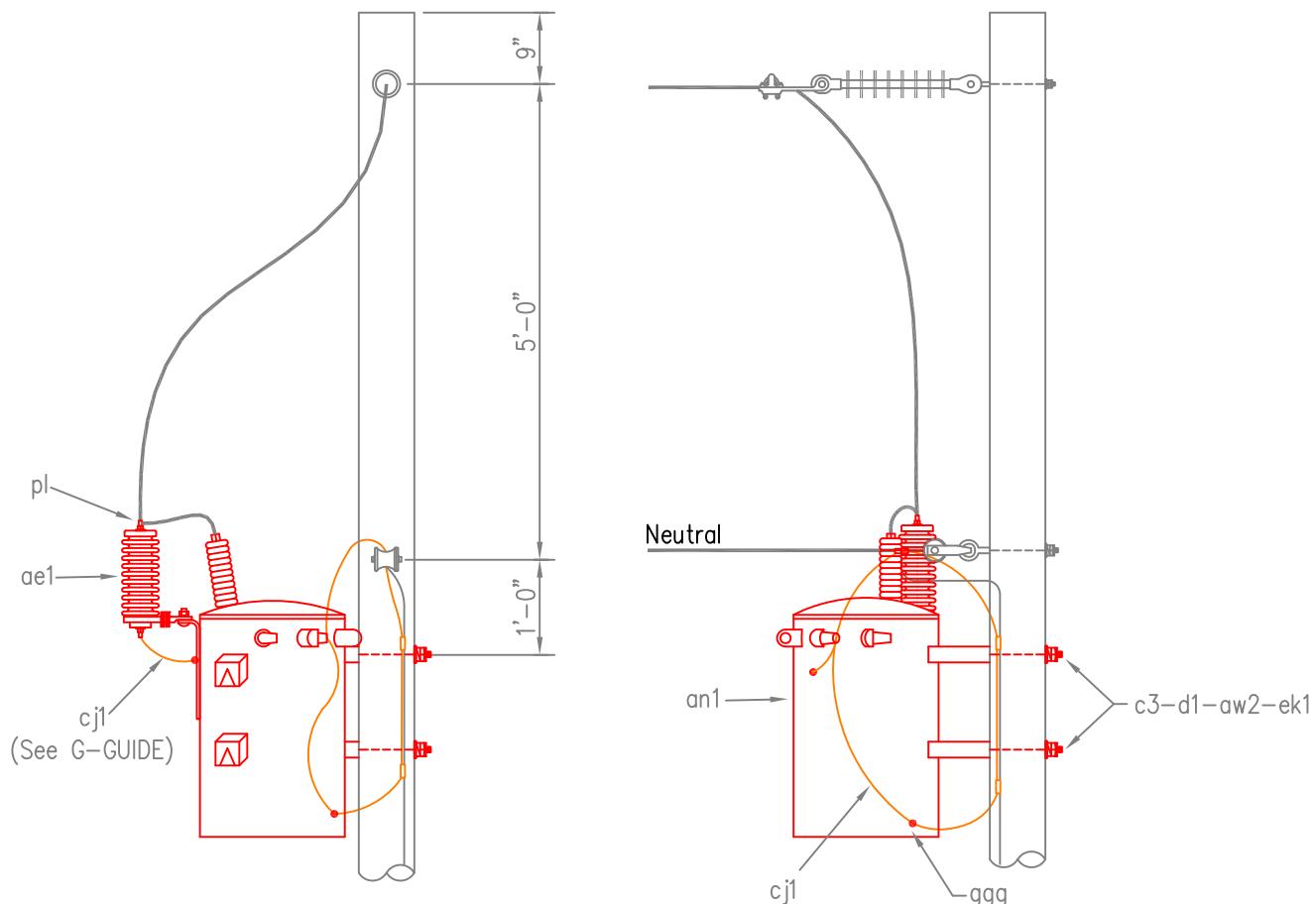
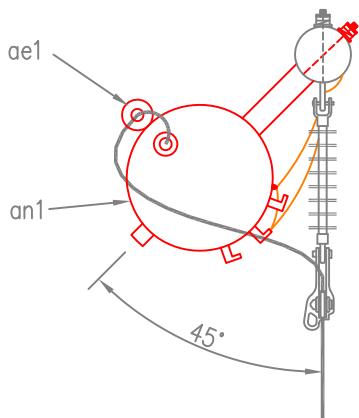
VM5-9B CUTOUT  
VM5-25 STANDOFF BRACKET

#### NOTES:

- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

FOR RETIREMENT OR TRANSFER ONLY

	DATE	REVISION	<b>14.4/24.9 kV, SINGLE PHASE TRANSFORMER AT DEADEND</b>	ISSUED	2/04/2008
				REVISED	
					STANDARD NUMBER
					VG106



**FOR RETIREMENT OR TRANSFER ONLY**



DATE	REVISION

14.4/24.9 kV,  
SINGLE PHASE TRANSFORMER  
AT DEADEND

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VG106

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	1	0152-19-32	Arrester, 14.4 lightning, 18kV
an1	1	693X-XX-XX	Transformer, (Primary & Secondary voltage needed) (SEE TABLES BELOW)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	2	7102-04-91	Washers, square, 5/8"
ek1	2	4290-70-63	Locknuts 5/8"
ggg	1	1721-20-00	Connectors, Transformer case ground
pl	1	1781-17-80	Connectors, Lightning arrester

### 120/240V

DVG106-1.5 (120/240V)	6934-11-02	TRAN 1.5kVA 7200X14400 120/240V PT 1B
DVG106-3 (120/240V)	6934-11-04	TRAN 3kVA 7200X14400 120/240V PT 1B
DVG106-10 (120/240V)	6934-11-11	TRAN 10kVA 7200X14400 120/240V PT 1B
DVG106-15 (120/240V)	6934-11-13	TRAN 15kVA 7200X14400 120/240V PT 1B
DVG106-25 (120/240V)	6934-11-15	TRAN 25kVA 7200X14400 120/240V PT 1B
DVG106-37.5 (120/240V)	6934-11-17	TRAN 37.5kVA 7200X14400 120/240V PT 1B
DVG106-50 (120/240V)	6934-11-19	TRAN 50kVA 7200X14400 120/240V PT 1B

### 240/480V

DVG106-10 (240/480V)	6938-21-11	TRAN 10kVA 7200X14400 240/480V PT 2B
DVG106-15 (240/480V)	6938-21-13	TRAN 15kVA 7200X14400 240/480V PT 2B
DVG106-25 (240/480V)	6938-21-15	TRAN 25kVA 7200X14400 240/480V PT 2B
DVG106-37.5 (240/480V)	6938-21-17	TRAN 37.5kVA 7200X14400 240/480V PT 2B
DVG106-50 (240/480V)	6938-21-19	TRAN 50kVA 7200X14400 240/480V PT 2B

### ADDITIONAL UNITS REQUIRED FOR TRANSFER

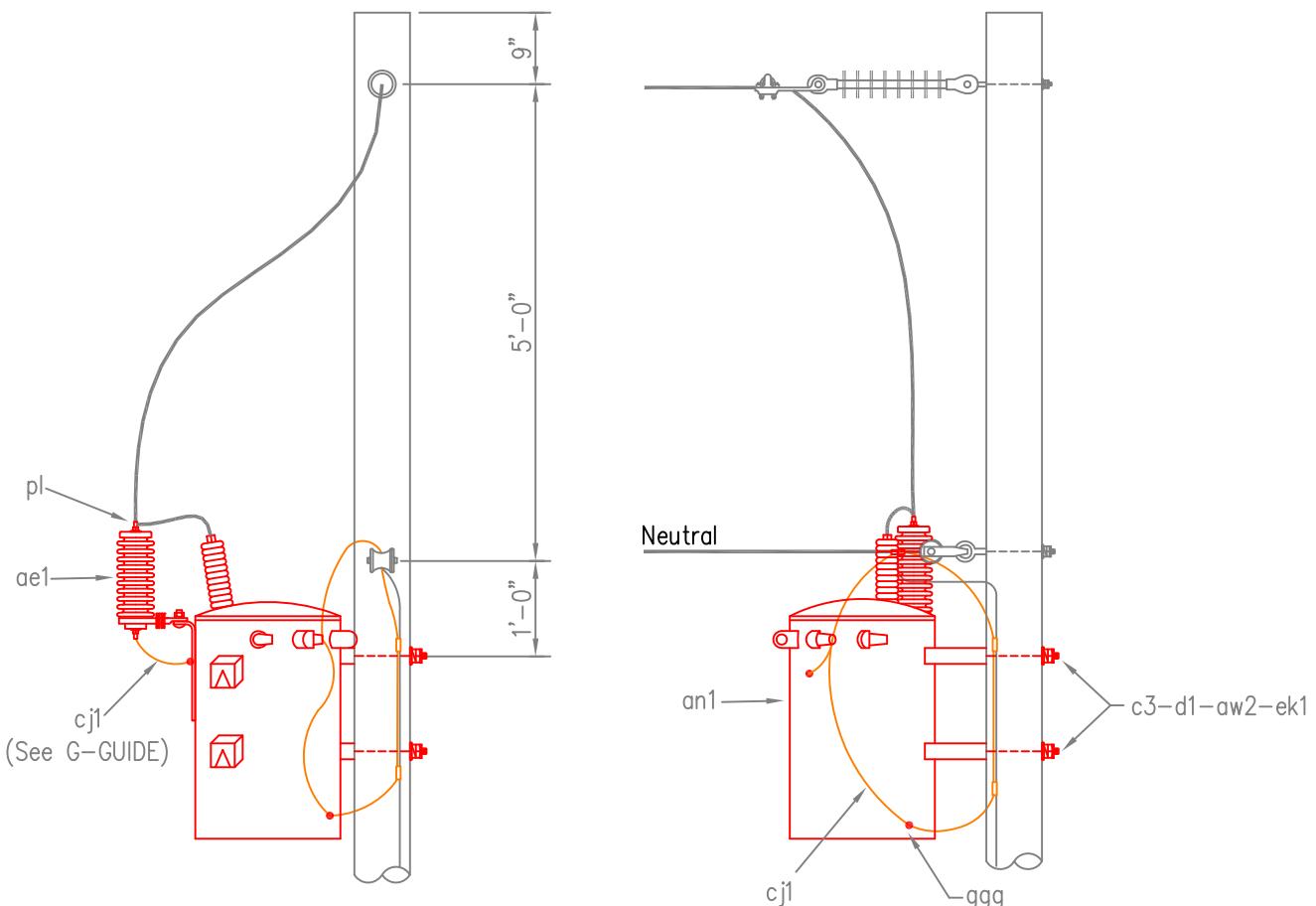
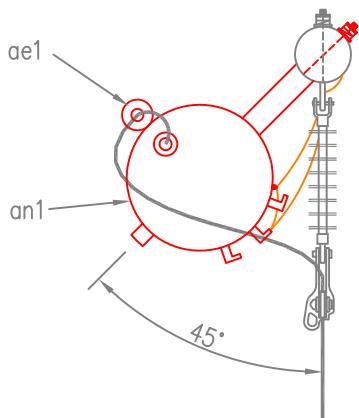
VM5-9B CUTOUT  
VM5-25 STANDOFF BRACKET

#### NOTES:

- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

FOR RETIREMENT OR TRANSFER ONLY

CoServ Electric	DATE	REVISION	7.2/14.4 kV, SINGLE PHASE TRANSFORMER AT DEADEND	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					DVG106



**FOR RETIREMENT OR TRANSFER ONLY**



DATE	REVISION

7.2/14.4 kV,  
SINGLE PHASE TRANSFORMER  
AT DEADEND

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	DVG106

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	1	0152-19-32	Arrester, 14.4 lightning, 18kV
af1	1	1831-12-12	Cutout 14.4, fuse (w/Bracket)
an1	1	693X-XX-XX	Transformer, conventional (Primary & Secondary voltage needed) (SEE TABLES BELOW)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	2	7102-04-91	Washers, square, 5/8"
ek1	2	4290-70-63	Locknuts 5/8"
999	1	1721-20-00	Connectors, Transformer case ground
pl	1	1781-17-80	Connectors, Lightning arrester

### 120/240V

<b>VG136-1.5 (120/240V)</b>	6933-11-02	TRAN 1.5kVA 14.4/24.9GY 120/240V PT 1B
<b>VG136-3 (120/240V)</b>	6933-11-04	TRAN 3kVA 14.4/24.9GY 120/240V PT 1B
<b>VG136-10 (120/240V)</b>	6933-11-11	TRAN 10kVA 14.4/24.9GY 120/240V PT 1B
<b>VG136-15 (120/240V)</b>	6933-11-13	TRAN 15kVA 14.4/24.9GY 120/240V PT 1B
<b>VG136-25 (120/240V)</b>	6933-11-15	TRAN 25kVA 14.4/24.9GY 120/240V PT 1B
<b>VG136-37.5 (120/240V)</b>	6933-11-17	TRAN 37.5kVA 14.4/24.9GY 120/240V PT 1B
<b>VG136-50 (120/240V)</b>	6933-11-19	TRAN 50kVA 14.4/24.9GY 120/240V PT 1B
<b>VG136-75 (120/240V)</b>	6933-11-21	TRAN 75kVA 14.4/24.9GY 120/240V PT 1B

### 240/480V

<b>VG136-10 (240/480V)</b>	6937-21-11	TRAN 10kVA 14.4/24.9GY 240/480V PT 2B
<b>VG136-15 (240/480V)</b>	6937-21-13	TRAN 15kVA 14.4/24.9GY 240/480V PT 2B
<b>VG136-25 (240/480V)</b>	6937-21-15	TRAN 25kVA 14.4/24.9GY 240/480V PT 2B
<b>VG136-37.5 (240/480V)</b>	6937-21-17	TRAN 37.5kVA 14.4/24.9GY 240/480V PT 2B
<b>VG136-50 (240/480V)</b>	6937-21-19	TRAN 50kVA 14.4/24.9GY 240/480V PT 2B
<b>VG136-75 (240/480V)</b>	6937-21-21	TRAN 75kVA 14.4/24.9GY 240/480V PT 2B

### ADDITIONAL UNITS REQUIRED

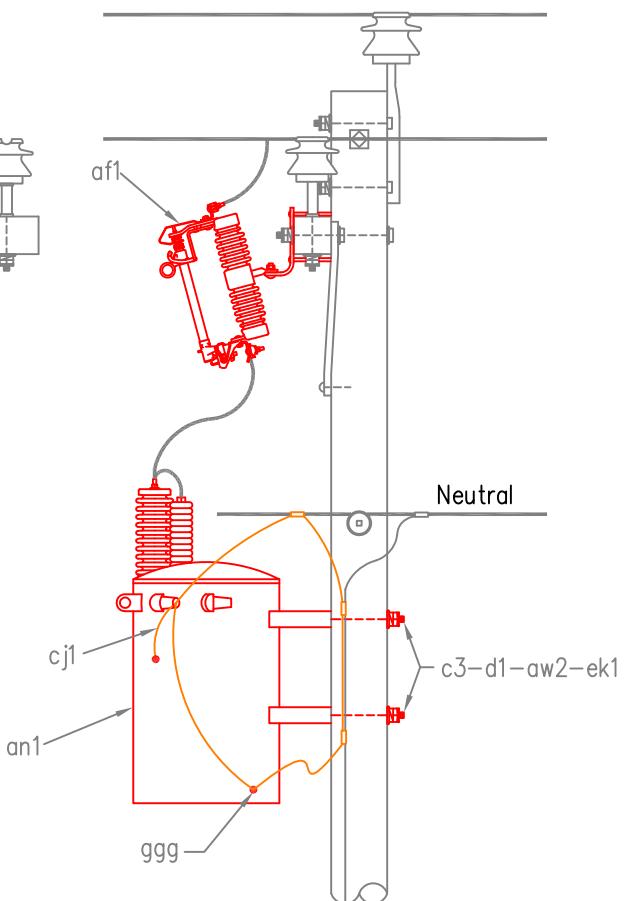
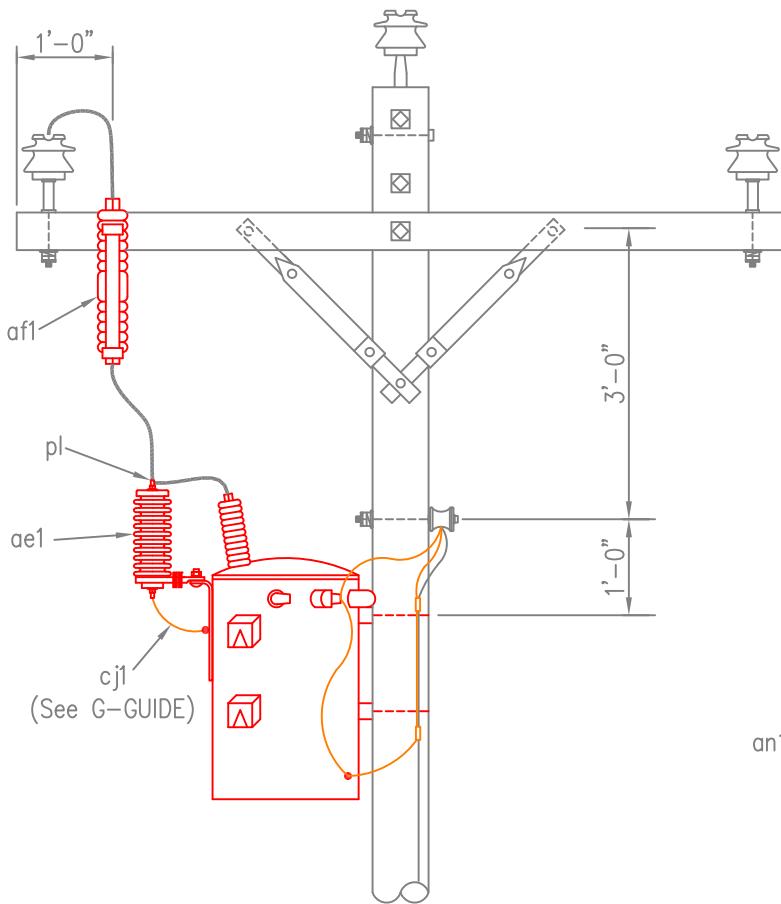
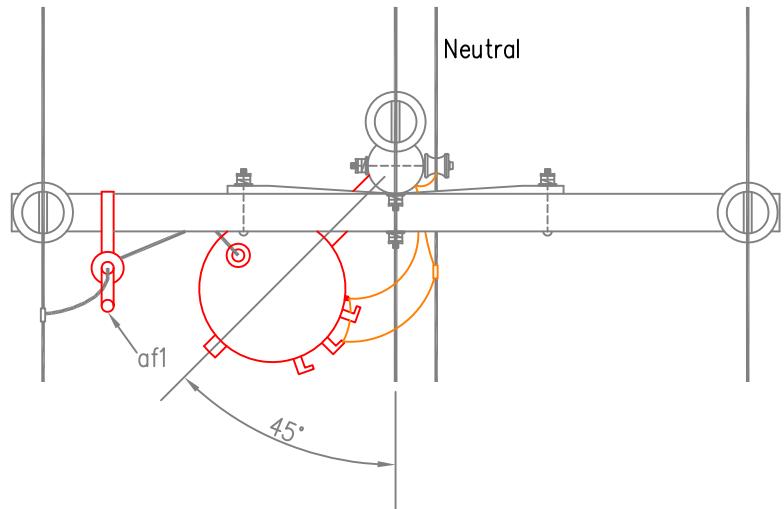
VM2-11 or VUM6-6-6

GROUNDING ASSEMBLY

NOTES:

1. For attachment to center phase, cutout should be mounted within 2" of brace bolt.
2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

CoServ Electric	DATE	REVISION	14.4/24.9 kV, SINGLE PHASE TRANSFORMER ON THREE PHASE CIRCUIT	ISSUED	2/04/2008
				REVISED	5/11/2011
				STANDARD NUMBER	VG136



DATE	REVISION

14.4/24.9 kV,  
SINGLE PHASE TRANSFORMER  
ON THREE PHASE CIRCUIT

ISSUED	2/04/2008
REVISED	5/11/2011
STANDARD NUMBER	VG136

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	1	0152-19-32	Arrester, 14.4 lightning, 18kV
af1	1	1831-12-12	Cutout 14.4, fuse (w/Bracket)
an1	1	693X-XX-XX	Transformer, conventional (Primary & Secondary voltage needed) (SEE TABLES BELOW)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	2	7102-04-91	Washers, square, 5/8"
ek1	2	4290-70-63	Locknuts 5/8"
999	1	1721-20-00	Connectors, Transformer case ground
pl	1	1781-17-80	Connectors, Lightning arrester

### 120/240V

DVG136-1.5 (120/240V)	6934-11-02	TRAN 1.5kVA 7200X14400 120/240V PT 1B
DVG136-3 (120/240V)	6934-11-04	TRAN 3kVA 7200X14400 120/240V PT 1B
DVG136-10 (120/240V)	6934-11-11	TRAN 10kVA 7200X14400 120/240V PT 1B
DVG136-15 (120/240V)	6934-11-13	TRAN 15kVA 7200X14400 120/240V PT 1B
DVG136-25 (120/240V)	6934-11-15	TRAN 25kVA 7200X14400 120/240V PT 1B
DVG136-37.5 (120/240V)	6934-11-17	TRAN 37.5kVA 7200X14400 120/240V PT 1B
DVG136-50 (120/240V)	6934-11-19	TRAN 50kVA 7200X14400 120/240V PT 1B
DVG136-75 (120/240V)	6934-11-19	TRAN 50kVA 7200X14400 120/240V PT 1B

### 240/480V

DVG136-10 (240/480V)	6938-21-11	TRAN 10kVA 7200X14400 240/480V PT 2B
DVG136-15 (240/480V)	6938-21-13	TRAN 15kVA 7200X14400 240/480V PT 2B
DVG136-25 (240/480V)	6938-21-15	TRAN 25kVA 7200X14400 240/480V PT 2B
DVG136-37.5 (240/480V)	6938-21-17	TRAN 37.5kVA 7200X14400 240/480V PT 2B
DVG136-50 (240/480V)	6938-21-19	TRAN 50kVA 7200X14400 240/480V PT 2B
DVG136-75 (240/480V)	6938-21-21	TRAN 75kVA 7200X14400 240/480V PT 2B

### ADDITIONAL UNITS REQUIRED

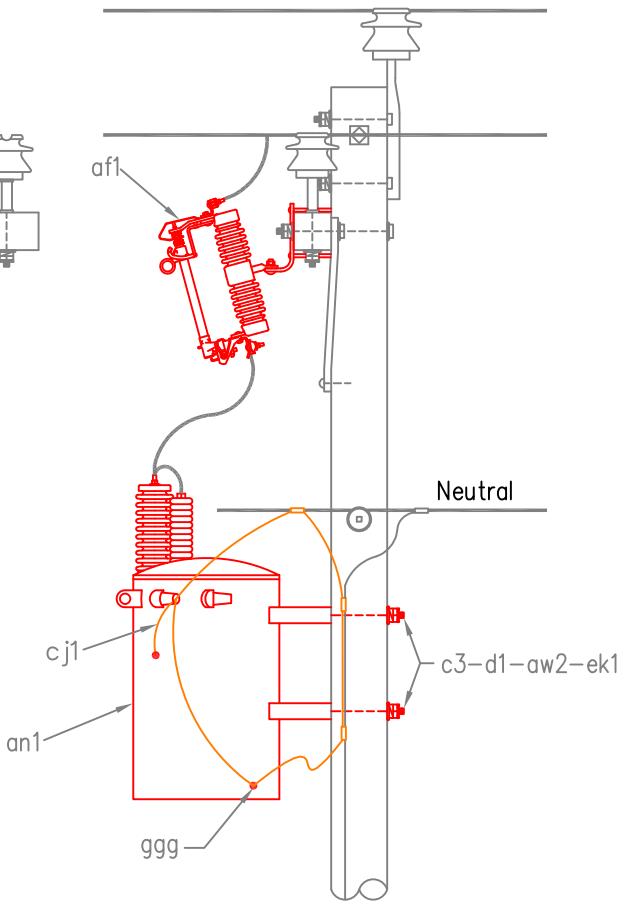
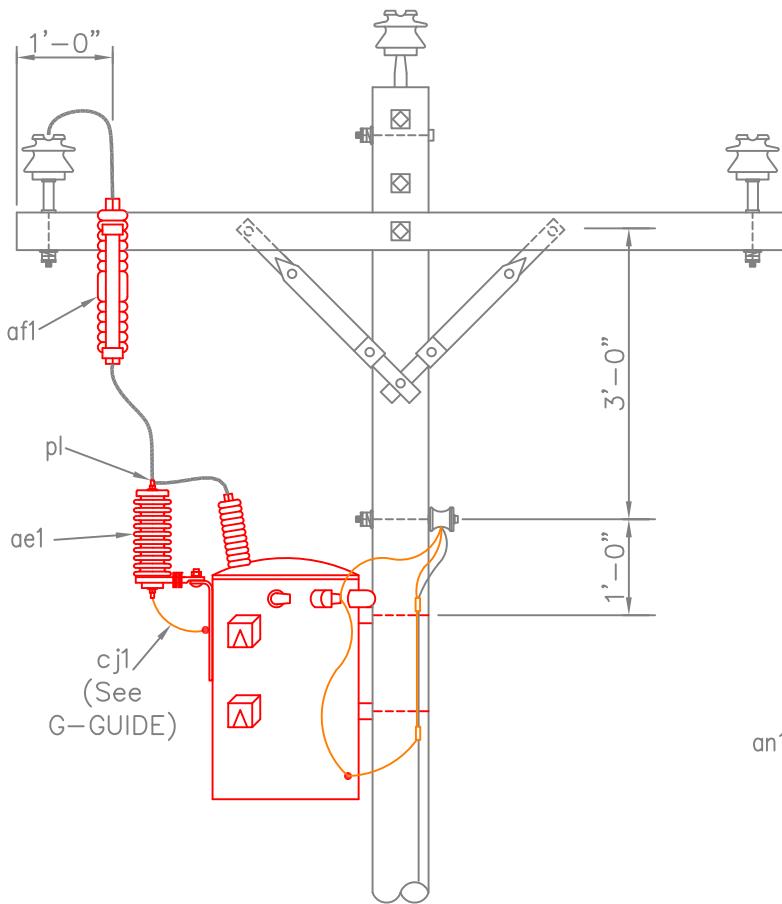
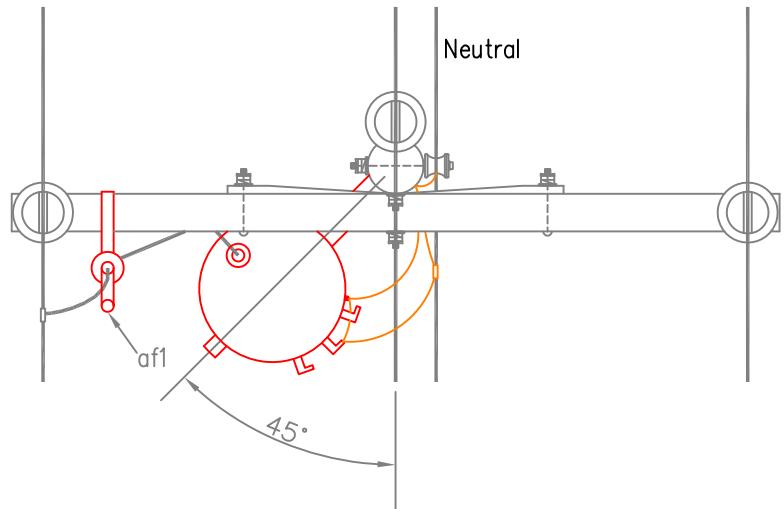
VM2-11 or VUM6-6-6

GROUNDING ASSEMBLY

#### NOTES:

- For attachment to center phase, cutout should be mounted within 2" of brace bolt.
- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	7.2/14.4 kV, SINGLE PHASE TRANSFORMER ON THREE PHASE CIRCUIT	ISSUED	2/04/2008
				REVISED	5/11/2011
				STANDARD NUMBER	DVG136



DATE	REVISION

7.2/14.4 kV,  
SINGLE PHASE TRANSFORMER  
ON THREE PHASE CIRCUIT

ISSUED	2/04/2008
REVISED	5/11/2011
STANDARD NUMBER	DVG136

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	1	0152-19-32	Arrester, 14.4 lightning, 18kV
an1	1	693X-XX-XX	Transformer, conventional (Primary & Secondary voltage needed) (SEE TABLES BELOW)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	2	7102-04-91	Washers, square, 5/8"
ek1	2	4290-70-63	Locknuts 5/8"
ggg	1	1721-20-00	Connectors, Transformer case ground
pl	1	1781-17-80	Connectors, Lightning arrester

### 120/240V

<b>VG136-LC-1.5 (120/240V)</b>	6933-11-02	TRAN 1.5kVA 14.4/24.9GY 120/240V PT 1B
<b>VG136-LC-3 (120/240V)</b>	6933-11-04	TRAN 3kVA 14.4/24.9GY 120/240V PT 1B
<b>VG136-LC-10 (120/240V)</b>	6933-11-11	TRAN 10kVA 14.4/24.9GY 120/240V PT 1B
<b>VG136-LC-15 (120/240V)</b>	6933-11-13	TRAN 15kVA 14.4/24.9GY 120/240V PT 1B
<b>VG136-LC-25 (120/240V)</b>	6933-11-15	TRAN 25kVA 14.4/24.9GY 120/240V PT 1B
<b>VG136-LC-37.5 (120/240V)</b>	6933-11-17	TRAN 37.5kVA 14.4/24.9GY 120/240V PT 1B
<b>VG136-LC-50 (120/240V)</b>	6933-11-19	TRAN 50kVA 14.4/24.9GY 120/240V PT 1B
<b>VG136-LC-75 (120/240V)</b>	6933-11-21	TRAN 75kVA 14.4/24.9GY 120/240V PT 1B

### 240/480V

<b>VG136-LC-10 (240/480V)</b>	6937-21-11	TRAN 10kVA 14.4/24.9GY 240/480V PT 2B
<b>VG136-LC-15 (240/480V)</b>	6937-21-13	TRAN 15kVA 14.4/24.9GY 240/480V PT 2B
<b>VG136-LC-25 (240/480V)</b>	6937-21-15	TRAN 25kVA 14.4/24.9GY 240/480V PT 2B
<b>VG136-LC-37.5 (240/480V)</b>	6937-21-17	TRAN 37.5kVA 14.4/24.9GY 240/480V PT 2B
<b>VG136-LC-50 (240/480V)</b>	6937-21-19	TRAN 50kVA 14.4/24.9GY 240/480V PT 2B
<b>VG136-LC-75 (240/480V)</b>	6937-21-21	TRAN 75kVA 14.4/24.9GY 240/480V PT 2B

### ADDITIONAL UNITS REQUIRED

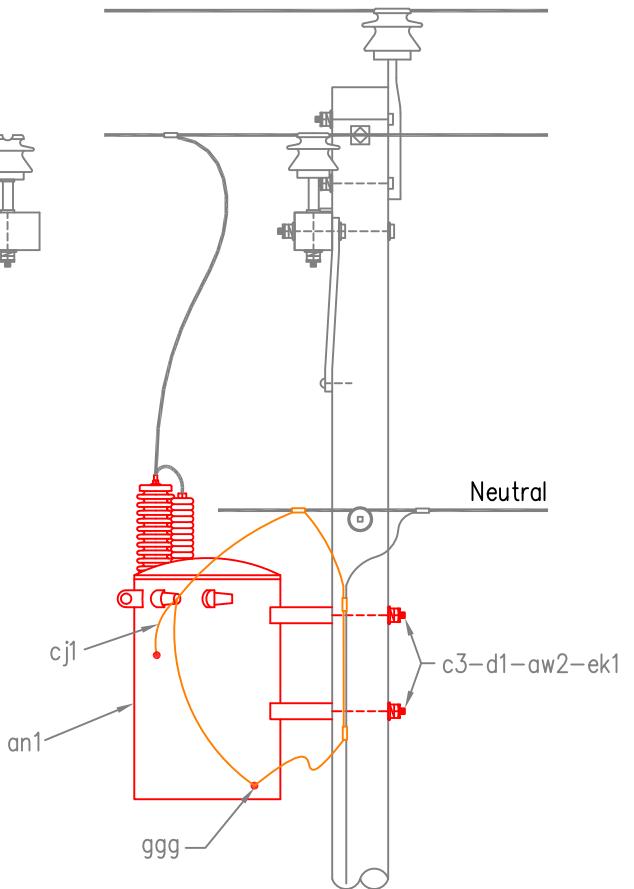
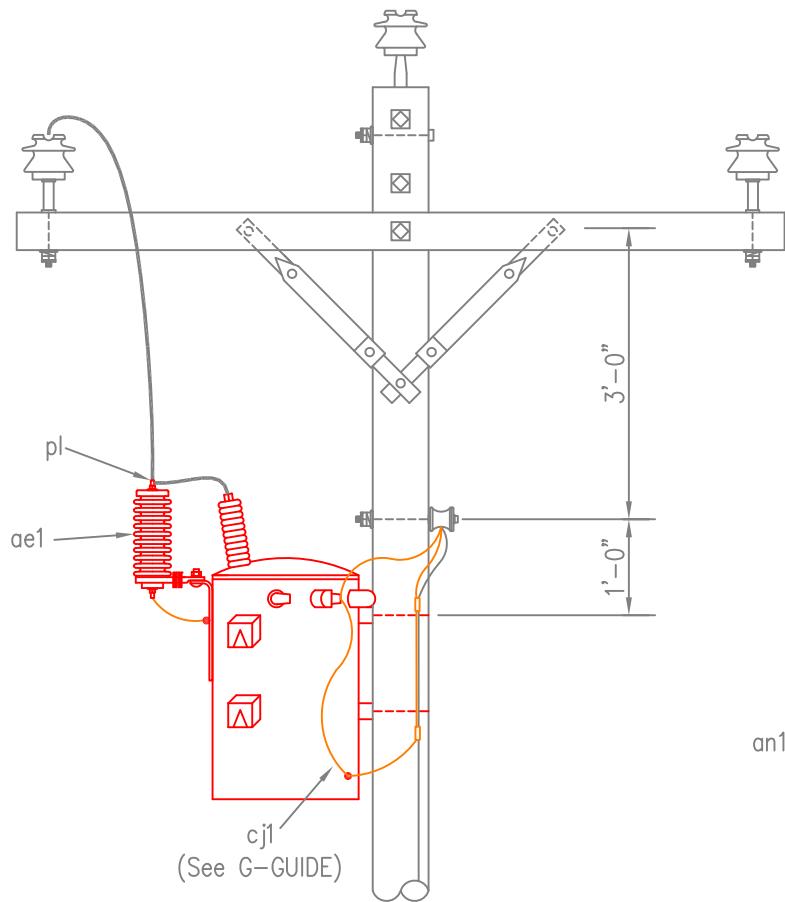
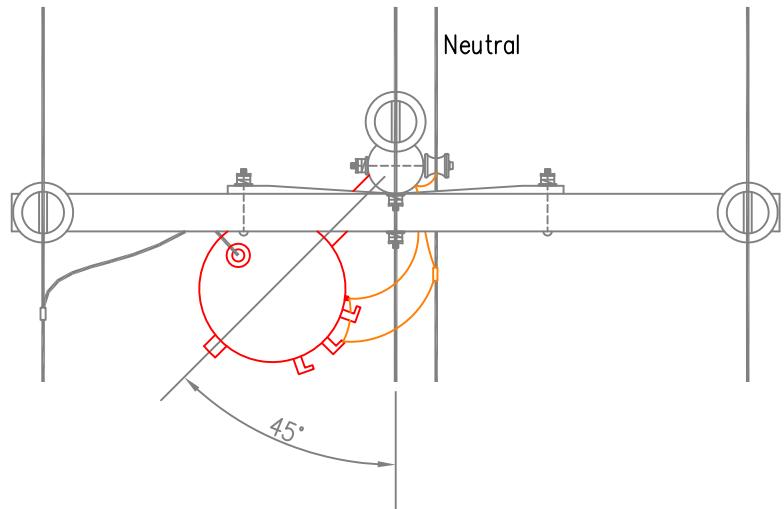
VM2-11 or VUM6-6-6

GROUNDING ASSEMBLY

#### NOTES:

- For attachment to center phase, cutout should be mounted within 2" of brace bolt.
- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, SINGLE PHASE TRANSFORMER ON THREE PHASE CIRCUIT LESS THE CUTOUT	ISSUED	2/04/2008
				REVISED	5/11/2011
				STANDARD NUMBER	VG136-LC



DATE	REVISION

14.4/24.9 kV,  
SINGLE PHASE TRANSFORMER  
ON THREE PHASE CIRCUIT  
LESS THE CUTOUT

ISSUED	2/04/2008
REVISED	5/11/2011
STANDARD NUMBER	VG136-LC

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	1	0152-19-32	Arrester, 14.4 lightning, 18kV
an1	1	693X-XX-XX	Transformer, conventional (Primary & Secondary voltage needed) (SEE TABLES BELOW)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	2	7102-04-91	Washers, square, 5/8"
ek1	2	4290-70-63	Locknuts 5/8"
ggg	1	1721-20-00	Connectors, Transformer case ground
pl	1	1781-17-80	Connectors, Lightning arrester

### 120/240V

DVG136-LC-1.5 (120/240V)	6933-11-02	TRAN 1.5kVA 7200X14400 120/240V PT 1B
DVG136-LC-3 (120/240V)	6933-11-04	TRAN 3kVA 7200X14400 120/240V PT 1B
DVG136-LC-10 (120/240V)	6933-11-11	TRAN 10kVA 7200X14400 120/240V PT 1B
DVG136-LC-15 (120/240V)	6933-11-13	TRAN 15kVA 7200X14400 120/240V PT 1B
DVG136-LC-25 (120/240V)	6933-11-15	TRAN 25kVA 7200X14400 120/240V PT 1B
DVG136-LC-37.5 (120/240V)	6933-11-17	TRAN 37.5kVA 7200X14400 120/240V PT 1B
DVG136-LC-50 (120/240V)	6933-11-19	TRAN 50kVA 7200X14400 120/240V PT 1B
DVG136-LC-75 (120/240V)	6933-11-21	TRAN 75kVA 7200X14400 120/240V PT 1B

### 240/480V

DVG136-LC-10 (240/480V)	6937-21-11	TRAN 10kVA 7200X14400 240/480V PT 2B
DVG136-LC-15 (240/480V)	6937-21-13	TRAN 15kVA 7200X14400 240/480V PT 2B
DVG136-LC-25 (240/480V)	6937-21-15	TRAN 25kVA 7200X14400 240/480V PT 2B
DVG136-LC-37.5 (240/480V)	6937-21-17	TRAN 37.5kVA 7200X14400 240/480V PT 2B
DVG136-LC-50 (240/480V)	6937-21-19	TRAN 50kVA 7200X14400 240/480V PT 2B
DVG136-LC-75 (240/480V)	6937-21-21	TRAN 75kVA 7200X14400 240/480V PT 2B

### ADDITIONAL UNITS REQUIRED

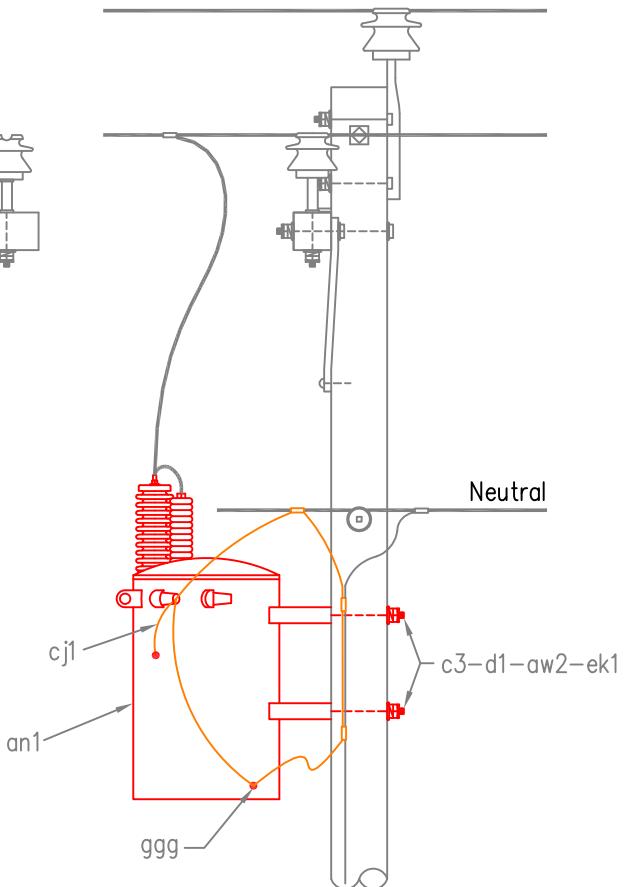
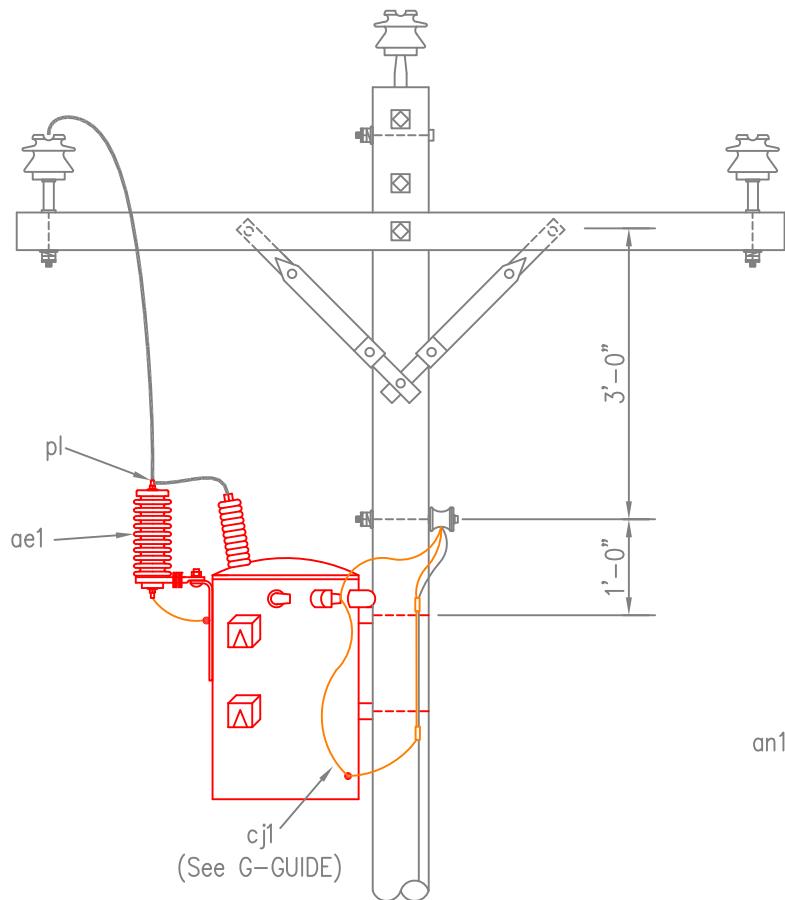
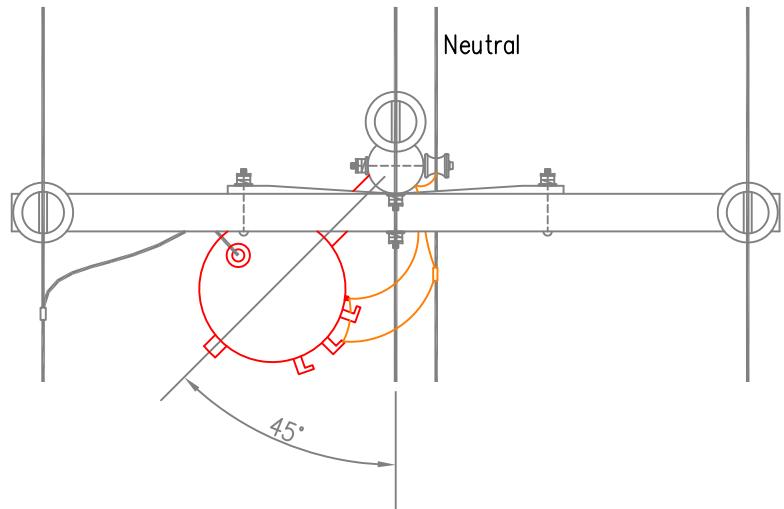
VM2-11 or VUM6-6-6

GROUNDING ASSEMBLY

NOTES:

- For attachment to center phase, cutout should be mounted within 2" of brace bolt.
- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	7.2/14.4 kV, SINGLE PHASE TRANSFORMER ON THREE PHASE CIRCUIT LESS THE CUTOUT	ISSUED	2/04/2008
				REVISED	5/11/2011
				STANDARD NUMBER	
				DVG136-LC	



DATE	REVISION

7.2/14.4 kV,  
SINGLE PHASE TRANSFORMER  
ON THREE PHASE CIRCUIT  
LESS THE CUTOUT

ISSUED	2/04/2008
REVISED	5/11/2011
STANDARD NUMBER	DVG136-LC

ITEM.	QTY.	MAT.CODE No	MATERIAL
ae1	2	0152-19-32	Arrester, 14.4 lightning, 18kV
af1	2	1831-12-12	Cutout 14.4, fuse (w/Bracket)
an1	2	693X-XX-XX	Transformer, conventional (Primary & Secondary voltage needed) (SEE TABLES BELOW)
aw2	6	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cj1	15'	7250-06-01	Wire, #6 SD Cu
cj3	15'	1522-02-19	Cable, #2 Cu THHN 600V Str
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	10	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
dn	1	3100-24-92	Cluster bracket, large, transformer
ek1	10	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
ek4	2	4290-70-75	Locknuts 3/4"
g	2	1809-01-01	Crossarm, Wood 8'
ggg	4	1721-20-00	Connectors, Transformer case ground
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"
pl	2	1781-17-80	Connectors, Lightning arrester
-	1	0630-06-08	A Bolt Pack

### 120/240V

<b>VG210-10 (120/240V)</b>	6937-11-11	TRAN 10kVA 14.4/24.9GY 120/240V PT 2B
<b>VG210-15 (120/240V)</b>	6937-11-13	TRAN 15kVA 14.4/24.9GY 120/240V PT 2B
<b>VG210-25 (120/240V)</b>	6937-11-15	TRAN 25kVA 14.4/24.9GY 120/240V PT 2B
<b>VG210-37.5 (120/240V)</b>	6937-11-17	TRAN 37.5kVA 14.4/24.9GY 120/240V PT 2B
<b>VG210-50 (120/240V)</b>	6937-11-19	TRAN 50kVA 14.4/24.9GY 120/240V PT 2B

### 240/480V

<b>VG210-10 (240/480V)</b>	6937-21-11	TRAN 10kVA 14.4/24.9GY 240/480V PT 2B
<b>VG210-15 (240/480V)</b>	6937-21-13	TRAN 15kVA 14.4/24.9GY 240/480V PT 2B
<b>VG210-25 (240/480V)</b>	6937-21-15	TRAN 25kVA 14.4/24.9GY 240/480V PT 2B
<b>VG210-37.5 (240/480V)</b>	6937-21-17	TRAN 37.5kVA 14.4/24.9GY 240/480V PT 2B
<b>VG210-50 (240/480V)</b>	6937-21-19	TRAN 50kVA 14.4/24.9GY 240/480V PT 2B

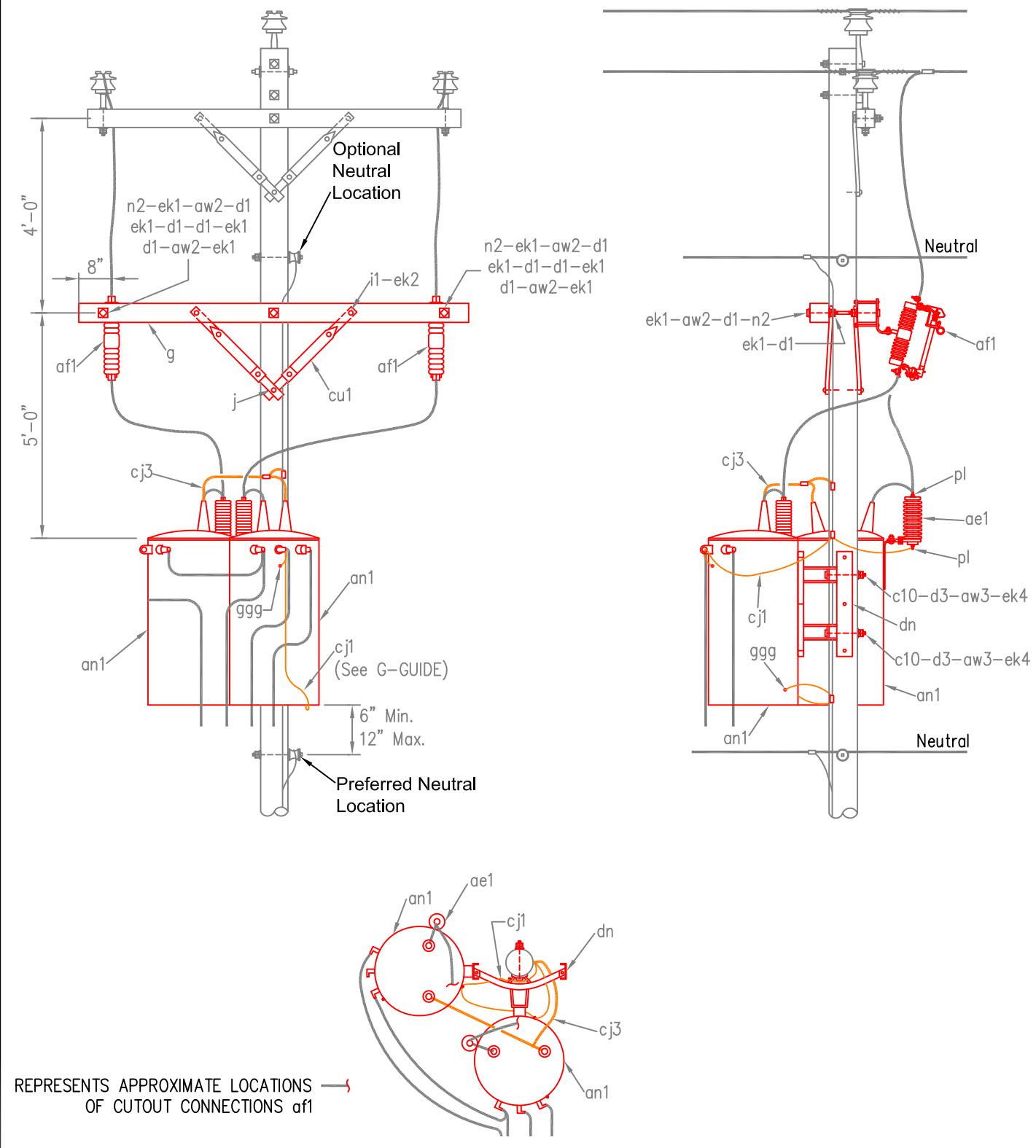
### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

#### NOTES:

1. Phase jumpers to H1, ground to H2
2. All tanks to be grounded to pole ground.
3. Secondary neutrals of all transformers except one shall be disconnected from tanks and not grounded.
4. When used for combined single phase and three phase load the transformer for the single phase load shall not be larger than twice the capacity of one of the others.
5. fo, use secondary transformer bracket (0780-97-00) to reduce strain on the secondary bushings if required (special order).
6. Secondary buss work to be a minimum of 4/0 copper.
7. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, TWO TRANSFORMERS CLUSTER MOUNTED OPEN WYE-OPEN DELTA SINGLE AND THREE PHASE POWER LOAD	ISSUED	2/04/2008
				REVISED	5/11/2011
				STANDARD NUMBER	VG210



DATE	REVISION

14.4/24.9 kV,  
TWO TRANSFORMERS CLUSTER  
MOUNTED OPEN WYE-OPEN DELTA  
SINGLE AND THREE PHASE POWER LOAD

ISSUED	2/04/2008
REVISED	5/11/2011
STANDARD NUMBER	VG210

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	2	0152-19-32	Arrester, 14.4 lightning, 18kV
af1	2	1831-12-12	Cutout 14.4, fuse (w/Bracket)
an1	2	693X-XX-XX	Transformer, conventional (Primary & Secondary voltage needed) (SEE TABLES BELOW)
aw2	6	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cj1	15'	7250-06-01	Wire, #6 SD Cu
cj3	15'	1522-02-19	Cable, #2 Cu THHN 600V Str
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	10	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
dn	1	3100-24-92	Cluster bracket, large, transformer
ek1	10	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
ek4	2	4290-70-75	Locknuts 3/4"
g	2	1809-01-01	Crossarm, Wood 8'
ggg	4	1721-20-00	Connectors, Transformer case ground
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"
pl	2	1781-17-80	Connectors, Lightning arrester
-	1	0630-06-08	A Bolt Pack

### 120/240V

DVG210-10 (120/240V)	6938-11-11	TRAN 10kVA 7200X14400 120/240V PT 2B
DVG210-15 (120/240V)	6938-11-13	TRAN 15kVA 7200X14400 120/240V PT 2B
DVG210-25 (120/240V)	6938-11-15	TRAN 25kVA 7200X14400 120/240V PT 2B
DVG210-37.5 (120/240V)	6938-11-17	TRAN 37.5kVA 7200X14400 120/240V PT 2B
DVG210-50 (120/240V)	6938-11-19	TRAN 50kVA 7200X14400 120/240V PT 2B

### 240/480V

DVG210-10 (240/480V)	6938-21-11	TRAN 10kVA 7200X14400 240/480V PT 2B
DVG210-15 (240/480V)	6938-21-13	TRAN 15kVA 7200X14400 240/480V PT 2B
DVG210-25 (240/480V)	6938-21-15	TRAN 25kVA 7200X14400 240/480V PT 2B
DVG210-37.5 (240/480V)	6938-21-17	TRAN 37.5kVA 7200X14400 240/480V PT 2B
DVG210-50 (240/480V)	6938-21-19	TRAN 50kVA 7200X14400 240/480V PT 2B

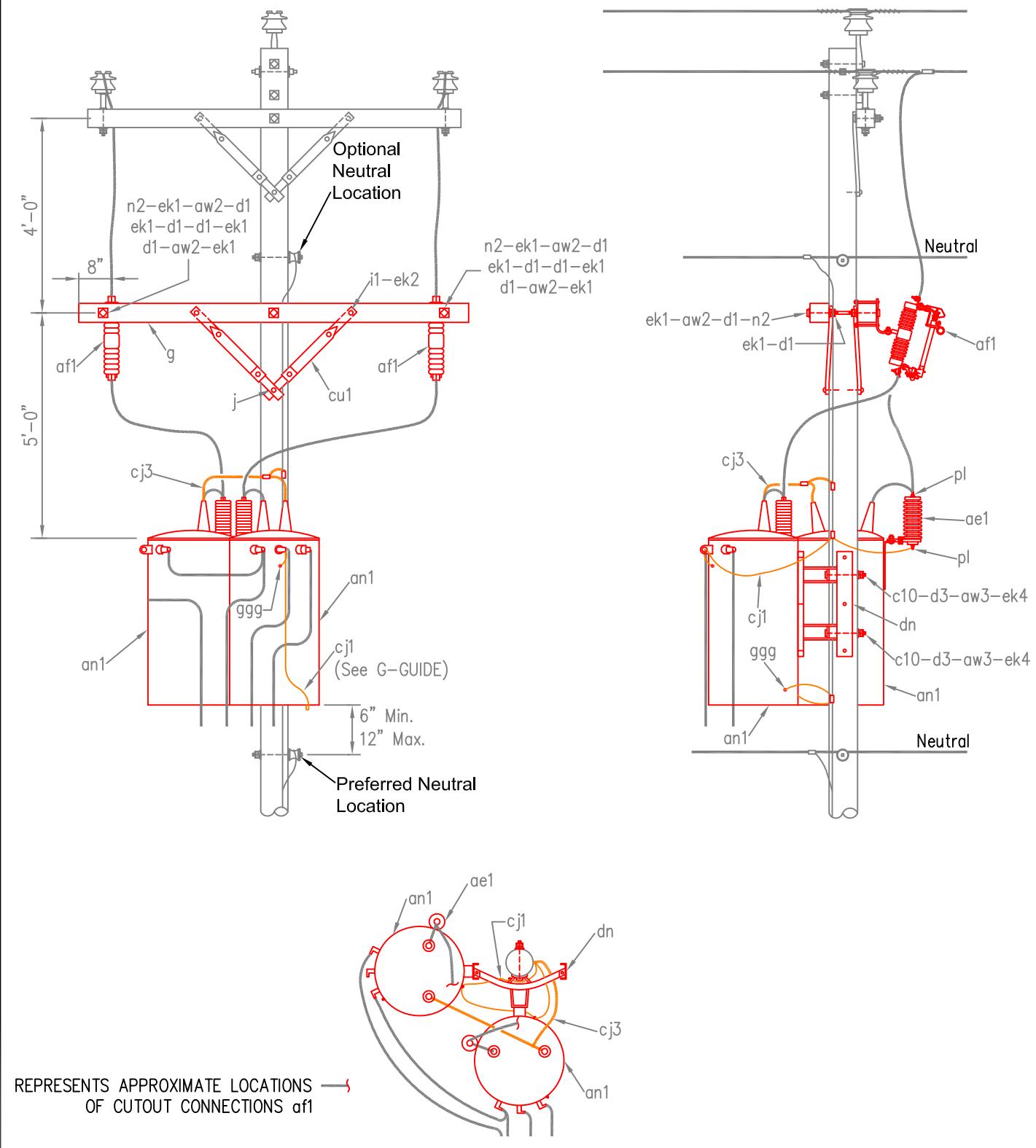
### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

#### NOTES:

- Phase jumpers to H1, ground to H2
- All tanks to be grounded to pole ground.
- Secondary neutrals of all transformers except one shall be disconnected from tanks and not grounded.
- When used for combined single phase and three phase load the transformer for the single phase load shall not be larger than twice the capacity of one of the others.
- fo, use secondary transformer bracket (0780-97-00) to reduce strain on the secondary bushings if required (special order).
- Secondary buss work to be a minimum of 4/0 copper.
- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	7.2/14.4 kV, TWO TRANSFORMERS CLUSTER MOUNTED OPEN WYE-OPEN DELTA SINGLE AND THREE PHASE POWER LOAD	ISSUED	2/04/2008
				REVISED	5/11/2011
				STANDARD NUMBER	DVG210



DATE	REVISION

7.2/14.4 kV,  
TWO TRANSFORMERS CLUSTER  
MOUNTED OPEN WYE-OPEN DELTA  
SINGLE AND THREE PHASE POWER LOAD

ISSUED	2/04/2008
REVISED	5/11/2011
STANDARD NUMBER	DVG210

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	3	0152-19-32	Arrester, 14.4 lightning, 18kV
af1	4	1831-12-12	Cutout 14.4, fuse (w/Bracket)
af2	1	1831-25-92	Solid Blade Only
an1	3	693X-XX-XX	Transformer, conventional (Primary & Secondary voltage needed) (SEE TABLES BELOW)
aw2	6	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cj1	15'	7250-06-01	Wire, #6 SD Cu
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	10	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
dn	1	3100-24-92	Cluster bracket, large, transformer
ek1	10	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
ek4	2	4290-70-75	Locknuts 3/4"
g	2	1809-01-01	Crossarm, Wood 8'
ggg	6	1721-20-00	Connectors, Transformer case ground
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"
pl	3	1781-17-80	Connectors, Lightning arrester
-	1	0630-06-05	A Bolt Pack

### 120/240V

<b>VG310-10 (120/240V)</b>	6937-11-11	TRAN 10kVA 14.4/24.9GY 120/240V PT 2B
<b>VG310-15 (120/240V)</b>	6937-11-13	TRAN 15kVA 14.4/24.9GY 120/240V PT 2B
<b>VG310-25 (120/240V)</b>	6937-11-15	TRAN 25kVA 14.4/24.9GY 120/240V PT 2B
<b>VG310-37.5 (120/240V)</b>	6937-11-17	TRAN 37.5kVA 14.4/24.9GY 120/240V PT 2B
<b>VG310-50 (120/240V)</b>	6937-11-19	TRAN 50kVA 14.4/24.9GY 120/240V PT 2B

### 240/480V

<b>VG310-10 (240/480V)</b>	6937-21-11	TRAN 10kVA 14.4/24.9GY 240/480V PT 2B
<b>VG310-15 (240/480V)</b>	6937-21-13	TRAN 15kVA 14.4/24.9GY 240/480V PT 2B
<b>VG310-25 (240/480V)</b>	6937-21-15	TRAN 25kVA 14.4/24.9GY 240/480V PT 2B
<b>VG310-37.5 (240/480V)</b>	6937-21-17	TRAN 37.5kVA 14.4/24.9GY 240/480V PT 2B
<b>VG310-50 (240/480V)</b>	6937-21-19	TRAN 50kVA 14.4/24.9GY 240/480V PT 2B

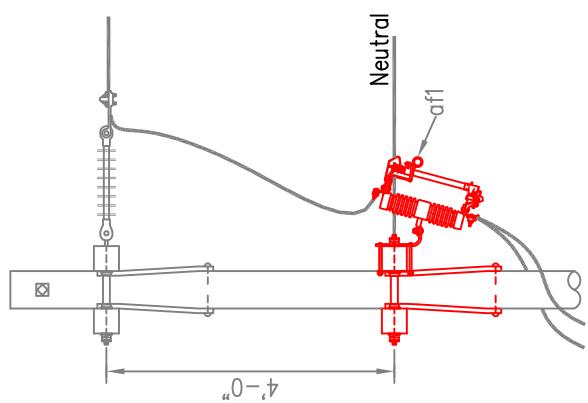
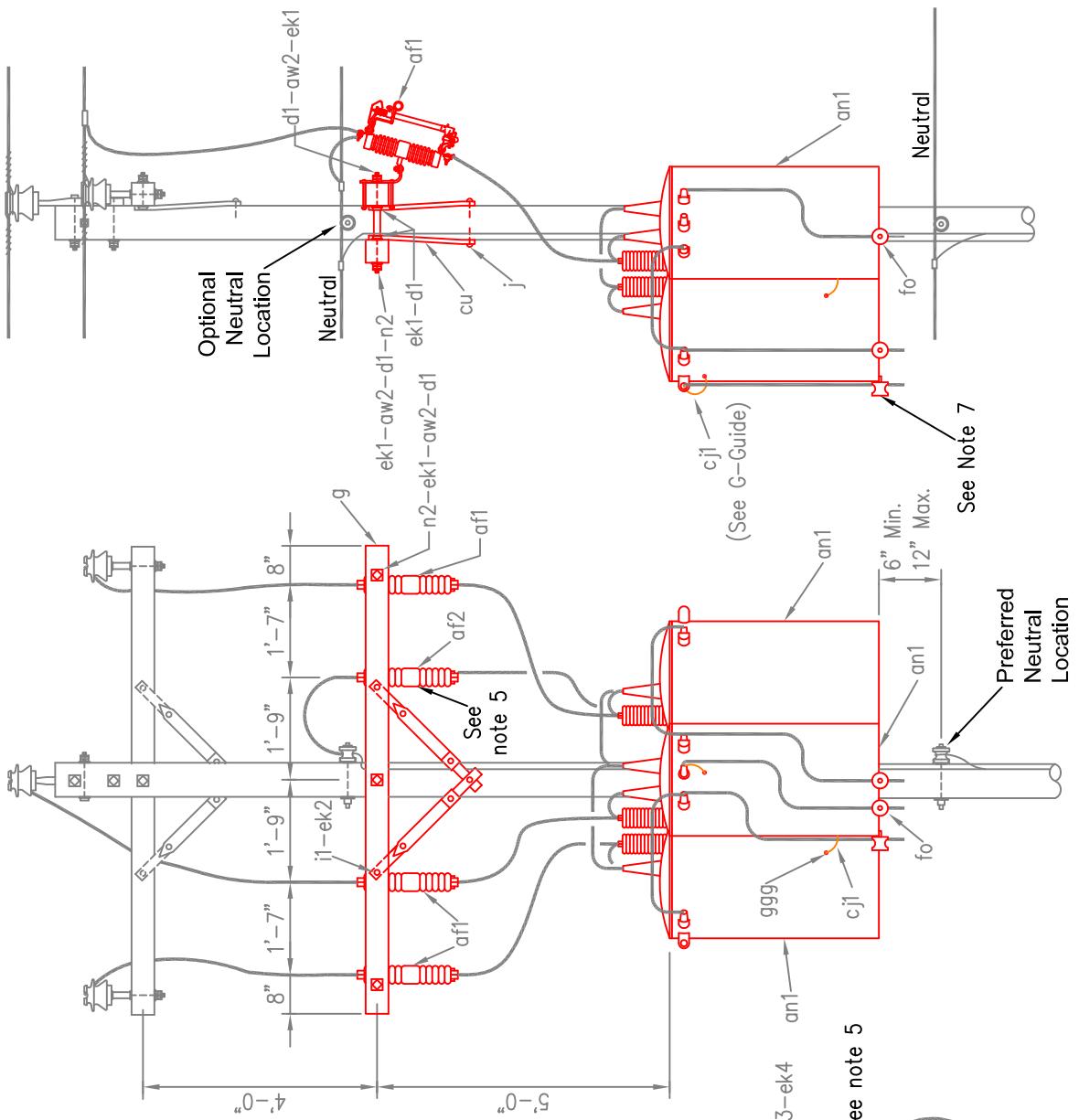
### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

#### NOTES:

- Phase jumpers to H1, ground to H2
- All tanks to be grounded.
- Secondary neutrals of all transformers except one shall be disconnected from tanks and not grounded.
- When used for combined single phase and three phase load the transformer for the single phase load shall not be larger than twice the capacity of one of the others.
- Solid blade cutout normally open.
- For grounding the bank, #4 copper is run from the X2 bushing of the center transformer to the system neutral, and is bonded to the pole ground. Case ground lug of each transformer is bonded to the pole ground.
- fo, use secondary transformer bracket (0780-97-00) to reduce strain on the secondary bushings if required (special order).
- Secondary buss work to be a minimum of 4/0 copper.
- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE TRANSFORMERS CLUSTER MOUNTED UNGROUNDED WYE-DELTA FOR 120/240 & 240/480 POWER LOADS	ISSUED	2/04/2008
				REVISED	5/11/2011
				STANDARD NUMBER	VG310

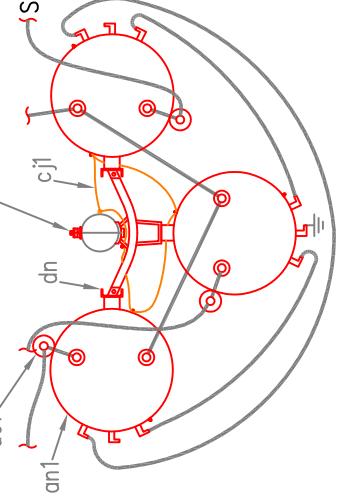


Deadend Assembly

REPRESENTS APPROXIMATE LOCATIONS —  
OF CUTOUT CONNECTIONS af1 or af2

c10-d4-d3-aw3-ek4  
(2 Locations)

See note 5



Transformer Assembly Plan View



DATE	REVISION

14.4/24.9 kV,  
THREE TRANSFORMERS CLUSTER  
MOUNTED UNGROUNDED WYE-DELTA  
FOR 120/240 & 240/480 POWER LOADS

ISSUED	2/04/2008
REVISED	5/11/2011
STANDARD NUMBER	VG310

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	3	0152-19-32	Arrester, 14.4 lightning, 18kV
af1	4	1831-12-12	Cutout 14.4, fuse (w/Bracket)
af2	1	1831-25-92	Solid Blade Only
an1	3	693X-XX-XX	Transformer, conventional (Primary & Secondary voltage needed) (SEE TABLES BELOW)
aw2	6	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cj1	20'	7250-06-01	Wire, #6 SD Cu
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	10	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
dn	1	3100-24-92	Cluster bracket, large, transformer
ek1	10	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
ek4	2	4290-70-75	Locknuts 3/4"
g	2	1809-01-01	Crossarm, Wood 8'
ggg	6	1721-20-00	Connectors, Transformer case ground
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"
pl	3	1781-17-80	Connectors, Lightning arrester
-	1	0630-06-05	A Bolt Pack

### 120/240V

DVG310-10 (120/240V)	6938-11-11	TRAN 10kVA 7200X14400 120/240V PT 2B
DVG310-15 (120/240V)	6938-11-13	TRAN 15kVA 7200X14400 120/240V PT 2B
DVG310-25 (120/240V)	6938-11-15	TRAN 25kVA 7200X14400 120/240V PT 2B
DVG310-37.5 (120/240V)	6938-11-17	TRAN 37.5kVA 7200X14400 120/240V PT 2B
DVG310-50 (120/240V)	6938-11-19	TRAN 50kVA 7200X14400 120/240V PT 2B

### 240/480V

DVG310-10 (240/480V)	6938-21-11	TRAN 10kVA 7200X14400 240/480V PT 2B
DVG310-15 (240/480V)	6938-21-13	TRAN 15kVA 7200X14400 240/480V PT 2B
DVG310-25 (240/480V)	6938-21-15	TRAN 25kVA 7200X14400 240/480V PT 2B
DVG310-37.5 (240/480V)	6938-21-17	TRAN 37.5kVA 7200X14400 240/480V PT 2B
DVG310-50 (240/480V)	6938-21-19	TRAN 50kVA 7200X14400 240/480V PT 2B

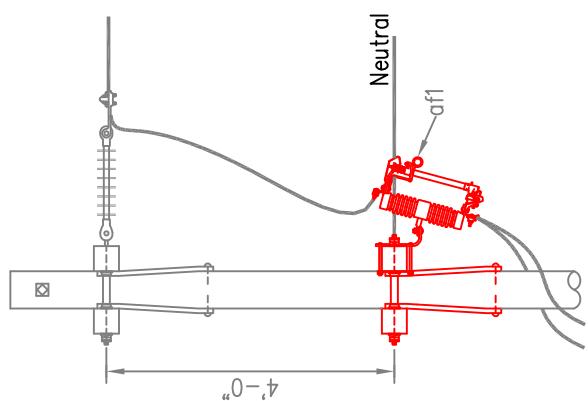
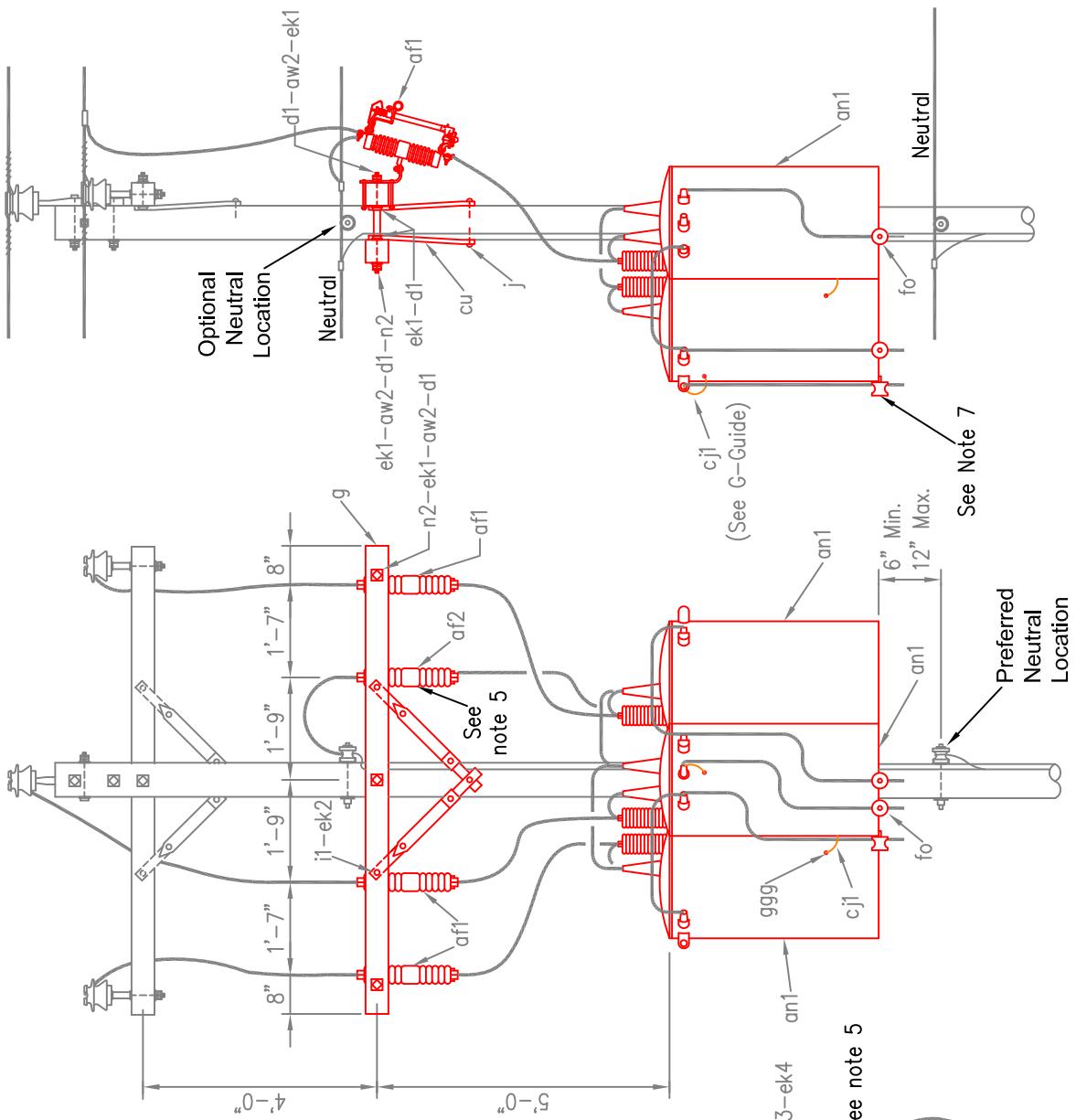
### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

#### NOTES:

- Phase jumpers to H1, ground to H2
- All tanks to be grounded.
- Secondary neutrals of all transformers except one shall be disconnected from tanks and not grounded.
- When used for combined single phase and three phase load the transformer for the single phase load shall not be larger than twice the capacity of one of the others.
- Solid blade cutout normally open.
- For grounding the bank, #4 copper is run from the X2 bushing of the center transformer to the system neutral, and is bonded to the pole ground. Case ground lug of each transformer is bonded to the pole ground.
- fo, use secondary transformer bracket (0780-97-00) to reduce strain on the secondary bushings if required (special order).
- Secondary buss work to be a minimum of 4/0 copper.
- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	7.2/14.4 kV, THREE TRANSFORMERS CLUSTER MOUNTED UNGROUNDED WYE-DELTA FOR 120/240 & 240/480 POWER LOADS	ISSUED	2/04/2008
				REVISED	5/11/2011
				STANDARD NUMBER	DVG310

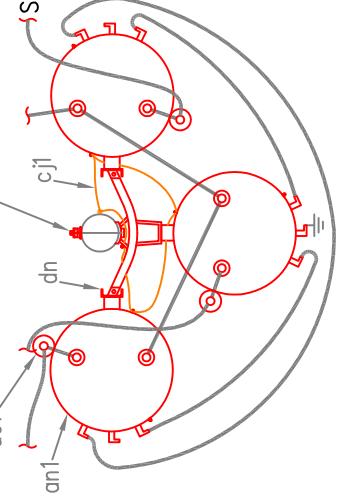


Deadend Assembly

REPRESENTS APPROXIMATE LOCATIONS —  
OF CUTOUT CONNECTIONS af1 or af2

c10-d4-d3-aw3-ek4  
(2 Locations)

See note 5



Transformer Assembly Plan View



DATE	REVISION

7.2/14.4 kV,  
THREE TRANSFORMERS CLUSTER  
MOUNTED UNGROUNDED WYE-DELTA  
FOR 120/240 & 240/480 POWER LOADS

ISSUED	2/04/2008
REVISED	5/11/2011
STANDARD NUMBER	DVG310

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	3	0152-19-32	Arrester, 14.4 lightning, 18kV
af1	4	1831-12-12	Cutout 14.4, fuse (w/Bracket)
af2	1	1831-25-92	Solid Blade Only
an1	3	693X-XX-XX	Transformer, conventional (Primary & Secondary voltage needed) (SEE TABLES BELOW)
aw2	6	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cj1	15'	7250-06-01	Wire, #6 SD Cu
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	10	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
dn	1	3100-24-92	Cluster bracket, large, transformer
ek1	10	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
ek4	2	4290-70-75	Locknuts 3/4"
g	2	1809-01-01	Crossarm, Wood 8'
ggg	6	1721-20-00	Connectors, Transformer case ground
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"
pl	3	1781-17-80	Connectors, Lightning arrester
-	1	0630-06-05	A Bolt Pack

### 120/240V

<b>VG311-10 (120/240V)</b>	6937-11-11	TRAN 10kVA 14.4/24.9GY 120/240V PT 2B
<b>VG311-15 (120/240V)</b>	6937-11-13	TRAN 15kVA 14.4/24.9GY 120/240V PT 2B
<b>VG311-25 (120/240V)</b>	6937-11-15	TRAN 25kVA 14.4/24.9GY 120/240V PT 2B
<b>VG311-37.5 (120/240V)</b>	6937-11-17	TRAN 37.5kVA 14.4/24.9GY 120/240V PT 2B
<b>VG311-50 (120/240V)</b>	6937-11-19	TRAN 50kVA 14.4/24.9GY 120/240V PT 2B

### 240/480V

<b>VG311-10 (240/480V)</b>	6937-21-11	TRAN 10kVA 14.4/24.9GY 240/480V PT 2B
<b>VG311-15 (240/480V)</b>	6937-21-13	TRAN 15kVA 14.4/24.9GY 240/480V PT 2B
<b>VG311-25 (240/480V)</b>	6937-21-15	TRAN 25kVA 14.4/24.9GY 240/480V PT 2B
<b>VG311-37.5 (240/480V)</b>	6937-21-17	TRAN 37.5kVA 14.4/24.9GY 240/480V PT 2B
<b>VG311-50 (240/480V)</b>	6937-21-19	TRAN 50kVA 14.4/24.9GY 240/480V PT 2B

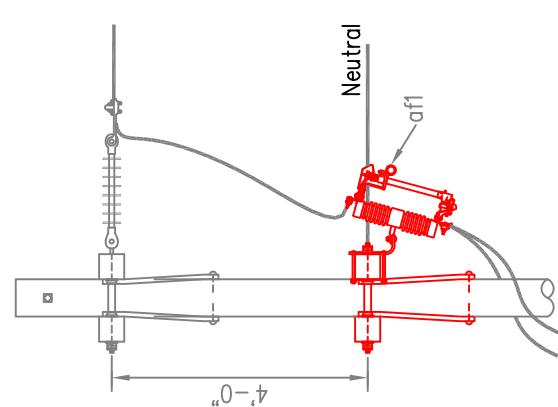
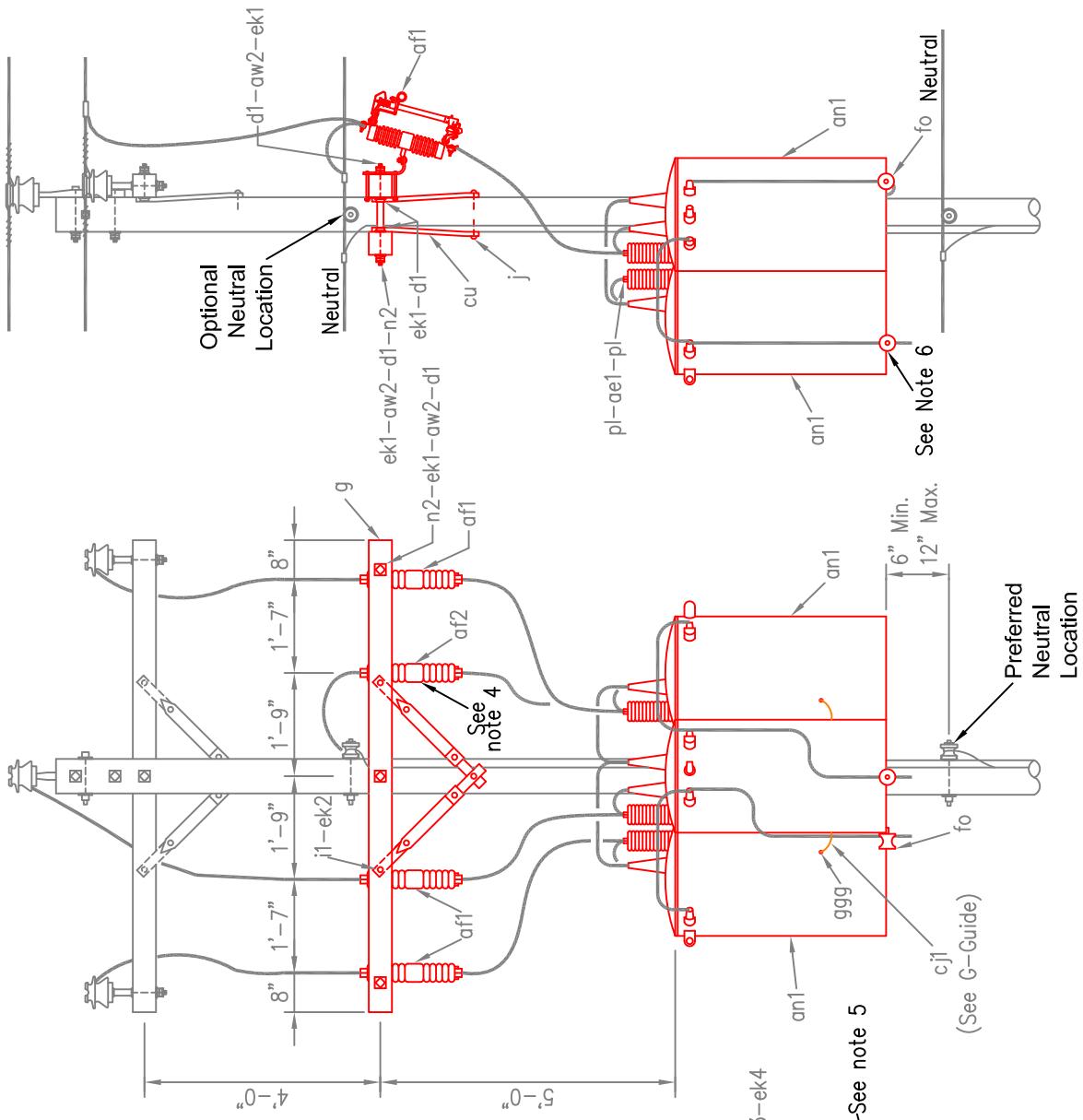
### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

#### NOTES:

1. Phase jumpers to H1, ground to H2
2. All tanks to be grounded to pole ground.
3. Secondary neutrals of all transformers shall be disconnected from tanks and not grounded.
4. Solid blade cutout normally open.
5. Bare service conductor to be connected directly to system neutral.
6. fo, use secondary transformer bracket (0780-97-00) to reduce strain on the secondary bushings if required (special order).
7. Secondary buss work to be a minimum of 4/0 copper.
8. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE TRANSFORMERS CLUSTER MOUNTED UNGROUNDED WYE-DELTA FOR 240V OR 480V POWER LOADS WITH CORNER GROUNDED	ISSUED	2/04/2008
				REVISED	5/11/2011
				STANDARD NUMBER	VG311

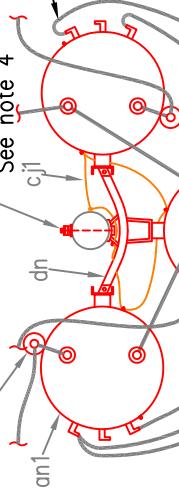


Deadend Assembly

REPRESENTS APPROXIMATE LOCATIONS  
OF CUTOUT CONNECTIONS af1

c10-d4-d3-aw3-ek4  
(2 Locations)

See note 4



af1

an1

dn

an1

an1

Transformer Assembly Plan View



DATE	REVISION

14.4/24.9 kV,  
THREE TRANSFORMERS CLUSTER  
MOUNTED UNGROUNDED WYE-DELTA  
FOR 240V OR 480V POWER LOADS  
WITH CORNER GROUNDED

ISSUED	2/04/2008
REVISED	5/11/2011
STANDARD NUMBER	VG311

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	3	0152-19-32	Arrester, 14.4 lightning, 18kV
af1	4	1831-12-12	Cutout 14.4, fuse (w/Bracket)
af2	1	1831-25-92	Solid Blade Only
an1	3	693X-XX-XX	Transformer, conventional (Primary & Secondary voltage needed) (SEE TABLES BELOW)
aw2	6	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cj1	15'	7250-06-01	Wire, #6 SD Cu
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	10	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
dn	1	3100-24-92	Cluster bracket, large, transformer
ek1	10	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
ek4	2	4290-70-75	Locknuts 3/4"
g	2	1809-01-01	Crossarm, Wood 8'
ggg	6	1721-20-00	Connectors, Transformer case ground
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"
pl	3	1781-17-80	Connectors, Lightning arrester
-	1	0630-06-05	A Bolt Pack

### 120/240V

DVG311-10 (120/240V)	6938-11-11	TRAN 10kVA 7200X14400 120/240V PT 2B
DVG311-15 (120/240V)	6938-11-13	TRAN 15kVA 7200X14400 120/240V PT 2B
DVG311-25 (120/240V)	6938-11-15	TRAN 25kVA 7200X14400 120/240V PT 2B
DVG311-37.5 (120/240V)	6938-11-17	TRAN 37.5kVA 7200X14400 120/240V PT 2B
DVG311-50 (120/240V)	6938-11-19	TRAN 50kVA 7200X14400 120/240V PT 2B

### 240/480V

DVG311-10 (240/480V)	6938-21-11	TRAN 10kVA 7200X14400 240/480V PT 2B
DVG311-15 (240/480V)	6938-21-13	TRAN 15kVA 7200X14400 240/480V PT 2B
DVG311-25 (240/480V)	6938-21-15	TRAN 25kVA 7200X14400 240/480V PT 2B
DVG311-37.5 (240/480V)	6938-21-17	TRAN 37.5kVA 7200X14400 240/480V PT 2B
DVG311-50 (240/480V)	6938-21-19	TRAN 50kVA 7200X14400 240/480V PT 2B

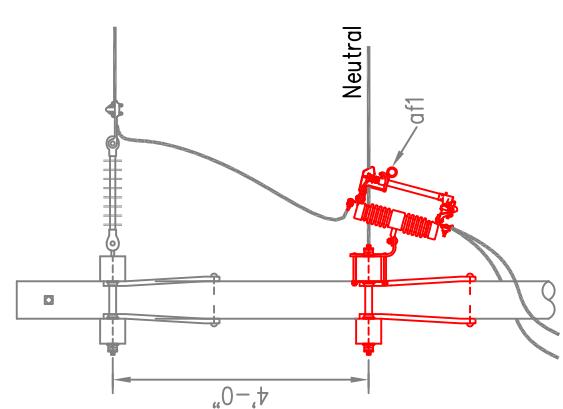
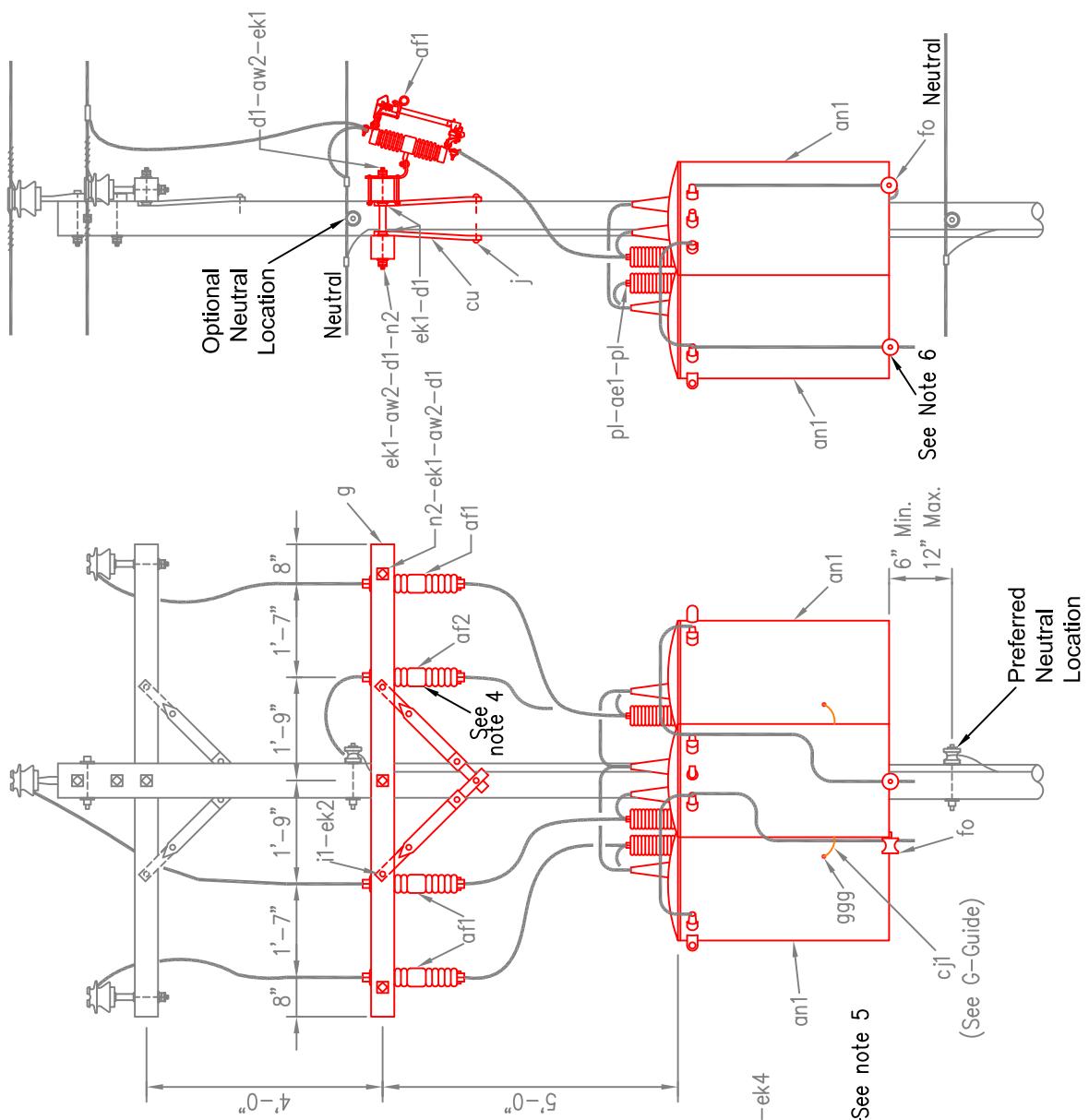
### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

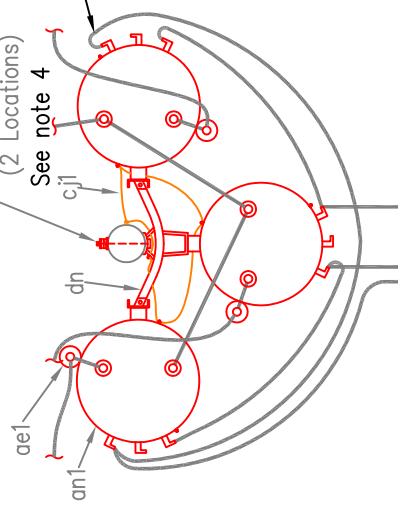
#### NOTES:

- Phase jumpers to H1, ground to H2
- All tanks to be grounded to pole ground.
- Secondary neutrals of all transformers shall be disconnected from tanks and not grounded.
- Solid blade cutout normally open.
- Bare service conductor to be connected directly to system neutral.
- fo, use secondary transformer bracket (0780-97-00) to reduce strain on the secondary bushings if required (special order).
- Secondary buss work to be a minimum of 4/0 copper.
- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	7.2/14.4 kV, THREE TRANSFORMERS CLUSTER MOUNTED UNGROUNDED WYE-DELTA FOR 240V OR 480V POWER LOADS WITH CORNER GROUNDED	ISSUED	2/04/2008
				REVISED	5/11/2011
				STANDARD NUMBER	DVG311



**Deadend Assembly** —  
REPRESENTS APPROXIMATE LOCATIONS  
OF CUTOUT CONNECTIONS 



**7.2/14.4 kV,  
THREE TRANSFORMERS CLUSTER  
MOUNTED UNGROUNDED WYE-DELTA  
FOR 240V OR 480V POWER LOADS  
WITH CORNER GROUNDED**



ISSUED 2/04/2008

REVISED 5/11/2011

**STANDARD NUMBER**

DVG311

Transformer Assembly Plan View

ITEM.	QTY.	MAT.CODE No	MATERIAL
ae1	3	0152-19-32	Arrester, 14.4 lightning, 18kV
af1	3	1831-12-12	Cutout 14.4, fuse (w/Bracket)
an1	3	693X-XX-XX	Transformer, conventional (Primary & Secondary voltage needed) (SEE TABLES BELOW)
aw2	6	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cj1	25'	7250-06-01	Wire, #6 SD Cu
cj3	15'	1522-02-19	Cable, #2 Cu THHN 600V Str
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	10	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
dn	1	3100-24-92	Cluster bracket, large, transformer
ek1	10	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
ek4	2	4290-70-75	Locknuts 3/4"
g	2	1809-01-01	Crossarm, Wood 8'
ggg	6	1721-20-00	Connectors, Transformer case ground
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"
pl	3	1781-17-80	Connectors, Lightning arrester
-	1	0630-06-05	A Bolt Pack

### 120/208V

<b>VG312-10 (120/208V)</b>	6937-11-11	TRAN 10kVA 14.4/24.9GY 120/240V PT 2B
<b>VG312-15 (120/208V)</b>	6937-11-13	TRAN 15kVA 14.4/24.9GY 120/240V PT 2B
<b>VG312-25 (120/208V)</b>	6937-11-15	TRAN 25kVA 14.4/24.9GY 120/240V PT 2B
<b>VG312-37.5 (120/208V)</b>	6937-11-17	TRAN 37.5kVA 14.4/24.9GY 120/240V PT 2B
<b>VG312-50 (120/208V)</b>	6937-11-19	TRAN 50kVA 14.4/24.9GY 120/240V PT 2B

### 277/480V

<b>VG312-10 (277/480V)</b>	6937-61-11	TRAN 10kVA 14.4/24.9GY 277/480V PT 2B
<b>VG312-15 (277/480V)</b>	6937-61-13	TRAN 15kVA 14.4/24.9GY 277/480V PT 2B
<b>VG312-25 (277/480V)</b>	6937-61-15	TRAN 25kVA 14.4/24.9GY 277/480V PT 2B
<b>VG312-37.5 (277/480V)</b>	6937-61-17	TRAN 37.5kVA 14.4/24.9GY 277/480V PT 2B
<b>VG312-50 (277/480V)</b>	6937-61-19	TRAN 50kVA 14.4/24.9GY 277/480V PT 2B

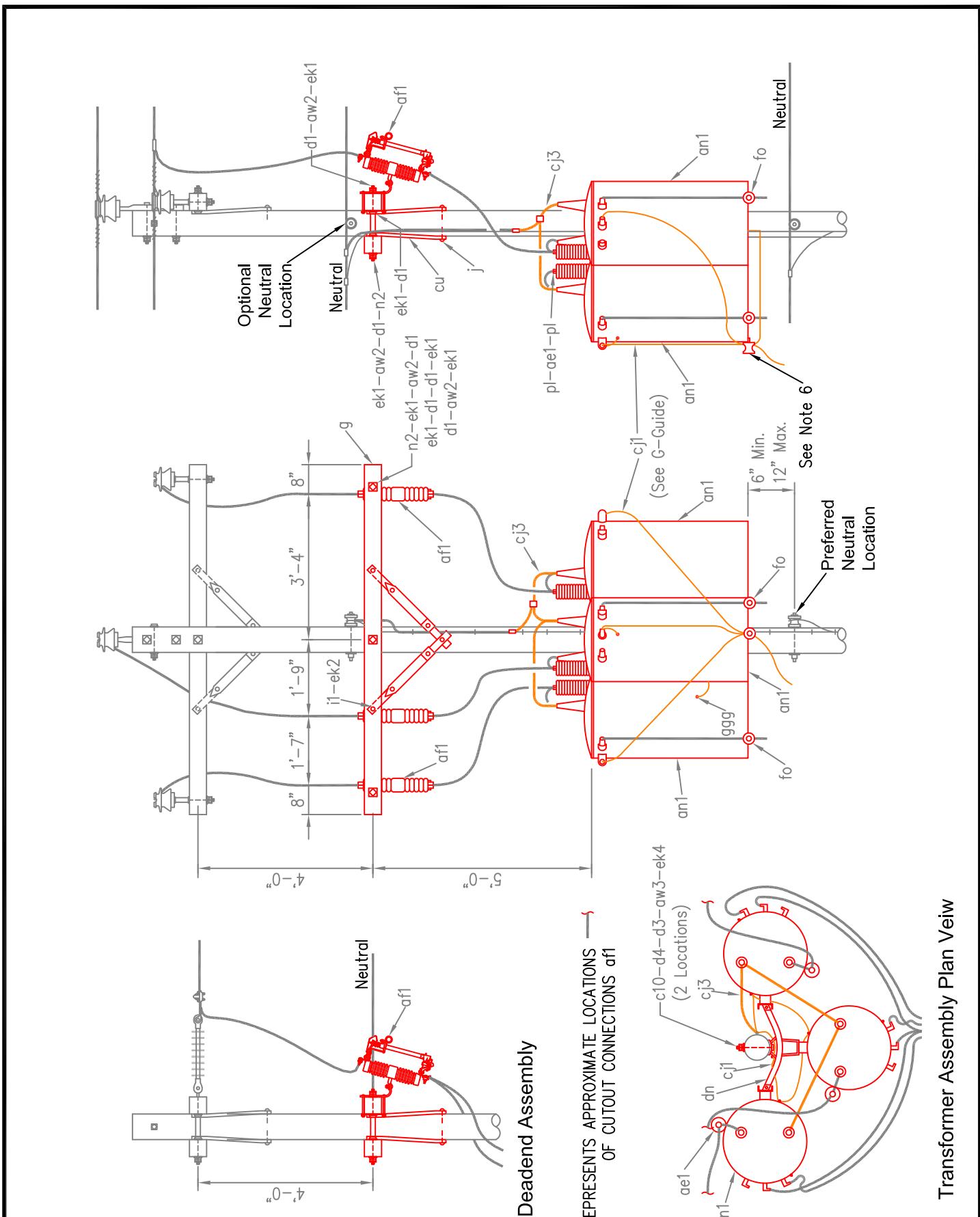
### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

#### NOTES:

- Phase jumpers to H1, ground to H2
- All tanks to be grounded to pole ground.
- Secondary neutrals of all transformers shall be disconnected from tanks and not grounded.
- Solid blade cutout normally open.
- Bare service conductor to be connected directly to system neutral.
- fo, use secondary transformer bracket (0780-97-00) to reduce strain on the secondary bushings if required (special order).
- Secondary buss work to be a minimum of 4/0 copper.
- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE TRANSFORMERS CLUSTER MOUNTED 4-WIRE GROUNDED WYE-GROUNDED WYE FOR 277/480 OR 120/208 POWER LOADS	ISSUED	2/04/2008
				REVISED	5/11/2011
				STANDARD NUMBER	VG312



DATE	REVISION

14.4/24.9 kV,  
THREE TRANSFORMERS CLUSTER  
MOUNTED 4-WIRE GROUNDED  
WYE-GROUNDED WYE FOR 277/480  
OR 120/208 POWER LOADS

ISSUED	2/04/2008
REVISED	5/11/2011
STANDARD NUMBER	VG312

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	3	0152-19-32	Arrester, 14.4 lightning, 18kV
af1	3	1831-12-12	Cutout 14.4, fuse (w/Bracket)
an1	3	693X-XX-XX	Transformer, conventional (Primary & Secondary voltage needed) (SEE TABLES BELOW)
aw2	6	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cj1	25'	7250-06-01	Wire, #6 SD Cu
cj3	15'	1522-02-19	Cable, #2 Cu THHN 600V Str
cu1	2	0753-51-26	Brace, crossarm 38" Span 18" Drop (pair)
d1	10	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
dn	1	3100-24-92	Cluster bracket, large, transformer
ek1	10	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
ek4	2	4290-70-75	Locknuts 3/4"
g	2	1809-01-01	Crossarm, Wood 8'
ggg	6	1721-20-00	Connectors, Transformer case ground
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	2	5550-44-40	Screw, lag 1/2 "x 4"
n2	3	0633-05-22	Bolts, DA 5/8" x 22"
pl	3	1781-17-80	Connectors, Lightning arrester
-	1	0630-06-05	A Bolt Pack

### 120/208V

DVG312-10 (120/208V)	6938-11-11	TRAN 10kVA 7200X14400 120/240V PT 2B
DVG312-15 (120/208V)	6938-11-13	TRAN 15kVA 7200X14400 120/240V PT 2B
DVG312-25 (120/208V)	6938-11-15	TRAN 25kVA 7200X14400 120/240V PT 2B
DVG312-37.5 (120/208V)	6938-11-17	TRAN 37.5kVA 7200X14400 120/240V PT 2B
DVG312-50 (120/208V)	6938-11-19	TRAN 50kVA 7200X14400 120/240V PT 2B

### 277/480V

DVG312-10 (277/480V)	6938-61-11	TRAN 10kVA 7200X14400 277/480V PT 2B
DVG312-15 (277/480V)	6938-61-13	TRAN 15kVA 7200X14400 277/480V PT 2B
DVG312-25 (277/480V)	6938-61-15	TRAN 25kVA 7200X14400 277/480V PT 2B
DVG312-37.5 (277/480V)	6938-61-17	TRAN 37.5kVA 7200X14400 277/480V PT 2B
DVG312-50 (277/480V)	6938-61-19	TRAN 50kVA 7200X14400 277/480V PT 2B

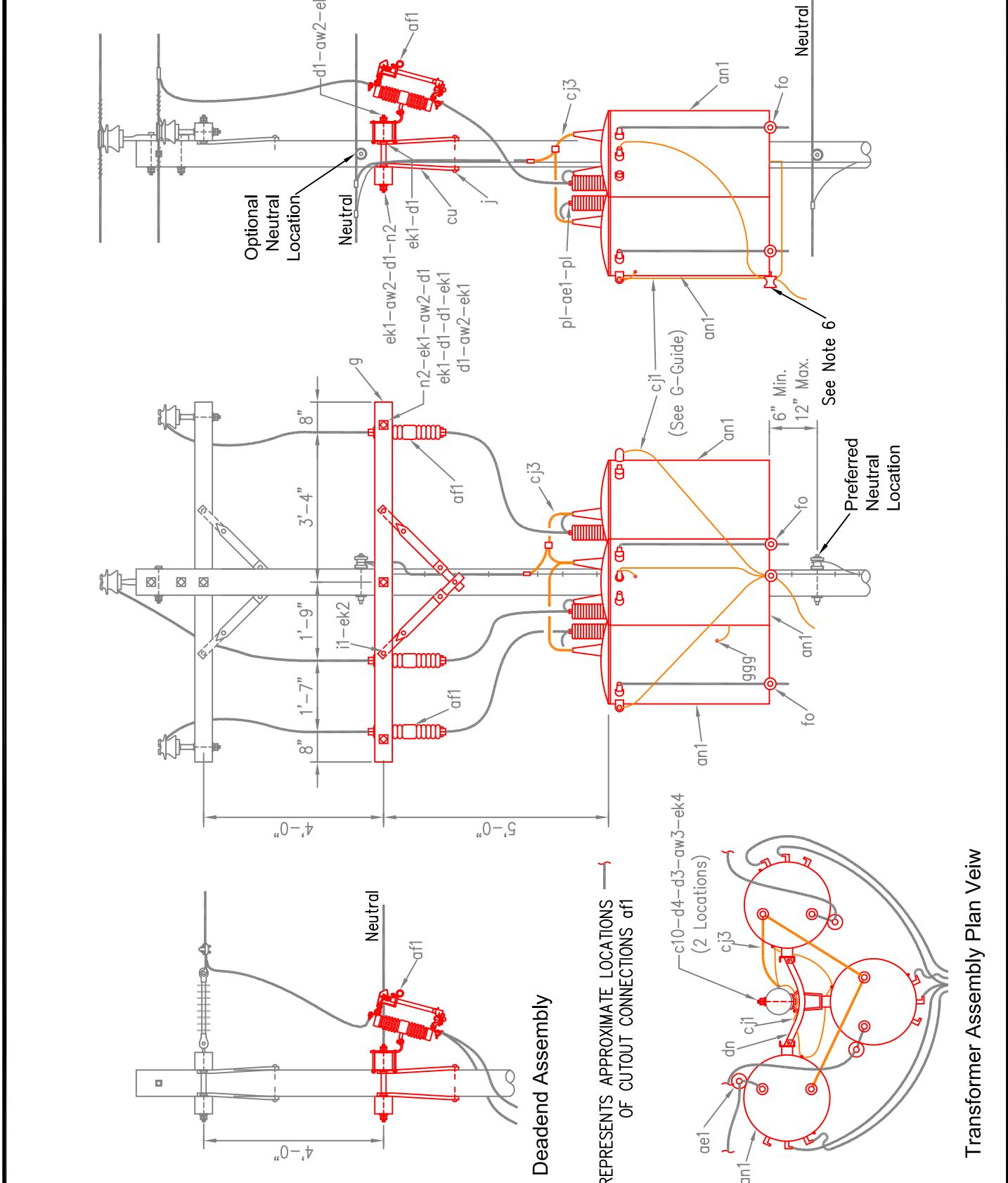
### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

#### NOTES:

- Phase jumpers to H1, ground to H2
- All tanks to be grounded to pole ground.
- Secondary neutrals of all transformers shall be disconnected from tanks and not grounded.
- Solid blade cutout normally open.
- Bare service conductor to be connected directly to system neutral.
- fo, use secondary transformer bracket (0780-97-00) to reduce strain on the secondary bushings if required (special order).
- Secondary buss work to be a minimum of 4/0 copper.
- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	7.2/14.4 kV, THREE TRANSFORMERS CLUSTER MOUNTED 4-WIRE GROUNDED WYE-GROUNDED WYE FOR 277/480 OR 120/208 POWER LOADS	ISSUED	2/04/2008
				REVISED	5/11/2011
				STANDARD NUMBER	DVG312



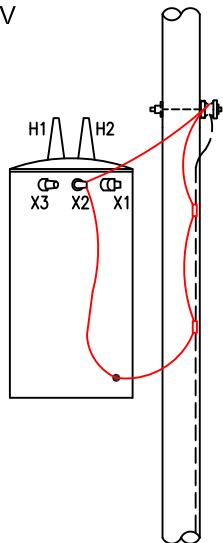
DATE	REVISION

7.2/14.4 kV,  
THREE TRANSFORMERS CLUSTER  
MOUNTED 4-WIRE GROUNDED  
WYE-GROUNDED WYE FOR 277/480  
OR 120/208 POWER LOADS

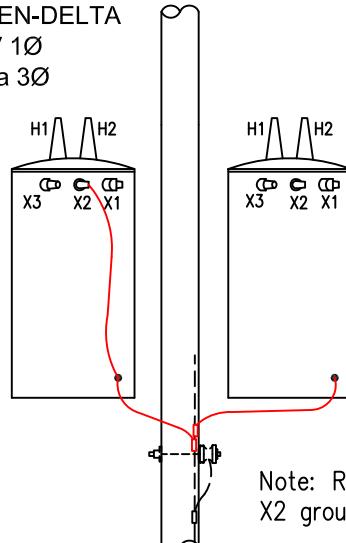
ISSUED	2/04/2008
REVISED	5/11/2011
STANDARD NUMBER	DVG312

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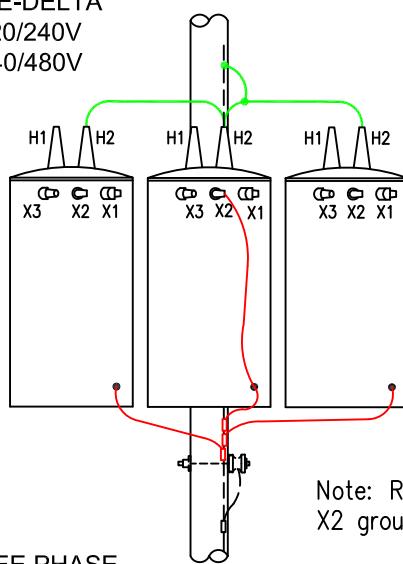
SINGLE PHASE  
120/240V



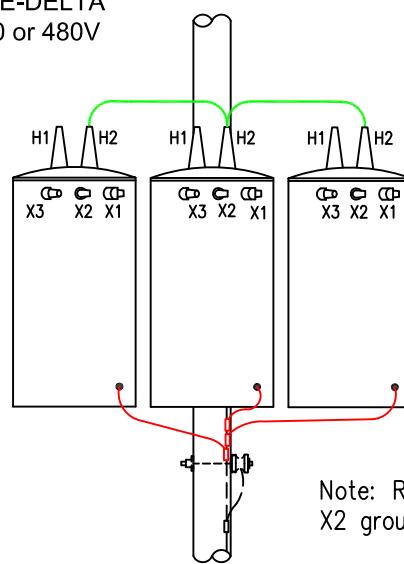
THREE PHASE  
OPEN-WYE OPEN-DELTA  
120/240V 1Ø  
240V delta 3Ø



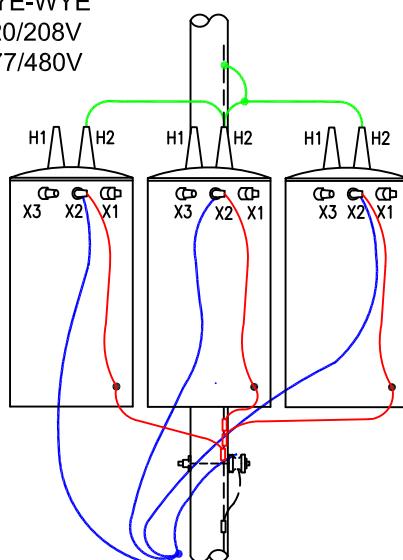
THREE PHASE  
WYE-DELTA  
120/240V  
240/480V



THREE PHASE  
WYE-DELTA  
240 or 480V



THREE PHASE  
WYE-WYE  
120/208V  
277/480V



#6 SD Cu

#2 Cu

Size as per Service



DATE

REVISION

### TRANSFORMER GROUNDING GUIDE

ISSUED

1/29/2012

REVISED

STANDARD NUMBER

G-GUIDE

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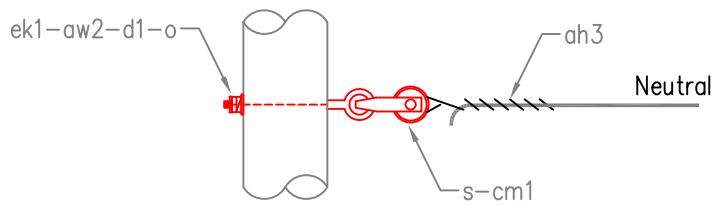
## **Tab J**

## **Tab J**

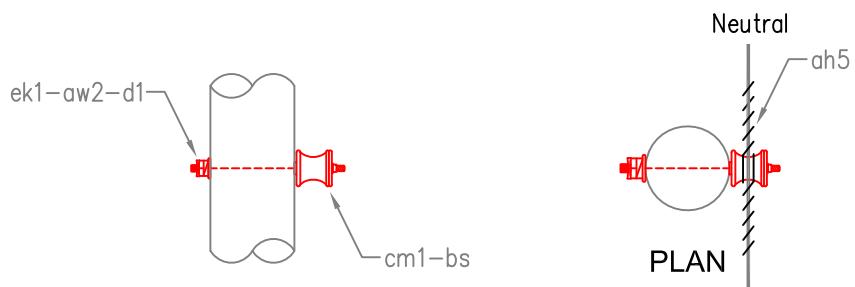
**INDEX J****NEUTRAL & SECONDARY ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
J6	NEUTRAL – SMALL CONDUCTOR, VERTICAL DEADEND
J8	NEUTRAL – SINGLE UPSET
J10	NEUTRAL – CLEVIS, RIDIG
J12	SECONDARY – TRANSFORMER BRACKET

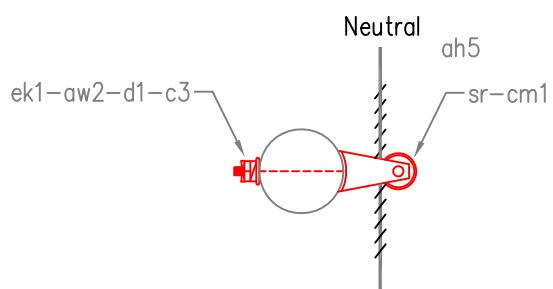
ITM.	QTY.	CATALOG No.	MATERIAL		
<b>J6</b>					
ah3	1	6790-XX-44	Neutral deadend tie, (Specify conductor size)		
aw2	1	7108-99-41	Washers, double spring lock, 5/8"		
cm1	1	3426-20-12	Insulator, 3" spool		
d1	1	7102-04-91	Washers, square, 5/8"		
ek1	1	4290-70-63	Locknuts 5/8"		
o	1	0636-15-12	Bolts, ovaleye 5/8" x 12"		
s	1	1230-19-01	Clevis, swinging (J-6)		
<b>J8</b>					
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)		
aw2	1	7108-99-41	Washers, double spring lock, 5/8"		
bs	1	0639-05-12	Bolts, SU 5/8" x 12"		
cm1	1	3426-20-12	Insulator, 3" spool		
d1	1	7102-04-91	Washers, square, 5/8"		
ek1	1	4290-70-63	Locknuts 5/8"		
<b>J10</b>					
ah5	1	6790-XX-66	Neutral spool tie, (Specify conductor size)		
aw2	1	7108-99-41	Washers, double spring lock, 5/8"		
c3	1	0638-05-12	Bolts, machine 5/8" x 12"		
cm1	1	3426-20-12	Insulator, 3" spool		
d1	1	7102-04-91	Washers, square, 5/8"		
ek1	1	4290-70-63	Locknuts 5/8"		
sr	1	1230-17-01	Clevis, rigid (D-bracket)		
<b>J12</b>					
fo	1	0780-97-00	Insulator, transformer secondary bracket (Special Order)		
<p>NOTES:</p> <ol style="list-style-type: none"> <li>1. Bolt lengths will be determined by the pole diameter at the position of the neutral assembly location.</li> <li>2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.</li> </ol>					
	DATE	REVISION	NEUTRAL AND SECONDARY ASSEMBLIES	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	J6, J8, J10, & J12



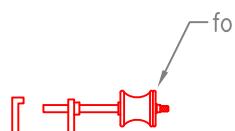
**J6**  
Small Conductor Neutral Vertical Deadend



**J8**  
Single Upset Bolt



**J10**  
D-Bracket  
Clevis, Rigid



**J12**  
Transformer Secondary Bracket

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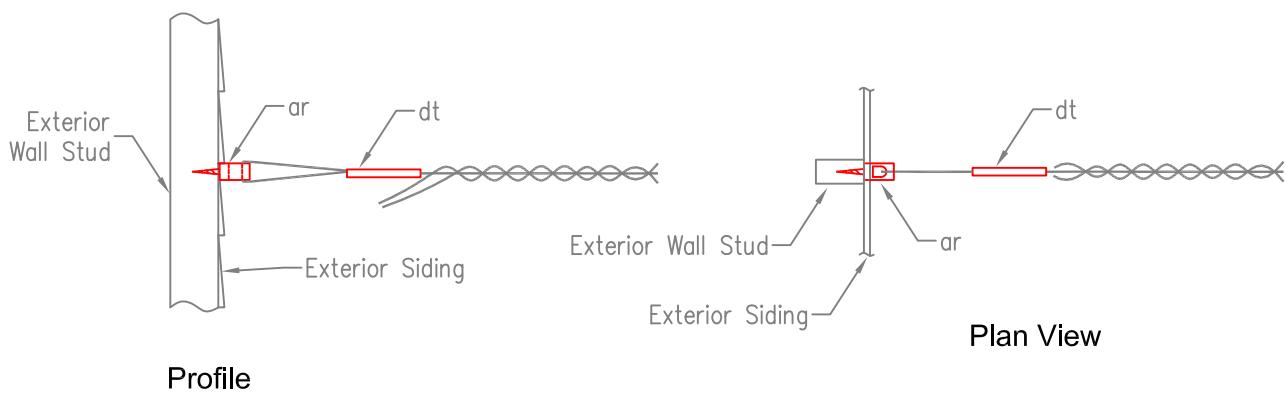
**Tab''M**

**Tab''M**

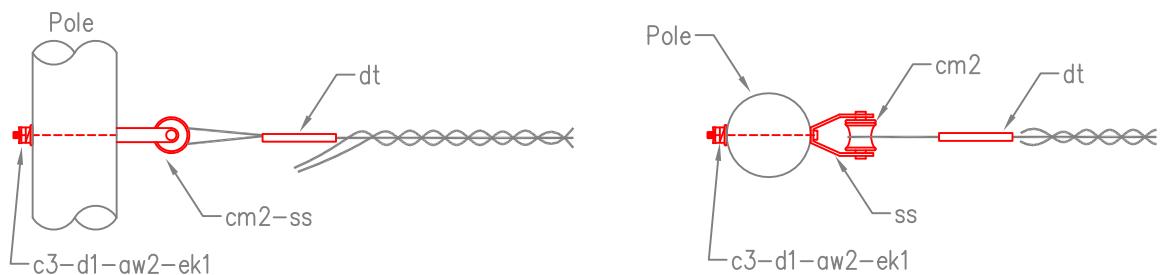
**INDEX K****SERVICE DEADENDS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
K10C	SERVICE DEADEND
K14	SERVICE DEADEND – POLE MOUNTED
K17	SERVICE DEADEND – MAST TYPE

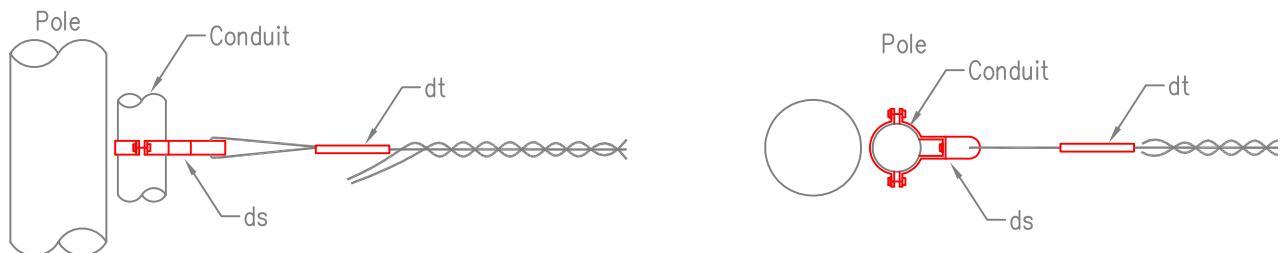
ITEM.	QTY.	MAT. CODE	No.	MATERIAL						
<b>K10C</b>										
ar	1	7510-10-22		Wireholder						
dt	1	1178-00-XX		Wedge clamp, (Specify conductor size)						
<b>K14</b>										
aw2	1	7108-99-41		Washers, double spring lock, 5/8"						
c3	1	0638-05-12		Bolts, machine 5/8" x 12" (SEE NOTE 1)						
cm2	1	3426-10-12		Insulator, 2" spool						
d1	1	7102-04-91		Washers, square, 5/8"						
dt	1	1178-00-XX		Wedge clamp, (Specify conductor size)						
ek1	1	4290-70-63		Locknuts 5/8"						
ss	1	1230-13-01		Clevis, service						
<b>K17</b>										
ds	1	7510-30-38		Wire holder, conduit						
dt	1	1178-00-XX		Wedge clamp, (Specify conductor size)						
<table border="1" style="width: 100%; text-align: center;"> <tr> <td>1178-00-19</td> <td>2-6 Wedge Clamp</td> </tr> <tr> <td>1178-00-25</td> <td>4-1/0 Wedge Clamp</td> </tr> <tr> <td>1178-00-35</td> <td>2/0-4/0 Wedge Clamp</td> </tr> </table>					1178-00-19	2-6 Wedge Clamp	1178-00-25	4-1/0 Wedge Clamp	1178-00-35	2/0-4/0 Wedge Clamp
1178-00-19	2-6 Wedge Clamp									
1178-00-25	4-1/0 Wedge Clamp									
1178-00-35	2/0-4/0 Wedge Clamp									
NOTES:										
<ol style="list-style-type: none"> <li>1. Bolt lengths will be determined by the pole diameter at the position of the service deadend location.</li> <li>2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.</li> </ol>										
		DATE	REVISION	SERVICE DEADENDS						
ISSUED		2/04/2008								
REVISED										
STANDARD NUMBER		K10C, K14, K17								



**K10C**



**K14**



**K17**



DATE	REVISION

### SERVICE DEADENDS

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	K10C, K14, K17

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# **Tab M**

# **Tab M**

**INDEX M****MISCELLANEOUS ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
VM2-11	GROUND ASSEMBLY – POLE GROUND
VM2-11-2	GROUND ASSEMBLY – POLE GROUND
VM2-11-4	GROUND ASSEMBLY – POLE GROUND
VM2-11SC	GROUND ASSEMBLY – SINGLE CIRCUIT LIGHTING ARRESTER & POLE GROUND
M2-11SC	GROUND ASSEMBLY – 7.2kV SINGLE CIRCUIT LIGHTING ARRESTER & POLE GROUND
VM2-11DC	GROUND ASSEMBLY – DOUBLE CIRCUIT LIGHTING ARRESTER & POLE GROUND
M2-11DC	GROUND ASSEMBLY – 7.2kV DOUBLE CIRCUIT LIGHTING ARRESTER & POLE GROUND
VM2-12	GROUND ASSEMBLY – BUTT PLATE
VM2-15	GROUND ASSEMBLY – MESH TYPE FOR SECTIONALIZING AIR BREAK SWITCH
VM3-3	SWITCHES – SECTIONALIZING DISCONNECT, NEUTRAL LOW
VM3-3A	SWITCHES – SECTIONALIZING DISCONNECT, NEUTRAL ON CROSSARM (ENGINEERING APPROVAL ONLY)
VM3-10A	OIL CIRCUIT RECLOSER – 1Ø SECTIONALIZING
M3-10A	OIL CIRCUIT RECLOSER – 7.2kV 1Ø SECTIONALIZING
VM3-10BO (OIL)	OIL CIRCUIT RECLOSER (BREAKER ONLY) - 1Ø SECTIONALIZING
VM3-10BO (NOVA)	VACUUM CIRCUIT RECLOSER (BREAKER ONLY) - 1Ø SECTIONALIZING
VM3-10N	VACUUM CIRCUIT RECLOSER – 14.4 kV 1Ø SECTIONALIZING WITH TRANSFORMER – NOVA CONTROLS
M3-10N	VACUUM CIRCUIT RECLOSER – 7.2 kV 1Ø SECTIONALIZING WITH TRANSFORMER – NOVA CONTROLS

**MISCELLANEOUS ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
VM3-10V	VACUUM CIRCUIT RECLOSER – 14.4 kV 1Ø SECTIONALIZING WITH TRANSFORMER – VIPER CONTROLS
M3-10V	VACUUM CIRCUIT RECLOSER – 7.2 kV 1Ø SECTIONALIZING WITH TRANSFORMER – VIPER CONTROLS
VM3-16S	3Ø 600 AMP AIR BREAK SWITCH
VM3-16 SO	3Ø 600 AMP AIR BREAK SWITCH (SCADA OPERATED) (ENGINEERING APPROVAL ONLY)
VM3-16S COMM	3Ø 600 AMP AIR BREAK SWITCH (COMMUNICATIONS)
VM3-25A	OIL CIRCUIT RECLOSER – 3-1Ø SECTIONALIZING WITH BY-PASS SWITCHES
M3-25A	OIL CIRCUIT RECLOSER – 7.2kV 3-1Ø SECTIONALIZING WITH BY-PASS SWITCHES
VM3-25B	VACUUM CIRCUIT RECLOSER – 3-1Ø SECTIONALIZING WITH BY-PASS SWITCHES
M3-25B	VACUUM CIRCUIT RECLOSER – 7.2kV 3-1Ø SECTIONALIZING WITH BY-PASS SWITCHES
VM3-30A-R	OIL CIRCUIT RECLOSER - 3Ø SECTIONALIZING WITH BY- PASS SWITCHES (RETIREMENT ONLY)
BOLTS	BOLT DETAILS
VM5-1	HOT LINE CLAMP
VM5-2	POLE TOP PIN ASSEMBLY
VM5-2A	POLE TOP OFFSET PIN ASSEMBLY
VM5-2FG	FIBERGLASS POLE TOP ASSEMBLY
VM5-3	STIRRUP
VM5-4	OFFSET INSULATOR
VM5-5	CROSSARM PIN – PHASE INSULATOR
VM5-5N	CROSSARM PIN – NEUTRAL INSULATOR

**INDEX M (cont.)****MISCELLANEOUS ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
VM5-5S	CROSSARM SADDLE PIN – PHASE INSULATOR
VM5-5SN	CROSSARM SADDLE PIN – NEUTRAL INSULATOR
VM5-5FG	CROSSARM PIN – PHASE INSULATOR. ¾" SHAFT
VM5-5FGN	CROSSARM PIN – NEUTRAL INSULATOR, ¾" SHAFT
VM5-5P	CROSSARM POST INSULATOR WITH MOUNTING STUD
VM5-6-10	ARRESTER WITH CROSSARM MOUNTING BRACKET
VM5-6-18	ARRESTER WITH CROSSARM MOUNTING BRACKET
VM5-6A-10	ARRESTER WITH TRANSFORMER MOUNTING BRACKET
VM5-6A-18	ARRESTER WITH TRANSFORMER MOUNTING BRACKET
VM5-6B-10	LIGHTNING ARRESTER
VM5-6B-18	LIGHTNING ARRESTER
VM5-9	FUSED CUTOOUT
VM5-9A	SPARE SOLID BLADE
VM5-9B	SOLID BLADE CUTOOUT
M5-13	CROSSARM BRACE – LARGE WITH 18" OR 30" DROP
M5-14	CROSSARM 8' – WOOD PRIMARY ASSEMBLY, TANGENT
M5-14F	CROSSARM 8' – FIBERGLASS PRIMARY ASSEMBLY, TANGENT
M5-14F-DE	CROSSARM 8' – FIBERGLASS PRIMARY ASSEMBLY, DEADEND
M5-16	CROSSARM 10' – WOOD PRIMARY ASSEMBLY, TANGENT
M5-16F	CROSSARM 10' – FIBERGLASS PRIMARY ASSEMBLY, TANGENT
M5-16F-DE	CROSSARM 10' – FIBERGLASS PRIMARY ASSEMBLY, DEADEND
M5-17	CROSSARM BRACE SMALL

**INDEX M (cont.)****MISCELLANEOUS ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
M5-18F	CROSSARM 12' – FIBERGLASS PRIMARY ASSEMBLY, TANGENT
M5-18F-DE	CROSSARM 12' – FIBERGLASS PRIMARY ASSEMBLY, DEADEND
M5-19F-DE	CROSSARM 14' – FIBERGLASS PRIMARY ASSEMBLY, DEADEND
VM5-20	INSULATOR – DEADEND SUSPENSION
VM5-21_(S, L, or C)	INSULATOR – FLOATER SUSPENSION (SMALL, LARGE OR COPPER CONDUCTORS)
VM5-23	LINK – SUSPENSION FIBERGLASS
VM5-24	INSULATOR – 14.4kV PIN TYPE, 1 3/8" INTERNAL TREAD
VM5-24A	INSULATOR – 7.2kV PIN TYPE, WITE 1" INTERNAL TREAD
VM5-24P	INSULATOR – 14.4kV POST TYPE
VM5-25	BRACKET - 1Ø ANGLED STANDOFF DOUBLE POSITION, FIBERGLASS
VM5-25A	BRACKET - 1Ø DOWNLEAD STANDOFF, FIBERGLASS 12"
VM5-26	BRACKET - 1Ø VERTICAL PIN, FIBERGLASS
VM5-26-2	BRACKET – TWO POSSITION VERTICAL PIN, FIBERGLASS
VM5-27	BRACKET - 2Ø VERTICAL PIN, FIBERGLASS
VM5-28	BRACKET - 3Ø STANDOFF DOUBLE POSITION, FIBERGLASS
VM5-30	DISCONNECT SWITCH – UNDERARM OR VERTICAL
VM5-31	DISCONNECT SWITCH – INLINE TAP
VM5-32	DISCONNECT SWITCH – INLINE DEADEND
VM5-33	CROSSARM – NARROW PROFILE, FIBERGLASS
VM5-34	LINK, STRAIGHT CONNECTION
VM5-35	SWITCH, REGULATOR BY-PASS

**INDEX M (cont.)****MISCELLANEOUS ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
VM5-36	PLATFORM, EQUIPMENT, ALUMINUM
VM5-37	BRACKET – TRANSFORMER MOUNTING, BOLT-A-BAND
VM5-38	BRACKET – ALL-PURPOSE MOUNTING, BOLT-A-BAND
VM5-39	CONDUIT AND U-GUARD STRAP, BOLT-A-BAND
VM5-40	BONDING CLIP
VM5-41	BONDING CLIP
VM7-1	1Ø REGULATOR, PLATFORM ASSEMBLY
M7-1	7.2kV 1Ø REGULATOR, PLATFORM ASSEMBLY
VM7-1A	1Ø REGULATOR, POLE MOUNTED ASSEMBLY
M7-1A	7.2kV 1Ø REGULATOR, POLE MOUNTED ASSEMBLY
VM7-3	3Ø REGULATOR, PLATFORM ASSEMBLY
M7-3	3Ø REGULATOR, PLATFORM ASSEMBLY
VM9-13A	3Ø CAPACITOR BANK – WITH NON-ZVC CONTROL
VM9-13S	3Ø CAPACITOR BANK – WITH ZVC CONTROL
M9-13S	7.2kV 3Ø CAPACITOR BANK – WITH ZVC CONTROL
VM9-13F	3Ø FIXED CAPACITOR BANK
VM9-13 COMM	3Ø FIXED CAPACITOR BANK (COMMUNICATIONS)
VM10-14-R	14.4 kV 1Ø ARCING HORN ASSEMBLIES, ANGLE 0° TO 5° (RETIREMENT ONLY)
VM10-15-R	14.4 kV 3Ø ARCING HORN ASSEMBLIES (RETIREMENT ONLY)
M42-11	DEADEND ASSEMBLY – SMALL CONDUCTORS
M42-12	DEADEND ASSEMBLY – COPPER CONDUCTORS
M42-13	DEADEND ASSEMBLY – LARGE CONDUCTORS
M45	OVERHEAD SPLICE

**INDEX M (cont.)**

**MISCELLANEOUS ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
M46	WILDLIFE PROTECTION
D#-X-X	OVERHEAD CONDUCTOR
POLE	POLE

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ITM.	QTY.	MAT.CODE No	MATERIAL
ai	1	5380-10-08	Rod, ground
cj1	60'	7250-06-01	Wire, #6 SD Cu
pt	1	4313-23-12	Connector, #6, ground wire to ground rod, ONE-SHOT (CR-1)

NOTES:

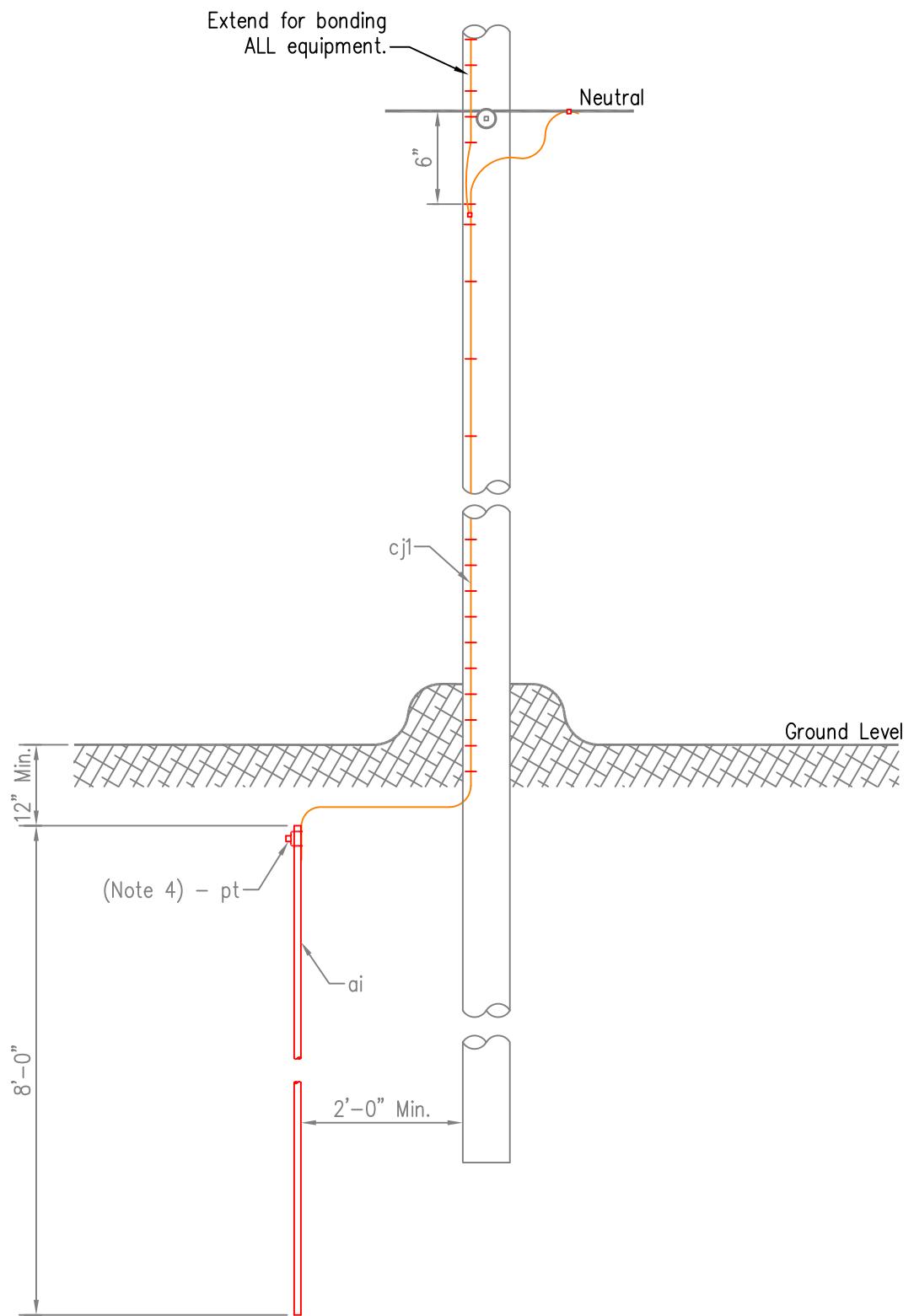
1. Ground to be located on same side as neutral conductor and in quadrant opposite climbing space or pole top pin.
2. Staples on ground wire shall be 2'-0" apart for a distance of 8'-0" above ground and 8'-0" from top of pole where they shall be 6" apart.
3. Ground Wire to clear ALL hardware by 2" minimum and shall be stapled to maintain this position.
4. All new construction shall use thermOweld mold CR-1 for all new ground rod and ground wire connections.
5. Bolt lengths will be determined by the pole diameter at the position of the down lead bracket location. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

GROUND ASSEMBLY  
(POLE GROUND)

ISSUED	2/04/2008
REVISED	5/06/2010
STANDARD NUMBER	VM2-11



DATE	REVISION

GROUND ASSEMBLY  
(POLE GROUND)

ISSUED	2/04/2008
REVISED	5/06/2010
STANDARD NUMBER	VM2-11

ITM.	QTY.	MAT.CODE No	MATERIAL
ai	1	5380-10-08	Rod, ground
cj3	60'	1522-02-19	Cable, #2 Cu THHN 600V Str
pt2	1	4313-23-16	Connector, #2, ground wire to ground rod, ONE-SHOT (CR-1)

NOTES:

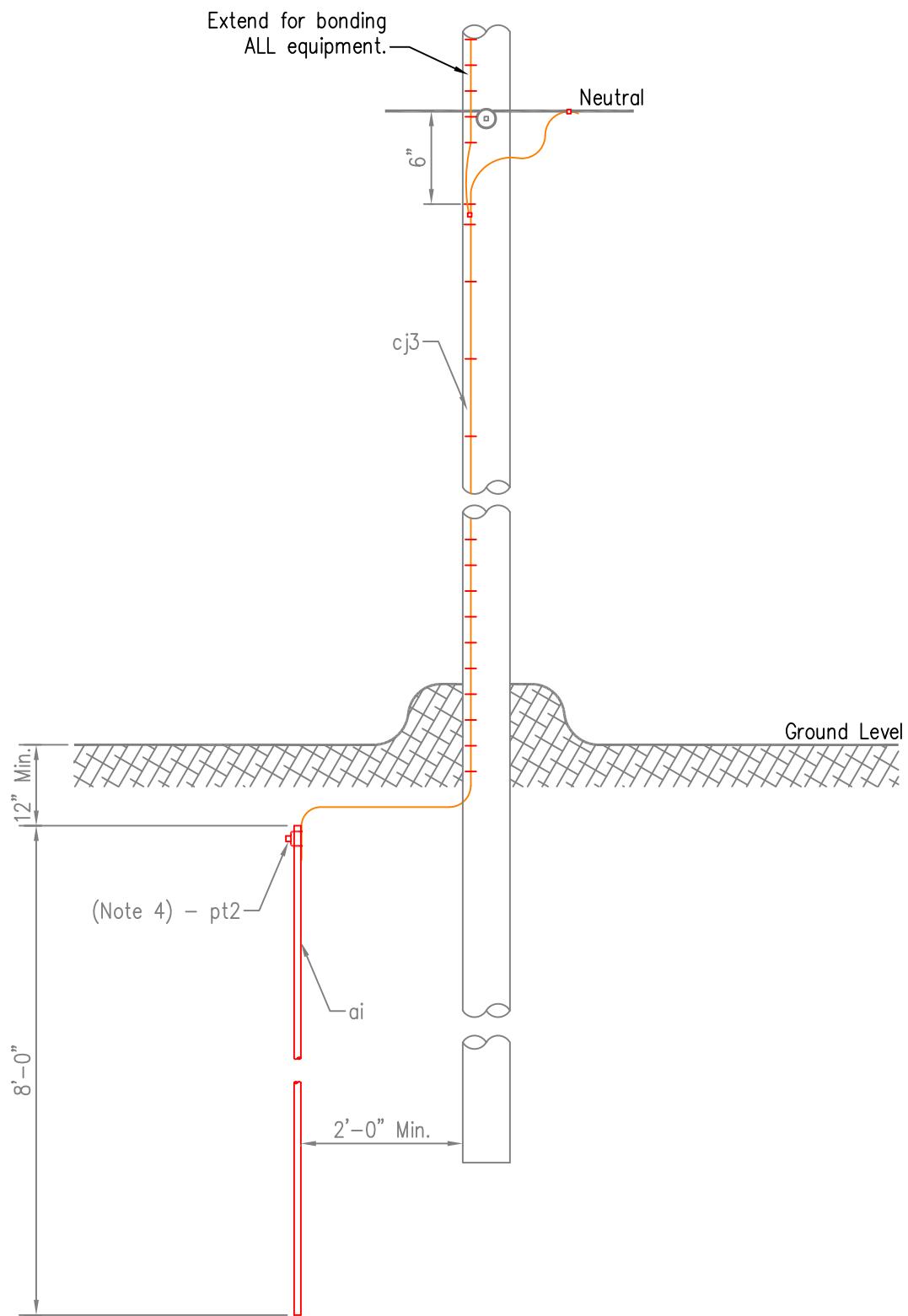
1. Ground to be located on same side as neutral conductor and in quadrant opposite climbing space or pole top pin.
2. Staples on ground wire shall be 2'-0" apart for a distance of 8'-0" above ground and 8'-0" from top of pole where they shall be 6" apart.
3. Ground Wire to clear ALL hardware by 2" minimum and shall be stapled to maintain this position.
4. All new construction shall use thermOweld mold CR-1 for all new ground rod and ground wire connections.
5. Bolt lengths will be determined by the pole diameter at the position of the down lead bracket location. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

GROUND ASSEMBLY  
(INSULATED POLE GROUND)

ISSUED	2/04/2008
REVISED	5/06/2010
STANDARD NUMBER	VM2-11-2



DATE	REVISION

GROUND ASSEMBLY  
(INSULATED POLE GROUND)

ISSUED	2/04/2008
REVISED	5/06/2010
STANDARD NUMBER	VM2-11-2

ITM.	QTY.	MAT.CODE No	MATERIAL
ai	1	5380-10-08	Rod, ground
cj2	60'	7250-04-07	Wire, #4 Bare Str. Cu
pt1	1	4313-23-14	Connector, #4-#6, ground wire to ground rod, ONE-SHOT (CR-1)

NOTES:

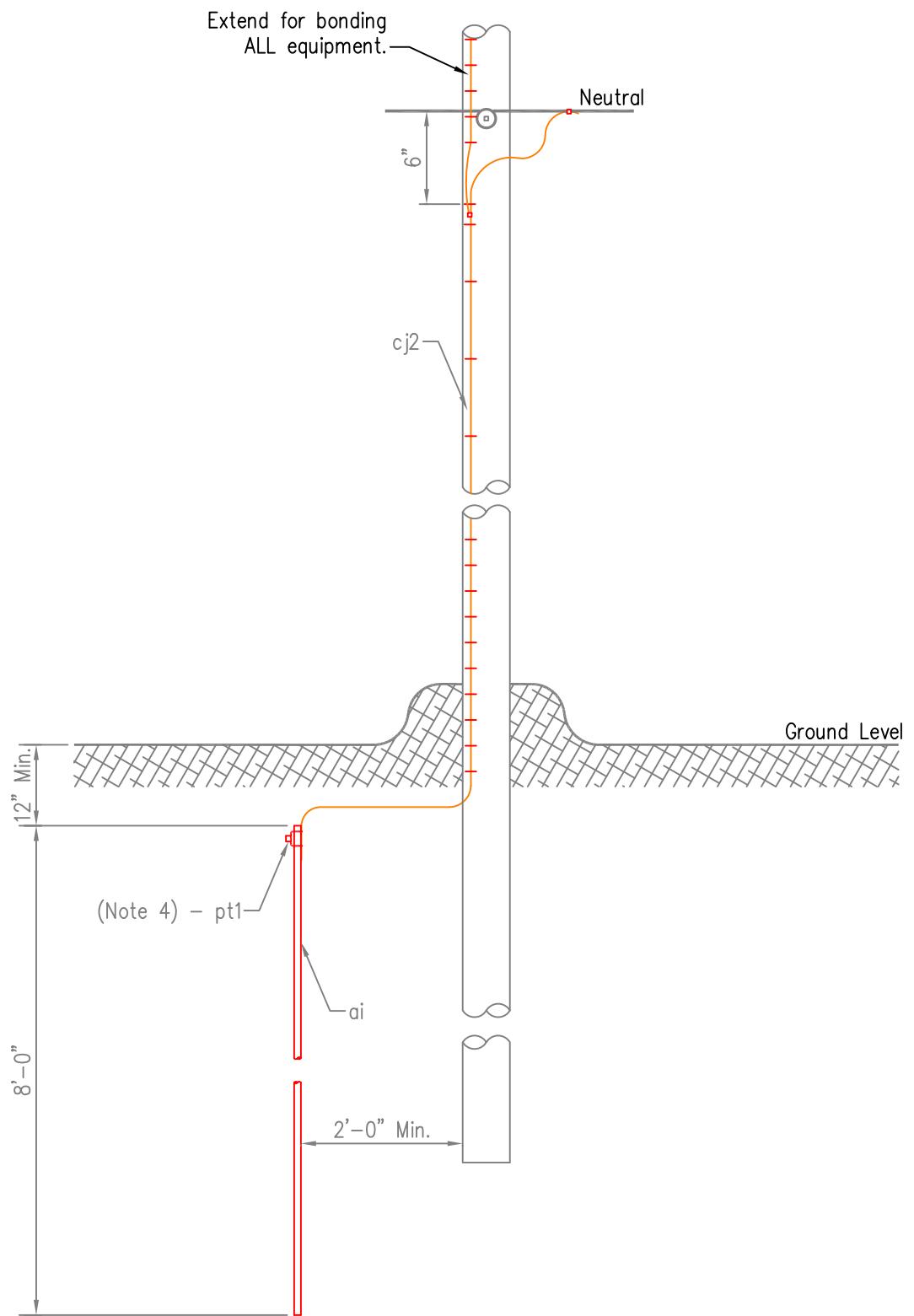
1. Ground to be located on same side as neutral conductor and in quadrant opposite climbing space or pole top pin.
2. Staples on ground wire shall be 2'-0" apart for a distance of 8'-0" above ground and 8'-0" from top of pole where they shall be 6" apart.
3. Ground Wire to clear ALL hardware by 2" minimum and shall be stapled to maintain this position.
4. All new construction shall use thermOweld mold CR-1 for all new ground rod and ground wire connections.
5. Bolt lengths will be determined by the pole diameter at the position of the down lead bracket location. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

GROUND ASSEMBLY  
(INSULATED POLE GROUND)

ISSUED	2/04/2008
REVISED	2/11/2010
STANDARD NUMBER	VM2-11-4



DATE	REVISION

**GROUND ASSEMBLY  
(INSULATED POLE GROUND)**

ISSUED	2/04/2008
REVISED	5/05/2010
STANDARD NUMBER	VM2-11-4

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	3	0152-19-39	Arrester, 14.4 lightning, 18 kV (No Bracket)
ai	1	5380-10-08	Rod, ground
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
bv	3	1741-XX-XX	Stirrup, (Specify conductor size)
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cj1	60'	7250-06-01	Wire, #6 SD Cu
cj2	15'	1522-04-19	Cable, #4 Cu THHN 600V Str.
d1	2	7102-04-91	Washers, square, 5/8"
ek1	2	4290-70-63	Locknuts, 5/8"
eq4	1	0780-28-03	Bracket, standoff, Fiberglass, 3Ø double position
fi	3	1172-90-33	Clamp, hotline #6 - 4/0
pl	6	1781-17-80	Connectors, Lightning arrester
pt	1	4313-23-12	Connectors, #6, ground wire to ground rod, ONE-SHOT (CR-1)

NOTES:

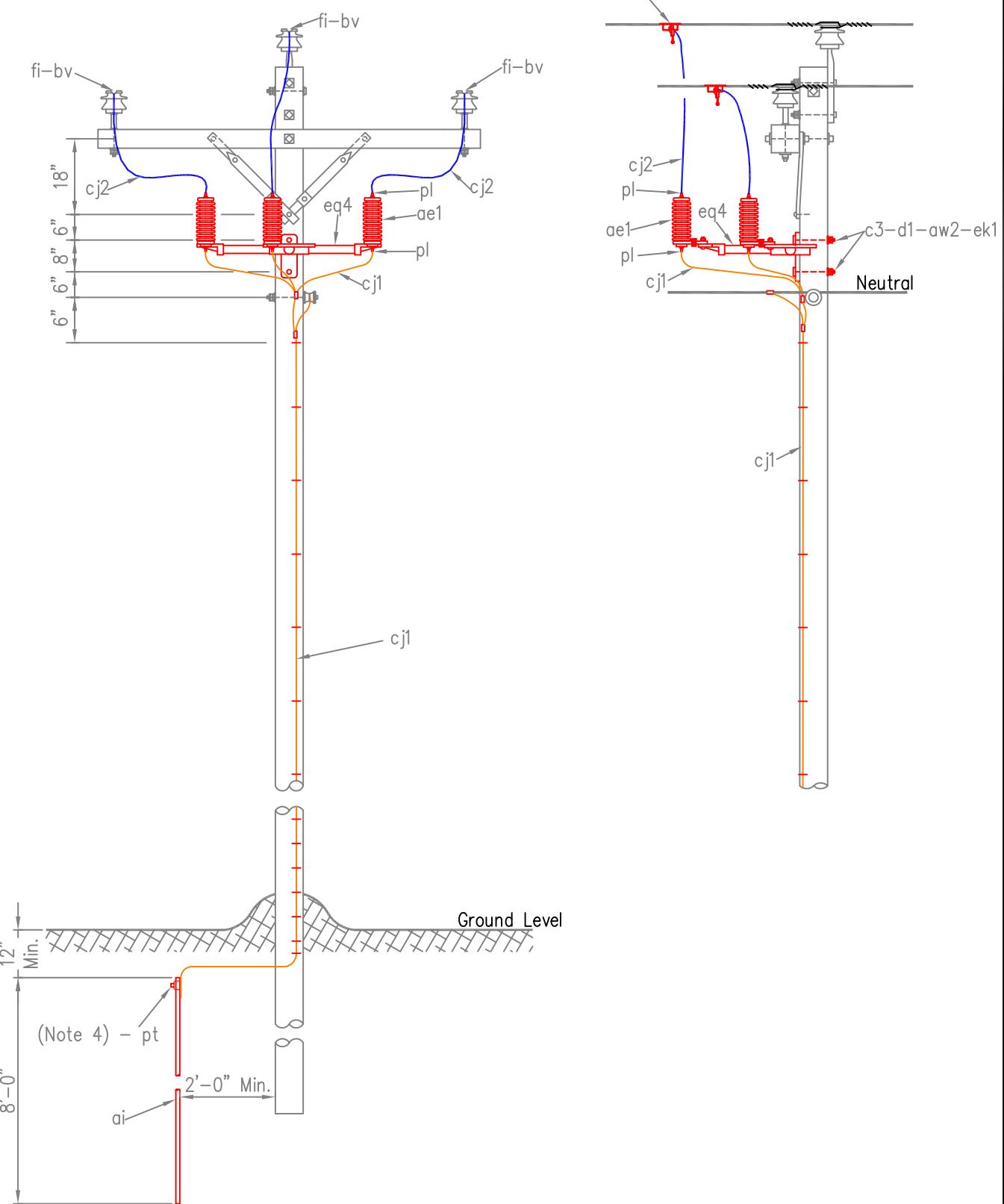
1. Ground to be located on same side as neutral conductor and in quadrant opposite climbing space or pole top pin.
2. Staples on ground wire shall be 2'-0" apart for a distance of 8'-0" above ground and 8'-0" from top of pole where they shall be 6" apart.
3. Ground Wire to clear ALL hardware by 2" minimum and shall be stapled to maintain this position.
4. All new construction shall use thermoweld mold CR-1 for all new ground rod and ground wire connections.
5. Bolt lengths will be determined by the pole diameter at the position of the down lead bracket location. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

14.4/24.9 kV, SINGLE CIRCUIT  
LIGHTNING ARRESTER AND  
GROUND ASSEMBLY

ISSUED	2/04/2008
REVISED	5/06/2010
STANDARD NUMBER	VM2-11SC



DATE	REVISION

14.4/24.9 kV, SINGLE CIRCUIT  
LIGHTNING ARRESTER AND  
GROUND ASSEMBLY

ISSUED	2/04/2008
REVISED	5/06/2010
STANDARD NUMBER	VM2-11SC

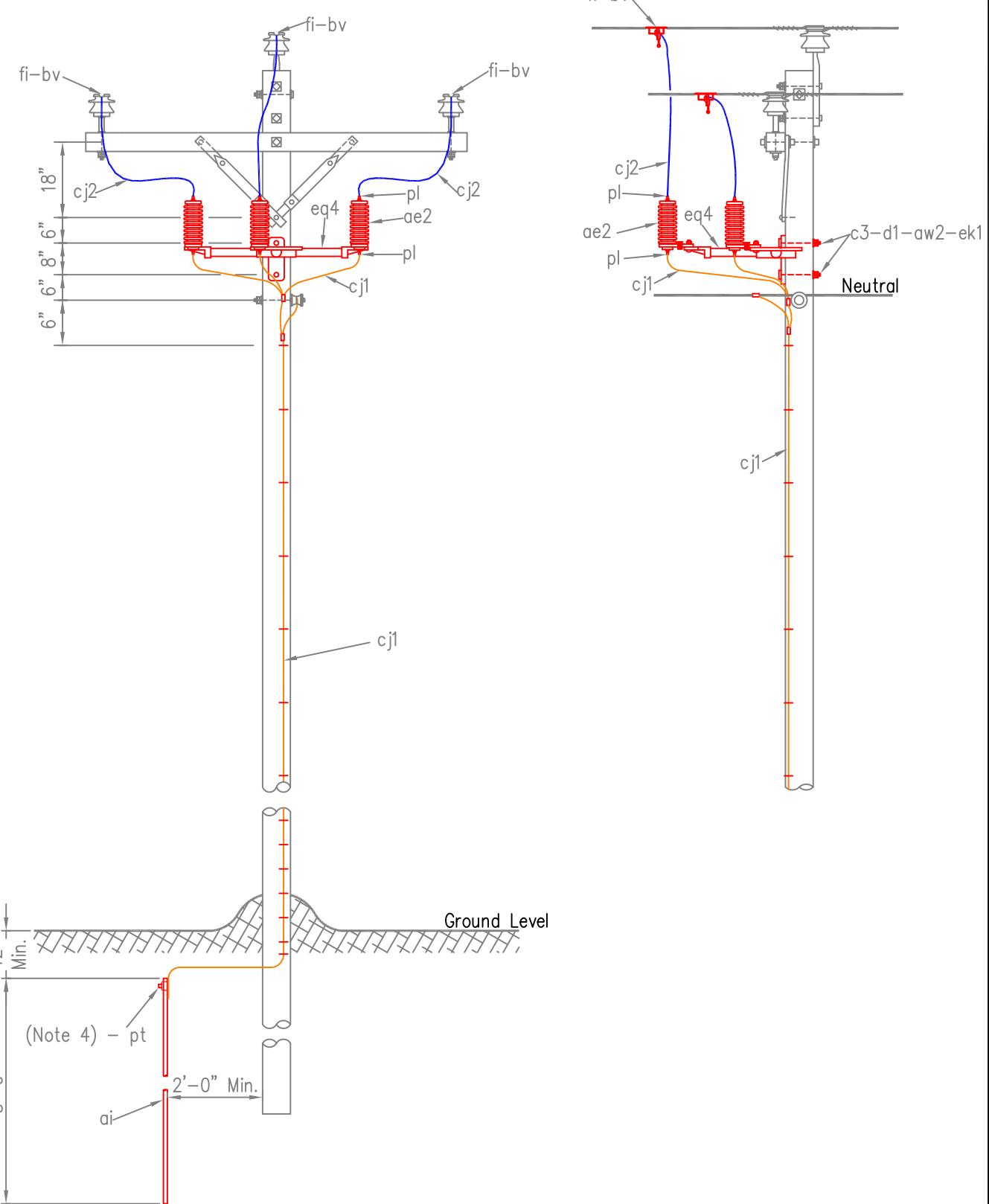
ITM.	QTY.	MAT.CODE No	MATERIAL
ae2	3	0152-10-39	Arrester, 7.2 lightning, 10 kV (No Bracket)
ai	1	5380-10-08	Rod, ground
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
bv	3	1741-XX-XX	Stirrup, (Specify conductor size)
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
cj1	60'	7250-06-01	Wire, #6 SD Cu
cj2	15'	1522-04-19	Cable, #4 Cu THHN 600V Str.
d1	2	7102-04-91	Washers, square, 5/8"
ek1	2	4290-70-63	Locknuts, 5/8"
eq4	1	0780-28-03	Bracket, standoff, Fiberglass, 3Ø double position
fi	3	1172-90-33	Clamp, hotline #6 - 4/0
pl	6	1781-17-80	Connectors, Lightning arrester
pt	1	4313-23-12	Connectors, #6, ground wire to ground rod, ONE-SHOT (CR-1)

NOTES:

1. Ground to be located on same side as neutral conductor and in quadrant opposite climbing space or pole top pin.
2. Staples on ground wire shall be 2'-0" apart for a distance of 8'-0" above ground and 8'-0" from top of pole where they shall be 6" apart.
3. Ground Wire to clear ALL hardware by 2" minimum and shall be stapled to maintain this position.
4. All new construction shall use thermOweld mold CR-1 for all new ground rod and ground wire connections.
5. Bolt lengths will be determined by the pole diameter at the position of the down lead bracket location. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	7.2/12.5 kV, SINGLE CIRCUIT LIGHTNING ARRESTER AND GROUND ASSEMBLY	ISSUED	2/04/2008
			REVISED	5/06/2010
			STANDARD NUMBER	
				M2-11SC



DATE	REVISION

7.2/12.5 kV, SINGLE CIRCUIT  
LIGHTNING ARRESTER AND  
GROUND ASSEMBLY

ISSUED	2/04/2008
REVISED	5/06/2010
STANDARD NUMBER	M2-11SC

ITEM.	QTY.	MAT.CODE No	MATERIAL
ae1	6	0152-19-39	Arrester, 14.4 lightning, 18 KV (No Bracket)
ai	1	5380-10-08	Rod, ground
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
bv	6	1741-XX-XX	Stirrup, (Specify conductor size)
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
cj1	50'	7250-06-01	Wire, #6 SD Cu
cj2	30'	1522-04-19	Cable, #4 Cu THHN 600V Str
cj3	50'	1522-02-19	Cable, #2 Cu THHN 600V Str
d1	4	7102-04-91	Washers, square, 5/8"
ek1	4	4290-70-63	Locknuts 5/8"
eq4	2	0780-28-03	Bracket, standoff, Fiberglass, 3Ø, double position
fi	6	1172-90-33	Clamp, hotline #6 - 4/0
pl	12	1781-17-80	Connectors, Lightning arrester
pt2	1	4313-23-16	Connectors, #2, ground wire to ground rod, ONE-SHOT (CR-1)

NOTES:

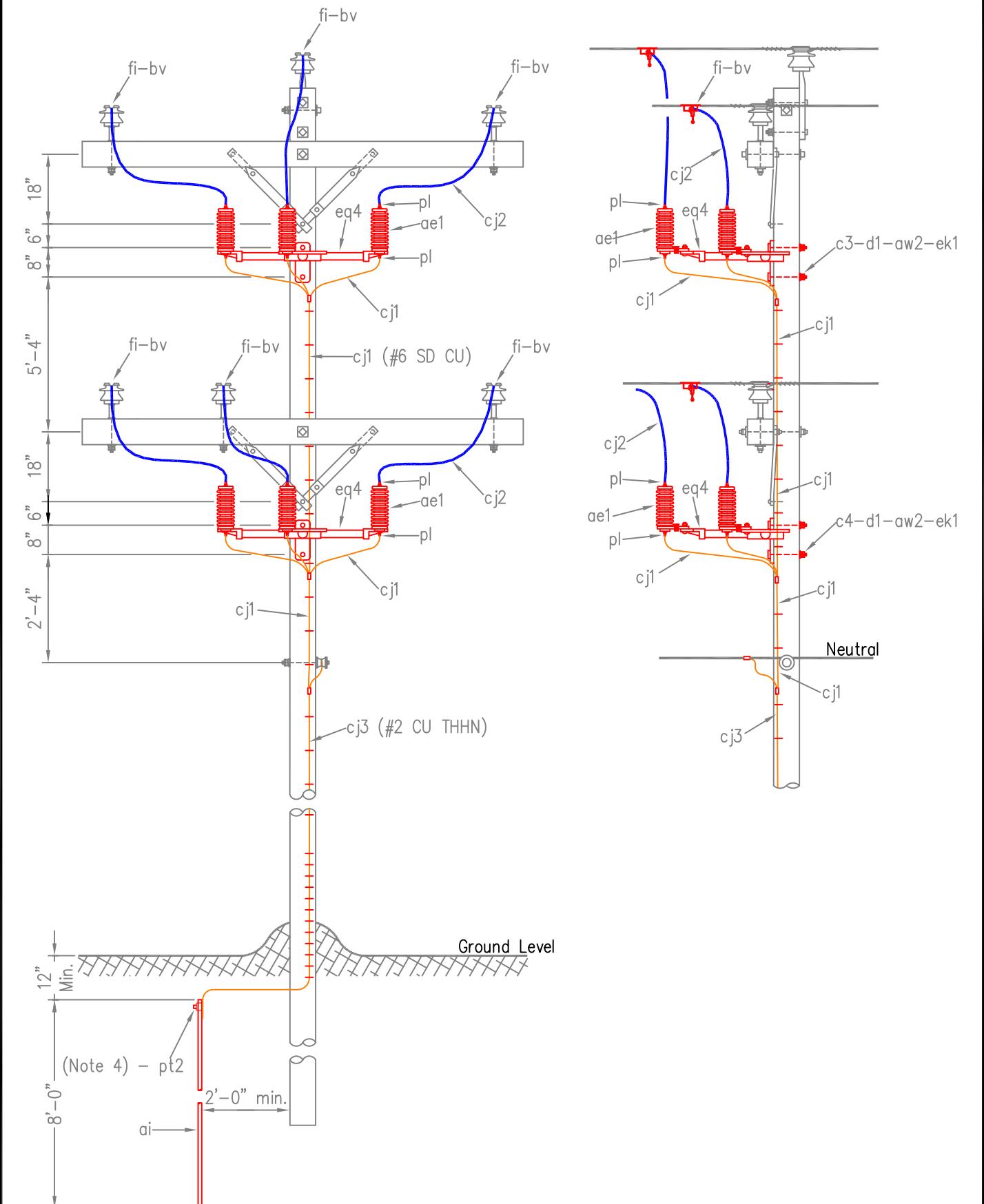
1. Ground to be located on same side as neutral conductor and in quadrant opposite climbing space or pole top pin.
2. Staples on ground wire shall be 2'-0" apart for a distance of 8'-0" above ground and 8'-0" from top of pole where they shall be 6" apart.
3. Ground Wire to clear ALL hardware by 2" minimum and shall be stapled to maintain this position.
4. All new construction shall use thermOweld mold CR-1 for all new ground rod and ground wire connections.
5. Bolt lengths will be determined by the pole diameter at the position of the down lead bracket location. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

14.4/24.9 kV, DOUBLE CIRCUIT  
LIGHTNING ARRESTER AND  
GROUND ASSEMBLY

ISSUED	2/04/2008
REVISED	5/06/2010
STANDARD NUMBER	VM2-11DC



DATE	REVISION

14.4/24.9 kV, DOUBLE CIRCUIT  
LIGHTNING ARRESTER AND  
GROUND ASSEMBLY

ISSUED 2/04/2008  
REVISED 5/06/2010  
STANDARD NUMBER  
VM2-11DC

ITEM.	QTY.	MAT.CODE No	MATERIAL
ae2	6	0152-10-39	Arrester, 7.2 lightning, 10 kV (No Bracket)
ai	1	5380-10-08	Rod, ground
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
bv	6	1741-XX-XX	Stirrup, (Specify conductor size)
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
cj1	50'	7250-06-01	Wire, #6 SD Cu
cj2	30'	1522-04-19	Cable, #4 Cu THHN 600V Str
cj3	50'	1522-02-19	Cable, #2 Cu THHN 600V Str
d1	4	7102-04-91	Washers, square, 5/8"
ek1	4	4290-70-63	Locknuts 5/8"
eq4	2	0780-28-03	Bracket, standoff, Fiberglass, 3Ø, double position
fi	6	1172-90-33	Clamp, hotline #6 - 4/0
pl	12	1781-17-80	Connectors, Lightning arrester
pt2	1	4313-23-16	Connector, #2, ground wire to ground rod, ONE-SHOT (CR-1)

NOTES:

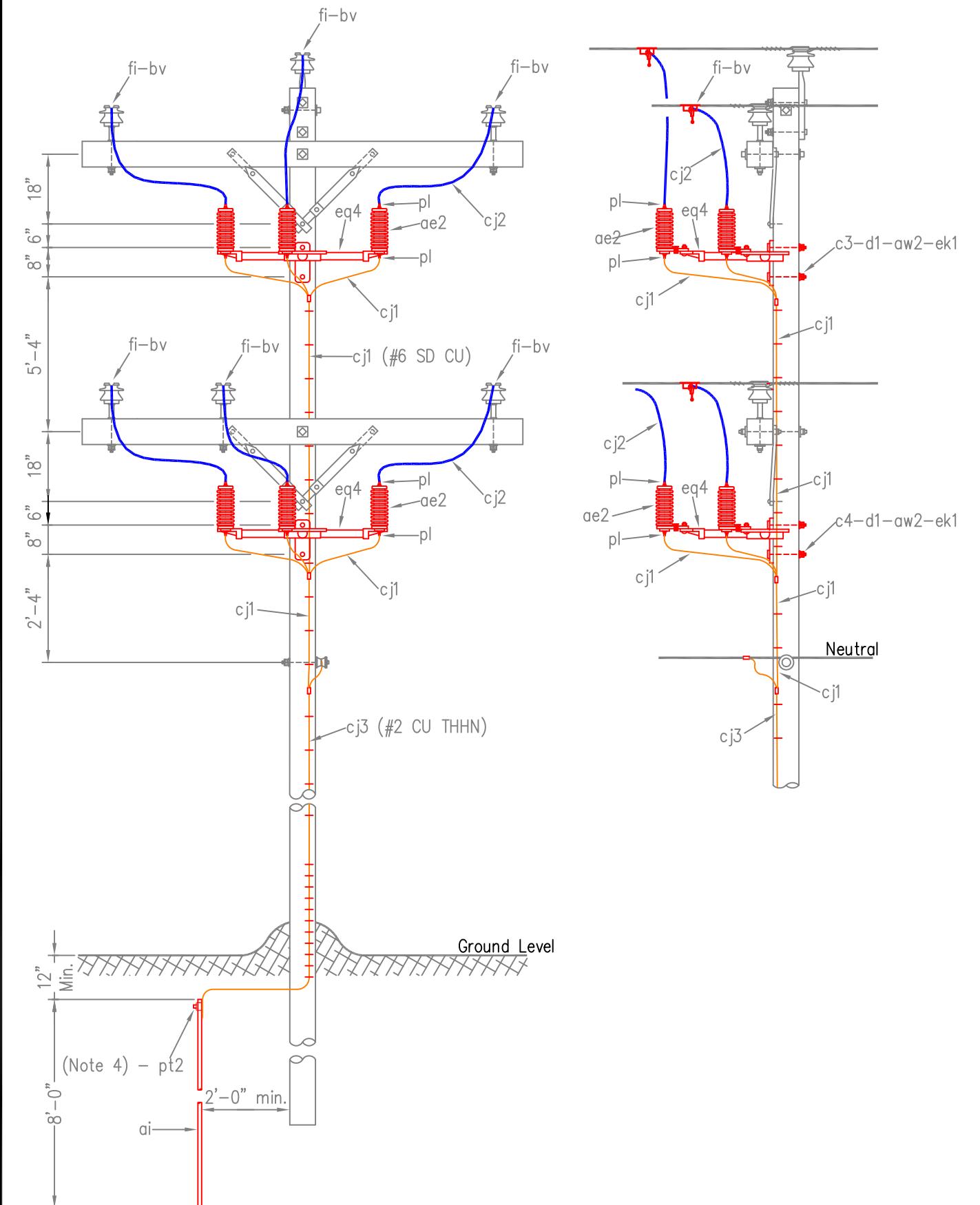
1. Ground to be located on same side as neutral conductor and in quadrant opposite climbing space or pole top pin.
2. Staples on ground wire shall be 2'-0" apart for a distance of 8'-0" above ground and 8'-0" from top of pole where they shall be 6" apart.
3. Ground Wire to clear ALL hardware by 2" minimum and shall be stapled to maintain this position.
4. All new construction shall use thermOweld mold CR-1 for all new ground rod and ground wire connections.
5. Bolt lengths will be determined by the pole diameter at the position of the down lead bracket location. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

7.2/12.5 kV, DOUBLE CIRCUIT  
LIGHTNING ARRESTER AND  
GROUND ASSEMBLY

ISSUED	2/04/2008
REVISED	5/06/2010
STANDARD NUMBER	M2-11DC



DATE	REVISION

7.2/12.5 kV, DOUBLE CIRCUIT  
LIGHTNING ARRESTER AND  
GROUND ASSEMBLY

ISSUED	2/04/2008
REVISED	5/06/2010
STANDARD NUMBER	M2-11DC

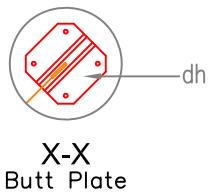
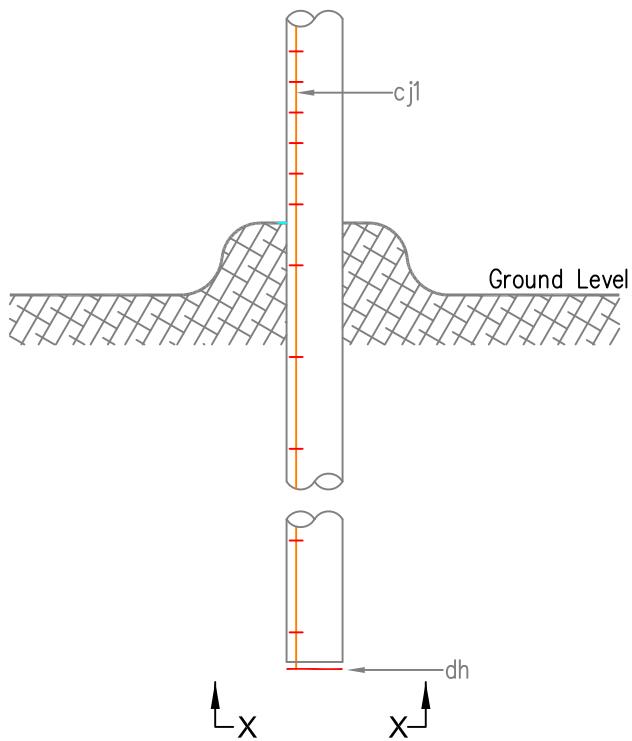
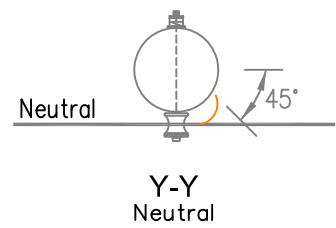
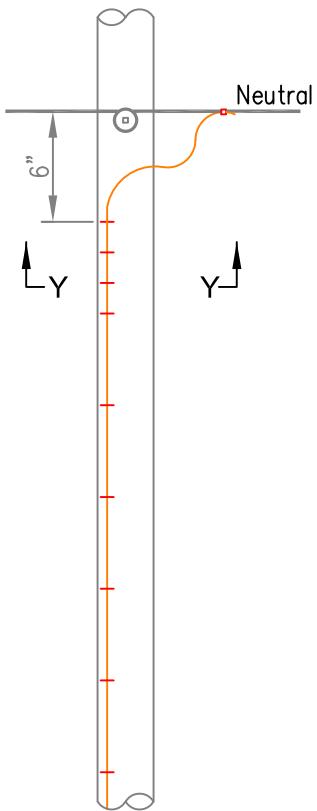
ITEM.	QTY.	MAT.CODE No	MATERIAL
cj1	50'	7250-06-01	Wire, #6 SD Cu
dh	1	4680-04-24	Grounding, copper butt plate

NOTES:

1. Ground to be located on same side as neutral conductor and in quadrant opposite climbing space or pole top pin.
2. Staples on ground wire shall be 2'-0" apart for a distance of 8'-0" above ground and 8'-0" from top of pole where they shall be 6" apart.
3. Ground Wire to clear ALL hardware by 2" minimum and shall be stapled to maintain this position.



DATE	REVISION	GROUND ASSEMBLY (BUTT PLATE)	ISSUED	2/04/2008
			REVISED	8/5/2011
			STANDARD NUMBER	
				VM2-12



DATE	REVISION

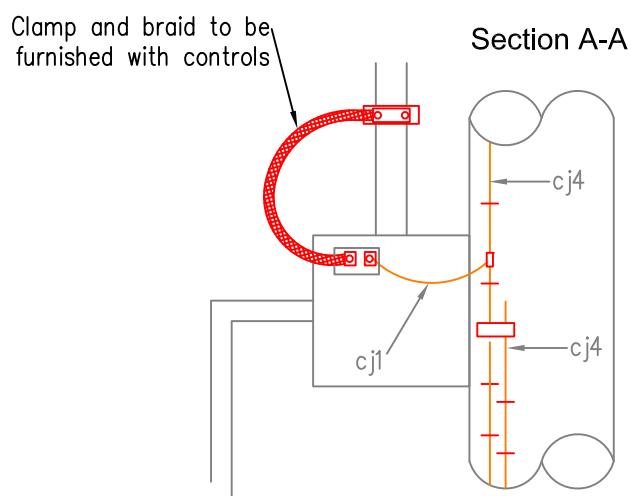
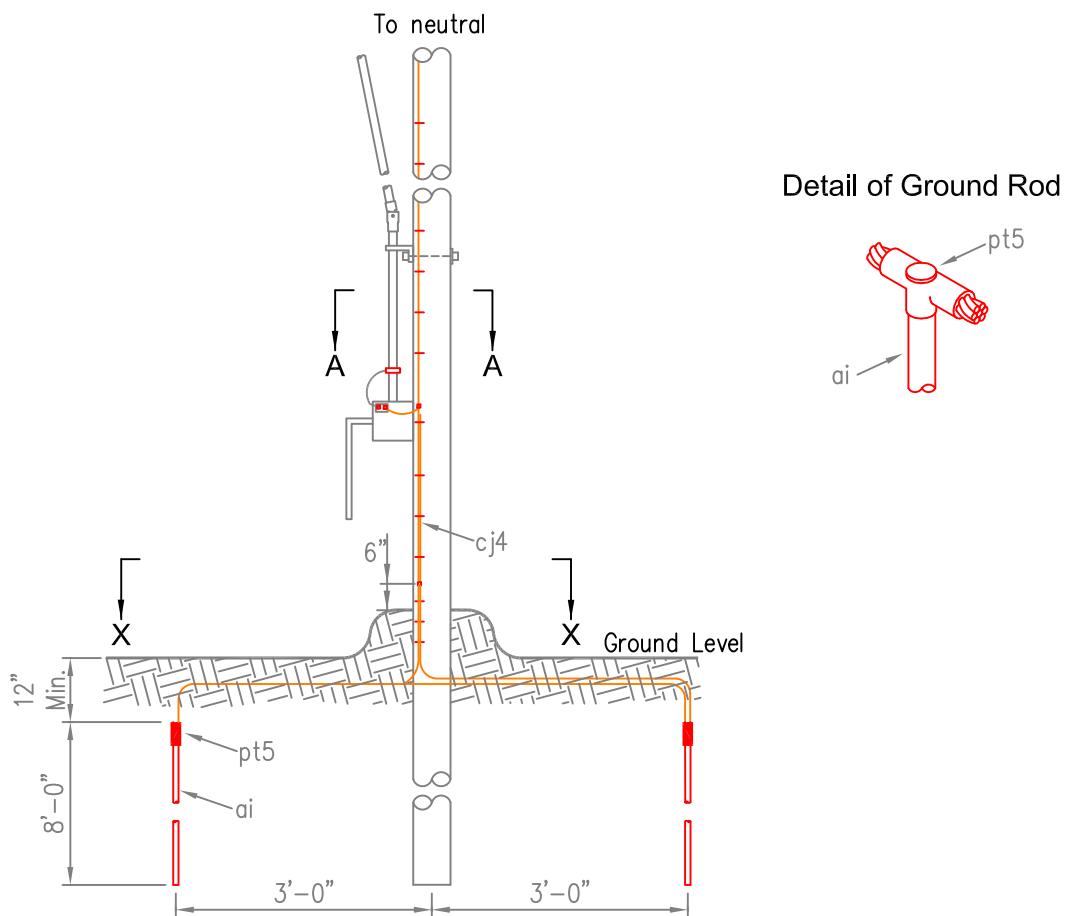
GROUND ASSEMBLY  
(BUTT PLATE)

ISSUED	2/04/2008
REVISED	8/5/2011
STANDARD NUMBER	VM2-12

ITM.	QTY.	MAT.CODE No	MATERIAL
ai	4	5380-10-08	Rod, ground
cj1	2'	7250-06-01	Wire, #6 SD Cu
cj4	75'	1522-10-19	Cable, 1/0 Cu THHN 600V Str
pt5	4	4313-30-18	Connector, 1/0, ground wire to ground rod, ONE-SHOT (CR-2)



DATE	REVISION	14.4/24.9 kV, GROUND ASSEMBLY GROUND ROD TYPE FOR SECTIONALIZING AIR BREAK SWITCH	ISSUED	2/04/2008
			REVISED	
			STANDARD NUMBER	
			VM2-15	



14.4/24.9 KV, GROUND ASSEMBLY  
GROUND ROD TYPE FOR  
SECTIONALIZING AIR BREAK SWITCH



DATE	REVISION

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VM2-15

ITM.	QTY.	MAT.CODE No	MATERIAL
aa	7	4290-40-63	Nuts, ovaleye 5/8"
ah3	2	6790-XX-44	Neutral deadend tie, (Specify conductor size)
aw2	13	7108-99-41	Washers, double spring lock, 5/8"
cz	12	0630-04-02	Bolts, 1/2" x 2", zinc plated
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
cu2	2	0753-51-68	Brace, crossarm 60" span 18" drop (pair)
dy	12	7107-54-97	Washer, lock, 1/2" zinc plated
dz	24	7103-54-97	Washers, flat 1/2" zinc plated
d1	21	7102-04-91	Washers, square, 5/8"
ez	12	4290-90-50	Nut, hex 1/2" zinc plated
ek1	21	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
g2	2	1809-01-03	Crossarm, Wood 10'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
k	6	3428-60-60	Insulator, polymer suspension
l	8	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
n3	5	0633-05-24	Bolts, DA 5/8" x 24"
o3	1	0636-15-12	Bolts, ovaleye 5/8" x 12"
ps	6	1702-XX-XX	Connectors, Terminal, Hylug, (Specify conductor)
sb1	3	6522-64-04	Switch, disconnect, 25kV, hookstick

NOTES:

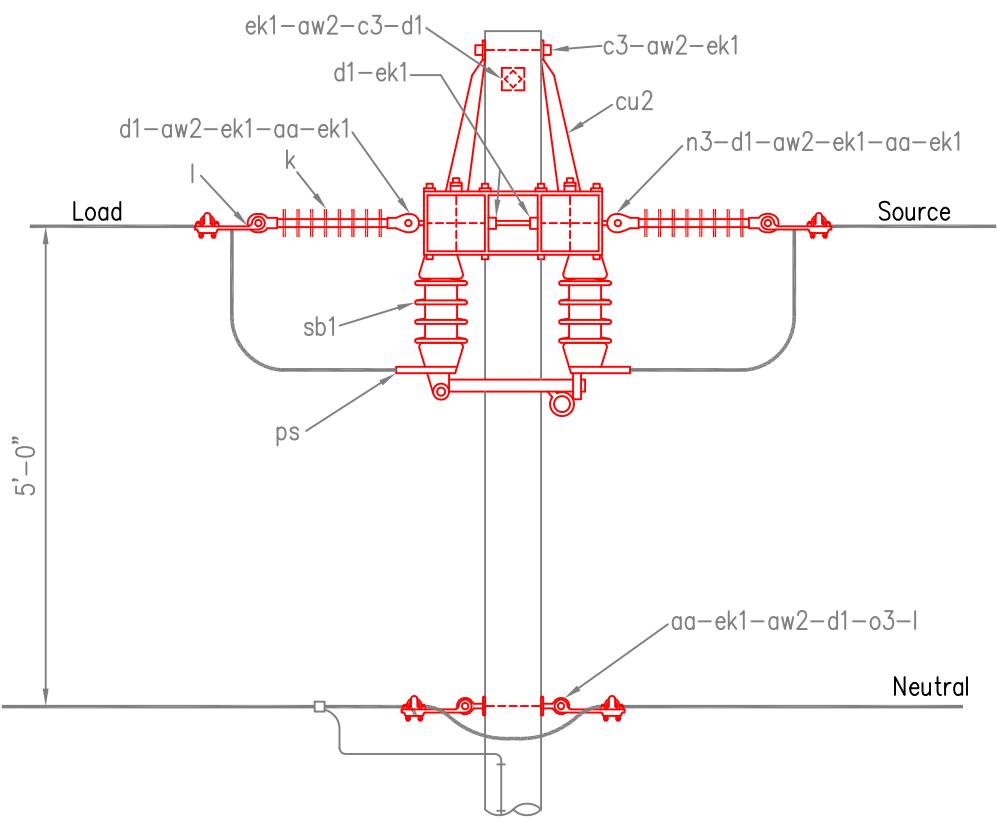
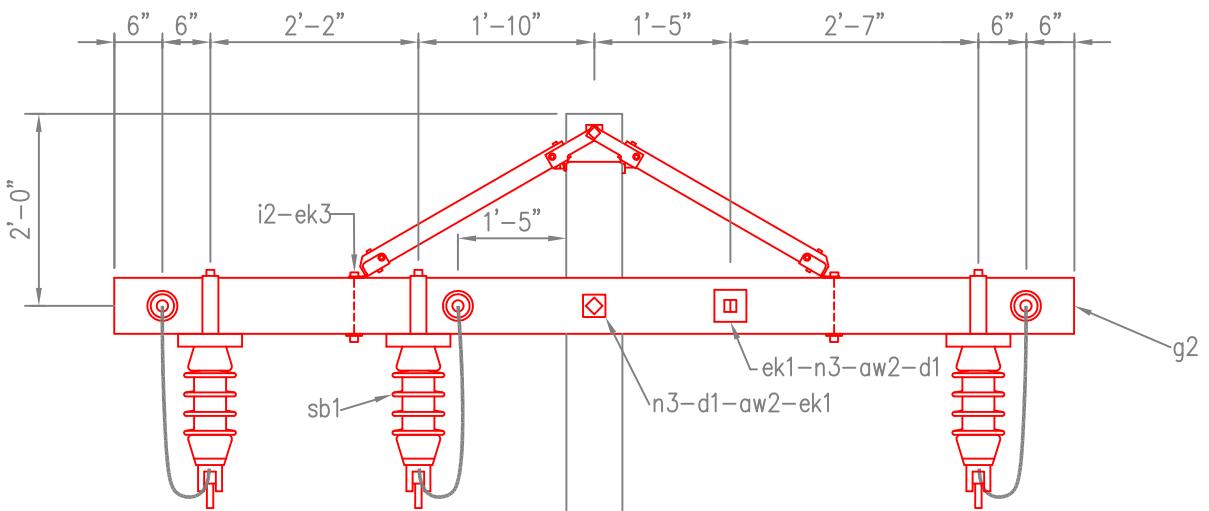
1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

14.4/24.9 kV,  
THREE SECTIONALIZING  
DISCONNECT SWITCHES

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VM3-3



DATE	REVISION

14.4/24.9 kV,  
THREE SECTIONALIZING  
DISCONNECT SWITCHES

ISSUED	2/04/2008
REVISED	5/18/2010
STANDARD NUMBER	VM3-3

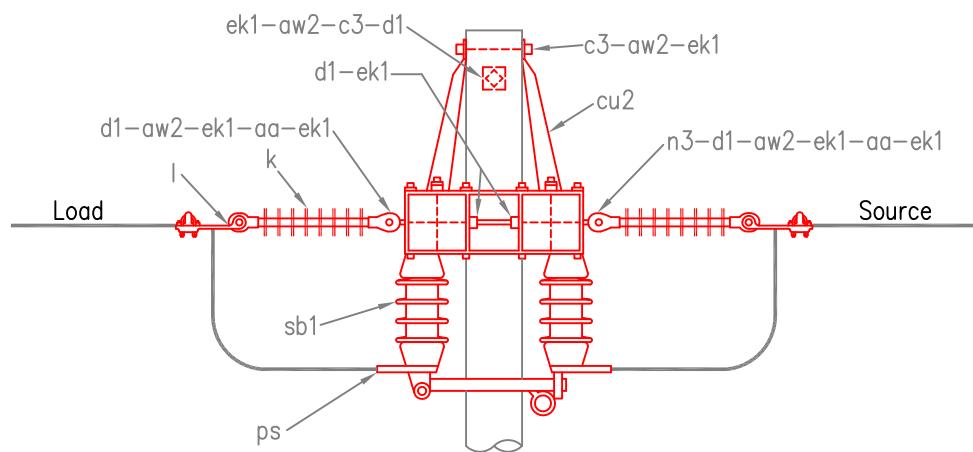
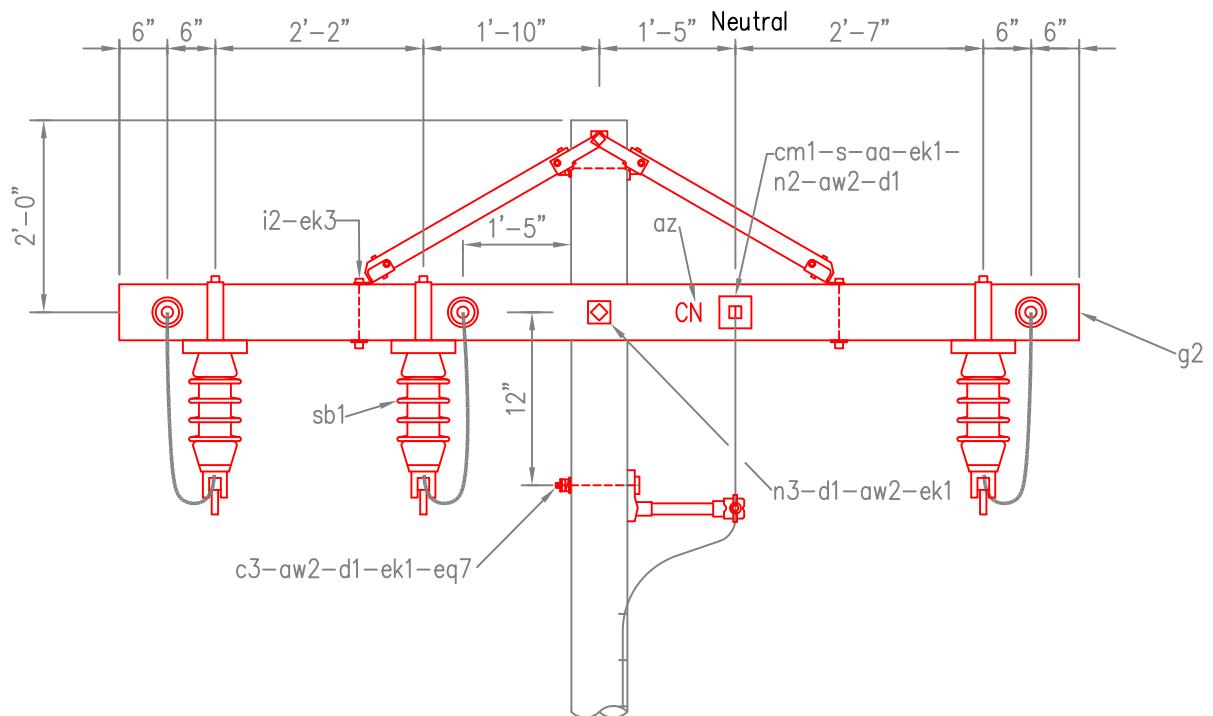
ITEM.	QTY.	MAT.CODE No	MATERIAL
aa	8	4290-40-63	Nuts, ovaleye 5/8"
aw2	13	7108-99-41	Washers, double spring lock, 5/8"
az	2	4260-21-04	CN Metal Tag
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
cu2	2	0753-51-68	Brace, Crossarm 60" span 18" drop (pair)
cz	12	0630-04-02	Bolts, 1/2"X2", Zinc Plated
d1	21	7102-04-91	Washers, square, 5/8"
dy	12	7107-54-97	Washers, lock, 1/2" Zinc Plated
dz	24	7103-54-97	Washers, flat, 1/2" Zinc Plated
ek1	21	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
eq7	1	0780-37-01	Bracket, Down lead, fiberglass 12"
ez	12	4290-90-50	Nuts, hex, 1/2" Zinc Plated
g2	2	1809-01-03	Crossarm, Wood 10'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
k	6	3428-60-60	Insulator, polymer suspension
l	8	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
n3	5	0633-05-24	Bolts, DA 5/8" x 24"
ps	6	1702-XX-XX	Connectors, Terminal, Hylug, (Specify conductor)
sb1	3	6522-64-04	Switch, disconnect, 25kV, hookstick

NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

ENGINEERING APPROVAL ONLY

	DATE	REVISION	14.4/24.9 kV, THREE SECTIONALIZING DISCONNECT SWITCHES NEUTRAL ON CROSSARM	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VM3-3A



**ENGINEERING APPROVAL ONLY**



DATE	REVISION

14.4/24.9 kV,  
THREE SECTIONALIZING  
DISCONNECT SWITCHES  
NEUTRAL ON CROSSARM

ISSUED	2/04/2008
REVISED	5/18/2010
STANDARD NUMBER	VM3-3A

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	2	0152-19-32	Arrester, 14.4 lightning, 18kV (Transformer Bracket)
af2	3	1831-22-12	Cutout 14.4, fuse (No Bracket)
afs	2	1831-25-92	Solid blade Only
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
be1	1	5043-1X-XX	Recloser, oil circuit, 1Ø SEE TABLE BELOW
c3	4	0638-05-12	Bolts, machine 5/8" x 12"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	2	7102-04-91	Washers, square 5/8"
ek1	4	4290-70-63	Locknuts 5/8"
eq1	2	0780-32-01	Bracket, standoff Fiberglass, single phase, double position
pl	4	1781-17-80	Connectors, Lightning arrester

#### RECLOSERS TYPE 4E

CoServ #	Size Amps
5043-12-20	50
5043-12-23	70
5043-12-26	100
5043-12-29	140

#### RECLOSERS TYPE E

CoServ #	Size Amps
5043-11-11	15
5043-11-14	25
5043-11-17	35
5043-11-20	50
5043-11-23	70
5043-11-26	100

#### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

#### NOTES:

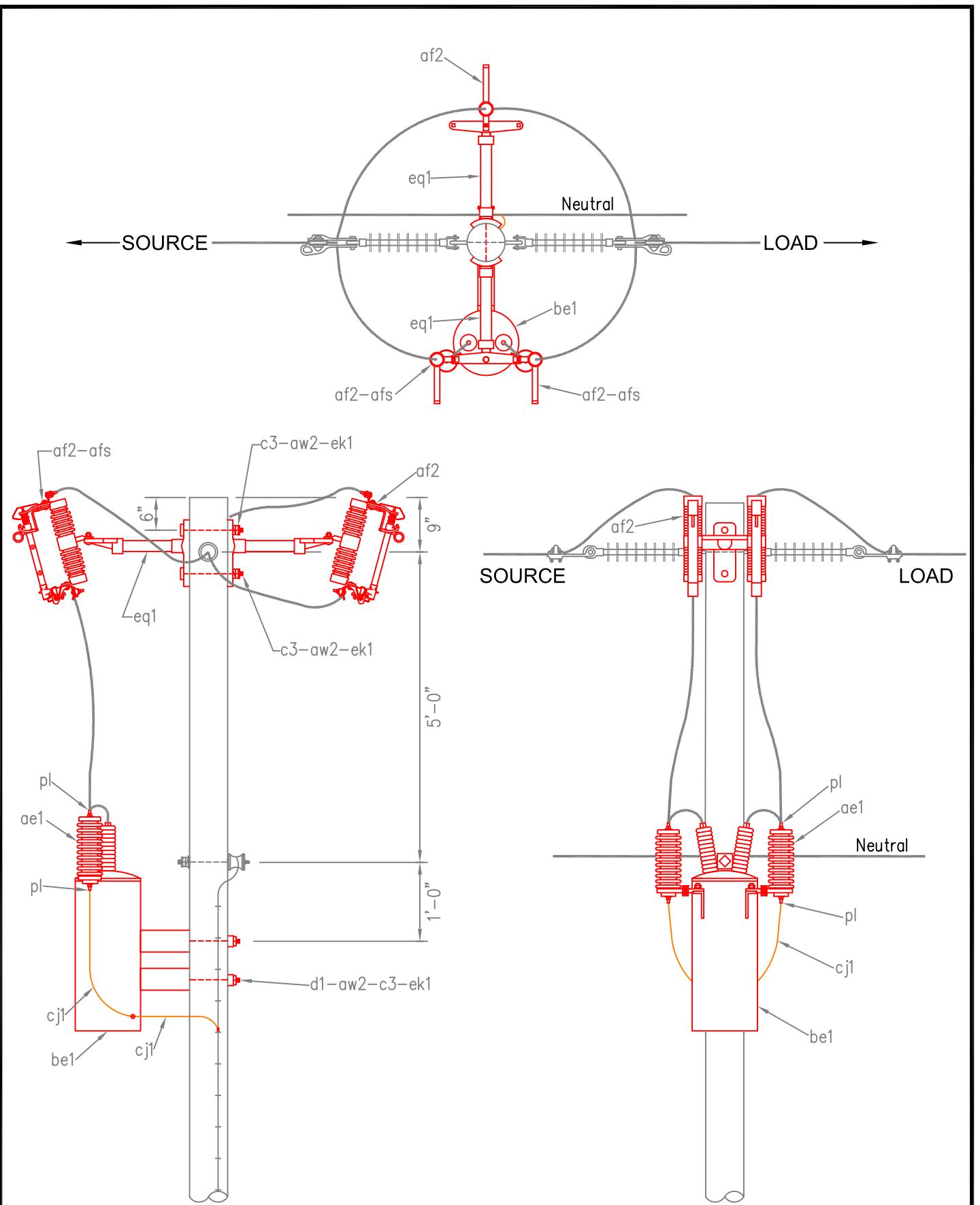
1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

14.4/24.9 kV,  
ONE SECTIONALIZING  
OIL CIRCUIT RECLOSER

ISSUED	2/04/2008
REVISED	5/21/2010
STANDARD NUMBER	VM3-10A



DATE	REVISION

14.4/24.9 kV,  
ONE SECTIONALIZING  
OIL CIRCUIT RECLOSER

ISSUED 2/04/2008

REVISED 5/21/2010

STANDARD NUMBER

VM3-10A

ITM.	QTY.	MAT.CODE No	MATERIAL
ae2	2	0152-10-32	Arrester, 7.2 lightning, 10kV (Transformer Bracket)
af2	3	1831-22-12	Cutout 14.4, fuse (No Bracket)
afs	2	1831-25-92	Solid blade Only
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
be1	1	504X-1X-XX	Recloser, oil circuit, 1Ø SEE TABLE BELOW
c3	3	0638-05-12	Bolts, machine 5/8" x 12"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	1	7102-04-91	Washers, square 5/8"
ek1	3	4290-70-63	Locknuts 5/8"
eq1	2	0780-32-01	Bracket, standoff Fiberglass, single phase, double position
pl	4	1781-17-80	Connectors, Lightning arrester

#### RECLOSERS TYPE 4E

CoServ #	Size Amps
5043-12-20	50
5043-12-23	70
5043-12-26	100
5043-12-29	140

#### RECLOSERS TYPE E

CoServ #	Size Amps
5043-11-11	15
5043-11-14	25
5043-11-17	35
5043-11-20	50
5043-11-23	70
5043-11-26	100

#### RECLOSERS TYPE 4H

CoServ #	Size Amps
5042-11-11	15
5042-11-14	25
5042-11-17	35
5042-11-20	50
5042-11-23	70
5042-11-26	100

#### RECLOSERS TYPE H

CoServ #	Size Amps
5042-10-11	15
5042-10-14	25
5042-10-17	35
5042-10-20	50

#### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

#### NOTES:

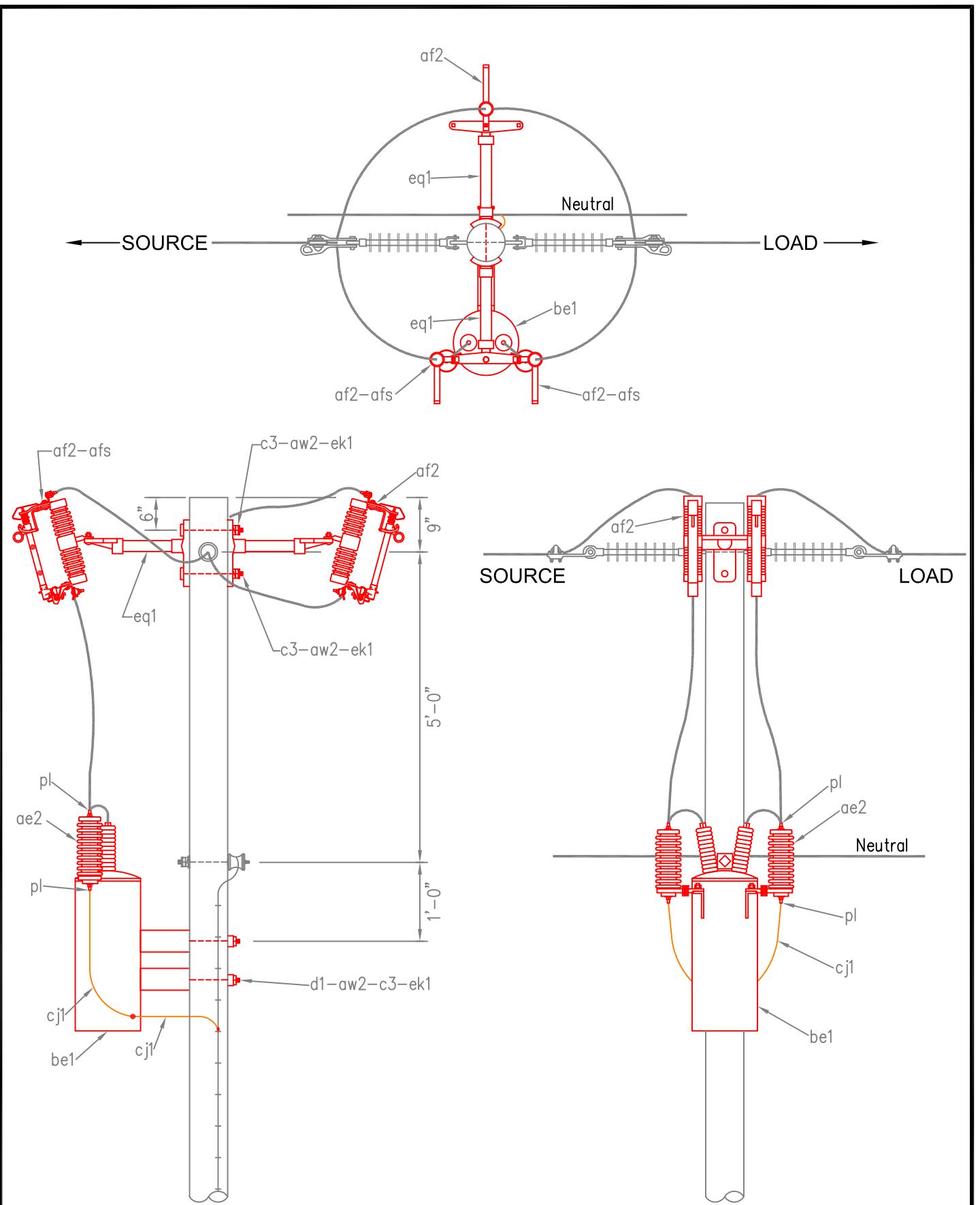
- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

7.2/12.4 kV,  
ONE SECTIONALIZING  
OIL CIRCUIT RECLOSER

ISSUED	2/04/2008
REVISED	5/21/2010
STANDARD NUMBER	M3-10A



DATE	REVISION

7.2/12.4 kV,  
ONE SECTIONALIZING  
OIL CIRCUIT RECLOSER

ISSUED 2/04/2008

REVISED 5/21/2010

STANDARD NUMBER

M3-10A

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	2	0152-19-32	Arrester, 14.4 lightning, 18KV (Transformer Bracket)
be1	1	5043-1X-XX	Recloser, oil circuit, 1Ø SEE TABLE BELOW
cj1	10'	7250-06-01	Wire, #6 SD Cu
pl	4	1781-17-80	Connectors, Lightning arrester

RECLOSERS TYPE 4E

CoServ #	Size Amps
5043-12-20	50
5043-12-23	70
5043-12-26	100
5043-12-29	140

RECLOSERS TYPE E

CoServ #	Size Amps
5043-11-11	15
5043-11-14	25
5043-11-17	35
5043-11-20	50
5043-11-23	70
5043-11-26	100

NOTES:

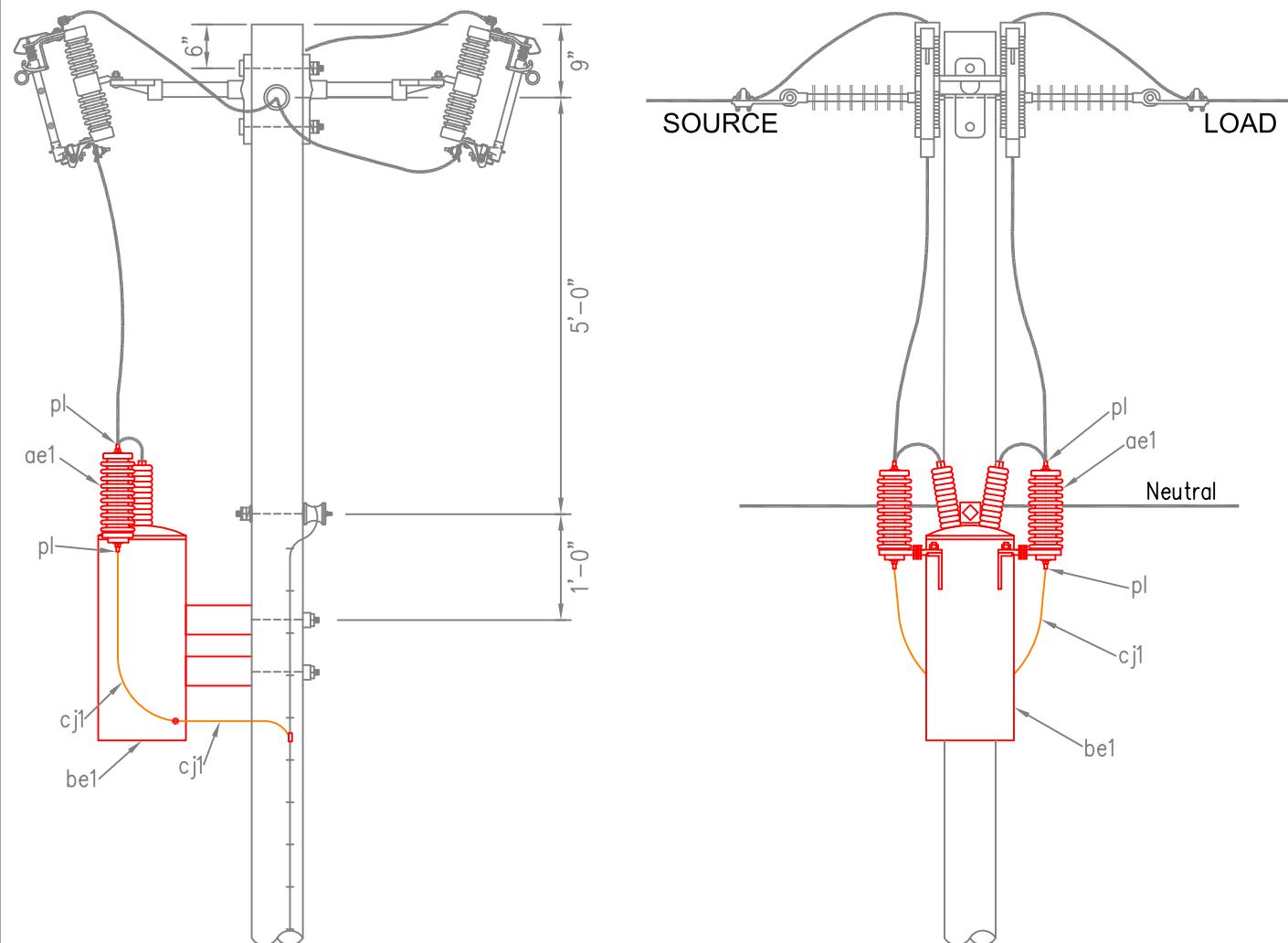
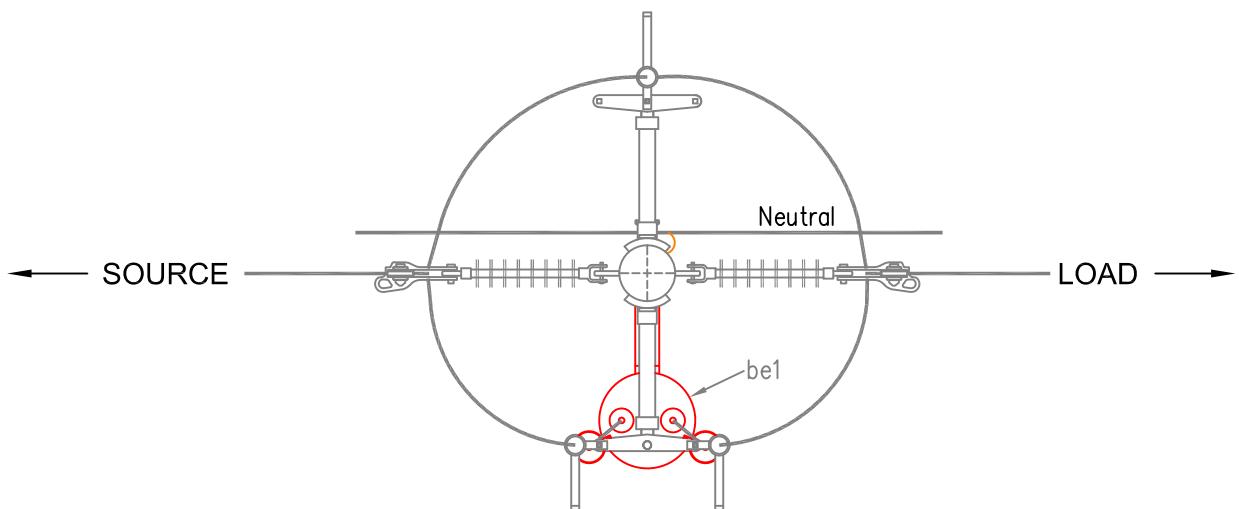
- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

14.4/24.9 kV,  
ONE SECTIONALIZING  
OIL CIRCUIT RECLOSER  
BREAKER ONLY

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VM3-10BO(OIL)



DATE	REVISION

14.4/24.9 kV,  
ONE SECTIONALIZING  
OIL CIRCUIT RECLOSER  
BREAKER ONLY

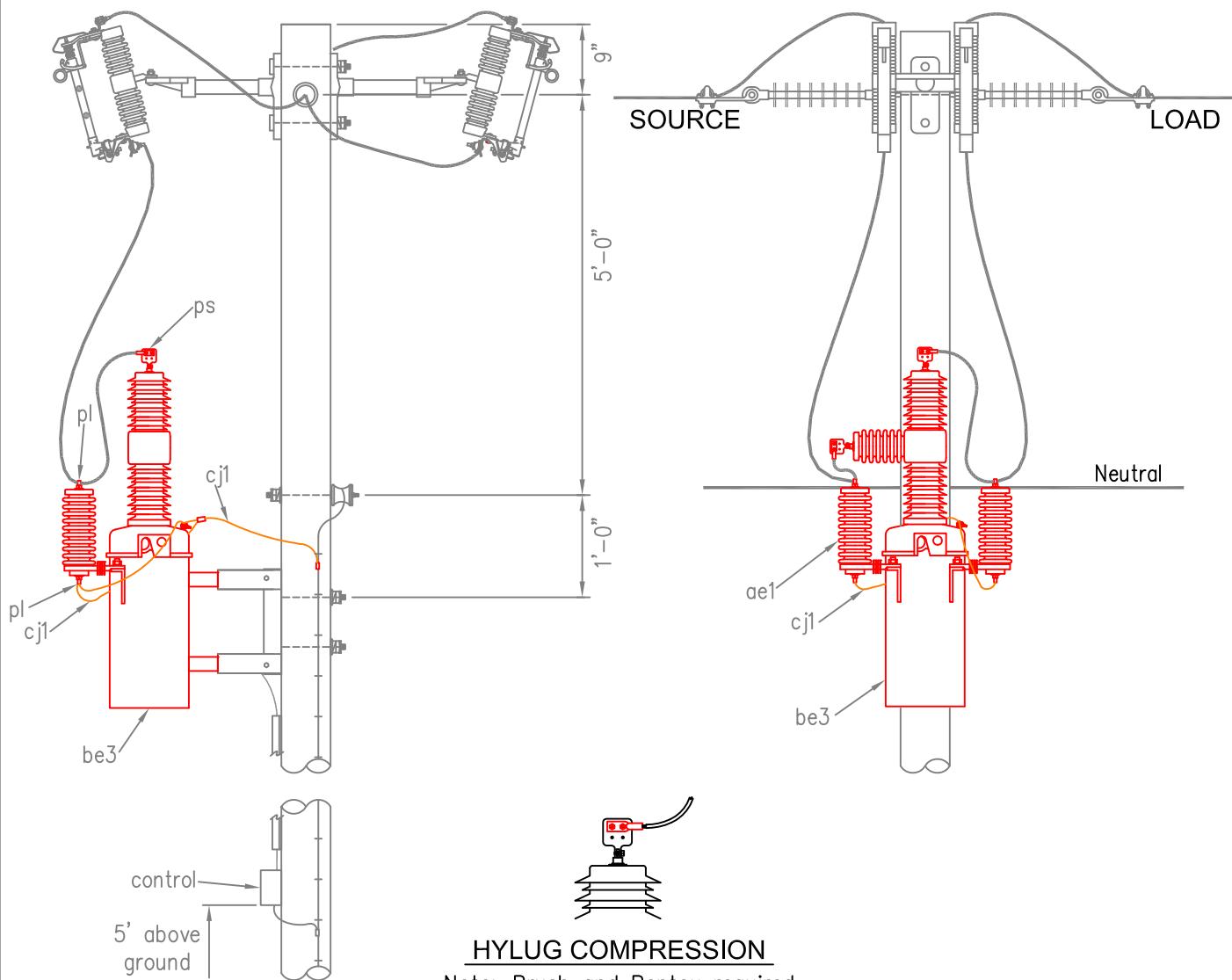
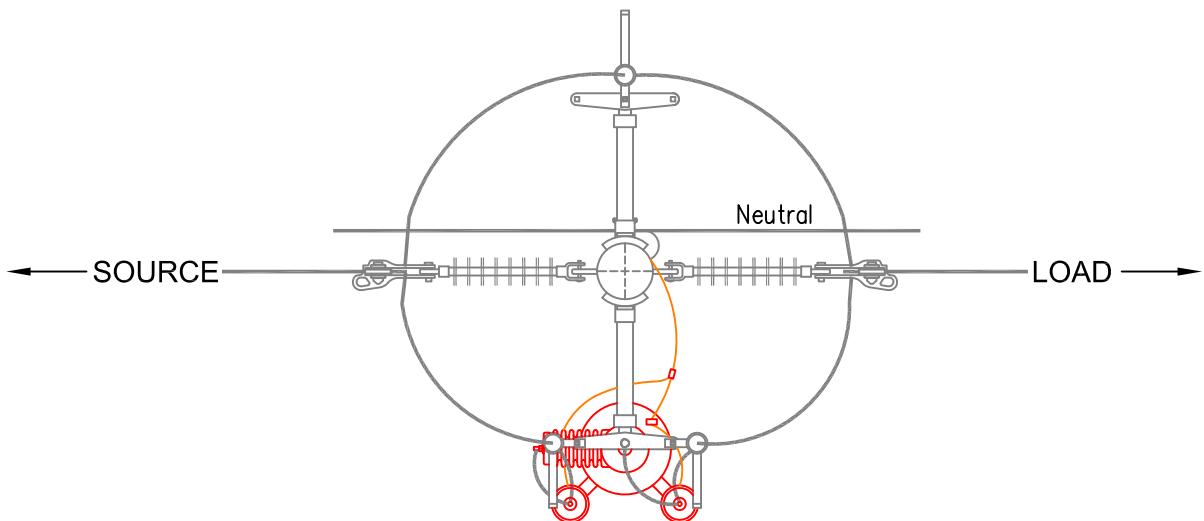
ISSUED	2/04/2008
REVISED	5/21/2010
STANDARD NUMBER	VM3-10BO(OIL)

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	2	0152-19-32	Arrester, 14.4 Lightning, 18kV (Transformer Bracket)
be3	1	5053-16-80	Recloser, vacuum, 1Ø
cj1	10'	7250-06-01	Wire, #6 SD Cu
pl	4	1781-17-80	Connectors, Lightning arrester
ps	2	1702-28-21	Connectors, Terminal, Hylug #1/0 Cu, 1/2" stud

NOTES:

- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, ONE SECTIONALIZING VACUUM CIRCUIT RECLOSER BREAKER ONLY	ISSUED	2/04/2008
				REVISED	5/21/2010
				STANDARD NUMBER	
				VM3-10BO(NOVA)	



DATE	REVISION

14.4/24.9 kV,  
ONE SECTIONALIZING  
VACUUM CIRCUIT RECLOSE  
BREAKER ONLY

ISSUED	2/04/2008
REVISED	5/21/2010
STANDARD NUMBER	VM3-10BO(NOVA)

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	3	0152-19-32	Arrester, 14.4 lightning, 18kV (Transformer Bracket)
af2	4	1831-22-12	Cutout 14.4, fuse (No Bracket)
afs	2	1831-25-92	Solid blade Only
an3	1	6933-11-02	Transformer, 1.5 KVA conventional, 24.9kV/14.4kV - 120/240,
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
be3	1	5053-16-01	Recloser, vacuum, 1Ø with NOVA 1 controls and mounting bracket
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c5	2	0638-05-16	Bolts, machine 5/8" x 16"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	2	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
dn	1	3100-24-92	Cluster bracket, large, transformer
ek1	4	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
eq1	2	0780-32-01	Bracket, standoff, Fiberglass, single phase, double position
99	1	0156-32-30	Arrester Secondary 175V Transformer Mount (Special Order)
pl	6	1781-17-80	Connectors, Lightning arrester
ps	2	1702-28-21	Connectors, Terminal, Hylug #1/0 Cu, 1/2" stud
-	1	0630-06-05	Bolts, A-Bolt Pack

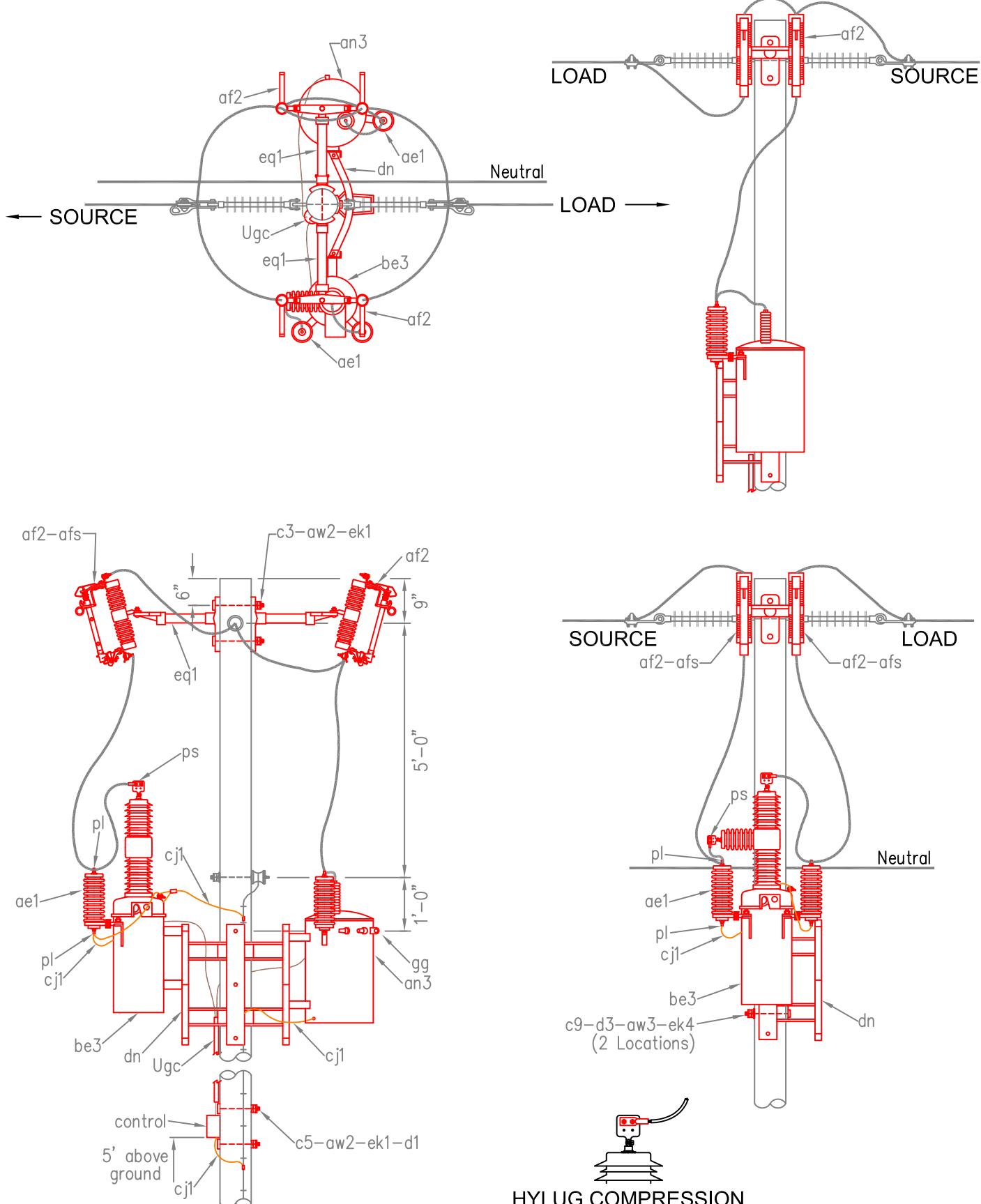
#### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, ONE SECTIONALIZING VACUUM CIRCUIT RECLOSER WITH TRANSFORMER AND NOVA CONTROLS	ISSUED	2/04/2008
				REVISED	5/21/2010
				STANDARD NUMBER	VM3-10N



DATE	REVISION

14.4/24.9 kV,  
ONE SECTIONALIZING  
VACUUM CIRCUIT RECLOSER  
WITH TRANSFORMER AND  
NOVA CONTROLS

ISSUED	2/04/2008
REVISED	5/21/2010
STANDARD NUMBER	VM3-10N

ITM.	QTY.	MAT.CODE No	MATERIAL
ae2	3	0152-10-32	Arrester, 7.2 lightning, 10KV (Transformer Bracket)
af2	4	1831-22-12	Cutout 14.4, fuse (No Bracket)
afs	2	1831-25-92	Solid blade Only
an4	1	6934-11-02	Transformer, conventional, 1 1/2 kVA, 14400/7200 - 120/240
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
be3	1	5053-16-01	Recloser, vacuum, 1Ø with NOVA 1 controls and mounting bracket
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c5	2	0638-05-16	Bolts, machine 5/8" x 16"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	2	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
dn	1	3100-24-92	Cluster bracket, large, transformer
ek1	4	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
eq1	2	0780-32-01	Bracket, standoff, Fiberglass, single phase, double position
99	1	0156-32-30	Arrester Secondary 175V Transformer Mount (Special Order)
pl	6	1781-17-80	Connectors, Lightning arrester
ps	2	1702-28-21	Connectors, Terminal, Hylug #1/0 Cu, 1/2" stud
-	1	0630-06-05	Bolts, A-Bolt Pack

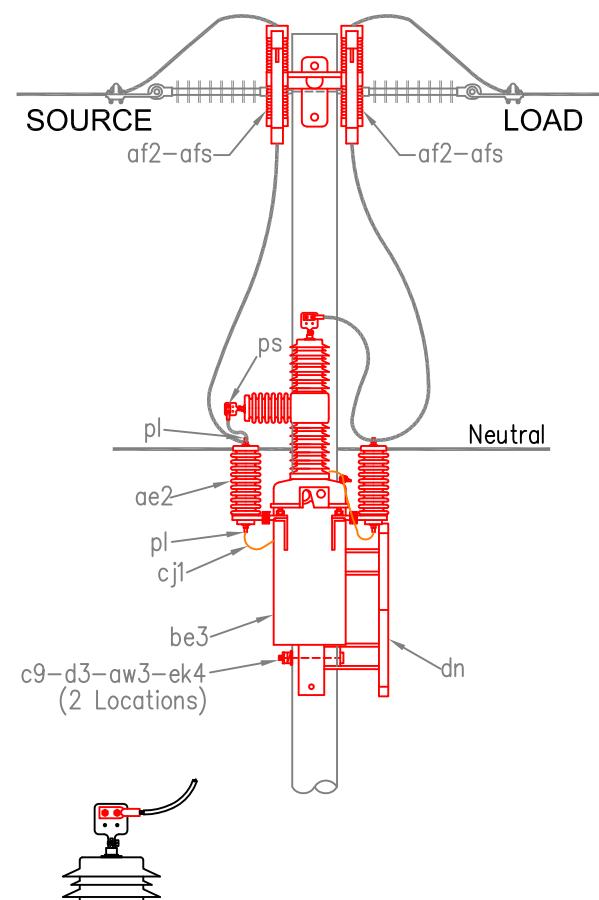
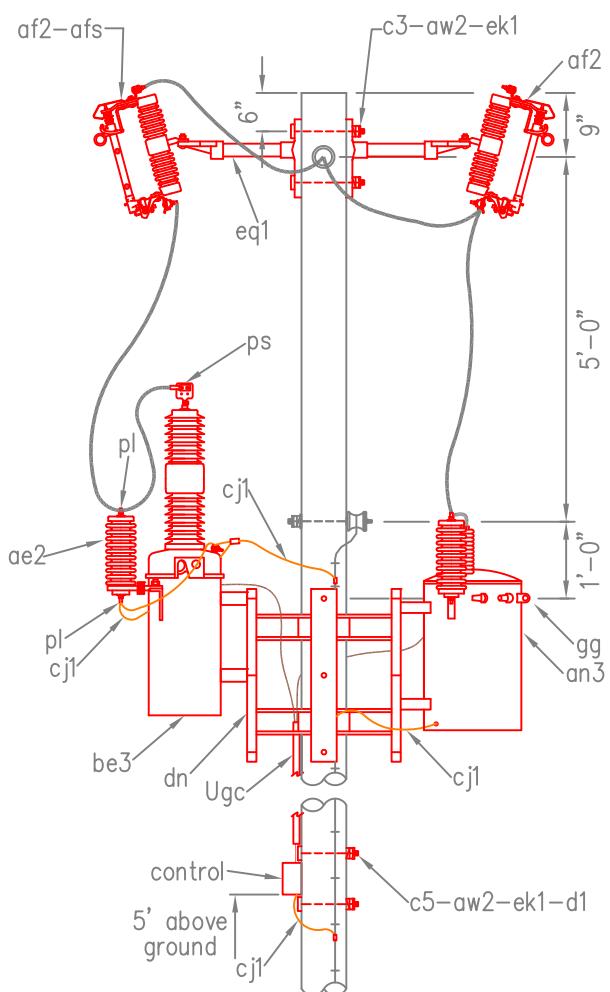
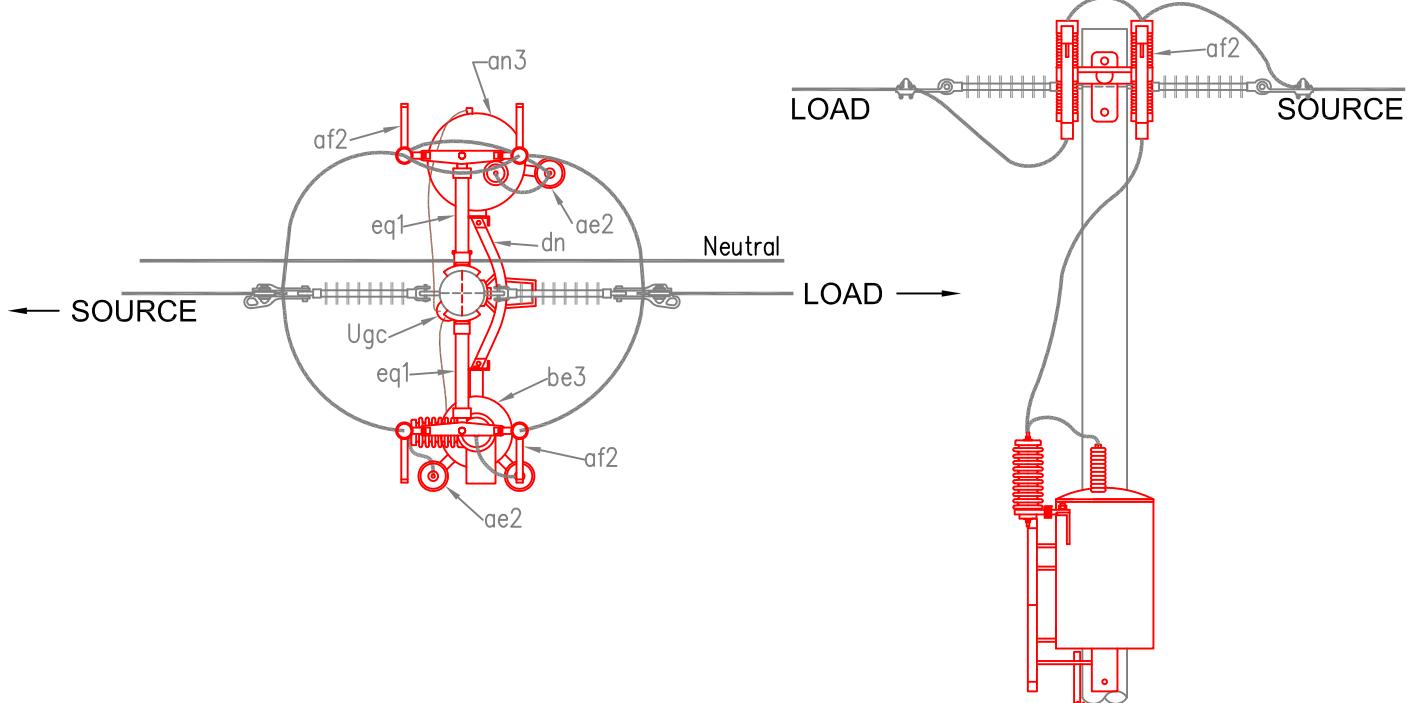
#### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

#### NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	7.2/12.5 kV, ONE SECTIONALIZING VACUUM CIRCUIT RECLOSER WITH TRANSFORMER AND NOVA CONTROLS	ISSUED	7/20/2012
				REVISED	-
				STANDARD NUMBER	
					M3-10N



**HYLUG COMPRESSION**  
Note: Brush and Pentox required



DATE	REVISION

7.2/12.5 kV,  
ONE SECTIONALIZING  
VACUUM CIRCUIT RECLOSE  
WITH TRANSFORMER AND  
NOVA CONTROLS

ISSUED	7/20/2012
REVISED	-
STANDARD NUMBER	M3-10N

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	3	0152-19-32	Arrester, 14.4 lightning, 18kV (Transformer Bracket)
af2	4	1831-22-12	Cutout 14.4, fuse (No Bracket)
afs	2	1831-25-92	Solid blade Only
an3	1	6933-11-02	Transformer, 1.5 KVA conventional, 24.9kV/14.4kV - 120/240,
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
be5	1	5053-16-02	Recloser, vacuum, 1Ø with VIPER controls and mounting bracket
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c5	2	0638-05-16	Bolts, machine 5/8" x 16"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	2	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
dn	1	3100-24-92	Cluster bracket, large, transformer
ek1	4	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
eq1	2	0780-32-01	Bracket, standoff, Fiberglass, single phase, double position
99	1	0156-32-30	Arrester Secondary 175V Transformer Mount (Special Order)
pl	6	1781-17-80	Connectors, Lightning arrester
ps	2	1702-28-21	Connectors, Terminal, Hylug #1/0 Cu, 1/2" stud
-	1	0630-06-05	Bolts, A-Bolt Pack

#### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

#### NOTES:

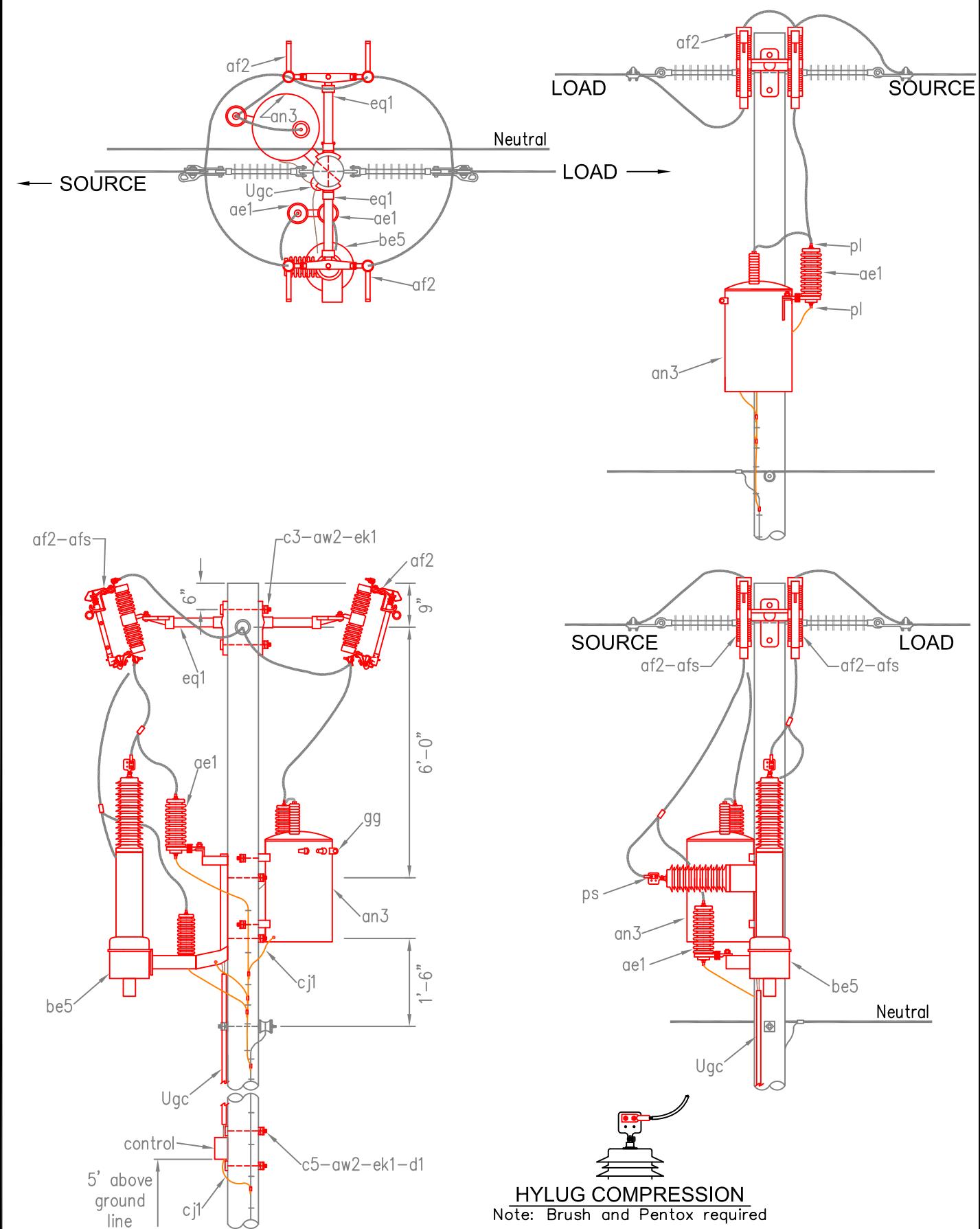
1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

14.4/24.9 kV,  
ONE SECTIONALIZING  
VACUUM CIRCUIT RECLOSER  
WITH TRANSFORMER AND  
VIPER CONTROLS

ISSUED	1/04/2012
REVISED	
STANDARD NUMBER	VM3-10V



DATE	REVISION

14.4/24.9 kV,  
ONE SECTIONALIZING  
VACUUM CIRCUIT RECLOSE  
WITH TRANSFORMER AND  
VIPER CONTROLS

ISSUED	1/04/2012
REVISED	
STANDARD NUMBER	VM3-10V

ITM.	QTY.	MAT.CODE No	MATERIAL
ae2	3	0152-10-32	Arrester, 7.2 lightning, 10KV (Transformer Bracket)
af2	4	1831-22-12	Cutout 14.4, fuse (No Bracket)
afs	2	1831-25-92	Solid blade Only
an4	1	6934-11-02	Transformer, conventional, 1 1/2 kVA, 14400/7200 - 120/240
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
be5	1	5053-16-02	Recloser, vacuum, 1Ø with VIPER controls and mounting bracket
c3	2	0638-05-12	Bolts, machine 5/8" x 12"
c5	2	0638-05-16	Bolts, machine 5/8" x 16"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	2	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
dn	1	3100-24-92	Cluster bracket, large, transformer
ek1	4	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
eq1	2	0780-32-01	Bracket, standoff, Fiberglass, single phase, double position
99	1	0156-32-30	Arrester Secondary 175V Transformer Mount (Special Order)
pl	6	1781-17-80	Connectors, Lightning arrester
ps	2	1702-28-21	Connectors, Terminal, Hylug #1/0 Cu, 1/2" stud
-	1	0630-06-05	Bolts, A-Bolt Pack

#### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

#### NOTES:

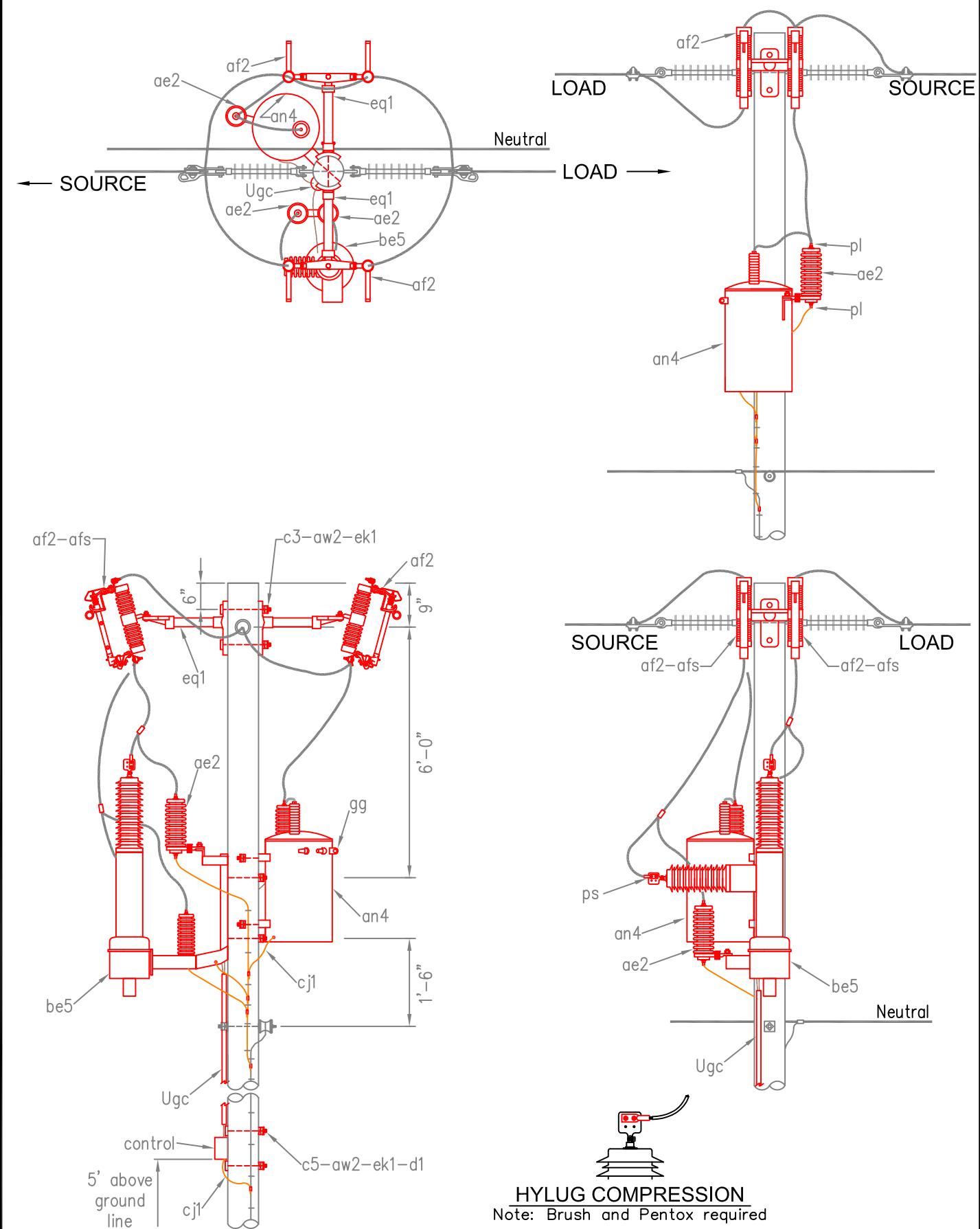
1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

7.2/12.5 kV,  
ONE SECTIONALIZING  
VACUUM CIRCUIT RECLOSER  
WITH TRANSFORMER AND  
VIPER CONTROLS

ISSUED	7/20/2012
REVISED	
STANDARD NUMBER	M3-10V



DATE	REVISION

7.2/12.5 kV,  
ONE SECTIONALIZING  
VACUUM CIRCUIT RECLOSE  
WITH TRANSFORMER AND  
VIPER CONTROLS

ISSUED	7/20/2012
REVISED	
STANDARD NUMBER	M3-10V

ITM.	QTY.	MAT. CODE No	MATERIAL
ae1	6	0152-19-36	Arrester, 14.4 lightning, 18KV (Crossarm Bracket)
aw2	6	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c4	4	0638-05-14	Bolts, machine 5/8" x 14"
c5	2	0638-05-16	Bolts, machine 5/8" x 16"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cg	1	6541-45-29	Switch, Air Break, 600 amp, handle operated
cj1	15'	7250-06-01	Wire, #6 SD Cu
cj2	6'	1522-04-19	Cable, #4 Cu THHN 600V Str.
cz	12	0630-04-02	Bolts, 1/2" x 2", zinc plated
d1	6	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
dy	12	7107-54-97	Washer lock 1/2" zinc plated
dz	24	7103-54-97	Washer flat 1/2" zinc plated
ek1	6	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
ez	12	4290-90-50	Nut hex 1/2" zinc plated
fi	6	1172-90-41	Clamp, hotline 3/0 - 636 ACSR
pl	12	1781-17-80	Connectors, Lightning arrester
ps	6	1702-XX-XX	Connectors, Terminal, Hylug, (Specify conductor)

### REFERENCED UNITS

VM5-21 FLOATERS (IF NEUTRAL HIGH)

### ADDITIONAL UNITS REQUIRED

VM2-15 GROUNDING ASSEMBLY

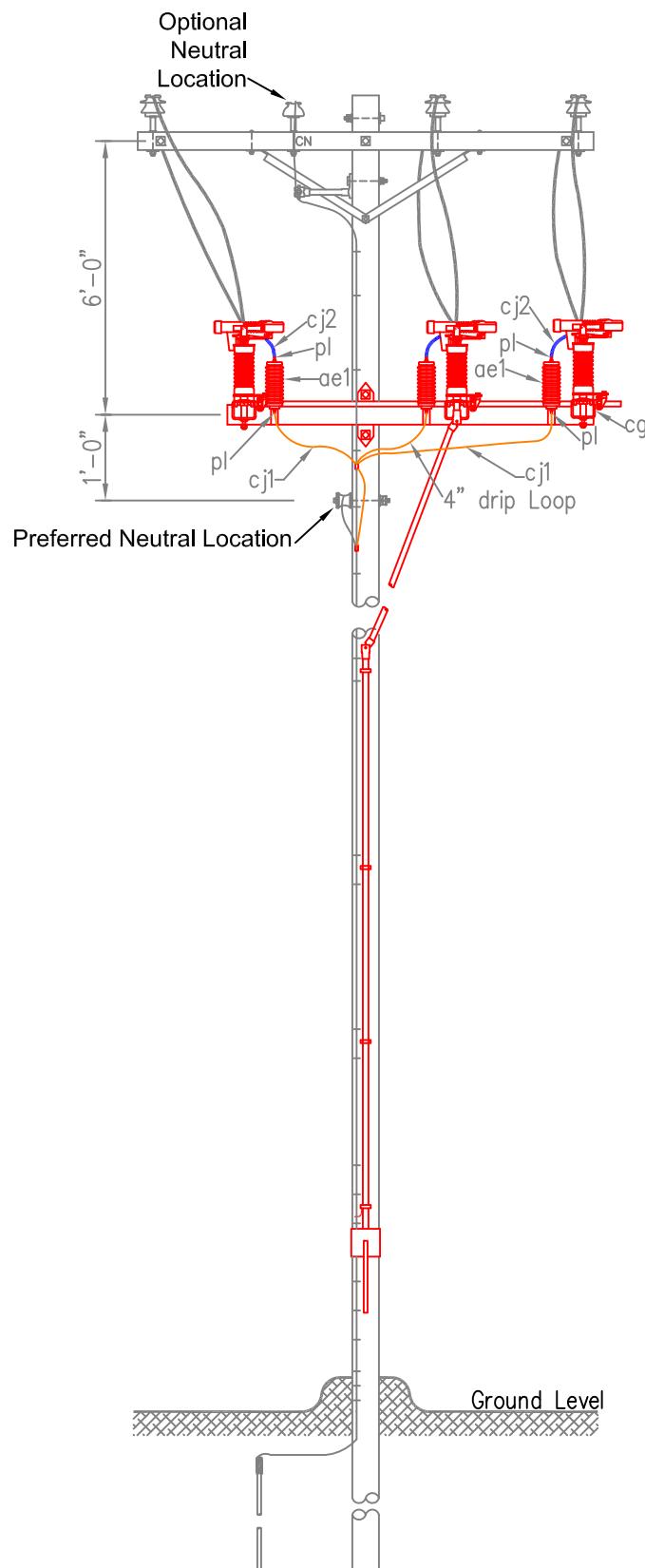
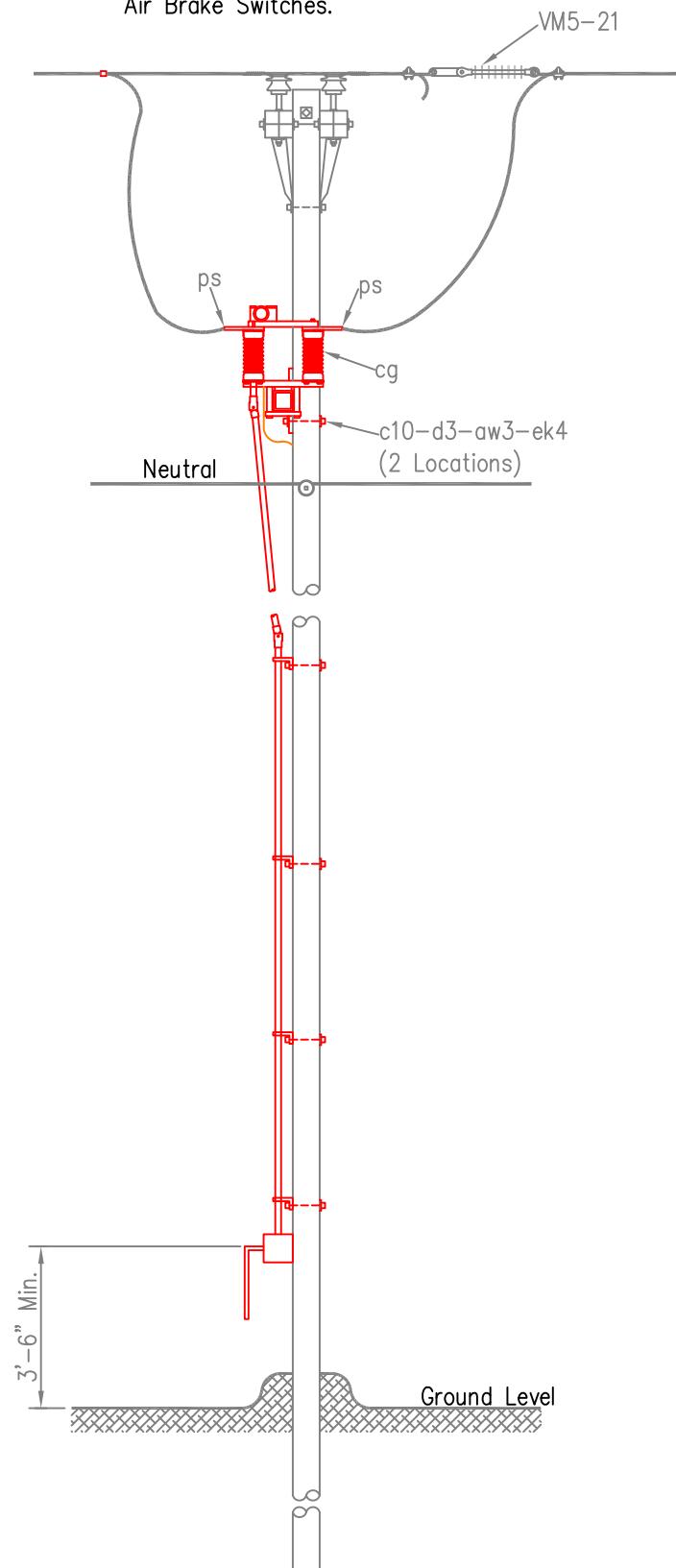
### NOTES:

1. Call primary pole top assembly separately.
2. Distribution line is to drop thru deadend shoe to connect to the 14.4 switch.
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION 600A AIR BREAK SWITCH	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VM3-16S	

Existing pole top assembly may be framed with VC9-2 as shown.

Preferred method (for new installations) is to use VC8A-F and lower Neutral 1'-0" below Air Brake Switches.



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CROSSARM CONSTRUCTION  
600A AIR BREAK SWITCH

ISSUED 2/04/2008  
REVISED  
STANDARD NUMBER  
VM3-16S

ITM.	QTY.	MAT.CODE No	MATERIAL
ae1	6	0152-19-36	Arrester, 14.4 lightning, 18KV (Crossarm Bracket)
aw2	6	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c4	4	0638-05-14	Bolts, machine 5/8" x 14"
c5	2	0638-05-16	Bolts, machine 5/8" x 16"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cg	1	6541-65-25	Switch, Air Break, 600 amp, Remote Control
ch	5	7540-31-09	Conduit strap, 1" - 1 hole
cj1	15'	7250-06-01	Wire, #6 SD Cu
cj2	6'	1522-04-19	Cable, #4 Cu THHN 600V Str.
cp	25'	7534-21-02	Conduit, 1" Flex
cz	12	0630-04-02	Bolts, 1/2" x 2", zinc plated
d1	6	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
dy	12	7107-54-97	Washer lock 1/2" zinc plated
dz	24	7103-54-97	Washer flat 1/2" zinc plated
ek1	6	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
ez	12	4290-90-50	Nuts, hex 1/2" zinc plated
fi	6	1172-90-41	Clamp, hotline 3/0 - 636 ACSR
pl	12	1781-17-80	Connectors, Lightning arrester
ps	6	1702-XX-XX	Connectors, Terminal, Hylug, (Specify conductor)
pt	1	1707-47-80	Connector, H Tap, 3-6 ACSR 8-14

ITM.	QTY.	MAT.CODE No	METER SHOP MATERIAL
1	1	9610-00-02	L&G Radio
2	30'	9620-10-01	Foam Cable
3	2	9620-20-01	Connector, N(M), LMR-400
4	2'	9620-10-02	Coax, RG-58
5	1	9620-20-02	Connector, TNC Male for RG-58 Coax
6	1	9620-20-03	Connector, N Male connector for RG-58 Coax
7	1	9620-30-01	Arrestor, Surge
8	1	6600-21-11	Weather Proofing Kit

### REFERENCED UNITS

VM5-21      FLOATERS (IF NEUTRAL HIGH)

### ADDITIONAL UNITS REQUIRED

VM2-15      GROUNDING ASSEMBLY

### SPECIFY CONTROLLER

S&C CONTROLLER 5800

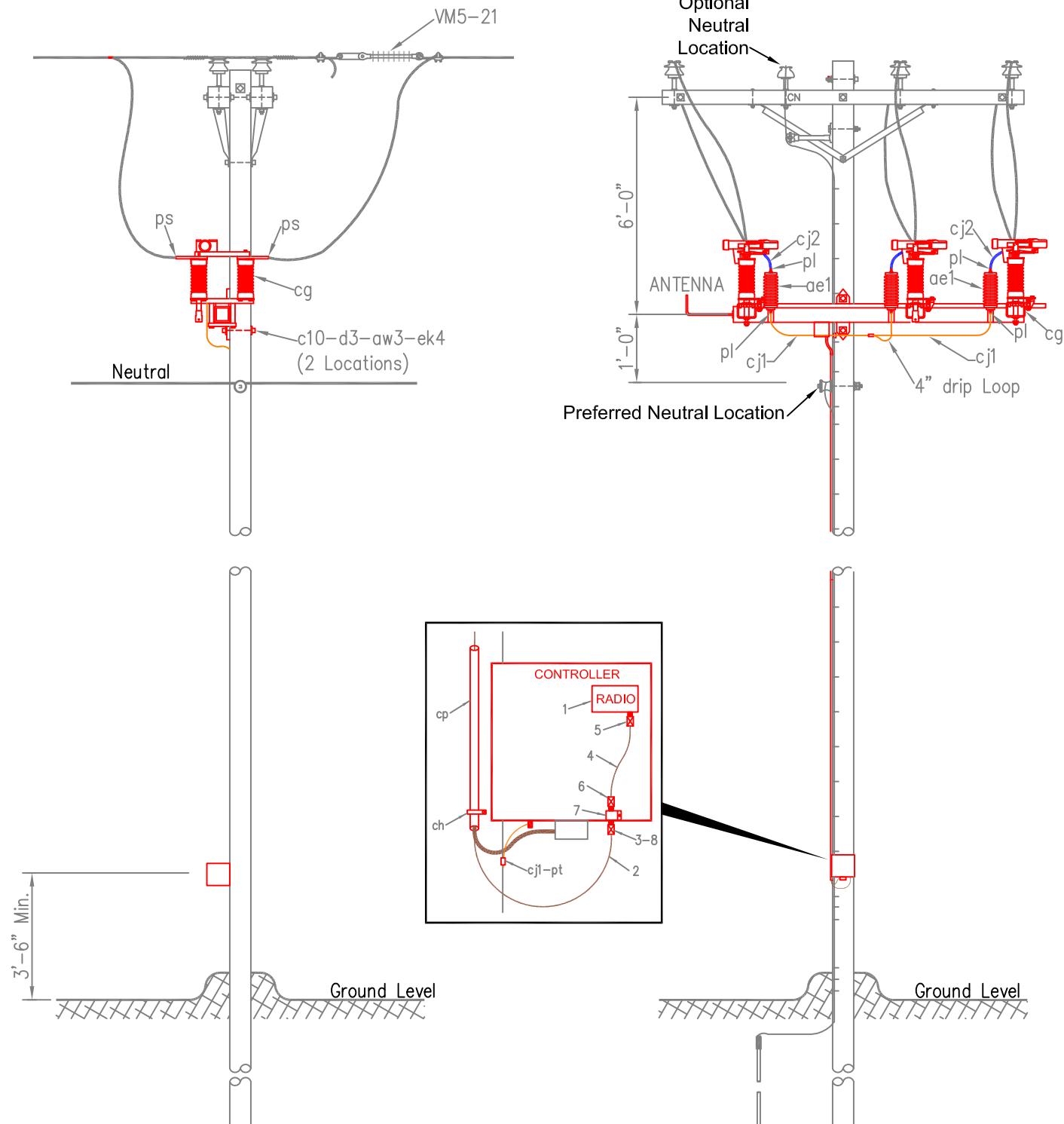
S&C CONTROLLER 6801

NOTES:

1. Call primary pole top assembly separately.
  2. Distribution line is to drop thru deadend shoe to connect to the 14.4 switch.
  3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.
- ENGINEERING APPROVAL ONLY**

CoServ Electric	DATE	REVISION	14.4/24.9 kV, THREE PHASE CROSSARM CONSTRUCTION 600A AIR BREAK SWITCH SCADA OPERATED	ISSUED	3/22/2011
				REVISED	
				STANDARD NUMBER	
				VM3-16SO	

Existing pole top assembly may be framed with VC9-2 as shown.  
 Preferred method (for new installations) is to use VC8A-F and lower Neutral 1'-0" below Air Brake Switches.



ENGINEERING APPROVAL ONLY



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
 CROSSARM CONSTRUCTION  
 600A AIR BREAK SWITCH  
 SCADA OPERATED

ISSUED	3/22/2011
REVISED	
STANDARD NUMBER	VM3-16SO

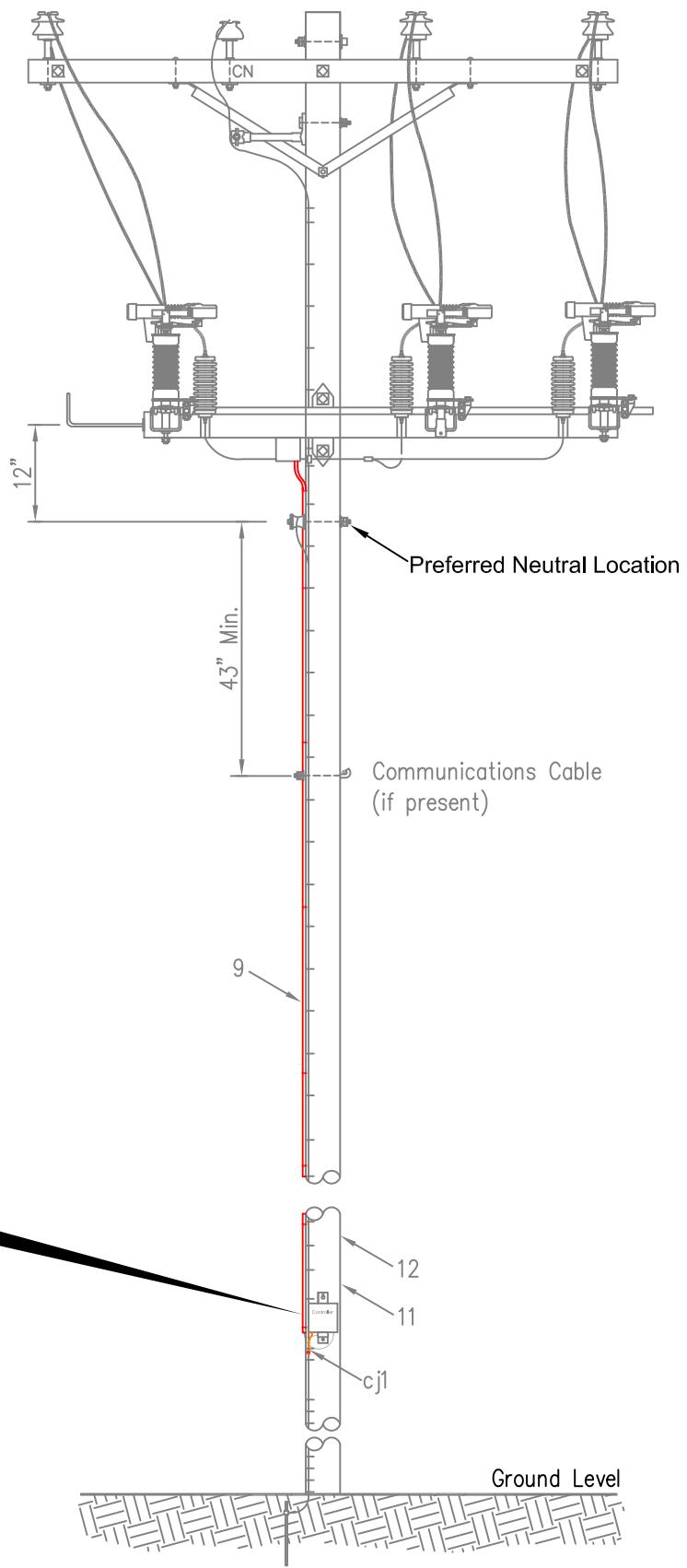
ITM.	QTY.	MAT.CODE No	MATERIAL
cj1	3'	7250-06-01	Wire, #6 SD Cu
9	25'	7534-21-02	Conduit, 1" Flex
10	5	7540-31-09	Conduit strap, 1" - 1 hole
11	1	1707-47-80	Connector, H Tap, 3-6 ACSR 8-14

ITM.	QTY.	MAT.CODE No	METER SHOP MATERIAL
1	1	9610-00-02	L&G Radio
2	30'	9620-10-01	Foam Cable
3	2	9620-20-01	Connector, N(M), LMR-400
4	2'	9620-10-02	Coax, RG-58
5	1	9620-20-02	Connector, TNC Male for RG-58 Coax
6	1	9620-20-03	Connector, N Male connector for RG-58 Coax
7	1	9620-30-01	Arrestor, Surge
8	1	6600-21-11	Weather Profing Kit

NOTES:

- Controller is to be specified with Air Break Switch unit.

	DATE	REVISION	AIR BREAK SWITCH COMMUNICATIONS	ISSUED	3/23/2011
				REVISED	
				STANDARD NUMBER	
				VM3-16S COMM	



DATE

REVISION

### AIR BREAK SWITCH COMMUNICATIONS

ISSUED 3/23/2011

REVISED

STANDARD NUMBER

VM3-16S COMM

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	1	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ae1	6	0152-19-32	Arrester, 14.4 lightning, 18KV (Transformer Bracket)
af1	6	1831-12-12	Cutout 14.4, fuse (Crossarm Bracket)
afs	6	1831-25-92	Solid Blade only
aw2	8	7108-99-41	Washers, double spring lock, 5/8"
az	2	4260-21-04	CN Metal Tag
be1	3	5043-1X-XX	Recloser, oil circuit, 1Ø SEE TABLE BELOW
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c4	1	0638-05-14	Bolts, machine 5/8" x 14"
cj1	30'	7250-06-01	Wire, #6 SD Cu
cm1	2	3426-20-12	Insulator, 3" spool
cu2	2	0753-51-68	Brace, crossarm 60" span 18" drop, (pair)
dd	1	4561-23-05	Adaptor, insulator
d1	13	7102-04-91	Washers, square, 5/8"
ek1	14	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
eq7	1	0780-37-01	Bracket, download standoff, Fiberglass
ez	12	4290-90-50	Nuts, hex, 1/2", zinc plated
fj	1	3100-24-92	Cluster bracket, large, transformer
g2	2	1809-01-03	Crossarm, Wood 10'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
n3	3	0633-05-24	Bolts, DA 5/8" x 24"
pl	12	1781-17-80	Connectors, Lightning arrester

#### RECLOSERS TYPE 4E

CoServ #	Size Amps
5043-12-20	50
5043-12-23	70
5043-12-26	100
5043-12-29	140

#### RECLOSERS TYPE E

CoServ #	Size Amps
5043-11-11	15
5043-11-14	25
5043-11-17	35
5043-11-20	50
5043-11-23	70
5043-11-26	100

#### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

#### NOTES:

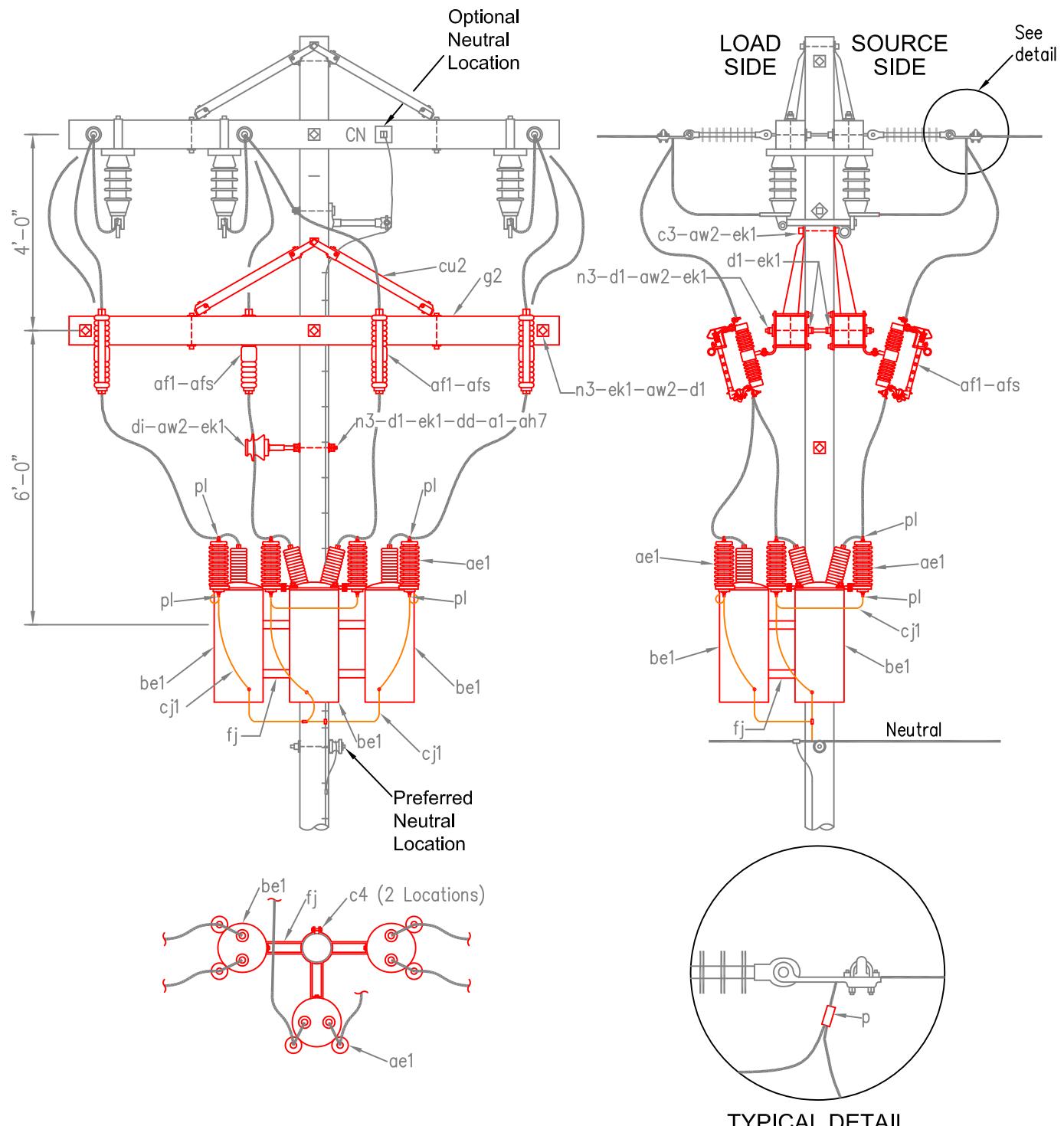
- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

14.4/24.9 kV,  
THREE SECTIONALIZING  
OIL CIRCUIT RECLOSER  
WITH BY-PASS SWITCHES

ISSUED	2/04/2008
REVISED	5/21/2010
STANDARD NUMBER	VM3-25A



DATE	REVISION

14.4/24.9 kV,  
THREE SECTIONALIZING  
OIL CIRCUIT RECLOSE  
WITH BY-PASS SWITCHES

ISSUED	2/04/2008
REVISED	5/21/2010
STANDARD NUMBER	VM3-25A

ITEM.	QTY.	MAT.CODE No	MATERIAL
a1	1	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ae2	6	0152-10-32	Arrester, 7.2 lightning, 10KV (Transformer Bracket)
af1	6	1831-12-12	Cutout 14.4, fuse (Crossarm Bracket)
afs	6	1831-25-92	Solid Blade Only
aw2	8	7108-99-41	Washers, double spring lock, 5/8"
az	2	4260-21-04	CN Metal Tag
be1	3	504X-1X-XX	Recloser, oil circuit, 1Ø SEE TABLE BELOW
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c4	1	0638-05-14	Bolts, machine 5/8" x 14"
cj1	30'	7250-06-01	Wire, #6 SD Cu
cm1	2	3426-20-12	Insulator, 3" spool
cu2	2	0753-51-68	Brace, crossarm 60" span 18" drop, (pair)
dd	1	4561-23-05	Adaptor, insulator
d1	13	7102-04-91	Washers, square, 5/8"
ek1	14	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
eq7	1	0780-37-01	Bracket, download standoff, Fiberglass
ez	12	4290-90-50	Nuts, hex, 1/2", zinc plated
fj	1	3100-24-92	Cluster bracket, large transformer
g2	2	1809-01-03	Crossarm, Wood 10'
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
n3	3	0633-05-24	Bolts, DA 5/8" x 24"
pl	12	1781-17-80	Connectors, Lightning arrester

#### RECLOSERS TYPE 4E

CoServ #	Size Amps
5043-12-20	50
5043-12-23	70
5043-12-26	100
5043-12-29	140

#### RECLOSERS TYPE E

CoServ #	Size Amps
5043-11-11	15
5043-11-14	25
5043-11-17	35
5043-11-20	50
5043-11-23	70
5043-11-26	100

#### RECLOSERS TYPE 4H

CoServ #	Size Amps
5042-11-11	15
5042-11-14	25
5042-11-17	35
5042-11-20	50
5042-11-23	70
5042-11-26	100

#### RECLOSERS TYPE H

CoServ #	Size Amps
5042-10-11	15
5042-10-14	25
5042-10-17	35
5042-10-20	50

#### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

#### NOTES:

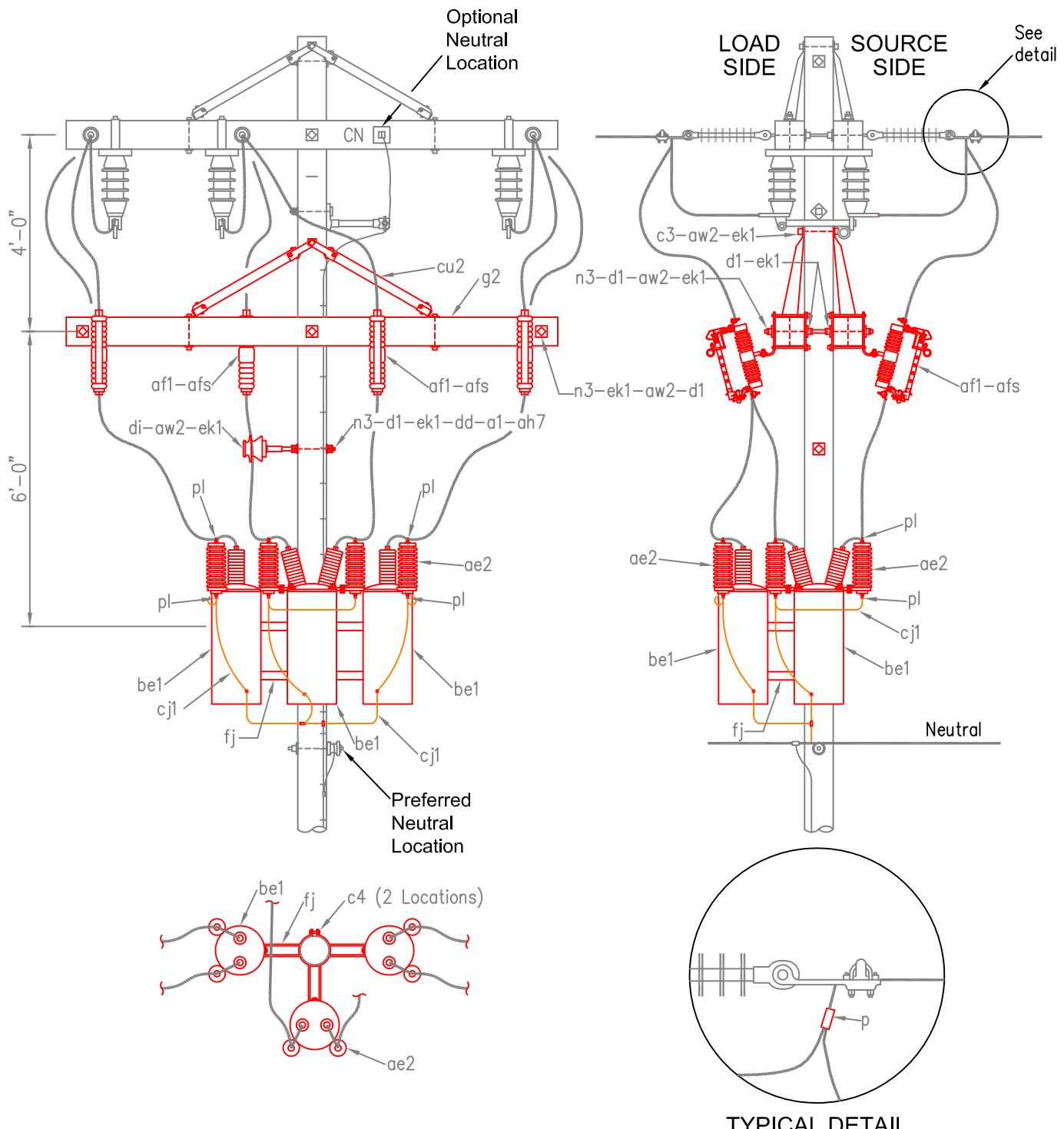
- Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

7.2/12.4 kV,  
THREE SECTIONALIZING  
OIL CIRCUIT RECLOSER  
WITH BY-PASS SWITCHES

ISSUED 2/04/2008  
REVISED 5/21/2010  
STANDARD NUMBER M3-25A



DATE	REVISION

7.2/12.4 kV,  
THREE SECTIONALIZING  
OIL CIRCUIT RECLOSE  
WITH BY-PASS SWITCHES

ISSUED	2/04/2008
REVISED	5/21/2010
STANDARD NUMBER	M3-25A

ITM.	QTY.	MAT.CODE No	MATERIAL
a1	1	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ae1	7	0152-19-32	Arrester, 14.4 lightning 18KV (Transformer Bracket)
af1	7	1831-12-12	Cutout 14.4, Fuse (w/Bracket)
afs	6	1831-25-92	Solid blade (Only)
an4	1	6933-11-02	Transformer, conventional, 1 1/2 kVA, 24.9/14.4kV – 120/240
aw2	12	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
be4	1	5053-36-80	Recloser, vacuum, Form6/NOVA triple-single controls and mounting bracket
c4	3	0638-05-14	Bolts, machine 5/8" x 14"
c5	2	0638-05-16	Bolts, machine 5/8" x 16"
c10	2	0638-06-16	Bolts, machine 3/4" x 16"
cj1	30'	7250-06-01	Wire, #6 SD Cu
cm1	2	3426-20-12	Insulator, 3" spool
cu2	2	0753-51-68	Brace, crossarm 60" span 18" drop, (pair)
d1	14	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
dd	1	4561-23-05	Adaptor, insulator
dn	1	3100-24-92	Cluster bracket, large, transformer
ek1	16	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
ek4	2	4290-70-75	Locknuts 3/4"
fi	6	1172-90-33	Clamp, hotline #6 – 4/0 TP
g2	2	1809-01-03	Crossarm, Wood 10'
99	1	0156-32-30	Arrester Secondary 175V Transformer Mount (Special Order)
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
jb	1	1065-05-21	Junction box, 8" x 6", Pelco, with weatherproof control cable (Specail Order)
n2	1	0633-05-22	Bolts, DA 5/8" x 22"
n3	3	0633-05-24	Bolts, DA 5/8" x 24"
pl	14	1781-17-80	Connectors, Lightning Arrester
ps	6	1702-XX-XX	Connectors, Terminal, Hylug, (specify Conductor)
-	10	XXXX-XX-XX	Straps

#### ADDITIONAL UNITS REQUIRED

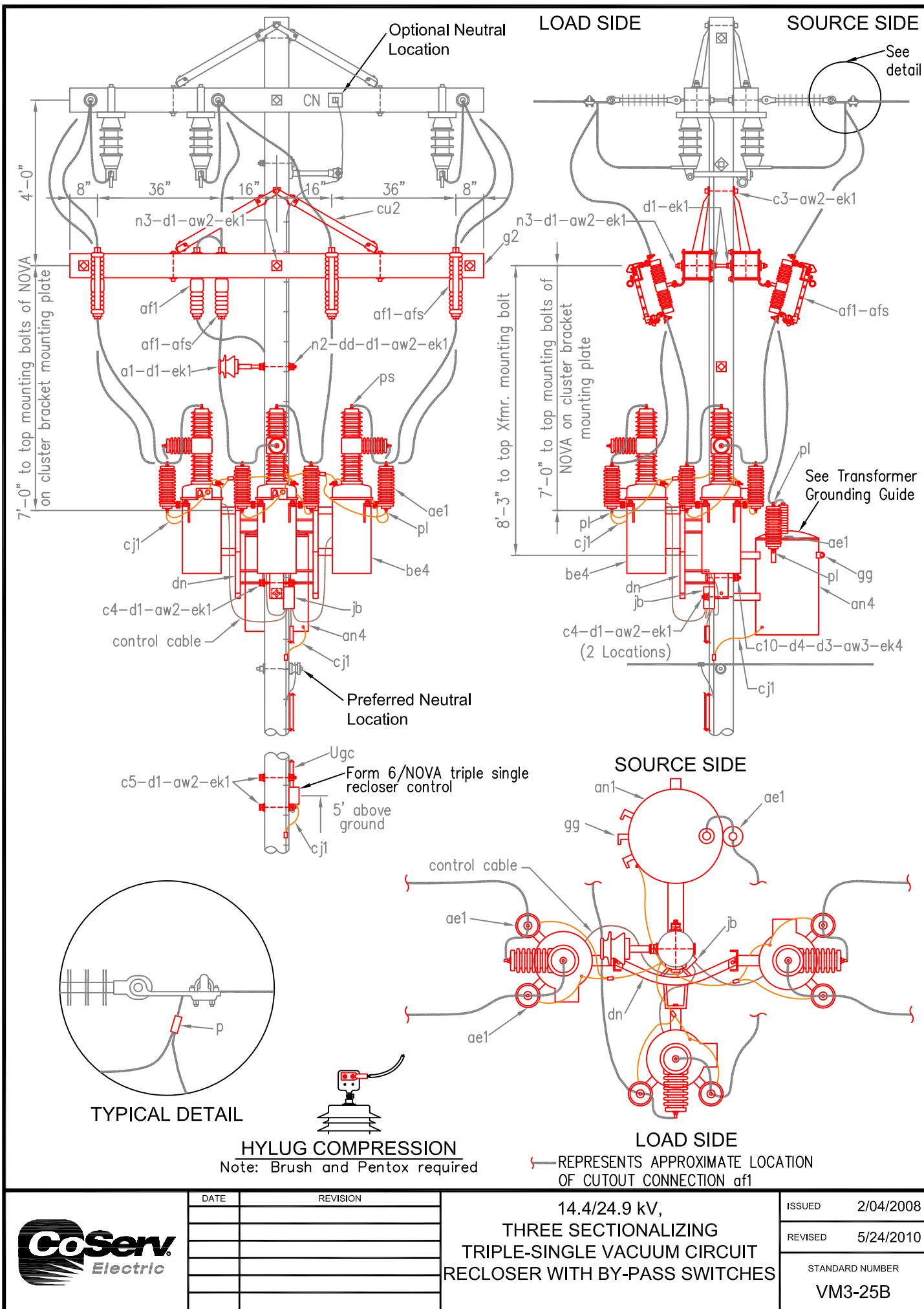
VM2-11-2 GROUNDING ASSEMBLY

#### NOTES:

1. Use top position for mounting all equipment to cluster bracket. Pole thru-bolt holes are 3/4" on 15" centers.
2. Jumpers are to be installed with as little slack and as few bends as practicable.
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION	14.4/24.9 kV, THREE SECTIONALIZING TRIPLE-SINGLE VACUUM CIRCUIT RECLOSER WITH BY-PASS SWITCHES	ISSUED	2/04/2008
			REVISED	5/24/2010
			STANDARD NUMBER	VM3-25B



ITM.	QTY.	MAT.CODE No	MATERIAL
a1	1	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
ae2	7	0152-10-32	Arrester, 7.2 lightning, 10KV (Transformer Bracket)
af1	7	1831-12-12	Cutout 14.4, Fuse (Crossarm Bracket)
afs	6	1831-25-92	Solid blade (Only)
an4	1	6934-11-02	Transformer, conventional, 1 1/2 kVA, 14400/7200 - 120/240
aw2	12	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
be4	1	5053-36-80	Recloser, vacuum, Form6/NOVA triple-single controls and mounting bracket
c4	3	0638-05-14	Bolts, machine 5/8" x 14"
c5	2	0638-05-16	Bolts, machine 5/8" x 16"
c10	2	0638-06-16	Bolts, machine 3/4" x 16"
cj1	30'	7250-06-01	Wire, #6 SD Cu
cm1	2	3426-20-12	Insulator, 3" spool
cu2	2	0753-51-68	Brace, crossarm 60" span 18" drop, (pair)
d1	14	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
dd	1	4561-23-05	Adaptor, insulator
dn	1	3100-24-92	Cluster bracket, large, transformer
ek1	16	4290-70-63	Locknuts 5/8"
ek3	4	4290-70-50	Locknuts 1/2"
ek4	2	4290-70-75	Locknuts 3/4"
fi	6	1172-90-33	Clamp, hotline #6 - 4/0 TP
g2	2	1809-01-03	Crossarm, Wood 10'
99	1	0156-32-30	Arrester Secondary 175V Transformer Mount (Special Order)
i2	4	0631-04-06	Bolts, carriage 1/2" x 6"
jb	1	1065-05-21	Junction box, 8" x 6", Pelco, with weatherproof control cable (Special Order)
n2	1	0633-05-22	Bolts, DA 5/8" x 22"
n3	3	0633-05-24	Bolts, DA 5/8" x 24"
pl	14	1781-17-80	Connectors, Lightning arrester
ps	6	1702-XX-XX	Connectors, Terminal, Hylug, (Specify Conductor)

#### ADDITIONAL UNITS REQUIRED

VM2-11-2      GROUNDING ASSEMBLY

#### NOTES:

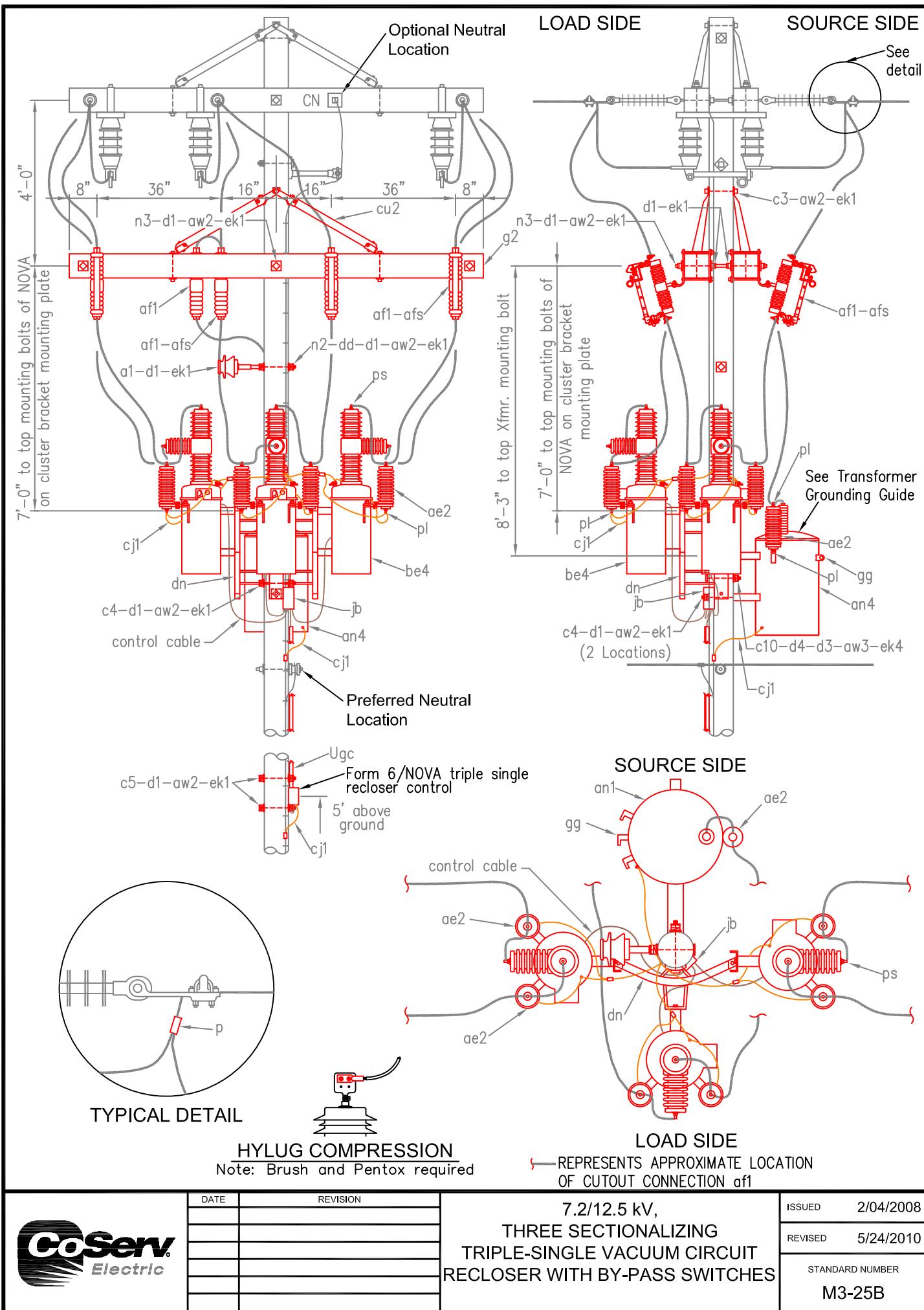
1. Use top position for mounting all equipment to cluster bracket. Pole thru-bolt holes are 3/4" on 15" centers.
2. Jumpers are to be installed with as little slack and as few bends as practicable.
3. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

7.2/12.5 kV,  
THREE SECTIONALIZING  
TRIPLE-SINGLE VACUUM CIRCUIT  
RECLOSER WITH BY-PASS SWITCHES

ISSUED	2/04/2008
REVISED	5/24/2010
STANDARD NUMBER	M3-25B



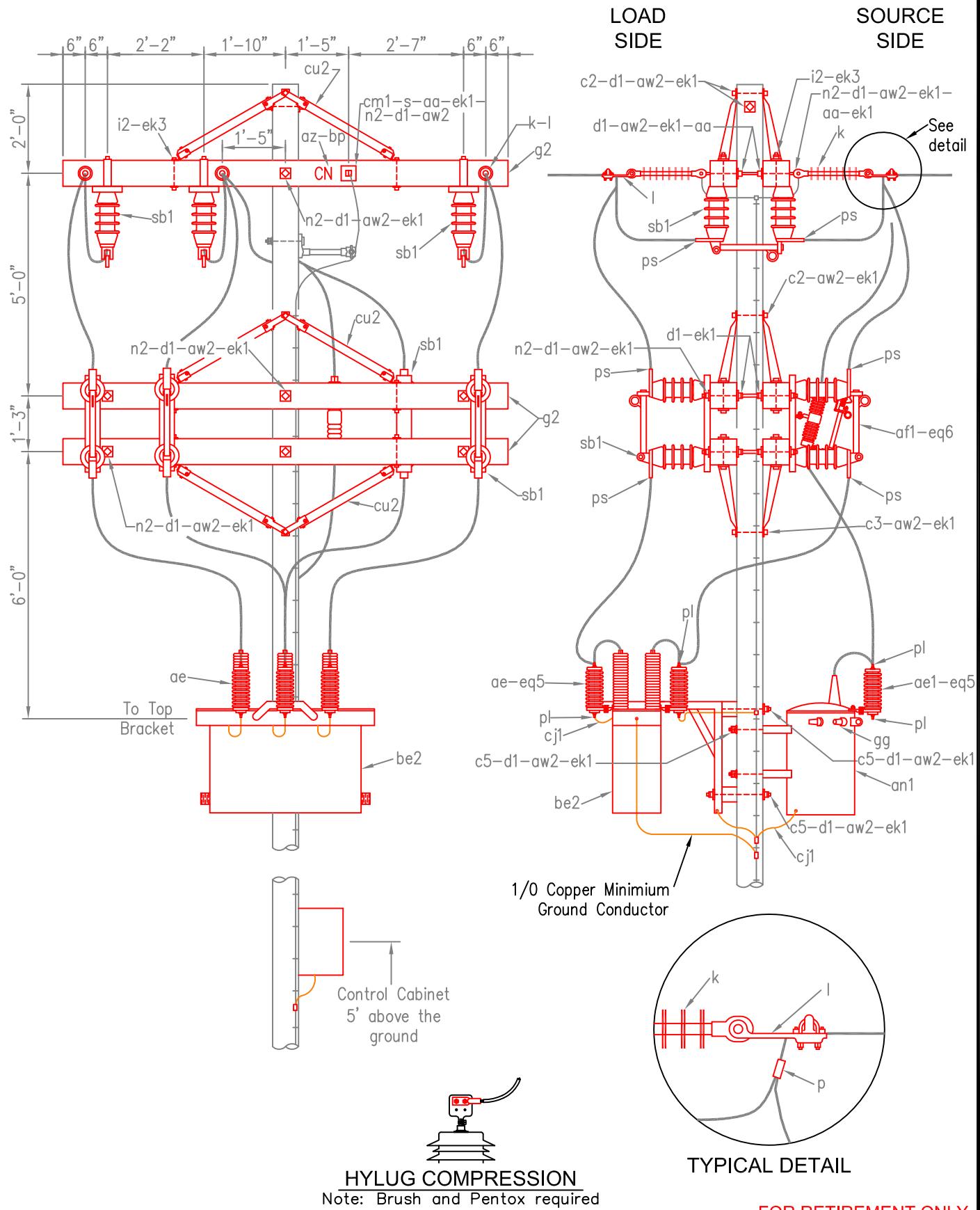
ITM.	QTY.	MAT.CODE No	MATERIAL
aa	8	4290-40-63	Nuts, oval eye 5/8"
ae1	1	0152-19-32	Arrester, 14.4 lightning, 18 KV (Transformer Bracket)
ae	6	0152-19-39	Arrester, 14.4 lightning, 18 KV (No Bracket) (Special Order)
af1	1	1831-12-12	Cutout 14.4, fuse (Crossarm Bracket)
an1	1	6930-XX-XX	Transformer, conventional (Primary & Secondary voltage needed)
aw2	30	7108-99-41	Washers, double spring lock, 5/8"
az	2	4260-21-04	CN Metal Tags
be2	1	5043-3X-XX	Recloser, oil circuit, 3Ø & controls
c2	3	0638-05-10	Bolts, machine 5/8" x 10"
c3	1	0638-05-12	Bolts, machine 5/8" x 12"
c5	4	0638-05-16	Bolts, machine 5/8" x 16"
cj1	20'	7250-06-01	Wire, #6 SD Cu
cm1	2	3426-20-12	Insulator, 3" spool
cu2	6	0753-51-68	Brace, crossarm 60" span 18" drop, (pair)
d1	44	7102-04-91	Washers, square, 5/8"
ek1	54	4290-70-63	Locknuts 5/8"
eq5	7	0780-95-00	Bracket, transformer mounted equipment
eq6	1	0780-13-00	Bracket, crossarm mounted equipment
g2	6	1809-01-03	Crossarm, Wood 10'
99	1	0156-32-30	Arrester Secondary 175V Transformer Mount (Special Order)
i2	12	0631-04-06	Bolts, carriage 1/2" x 6"
k	6	3428-60-60	Insulator, polymer suspension
l	6	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
n2	11	0633-05-22	Bolts, DA 5/8" x 22"
pl	14	1781-17-80	Connectors, Lightning arrester
ps	18	1702-XX-XX	Connectors, Terminal, Hylug, (Specify conductor)
sb1	9	6522-64-04	Switch, disconnect, 25kV, hookstick

NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

FOR RETIREMENT ONLY

	DATE	REVISION	14.4/24.9 kV, THREE PHASE CIRCUIT RECLOSE	ISSUED	2/04/2008
				REVISED	5/24/2010
				STANDARD NUMBER	
				VM3-30A-R	



## HYLUG COMPRESSION

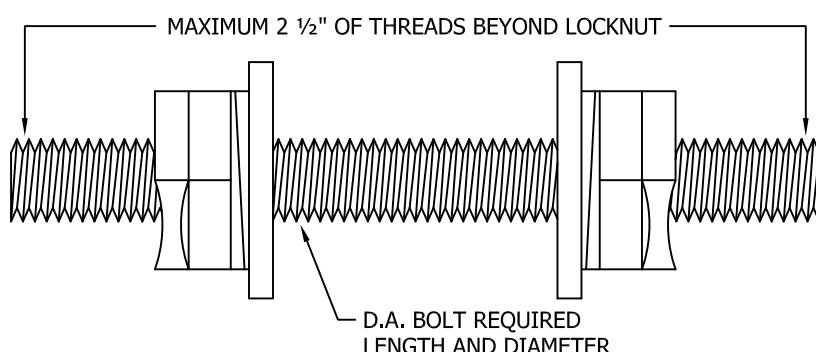
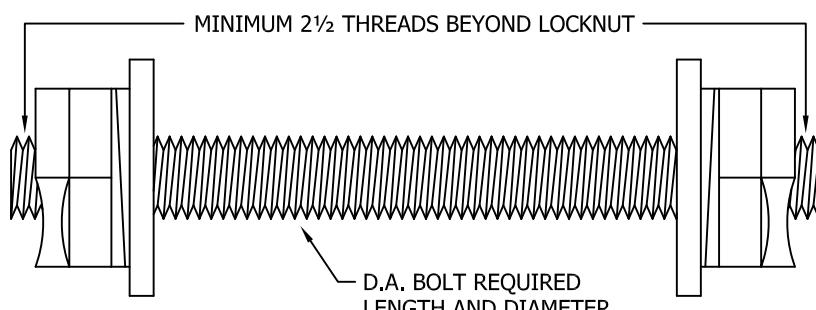
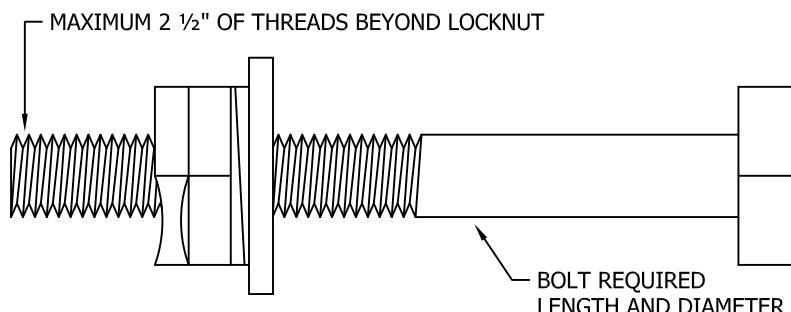
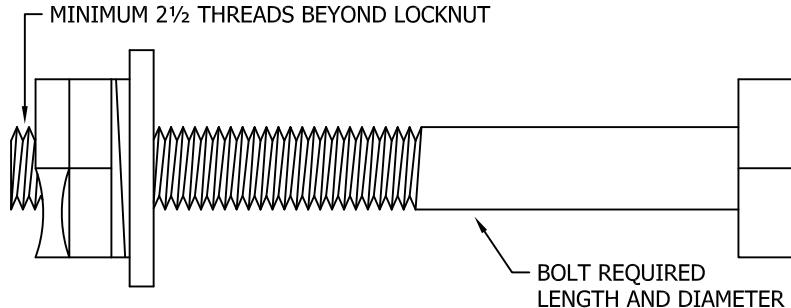
## **FOR RETIREMENT ONLY**

# 14.4/24.9 kV, THREE PHASE CIRCUIT RECLOSER

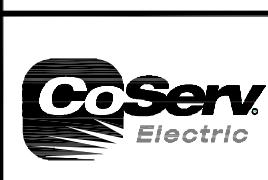
ISSUED	2/04/2008
REVISED	5/24/2010
STANDARD NUMBER	
VM3-30A-R	

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# BOLT FRAMING DETAIL



THE CONTRACTORS SHALL BE RESPONSIBLE FOR FRAMERS USING THE CORRECT LENGTH OF BOLTS.

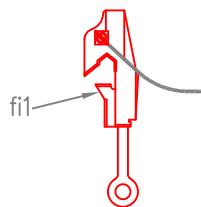


DATE	REVISION

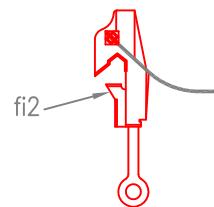
BOLT DETAIL  
ALL BOLTS

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	BOLTS

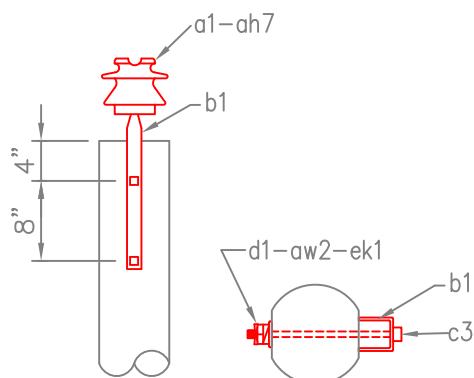
ITM.	QTY.	MAT.CODE	No.	MATERIAL	
<b>VM5-1-S</b>					
fi1	1	1172-90-33		Clamp, hotline #6 - 4/0 TP	
<b>VM5-1-L</b>					
fi2	1	1172-90-41		Clamp, hotline 3/0 - 636 ACSR	
<b>VM5-2</b>					
a1	1	3423-10-10		Insulator, 14.4 pin, 1 3/8" internal thread	
aw2	2	7108-99-41		Washers, double spring lock, 5/8"	
b1	1	4561-23-20		Pin, pole top 14.4	
c3	2	0638-05-12		Bolts, machine 5/8" x 12"	
d1	2	7102-04-91		Washers, square, 5/8"	
ek1	2	4290-70-63		Locknuts 5/8"	
<b>VM5-2A</b>					
a1	2	3423-10-10		Insulator, 14.4 pin, 1 3/8" internal thread	
aw2	2	7108-99-41		Washers, double spring lock, 5/8"	
b2	2	4561-33-21		Pin, offset pole top 14.4	
c4	2	0638-05-14		Bolts, machine 5/8" x 14"	
ek1	2	4290-70-63		Locknuts 5/8"	
<b>VM5-2FG</b>					
a1	1	3423-10-10		Insulator, 14.4 pin, 1 3/8" internal thread	
aw2	2	7108-99-41		Washers, double spring lock, 5/8"	
b3	1	4561-43-27		Ridge pin, pole top 14.4, fiberglass 15"	
c3	2	0638-05-12		Bolts, machine 5/8" x 12"	
d1	2	7102-04-91		Washers, square, 5/8"	
ek1	2	4290-70-63		Locknuts 5/8"	
<b>VM5-3</b>					
bv	1	1741-XX-XX		Stirrup, (Specify conductor size)	
<b>VM5-4</b>					
a1	1	3423-10-10		Insulator, 14.4 pin, 1 3/8" internal thread	
aw2	1	7108-99-41		Washers, double spring lock, 5/8"	
d1	2	7102-04-91		Washers, square, 5/8"	
dd	1	4561-23-05		Adaptor, insulator	
ek1	3	4290-70-63		Locknuts 5/8"	
n2	1	0633-05-22		Bolts, DA 5/8" x 22"	
NOTES:					
1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.					
		DATE	REVISION	14.4/24.9 kV, MISCELLANEOUS PRIMARY ASSEMBLIES	
ISSUED			2/04/2008		
REVISED					
STANDARD NUMBER			VM5-1 to 4		



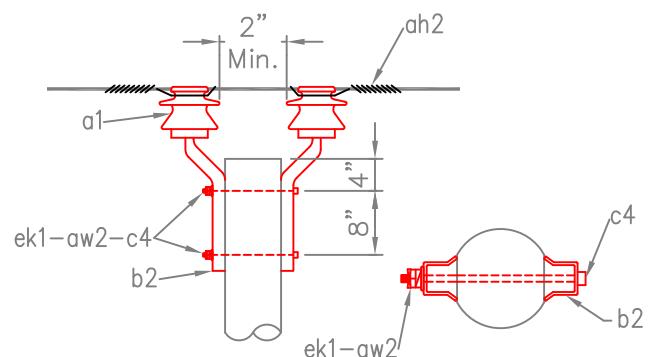
**VM5-1-S**  
HOT LINE CLAMP



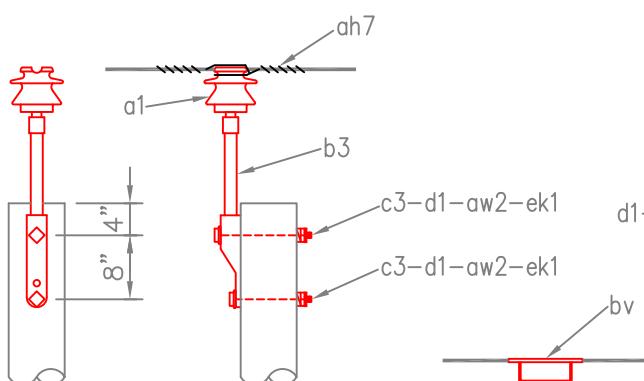
**VM5-1-L**  
HOT LINE CLAMP



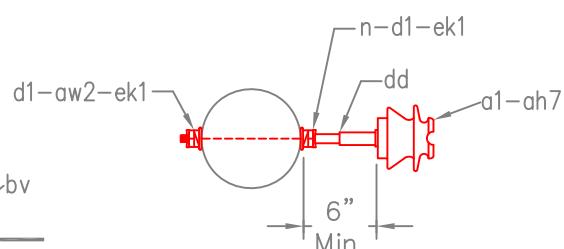
**VM5-2**  
POLE TOP  
PIN ASSEMBLY



**VM5-2A**  
POLE TOP OFFSET  
PIN ASSEMBLY



**VM5-2FG**  
POLE TOP  
RIDGE PIN ASSEMBLY



**VM5-3-2**  
**VM5-3-4**  
**VM5-3-1/0**  
**VM5-3-4/0**  
**VM5-3-477**  
STIRRUP

**VM5-4**  
OFFSET INSULATOR

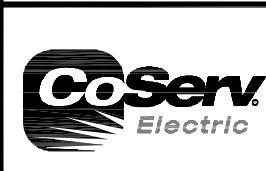


DATE	REVISION

14.4/24.9 kV,  
MISCELLANEOUS PRIMARY  
ASSEMBLIES

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VM5-1 to 4

ITM.	QTY.	MAT.CODE	No	MATERIAL
<b>VM5-5</b>				
a1	1	3423-10-10		Insulator, 14.4 pin, 1 3/8" internal thread
fp	1	4541-23-13		Pin, crossarm 14.4, phase
aw2	1	7108-99-41		Washers, spring, 5/8"
d1	1	7102-04-91		Washers, square, 5/8"
ek1	1	4290-70-63		Locknuts 5/8"
<b>VM5-5N</b>				
a2	1	3422-40-10		Insulator, 7.2 pin, white, 1" internal thread
fn	1	4541-24-11		Pin, crossarm 7.2, neutral
aw2	1	7108-99-41		Washers, double spring lock, 5/8"
d1	1	7102-04-91		Washers, square, 5/8"
ek1	1	4290-70-63		Locknuts 5/8"
<b>VM5-5S</b>				
a1	1	3422-10-10		Insulator, 14.4 pin, 1 3/8" internal thread
fs	1	4541-11-13		Pin, saddle crossarm 14.4, phase
aw2	2	7108-99-41		Washers, double spring lock, 5/8"
ek1	2	4290-70-63		Locknuts 5/8"
<b>VM5-5SN</b>				
a2	1	3422-40-10		Insulator, 7.2 pin, white, 1" internal thread
fl	1	4541-14-12		Pin, saddle crossarm 7.2, neutral
aw2	2	7108-99-41		Washers, double spring lock, 5/8"
ek1	2	4290-70-63		Locknuts 5/8"
<b>VM5-5FG</b>				
a1	1	3423-10-10		Insulator, 14.4 pin, 1 3/8" internal thread
fr	1	4541-23-34		Pin, crossarm 14.4, 3/4" shank, phase
aw3	1	7108-99-51		Washers, double spring lock, 3/4"
d4	1	7102-04-51		Washers, square, 3/4"
ek4	1	4290-70-75		Locknuts 3/4"
<b>VM5-5FGN</b>				
a2	1	3422-40-10		Insulator, 7.2 pin, white, 1" internal thread
fm	1	4541-22-32		Pin, crossarm 7.2, 3/4" shank, neutral
aw3	1	7108-99-51		Washers, double spring lock, 3/4"
ek1	2	4290-70-75		Locknuts 3/4"
d4	1	7102-04-51		Washers, square, 3/4"
<b>VM5-5P</b>				
aw3	1	7108-99-51		Washers, double spring lock, 3/4"
ea	1	3425-87-10		Insulator, 14.4 post type
yo	1	4541-55-37		Stud, post type, distribution 10"
d4	1	7102-04-51		Washers, square, 3/4"
ek4	1	4290-70-75		Locknuts 3/4"



DATE

REVISION

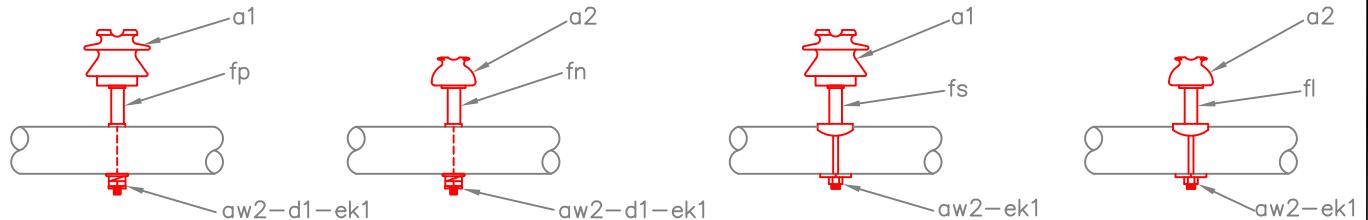
14.4/24.9 kV,  
MISCELLANEOUS PRIMARY  
ASSEMBLIES

ISSUED 2/04/2008

REVISED

STANDARD NUMBER

VM5-5

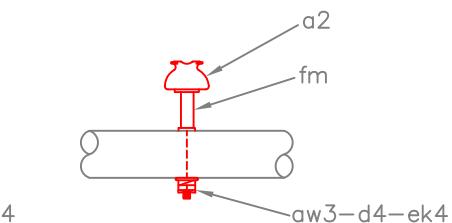
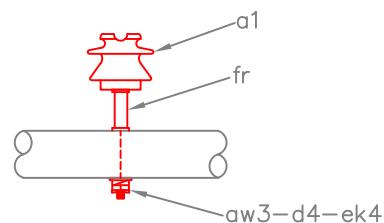


**VM5-5**  
CROSSARM PHASE  
PIN INSULATOR

**VM5-5N**  
CROSSARM NEUTRAL  
PIN INSULATOR

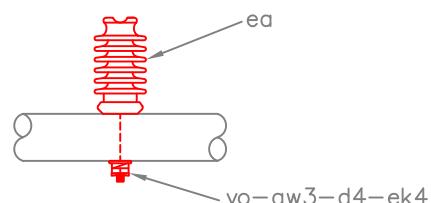
**VM5-5S**  
CROSSARM PHASE  
SADDLE PIN INSULATOR

**VM5-5SN**  
CROSSARM NEUTRAL  
SADDLE PIN INSULATOR



**VM5-5FG**  
FIBERGLASS PUPI CROSSARM  
PHASE PIN INSULATOR

**VM5-5FGN**  
FIBERGLASS PUPI CROSSARM  
NEUTRAL PIN INSULATOR



**VM5-5P**  
CROSSARM PHASE  
POST INSULATOR

All insulators will have conductor ties that are determined by conductor orientations.

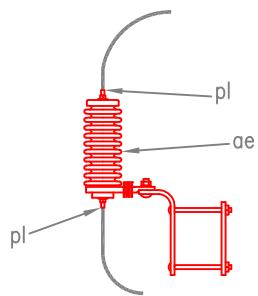


DATE	REVISION

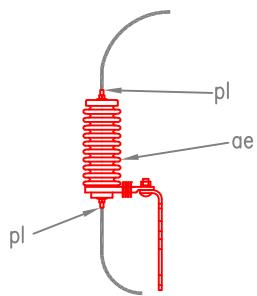
14.4/24.9 kV,  
MISCELLANEOUS PRIMARY  
ASSEMBLIES

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VM5-5

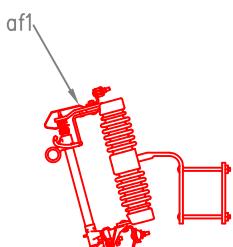
ITM.	QTY.	MAT.CODE	No	MATERIAL
<b>VM5-6-10</b>				
ae2	1	0152-10-36		Arrester, 7.2 lightning, 10KV (Crossarm Bracket)
pl	2	1781-17-80		Connectors, Lightning arrester
<b>VM5-6-18</b>				
ae1	1	0152-19-36		Arrester, 14.4 lightning, 18KV (Crossarm Bracket)
pl	2	1781-17-80		Connectors, Lightning arrester
<b>VM5-6A-10</b>				
ae2	1	0152-10-32		Arrester, 7.2 lightning, 10KV (Transformer Bracket)
pl	1	1781-17-80		Connectors, Lightning arrester
<b>VM5-6A-18</b>				
ae1	1	0152-19-32		Arrester, 14.4 lightning, 18KV (Transformer Bracket)
pl	1	1781-17-80		Connectors, Lightning arrester
<b>VM5-6B-10</b>				
ae2	1	0152-10-39		Arrester, 7.2 lightning 10kV (No Bracket) (Special Order)
<b>VM5-6B-18</b>				
ae1	1	0152-19-39		Arrester, 14.4 lightning 18kV (No Bracket) (Special Order)
<b>VM5-9</b>				
af1	1	1831-12-12		Cutout 14.4, fuse (Crossarm Bracket)
<b>VM5-9A</b>				
afs	1	1831-25-92		Solid blade, Only
<b>VM5-9B</b>				
af2	1	1831-22-12		Cutout 14.4, fuse (No Bracket)
	DATE	REVISION	14.4/24.9 kV, MISCELLANEOUS PRIMARY ASSEMBLIES	ISSUED
				2/04/2008
				REVISED
				STANDARD NUMBER
				VM5-6 to 9



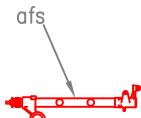
**VM5-6-10**  
**VM5-6-18**  
ARRESTOR WITH  
CROSSARM MOUNTING  
BRACKET



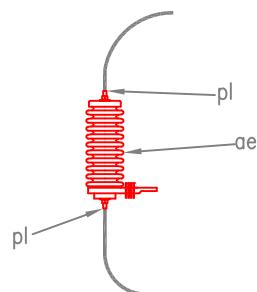
**VM5-6A-10**  
**VM5-6A-18**  
ARRESTOR WITH  
TRANSFORMER MOUNTING  
BRACKET



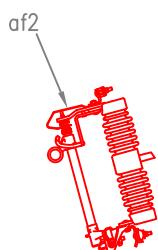
**VM5-9**  
CUTOUT WITH FUSE  
AND CROSSARM MOUNTING  
BRACKET



**VM5-9A**  
SOLID BLADE



**VM5-6B-10**  
**VM5-6B-18**  
ARRESTOR WITH  
(NO BRACKET)



**VM5-9B**  
CUTOUT WITH FUSE  
(NO BRACKET)



DATE	REVISION

14.4/24.9 kV,  
MISCELLANEOUS PRIMARY  
ASSEMBLIES

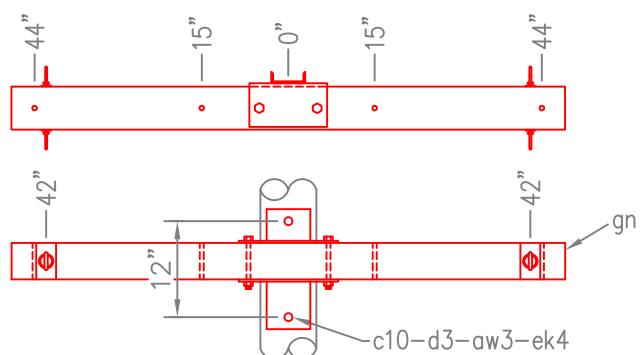
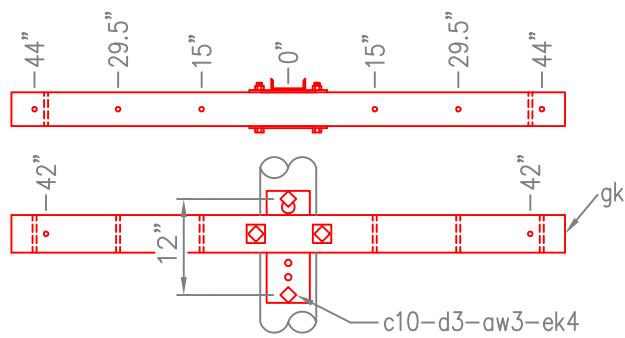
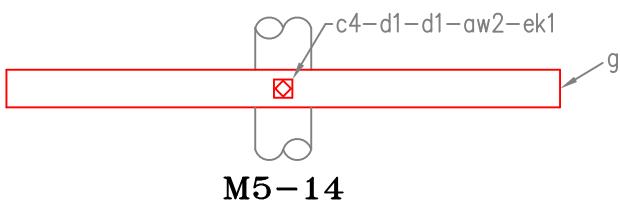
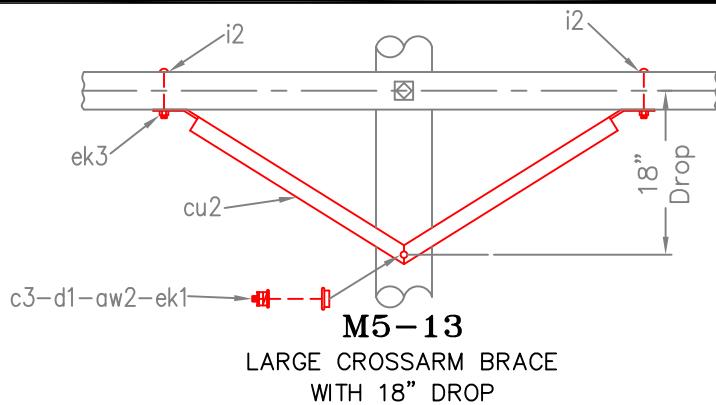
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VM5-6 to 9

ITM.	QTY.	MAT.CODE	No	MATERIAL
<b>M5-13</b>				
aw2	1	7108-99-41		Washers, double spring lock, 5/8"
c3	1	0638-05-12		Bolts, machine 5/8" x 12"
cu2	1	0753-51-68		Brace, crossarm 60" span 18" drop (pair)
d1	1	7102-04-91		Washers, square, 5/8"
ek1	1	4290-70-63		Locknuts 5/8"
ek3	2	4290-70-50		Locknuts 1/2"
i2	2	0631-04-06		Bolts, carriage 1/2" x 6"
<b>M5-14</b>				
aw2	1	7108-99-41		Washers, double spring lock, 5/8"
c4	1	0638-05-14		Bolts, machine 5/8" x 14"
d1	2	7102-04-91		Washers, square, 5/8"
ek1	1	4290-70-63		Locknuts 5/8"
g	1	1809-01-01		Crossarm, Wood 8'
<b>M5-14F</b>				
aw3	2	7108-99-51		Washers, double spring lock, 3/4"
c10	2	0638-06-14		Bolts, machine 3/4" x 14"
d3	2	7101-30-91		Washers, heavy duty, 3/4" curved
ek4	2	4290-70-75		Locknuts 3/4"
gn	1	1809-09-14		Crossarm, Fiberglass 8' TB 3000-96
<b>M5-14F-DE</b>				
aw3	2	7108-99-51		Washers, double spring lock, 3/4"
c10	2	0638-06-14		Bolts, machine 3/4" x 14"
d3	2	7101-30-91		Washers, heavy duty, 3/4" curved
ek4	2	4290-70-75		Locknuts 3/4"
gn	1	1809-09-08		Crossarm, Fiberglass 8' DA 3000-96

## NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

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				REVISED	
				STANDARD NUMBER	M5-13 to M5-14F-DE

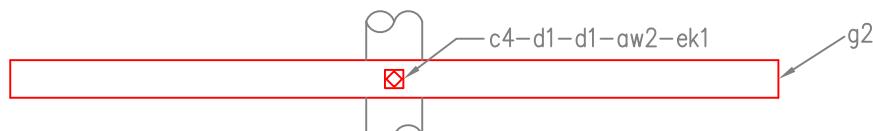


DATE	REVISION

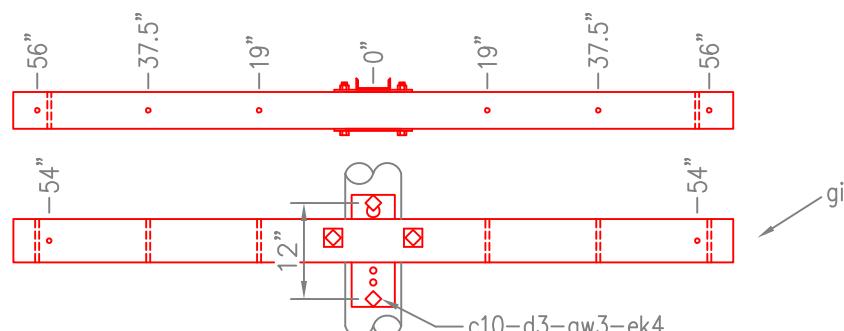
14.4/24.9 kV,  
MISCELLANEOUS PRIMARY  
ASSEMBLIES

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	M5-13 to M5-14F-DE

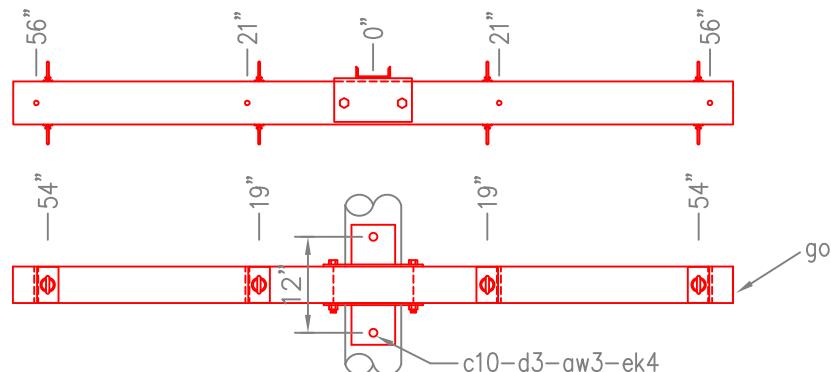
ITM.	QTY.	MAT.CODE	No	MATERIAL	
<b>M5-16</b>					
aw2	1	7108-99-41		Washers, double spring lock, 5/8"	
c4	1	0638-05-14		Bolts, machine 5/8" x 14"	
d1	2	7102-04-91		Washers, square, 5/8"	
ek1	1	4290-70-63		Locknuts 5/8"	
g2	1	1809-01-03		Crossarm, Wood 10'	
<b>M5-16F</b>					
aw3	2	7108-99-51		Washers, double spring lock, 3/4"	
c10	2	0638-06-14		Bolts, machine 3/4" x 14"	
d3	2	7101-30-91		Washers, heavy duty, 3/4" curved	
ek4	2	4290-70-75		Locknuts 3/4"	
gi	1	1809-09-09		Crossarm, Fiberglass 10' TB 3000-120	
<b>M5-16F-DE</b>					
aw3	2	7108-99-51		Washers, double spring lock, 3/4"	
c10	2	0638-06-14		Bolts, machine 3/4" x 14"	
d3	2	7101-30-91		Washers, heavy duty, 3/4" curved	
ek4	2	4290-70-75		Locknuts 3/4"	
go	1	1809-09-17		Crossarm, Fiberglass 10' DA 3000-120	
<b>M5-17</b>					
cu1	1	0753-51-26		Brace, crossarm 38" span 18" drop (pair)	
ek2	2	4290-70-38		Locknuts 3/8"	
i1	2	0631-03-45		Bolts, carriage 3/8" x 4 1/2"	
j	1	5550-44-40		Screw, lag 1/2 "x 4"	
NOTES:					
1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.					
		DATE	REVISION	14.4/24.9 kV, MISCELLANEOUS PRIMARY ASSEMBLIES	
ISSUED			2/04/2008		
REVISED					
STANDARD NUMBER			M5-16 to M5-17		



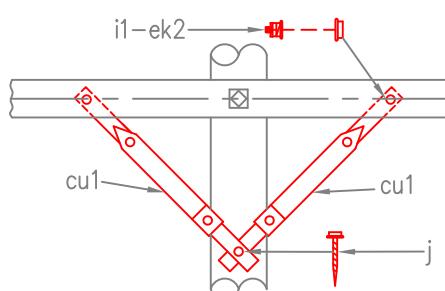
**M5-16**  
MISCELLANEOUS PRIMARY ASSEMBLY  
TANGENT WOOD CROSSARM 10'



**M5-16F**  
MISCELLANEOUS PRIMARY ASSEMBLY  
TANGENT FIBERGLASS CROSSARM 10'



**M5-16F-DE**  
MISCELLANEOUS PRIMARY ASSEMBLY  
DEADEND FIBERGLASS CROSSARM 10'



**M5-17**  
SMALL CROSSARM  
BRACE



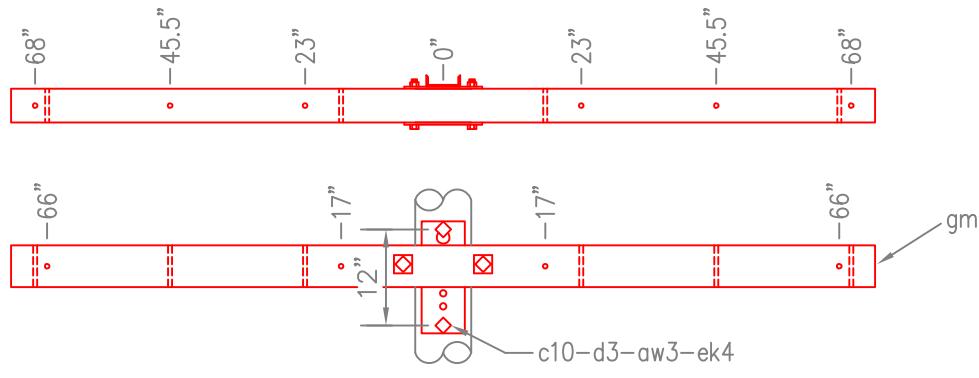
DATE	REVISION

14.4/24.9 kV,  
MISCELLANEOUS PRIMARY  
ASSEMBLIES

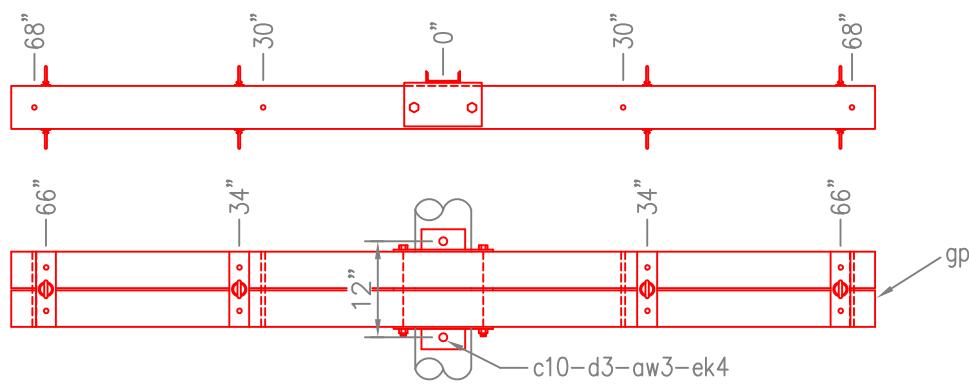
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	M5-16 to M5-17

ITM.	QTY.	MAT. CODE	No	MATERIAL		
<b>M5-18F</b>						
aw3	2	7108-99-51		Washers, double spring lock, 3/4"		
c10	2	0638-06-14		Bolts, machine 3/4" x 14"		
d3	2	7101-30-91		Washers, heavy duty, 3/4" curved		
ek4	2	4290-70-75		Locknuts 3/4"		
gm	1	1809-09-10		Crossarm, Fiberglass 12' TB 3000-144		
<b>M5-18F-DE</b>						
aw3	2	7108-99-51		Washers, double spring lock, 3/4"		
c10	2	0638-06-14		Bolts, machine 3/4" x 14"		
d3	2	7101-30-91		Washers, heavy duty, 3/4" curved		
ek4	2	4290-70-75		Locknuts 3/4"		
gp	1	1809-09-11		Crossarm, Fiberglass 12' DA 3200-144		
<b>M5-19F-DE</b>						
aw3	2	7108-99-51		Washers, double spring lock, 3/4"		
c10	2	0638-06-14		Bolts, machine 3/4" x 14"		
d3	2	7101-30-91		Washers, heavy duty, 3/4" curved		
ek4	2	4290-70-75		Locknuts 3/4"		
qq	1	1809-09-19		Crossarm, Fiberglass 14' DA 3200-168		
NOTES:						
1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.						
		DATE	REVISION	14.4/24.9 kV, MISCELLANEOUS PRIMARY ASSEMBLIES	ISSUED	2/04/2008
					REVISED	
					STANDARD NUMBER	M5-18F to M5-19F-DE

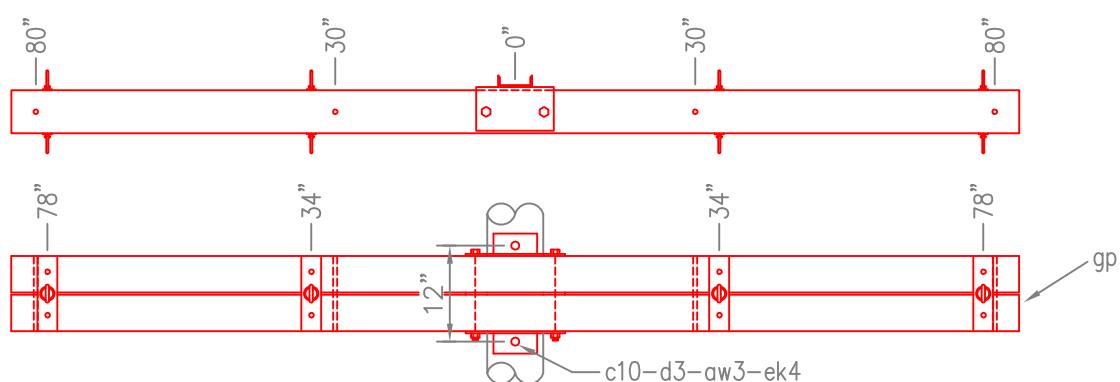




**M5-18F**  
MISCELLANEOUS PRIMARY ASSEMBLY  
TANGENT FIBERGLASS CROSSARM 12'



**M5-18F-DE**  
MISCELLANEOUS PRIMARY ASSEMBLY  
DEADEND FIBERGLASS CROSSARM 12'



**M5-19F-DE**  
MISCELLANEOUS PRIMARY ASSEMBLY  
DEADEND FIBERGLASS CROSSARM 14'



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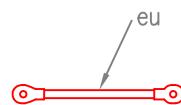
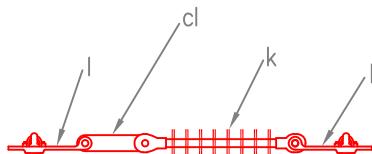
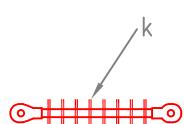
14.4/24.9 kV,  
MISCELLANEOUS PRIMARY  
ASSEMBLIES

ISSUED 2/04/2008

REVISED

STANDARD NUMBER  
M5-18F to  
M5-19F-DE

ITM.	QTY.	MAT.CODE	No.	MATERIAL
<b>VM5-20</b>				
k	1	3428-60-60		Insulator, polymer suspension
<b>VM5-21 (S, L, or C)</b>				
cl	1	3787-32-38		Straight connection link, 9 1/2" x 2" x 3/8", 3171
k	1	3428-60-60		Insulator, polymer suspension
l	2	1172-8X-XX		Deadend shoe (Specify conductor size & material) (SEE NOTE 1)
<b>VM5-23</b>				
eu	1	3427-70-30		Link, Fiberglass pri. extension, clevis-eye
<b>VM5-24</b>				
a1	1	3423-10-10		Insulator, 14.4 pin, 1 3/8" internal thread
<b>VM5-24A</b>				
a2	1	3422-40-10		Insulator, 7.2 pin, white, 1" internal thread
<b>VM5-24P</b>				
ea	1	3425-87-10		Insulator, 14.4 post type
<b>VM5-25</b>				
aw2	2	7108-99-41		Washers, double spring lock, 5/8"
c3	2	0638-05-12		Bolts, machine 5/8" x 12"
d1	2	7102-04-91		Washers, square, 5/8"
ek1	2	4290-70-63		Locknuts 5/8"
eq1	1	0780-32-01		Bracket, standoff, Fiberglass, 1Ø, double position
<b>VM5-25A</b>				
aw2	1	7108-99-41		Washers, double spring lock, 5/8"
c3	1	0638-05-12		Bolts, machine 5/8" x 12"
d1	1	7102-04-91		Washers, square, 5/8"
ek1	1	4290-70-63		Locknuts 5/8"
eq7	1	0780-37-01		Bracket, download standoff, fiberglass 12"
<b>VM5-26</b>				
a1	1	3423-10-10		Insulator, 14.4 pin, 1 3/8" internal thread
aw2	2	7108-99-41		Washers, double spring lock, 5/8"
c3	2	0638-05-12		Bolts, machine 5/8" x 12"
d1	2	7102-04-91		Washers, square, 5/8"
ek1	2	4290-70-63		Locknuts 5/8"
eq2	1	0780-47-01		Bracket, vertical pin insulator, Fiberglass, 1Ø
<b>VM5-26-2</b>				
a1	2	3423-10-10		Insulator, 14.4 pin, 1 3/8" internal thread
aw2	2	7108-99-41		Washers, double spring lock, 5/8"
c3	2	0638-05-12		Bolts, machine 5/8" x 12"
d1	2	7102-04-91		Washers, square, 5/8"
ek1	2	4290-70-63		Locknuts 5/8"
eq9	1	0780-36-02		Bracket (Special Order)
NOTES:				
1. Use M42-11 for small conductors. Use M42-12 for copper conductors. Use M42-13 for large conductors. 2. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.				
	DATE	REVISION	14.4/24.9 kV, MISCELLANEOUS PRIMARY ASSEMBLIES	ISSUED
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				REVISED
				STANDARD NUMBER
				VM5-20 to 26



**VM5-20**  
DEADEND  
SUSPENSION  
INSULATOR



**VM5-21\_ (S, L, or C)**  
FLOATER  
SUSPENSION  
INSULATOR



**VM5-23**  
FIBERGLASS  
SUSPENSION  
LINK – 12"



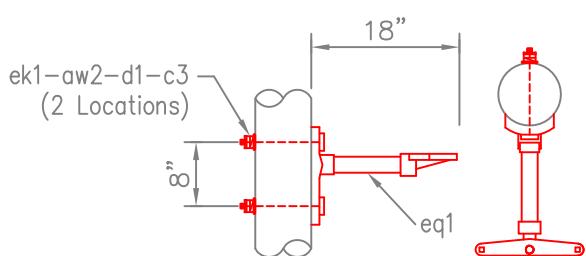
**VM5-24**  
14.4kV PIN TYPE  
INSULATOR



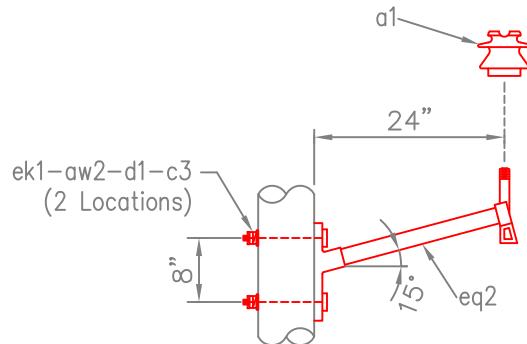
**VM5-24A**  
7.2kV PIN TYPE  
INSULATOR



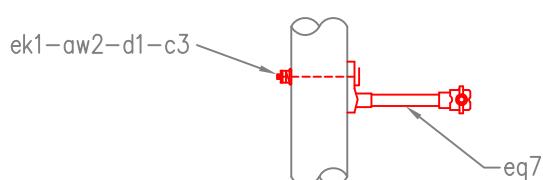
**VM5-24P**  
14.4kV POST TYPE  
INSULATOR



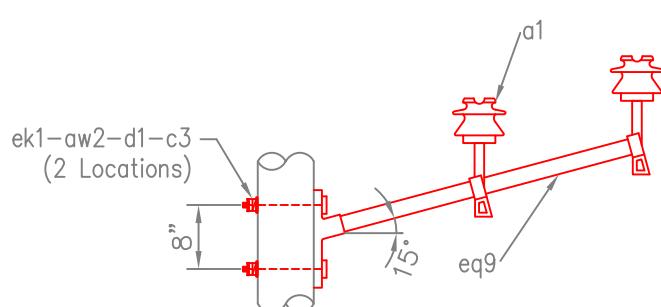
**VM5-25**  
1Ø FIBERGLASS DOUBLE POSITION  
STANDOFF BRACKET



**VM5-26**  
1Ø VERTICAL PIN  
INSULATOR BRACKET



**VM5-25A**  
DOWNLEAD BRACKET



**VM5-26-2**  
(2 POSITION)



DATE

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MISCELLANEOUS PRIMARY  
ASSEMBLIES

ISSUED

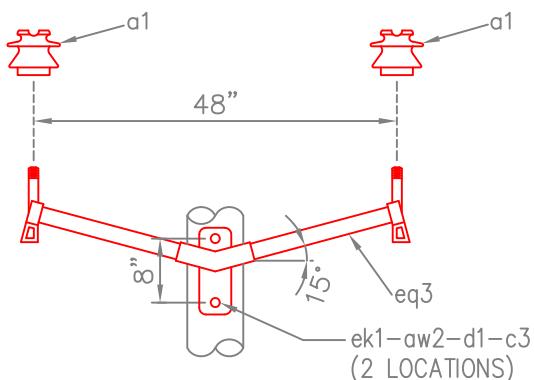
2/04/2008

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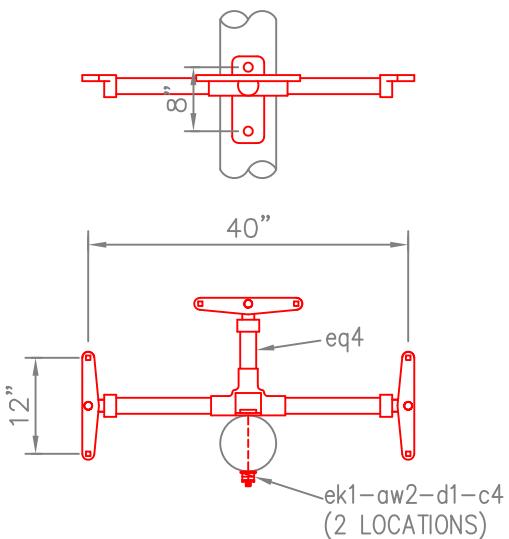
STANDARD NUMBER

VM5-20 to 26

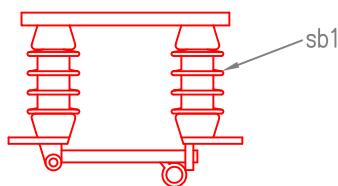
ITM.	QTY.	MAT.CODE	No	MATERIAL
<b>VM5-27</b>				
a1	2	3423-10-10		Insulator, 14.4 pin, 1 3/8" internal thread
aw2	2	7108-99-41		Washers, double spring lock, 5/8"
c3	2	0638-05-12		Bolts, machine 5/8" x 12"
d1	2	7102-04-91		Washers, square, 5/8"
ek1	2	4290-70-63		Locknuts 5/8"
eq3	1	0780-47-03		Bracket, vertical pin insulator, Fiberglass, VØ
<b>VM5-28</b>				
aw2	2	7108-99-41		Washers, double spring lock, 5/8"
c4	2	0638-05-14		Bolts, machine 5/8" x 14"
d1	2	7102-04-91		Washers, square, 5/8"
ek1	2	4290-70-63		Locknuts 5/8"
eq4	1	0780-28-03		Bracket, standoff, Fiberglass, 3Ø, double position
<b>VM5-30</b>				
sb1	1	6522-64-04		Switch, disconnect, 25kV, hookstick
cz	4	0630-04-02		Bolts, 1/2" x 2", zinc plated
dy	4	7107-54-97		Washers, lock, 1/2" zinc plated
dz	8	7103-54-97		Washers, flat, 1/2" zinc plated
ez	4	4290-90-50		Nuts, Hex, 1/2", zinc plated
<b>VM5-31</b>				
sb2	1	6582-64-10		Switch, Shoot-on disconnect, 25kV, hookstick
<b>VM5-32</b>				
sb3	1	6512-64-11		Switch, inline deadend disconnect, 25kV, hookstick
<b>VM5-33</b>				
aw2	2	7108-99-41		Washers, double spring lock, 5/8"
c3	2	0638-05-12		Bolts, machine 5/8" x 12"
d1	2	7102-04-91		Washers, square, 5/8"
ek1	2	4290-70-63		Locknuts 5/8"
gf3	1	1809-09-13		Crossarm, Fiberglass, 48", narrow profile
NOTES:				
1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.				
		DATE	REVISION	14.4/24.9 kV, MISCELLANEOUS PRIMARY ASSEMBLIES
ISSUED			2/04/2008	
REVISED				
STANDARD NUMBER			VM5-27 to 33	



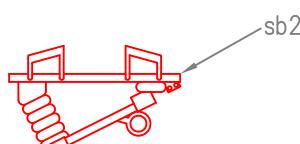
**VM5-27**  
VØ VERTICAL PIN  
INSULATOR BRACKET



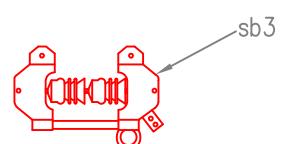
**VM5-28**  
3Ø DOUBLE POSITION  
STANDOFF BRACKET



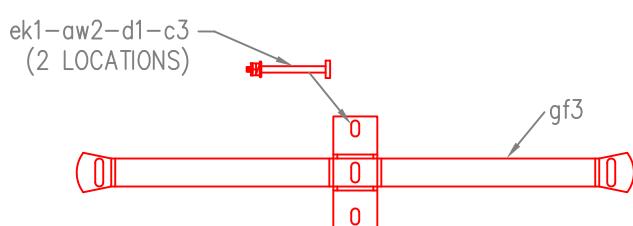
**VM5-30**  
UNDERARM OR VERTICAL  
DISCONNECT  
SWITCH



**VM5-31**  
SHOOT-ON  
DISCONNECT  
SWITCH



**VM5-32**  
INLINE DEADEND  
DISCONNECT  
SWITCH



**VM5-33**  
FIBERGLASS  
NARROW PROFILE  
CROSSARM 4'



DATE	REVISION

14.4/24.9 kV,  
MISCELLANEOUS PRIMARY  
ASSEMBLIES

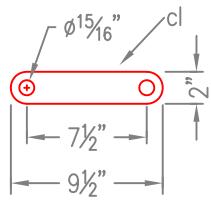
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VM5-27 to 33

ITM.	QTY.	MAT.CODE	No	MATERIAL
<b>VM5-34</b>				
cl	1	3787-32-38		Straight connection link, 9 1/2" x 2" x 3/8", 3171
<b>VM5-35</b>				
sk	1	6562-60-00		Switch, regulator by-pass, 25kV, hookstick
cz	10	0630-04-02		Bolts, 1/2" x 2", zinc plated
dy	10	7107-54-97		Washers, lock, 1/2", zinc plated
dz	20	7103-54-97		Washers, flat, 1/2", zinc plated
ez	10	4290-90-50		Nuts, Hex, 1/2", zinc plated
<b>VM5-36</b>				
aw2	4	7108-99-41		Washers, double spring lock, 5/8"
aw3	6	7108-99-51		Washers, double spring lock, 3/4"
c4	4	0638-05-14		Bolts, machine 5/8" x 14"
c11	6	0638-06-16		Bolts, machine 3/4" x 16"
d1	4	7102-04-91		Washers, square, 5/8"
ek1	4	4290-70-63		Locknuts 5/8"
ek4	6	4290-70-75		Locknuts 3/4"
j	2	5550-44-40		Screw, lag 1/2" x 4"
so	1	4706-07-00		I-beam, Aluma-form 2B2-20 (Pair)
sp	1	4704-08-03		Platform, Aluma-form EHD2PAL-22' w/bracing & (2) eye beams

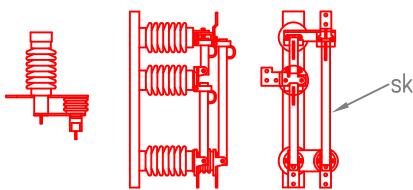
## NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

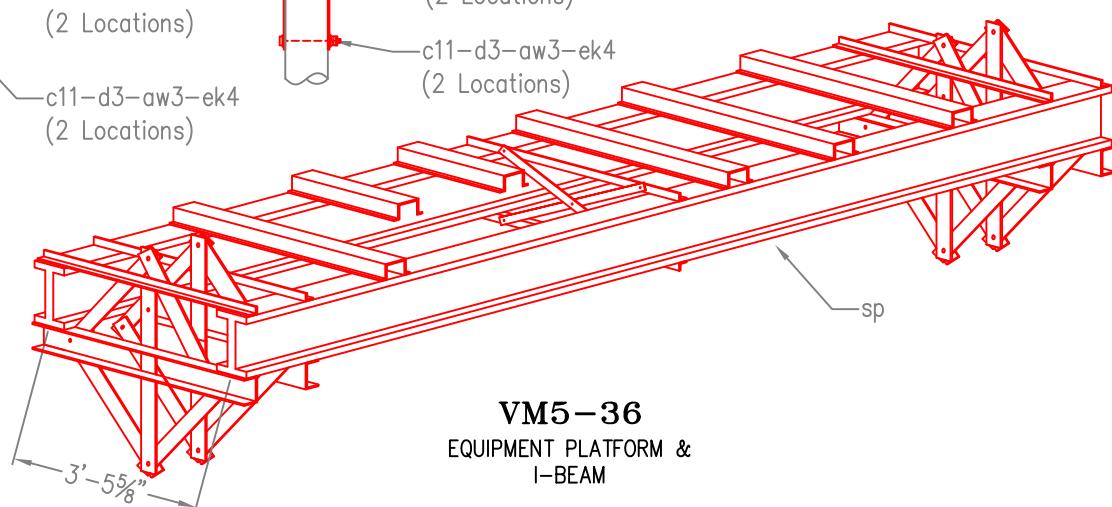
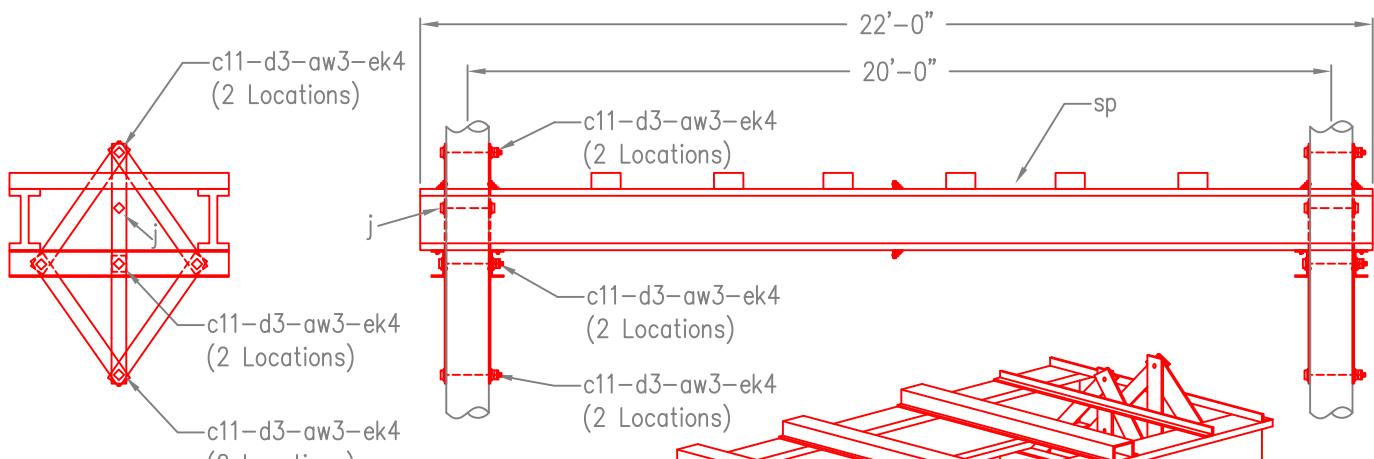
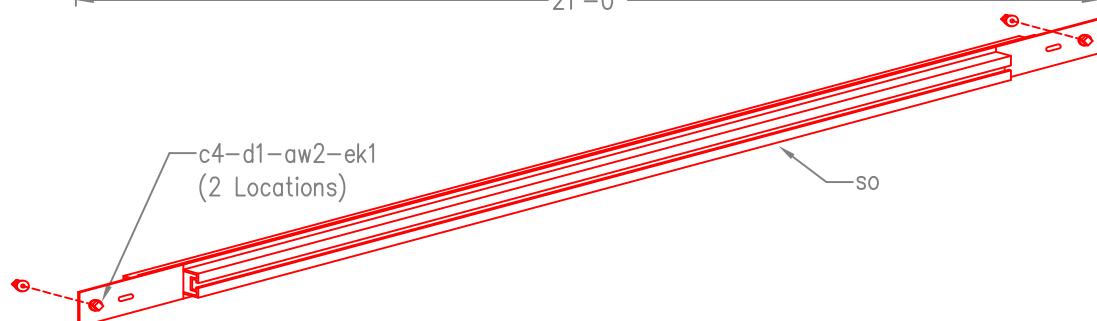
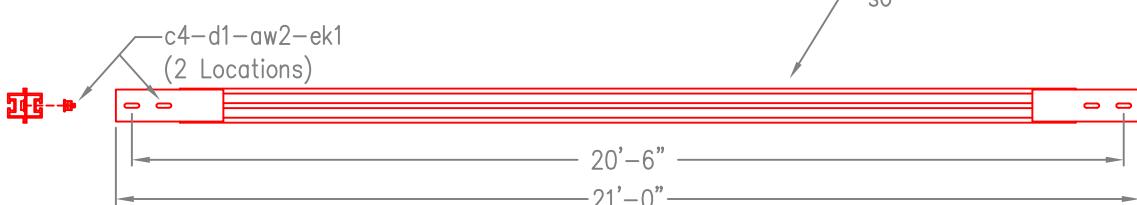
	DATE	REVISION	14.4/24.9 kV, MISCELLANEOUS PRIMARY ASSEMBLIES	ISSUED	2/04/2008
				REVISED	
					STANDARD NUMBER
					VM5-34 to 36



**VM5-34**  
STRAIGHT  
CONNECTION LINK



**VM5-35**  
REGULATOR  
BY-PASS SWITCH



**VM5-36**  
EQUIPMENT PLATFORM &  
I-BEAM



DATE	REVISION

14.4/24.9 kV,  
MISCELLANEOUS PRIMARY  
ASSEMBLIES

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	VM5-34 to 36

ITM.	QTY.	MAT.CODE No	MATERIAL
<b>VM5-37</b>			
fo	1	0780-92-00	Bracket, transformer mount, Aluminum (Bolt-A-Band)
bb2	3	7610-58-00	Buckle with Carriage Bolt 5\8"x 8"
bb4	30'	7620-25-00	Band, 1 1\4"
<b>VM5-38</b>			
fo1	1	0780-29-00	Bracket, all purpose mount, (Bolt-A-Band)
bb2	2	7610-58-00	Buckle with Carriage Bolt 5\8"x 8"
bb4	20'	7620-25-00	Band, 1 1\4"
<b>VM5-39-2</b>			
ug2	1	7540-50-01	Strap, conduit, U-guard, 2"
bb1	1	7610-38-00	Buckle with Carriage Bolt 3\8"x 6"
bb3	10'	7620-75-00	Band, 3\4"
<b>VM5-39-3</b>			
ug3	1	7540-50-03	Strap, conduit, U-guard, 3"
bb1	1	7610-38-00	Buckle with Carriage Bolt 3\8"x 6"
bb3	10'	7620-75-00	Band, 3\4"
<b>VM5-39-4</b>			
ug4	1	7540-50-05	Strap, conduit, U-guard, 4"
bb1	1	7610-38-00	Buckle with Carriage Bolt 3\8"x 6"
bb3	10'	7620-75-00	Band, 3\4"
<b>VM5-39-6</b>			
ug5	1	7540-50-07	Strap, conduit, U-guard, 6"
bb1	1	7610-38-00	Buckle with Carriage Bolt 3\8"x 6"
bb3	10'	7620-75-00	Band, 3\4"



DATE  
REVISION

REVISION

BOLT-A-BAND  
DETAIL

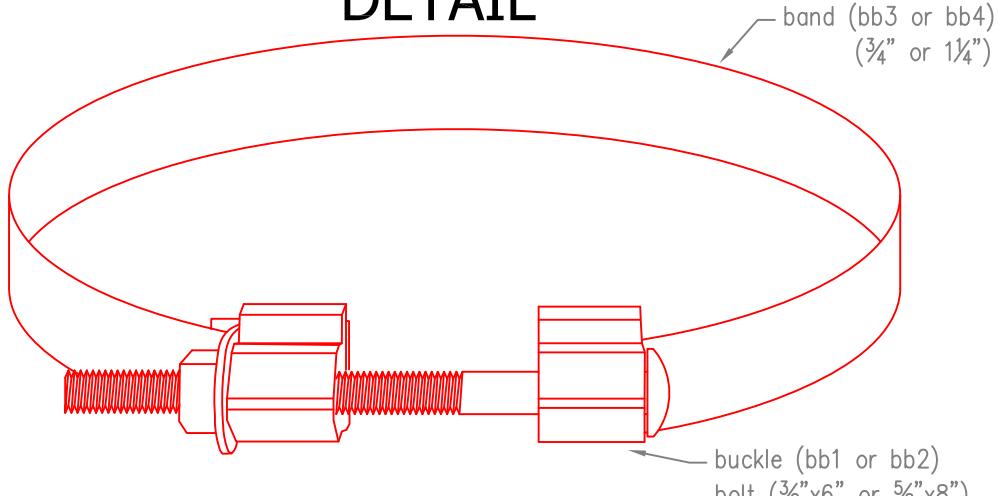
ISSUED 1/16/2012

REVISED

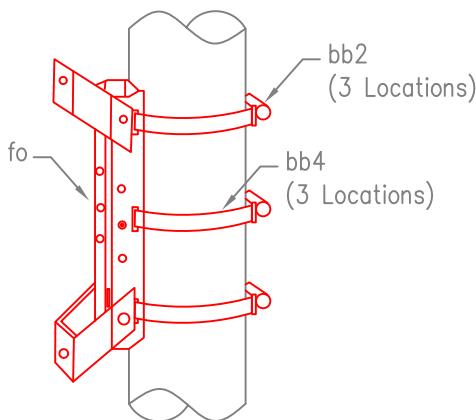
STANDARD NUMBER

VM5-37 to 39

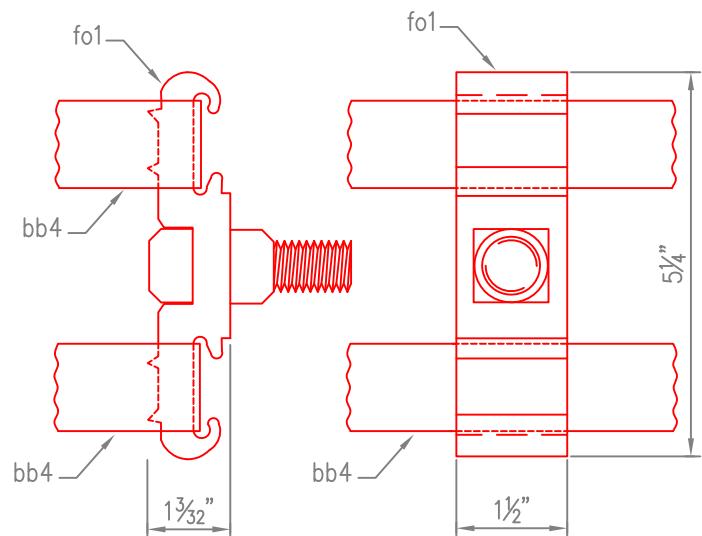
# BOLT-A-BAND DETAIL



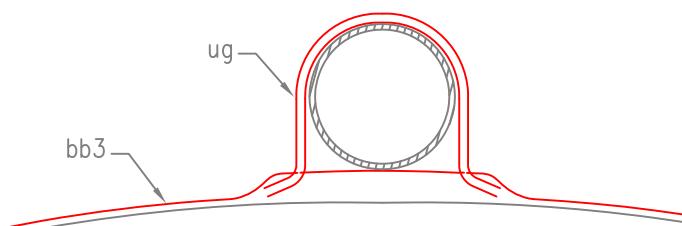
**BOLT-A-BAND BANDING SYSTEM**



**VM5-37**  
TRANSFORMER MOUNTING BRACKET  
Attaches with  $1\frac{1}{4}$ " Band



**VM5-38**  
ALL PURPOSE MOUNTING BRACKET  
Attaches with  $1\frac{1}{4}$ " Band



**VM5-39**  
CONDUIT AND U-GUARD STRAP  
Attaches with  $\frac{3}{4}$ " Band



DATE

REVISION

BOLT-A-BAND  
DETAIL

ISSUED

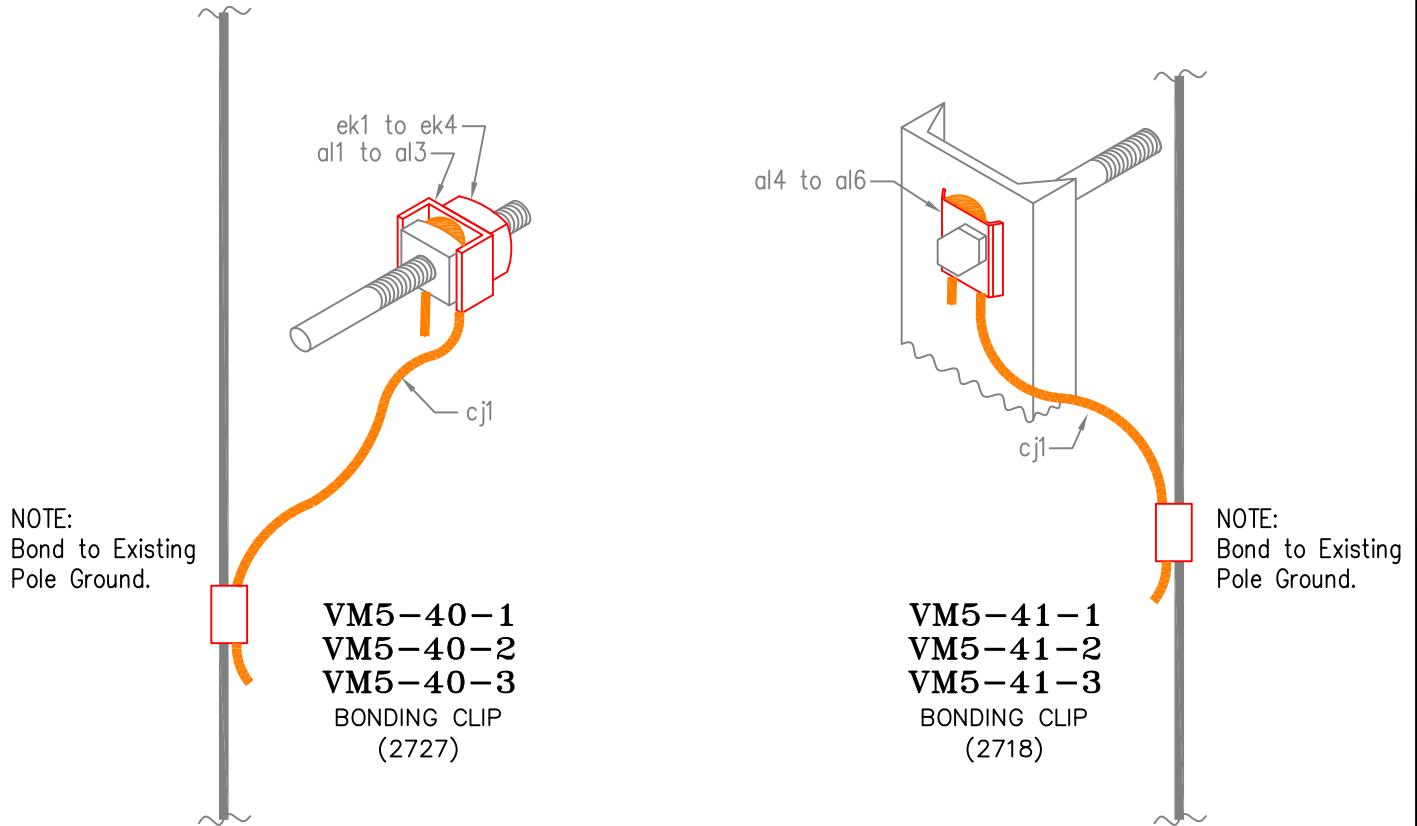
1/16/2012

REVISED

STANDARD NUMBER

VM5-37 to 39

ITM.	QTY.	MAT.CODE	No	MATERIAL
<b>VM5-40-1</b>				
al1	1	1737-11-01	Bonding clip, 1/2", (2727)	
cj1	2'	7250-06-01	Wire, #6 SD Cu	
ek3	1	4290-70-50	Locknuts 1/2"	
<b>VM5-40-2</b>				
al2	1	1737-12-01	Bonding clip, 5/8", (2727)	
cj1	2'	7250-06-01	Wire, #6 SD Cu	
ek1	1	4290-70-63	Locknuts 5/8"	
<b>VM5-40-3</b>				
al3	1	1737-13-01	Bonding clip, 3/4", (2727)	
cj1	2'	7250-06-01	Wire, #6 SD Cu	
ek4	1	4290-70-75	Locknuts 3/4"	
<b>VM5-41-1</b>				
al4	1	1737-11-02	Bonding clip, 1/2", (2718)	
cj1	2'	7250-06-01	Wire, #6 SD Cu	
<b>VM5-41-2</b>				
al5	1	1737-12-02	Bonding clip, 5/8", (2718)	
cj1	2'	7250-06-01	Wire, #6 SD Cu	
<b>VM5-41-3</b>				
al6	1	1737-13-02	Bonding clip, 3/4", (2718)	
cj1	2'	7250-06-01	Wire, #6 SD Cu	
NOTES:				
1. Bonding Clip required for Concrete Pole use "ONLY".				
	DATE	REVISION	BONDING CLIP ASSEMBLY	ISSUED
				6/13/2012
				REVISED
				-
				STANDARD NUMBER
				VM5-40 to 41



DATE	REVISION

REVISION

BONDING CLIP  
ASSEMBLY

ISSUED	6/13/2012
REVISED	-
STANDARD NUMBER	VM5-40 to 41

ITM.	QTY.	CATALOG No.	MATERIAL
ae1	2	0152-19-32	Arrester, 14.4 lightning, 18kV (Transformer Bracket)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	8	7108-99-51	Washers, double spring lock, 3/4"
c5	2	0638-05-16	Bolts, machine 5/8" x 16"
cj1	20'	7250-06-01	Wire, #6 SD Cu
cl	1	3787-32-38	Straight connection link, 9 1/2" x 2" x 3/8"
cu1	4	0753-51-26	Brace, crossarm 38" span 18" drop (pair)
cz	10	0630-04-02	Bolts, 1/2" x 2", zinc plated
d1	4	7102-04-91	Washers, square, 5/8"
d4	8	7102-04-51	Washers, square, 3/4"
dy	10	7107-54-97	Washers, lock, 1/2", zinc plated
dz	20	7103-54-97	Washers, flat, 1/2", zinc plated
ek1	2	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
ek4	8	4290-70-75	Locknuts 3/4"
ez	10	4290-90-50	Nuts, Hex, 1/2", zinc plated
fi1	2	1172-90-33	Clamp, hotline #6 - 4/0 TP
g	6	1809-01-01	Crossarm, Wood 8'
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	3	5550-44-40	Screw, lag 1/2 "x 4"
k	1	3428-60-60	Insulator, polymer suspension
l	2	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
n7	4	0633-06-24	Bolts, DA 3/4" x 24" (Special Order)
pl	4	1781-17-80	Connectors, Lightning arrester
ps	4	1702-XX-XX	Connectors, Terminal, Hylug, (Specify conductor)
sc	1	513X-XX-XX	Regulator, 25kV, (Specify amp rating)
sk	1	6562-60-00	Switch, regulator by-pass, 25kV, hookstick
Ugc	1	1960-21-10	Cable riser shield, length as required

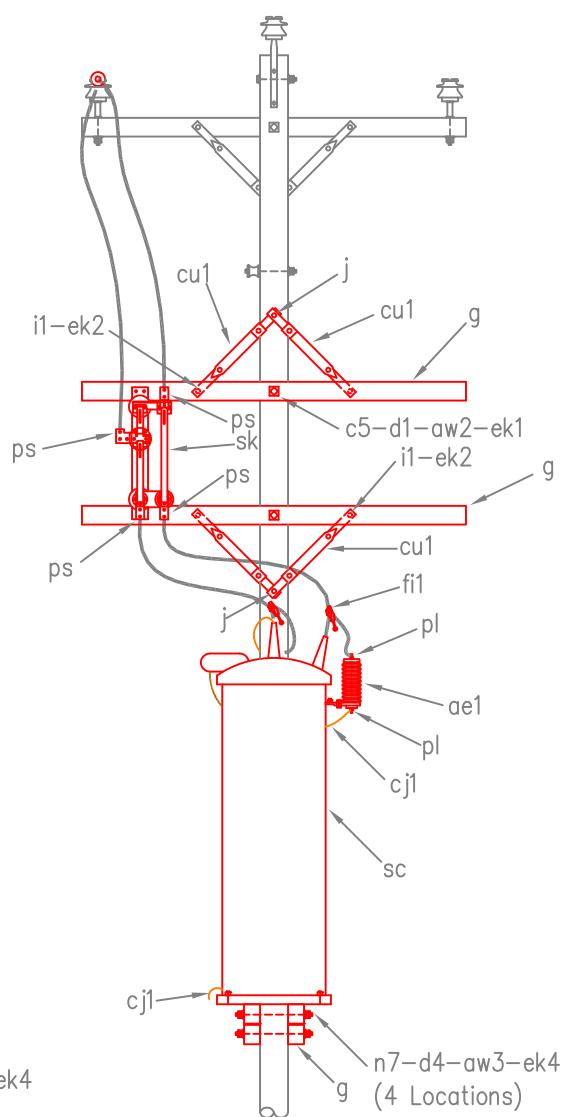
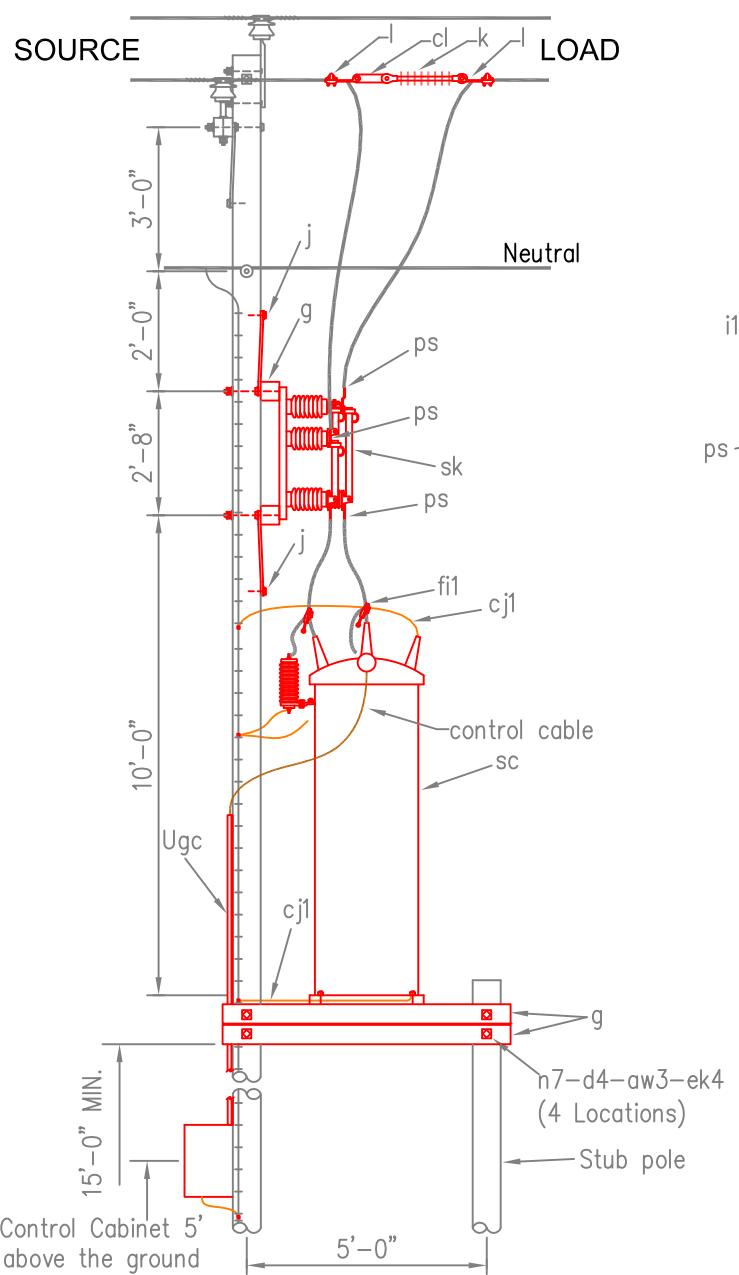
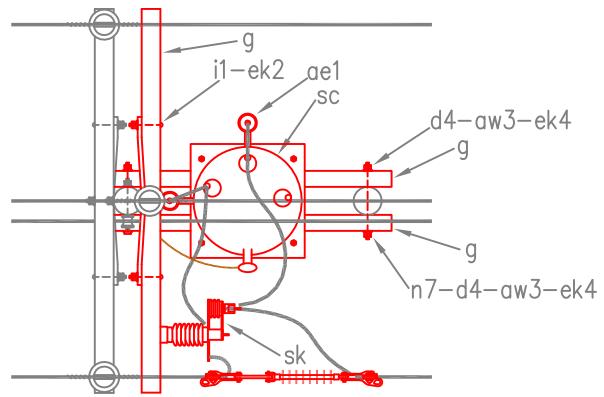
### REGULATORS

CoServ #	Size Amps
5136-09-20	100
5136-13-20	150
5136-19-20	219
5136-21-20	250
5136-23-20	288

### NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, SINGLE PHASE REGULATOR PLATFORM ASSEMBLY	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					VM7-1



## 14.4/24.9 KV, SINGLE PHASE REGULATOR PLATFORM ASSEMBLY

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	
VM7-1	

ITM.	QTY.	CATALOG No.	MATERIAL
ae2	2	0152-10-32	Arrester, 7.2 lightning, 10KV (Transformer Bracket)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	8	7108-99-51	Washers, double spring lock, 3/4"
c5	2	0638-05-16	Bolts, machine 5/8" x 16"
cj1	20'	7250-06-01	Wire, #6 SD Cu
cl	1	3787-32-38	Straight connection link, 9 1/2" x 2" x 3/8"
cu1	4	0753-51-26	Brace, crossarm 38" span 18" drop (pair)
cz	10	0630-04-02	Bolts, 1/2" x 2", zinc plated
d1	4	7102-04-91	Washers, square, 5/8"
d4	8	7102-04-51	Washers, square, 3/4"
dy	10	7107-54-97	Washers, lock, 1/2", zinc plated
dz	20	7103-54-97	Washers, flat, 1/2", zinc plated
ek1	2	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
ek4	8	4290-70-75	Locknuts 3/4"
ez	10	4290-90-50	Nuts, Hex, 1/2", zinc plated
fi1	2	1172-90-33	Clamp, hotline #6 - 4/0 TP
g	6	1809-01-01	Crossarm, Wood 8'
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	3	5550-44-40	Screw, lag 1/2 "x 4"
k	1	3428-60-60	Insulator, polymer suspension
l	2	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
n7	4	0633-06-24	Bolts, DA 3/4" x 24" (Special Order)
pl	4	1781-17-80	Connectors, Lightning arrester
ps	4	1702-XX-XX	Connectors, Terminal, Hylug, (Specify conductor)
sc	1	513X-XX-XX	Regulator, 25kV, (Specify amp rating)
sk	1	6562-60-00	Switch, regulator by-pass, 25kV, hookstick
Ugc	1	1960-21-10	Cable riser shield, length as required

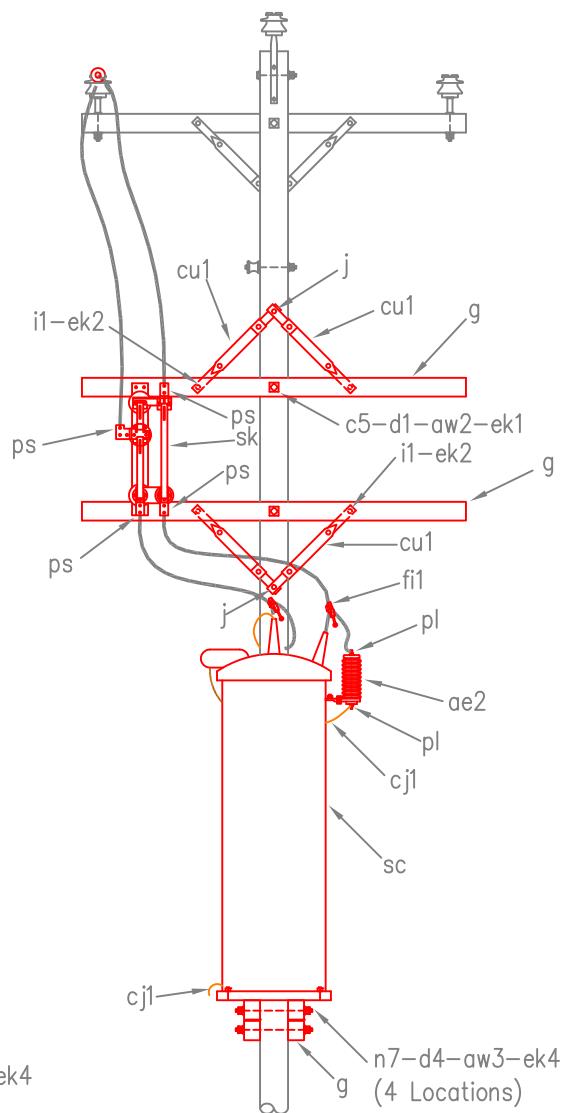
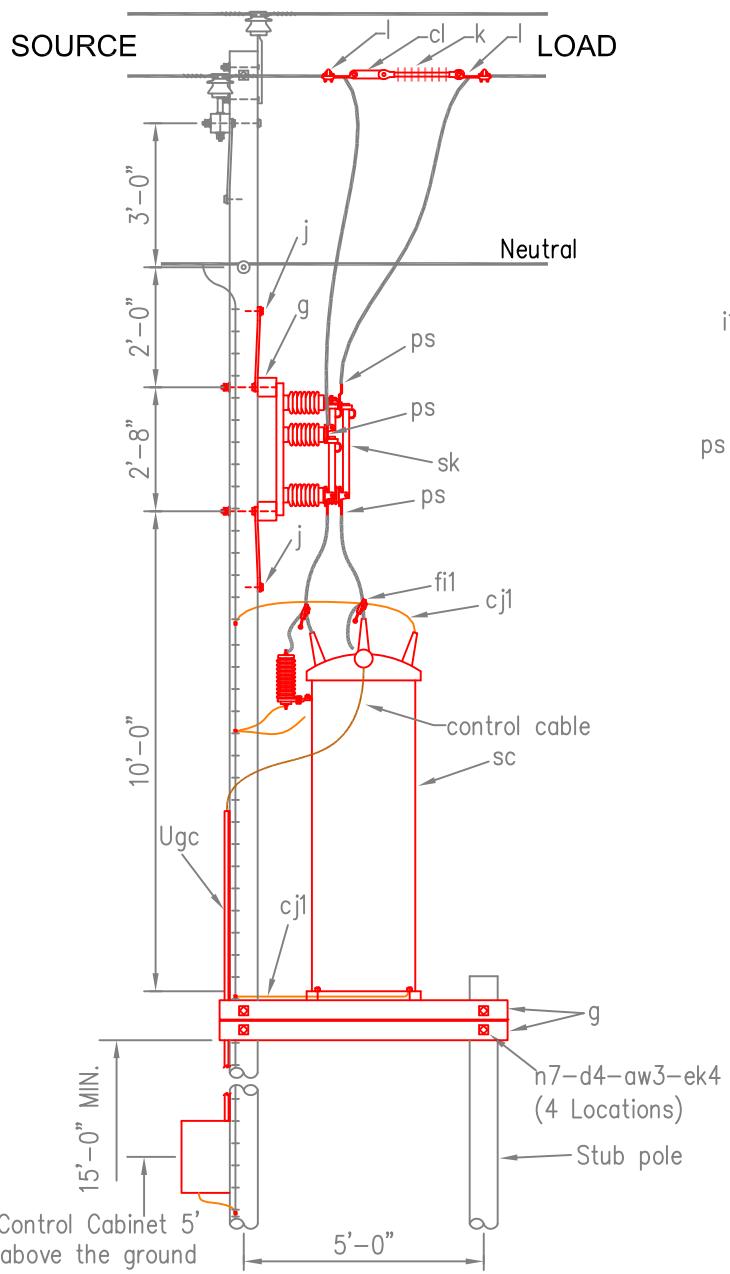
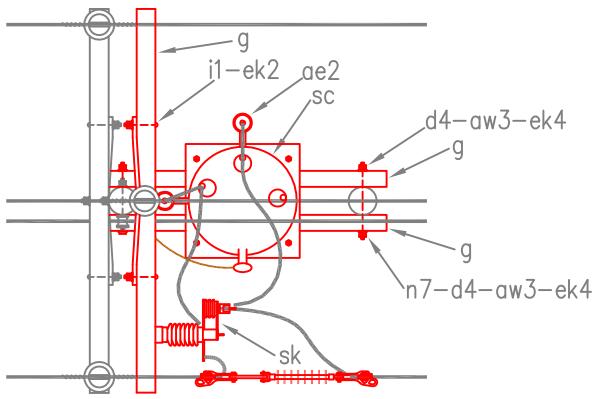
### REGULATORS

CoServ #	Size Amps
5136-09-20	100
5136-13-20	150
5136-19-20	219
5136-21-20	250
5136-23-20	288

### NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	7.2/12.5 kV, SINGLE PHASE REGULATOR PLATFORM ASSEMBLY	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					M7-1



## 7.2/12.5 KV, SINGLE PHASE REGULATOR PLATFORM ASSEMBLY

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	
<b>M7-1</b>	

ITEM.	QTY.	CATALOG No.	MATERIAL
ae1	2	0152-19-32	Arrester, 14.4 lightning, 18KV (Transformer Bracket)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c5	2	0638-05-16	Bolts, machine 5/8" x 16"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cj1	20'	7250-06-01	Wire, #6 SD Cu
cl	1	3787-32-38	Straight connection link, 9 1/2" x 2" x 3/8"
cu1	4	0753-51-26	Brace, crossarm 38" span 18" drop (pair)
cz	10	0630-04-02	Bolts, 1/2" x 2", zinc plated
d1	4	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
dy	10	7107-54-97	Washers, lock, 1/2", zinc plated
dz	20	7103-54-97	Washers, flat, 1/2", zinc plated
ek1	2	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
ek4	2	4290-70-75	Locknuts 3/4"
ez	10	4290-90-50	Nuts, Hex, 1/2", zinc plated
fi1	2	1172-90-33	Clamp, hotline #6 - 4/0 TP
g	2	1809-01-01	Crossarm, Wood 8'
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	3	5550-44-40	Screw, lag 1/2 "x 4"
k	1	3428-60-60	Insulator, polymer suspension
l	2	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
pl	4	1781-17-80	Connectors, Lightning arrester
ps	4	1702-XX-XX	Connectors, Terminal, Hylug, (Specify conductor)
sc	1	513X-XX-XX	Regulator, 25kV, (Specify amp rating)
sk	1	6562-60-00	Switch, regulator by-pass, 25kV, hookstick
Ugc	1	1960-21-10	Cable riser shield, length as required

### REGULATORS

CoServ #	Size Amps
5136-09-20	100
5136-13-20	150
5136-19-20	219
5136-21-20	250
5136-23-20	288

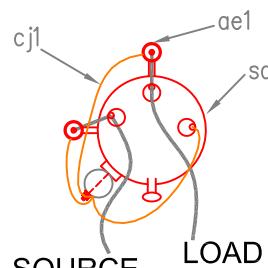
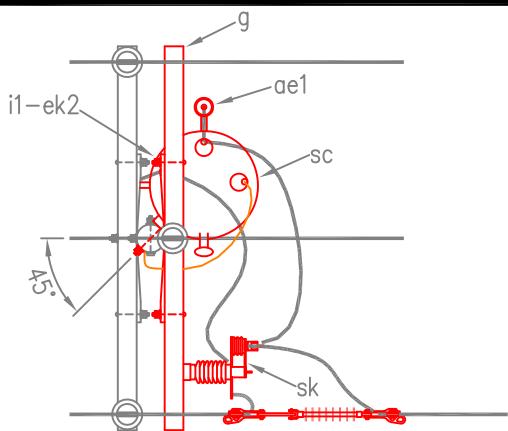
### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

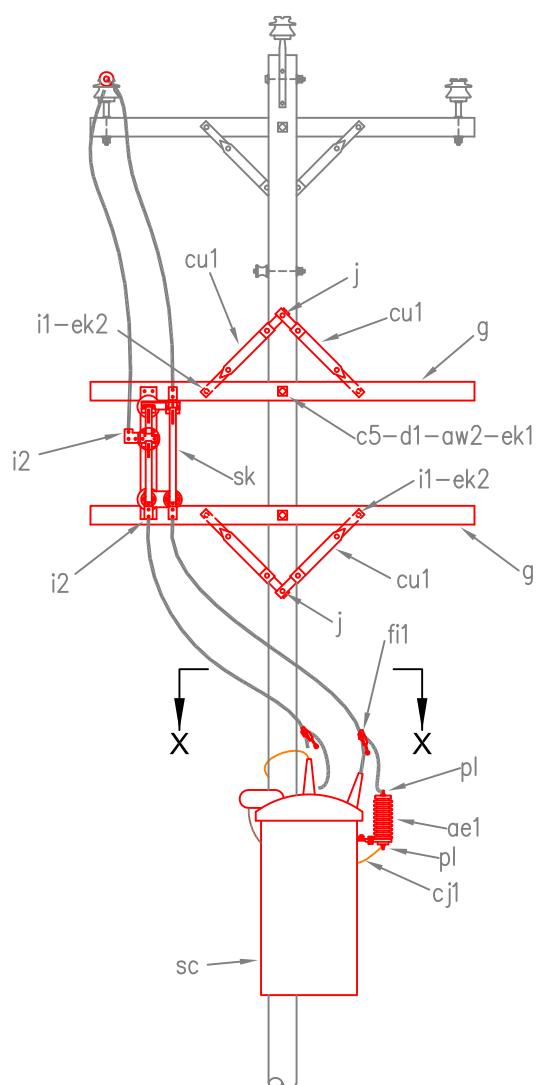
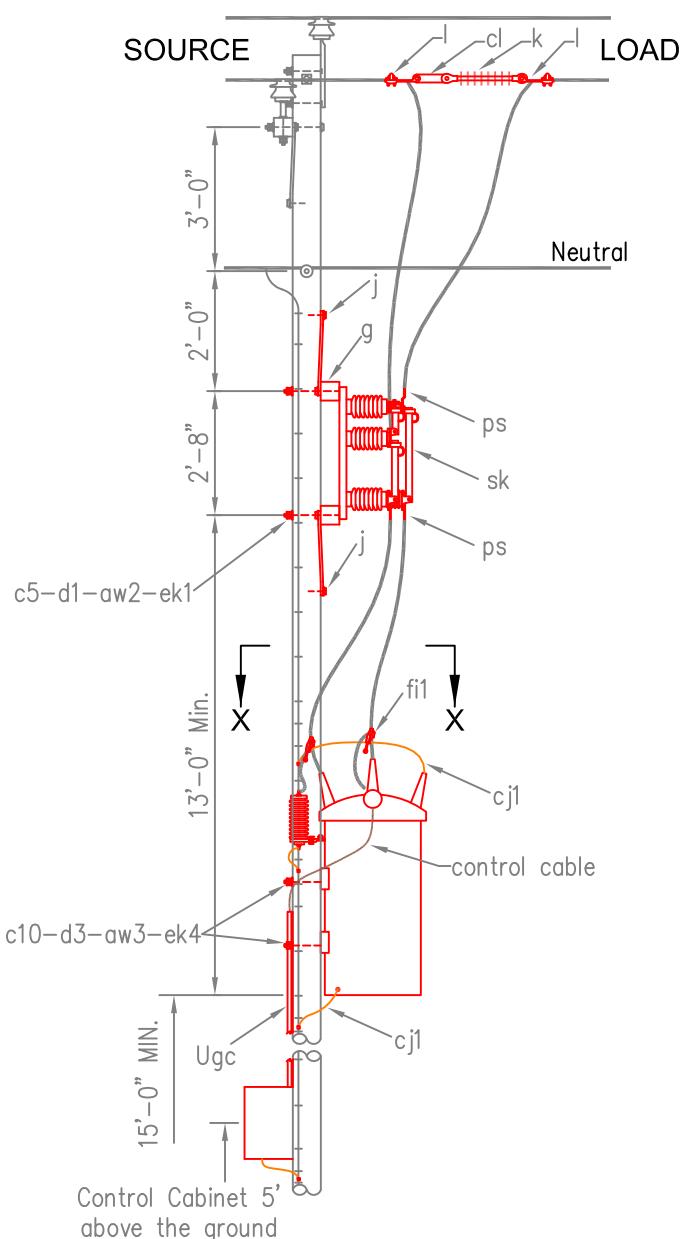
#### NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, SINGLE PHASE REGULATOR POLE MOUNTED ASSEMBLY	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				VM7-1A	



## VIEW X-X



**14.4/24.9 KV, SINGLE PHASE  
REGULATOR  
POLE MOUNTED ASSEMBLY**

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	
VM7-1A	

ITEM.	QTY.	CATALOG No.	MATERIAL
ae2	2	0152-10-32	Arrester, 7.2 lightning, 10KV (Transformer Bracket)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c5	2	0638-05-16	Bolts, machine 5/8" x 16"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cj1	20'	7250-06-01	Wire, #6 SD Cu
cl	1	3787-32-38	Straight connection link, 9 1/2" x 2" x 3/8"
cu1	2	0753-51-26	Brace, crossarm 38" span 18" drop (pair)
cz	10	0630-04-02	Bolts, 1/2" x 2", zinc plated
d1	4	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
dy	10	7107-54-97	Washers, lock, 1/2", zinc plated
dz	20	7103-54-97	Washers, flat, 1/2", zinc plated
ek1	2	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
ek4	2	4290-70-75	Locknuts 3/4"
ez	10	4290-90-50	Nuts, Hex, 1/2", zinc plated
fi1	2	1172-90-33	Clamp, hotline #6 - 4/0 TP
g	2	1809-01-01	Crossarm, Wood 8'
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	3	5550-44-40	Screw, lag 1/2 "x 4"
k	1	3428-60-60	Insulator, polymer suspension
l	2	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
pl	4	1781-17-80	Connectors, Lightning arrester
ps	4	1702-XX-XX	Connectors, Terminal, Hylug, (Specify conductor)
sc	1	513X-XX-XX	Regulator, 25kV, (Specify amp rating)
sk	1	6562-60-00	Switch, regulator by-pass, 25kV, hookstick
Ugc	1	1960-21-10	Cable riser shield, length as required

### REGULATORS

CoServ #	Size Amps
5136-09-20	100
5136-13-20	150
5136-19-20	219
5136-21-20	250
5136-23-20	288

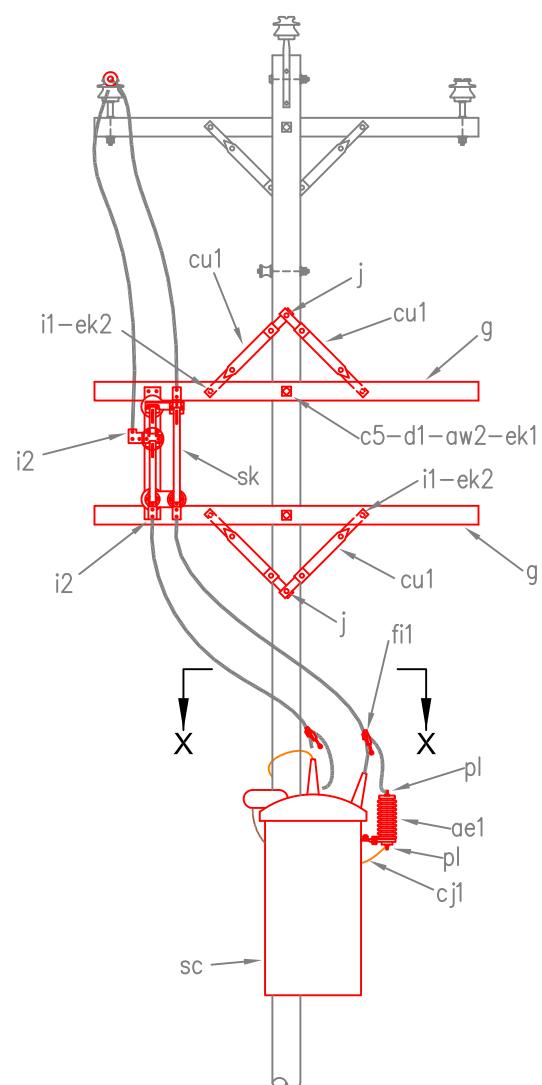
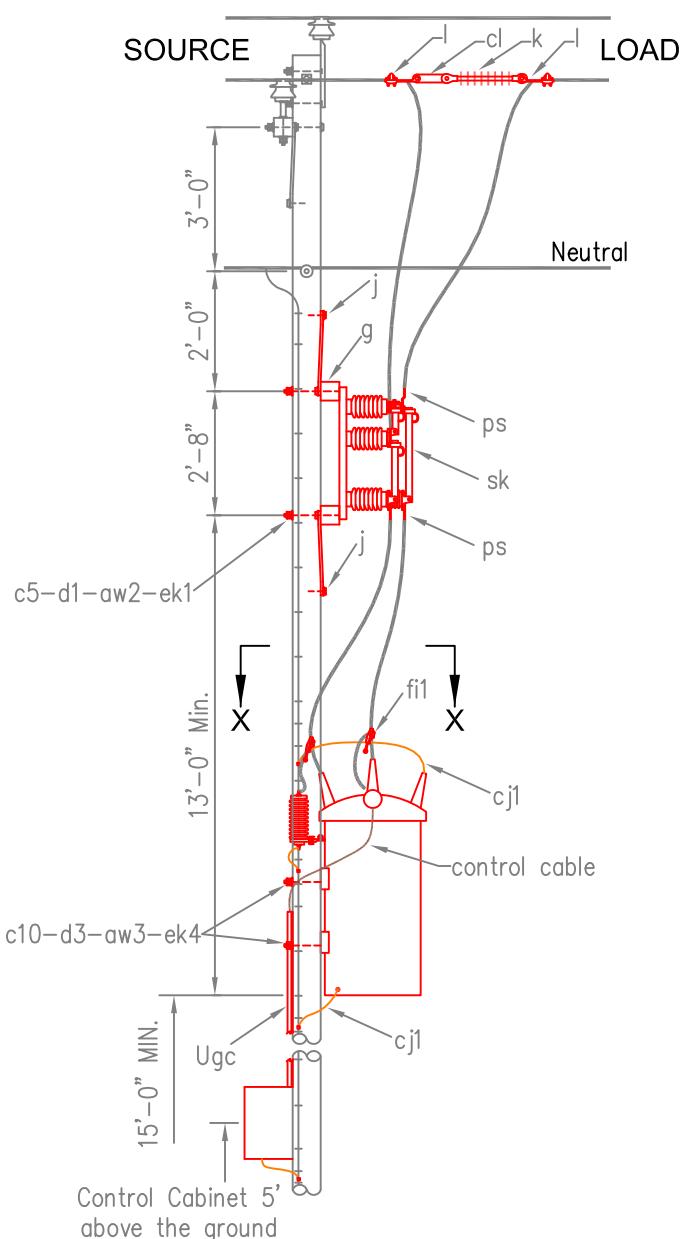
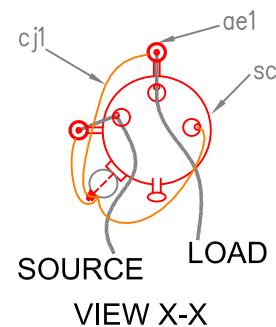
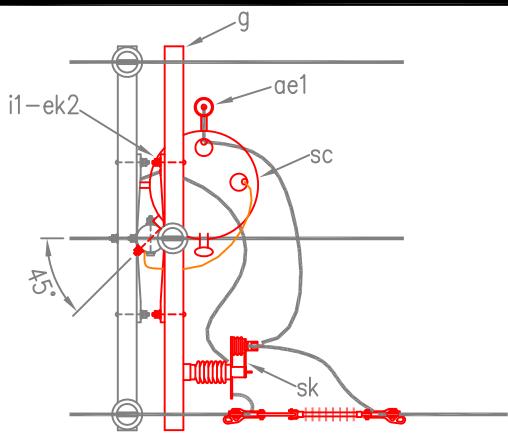
### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

### NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	7.2/12.5 kV, SINGLE PHASE REGULATOR POLE MOUNTED ASSEMBLY	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
					M7-1A



DATE	REVISION

7.2/12.5 kV, SINGLE PHASE  
REGULATOR  
POLE MOUNTED ASSEMBLY

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	M7-1A

ITEM.	QTY.	CATALOG No.	MATERIAL
ae1	6	0152-19-32	Arrester, 14.4 lightning, 18KV (Transformer Bracket)
a1	2	3423-10-10	Insulator, 14.4 pin 1 3/8 internal thread
ah7	2	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	16	7108-99-41	Washers, double spring lock, 5/8"
aw3	6	7108-99-51	Washers, double spring lock, 3/4"
c4	4	0638-05-14	Bolts, machine 5/8" x 14"
c11	6	0638-06-16	Bolts, machine 3/4" x 16"
cj1	80'	7250-06-01	Wire, #6 SD Cu
cj2	30'	1522-04-19	Cable, #4 Cu THHN 600V Str
cj3	20'	1522-02-19	Cable, #2 Cu THHN 600V Str
cl	3	3787-32-38	Straight connection link, 9 1/2" x 2" x 3/8", 3171
cu1	2	0753-51-26	Brace, crossarm 38" span 18" drop (pair)
cz	30	0630-04-02	Bolts, 1/2" x 2", zinc plated
d1	8	7102-04-91	Washers, square, 5/8"
d3	6	7101-30-91	Washers, heavy duty, 3/4" curved
dd	2	4561-23-05	Adapter, insulator equipment
dy	30	7107-54-97	Washer, lock, 1/2", zinc plated
dz	60	7103-54-97	Washer, flat, 1/2", zinc plated
ek1	17	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
ek4	6	4290-70-75	Locknuts 3/4"
ez	30	4290-90-50	Nuts, Hex, 1/2", zinc plated
fi1	6	1172-90-33	Clamp, hotline #6 - 4/0 TP
g	2	1809-01-01	Crossarm, Wood 8'
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	7	5550-44-40	Screw, lag 1/2 "x 4"
k	3	3428-60-60	Insulator, polymer suspension
l	6	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
n3	3	0633-05-24	Bolts, DA 5/8" x 24"
pl	12	1781-17-80	Connectors, Lightning arrester
ps	12	1702-XX-XX	Connectors, Terminal, Hylug, (Specify conductor)
sc	3	513X-XX-XX	Regulator, 25kV, (Specify amp rating) SEE TABLE BELOW
sk	3	6562-60-00	Switch, regulator by-pass, 25kV, hookstick
so	1	4706-07-00	I-beam, Aluma-form 2B2-20 (Pair)
sp	1	4704-08-03	Platform, Aluma-form EHD2PAL-22 w/bracing & (2) eye beams
Ugc	3	1960-21-10	Cable riser shield, length as required

### REGULATORS

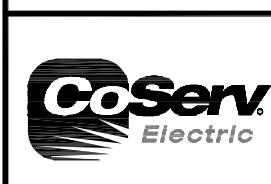
CoServ #	Size Amps
5136-09-20	100
5136-13-20	150
5136-19-20	219
5136-21-20	250
5136-23-20	288

### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

### NOTES:

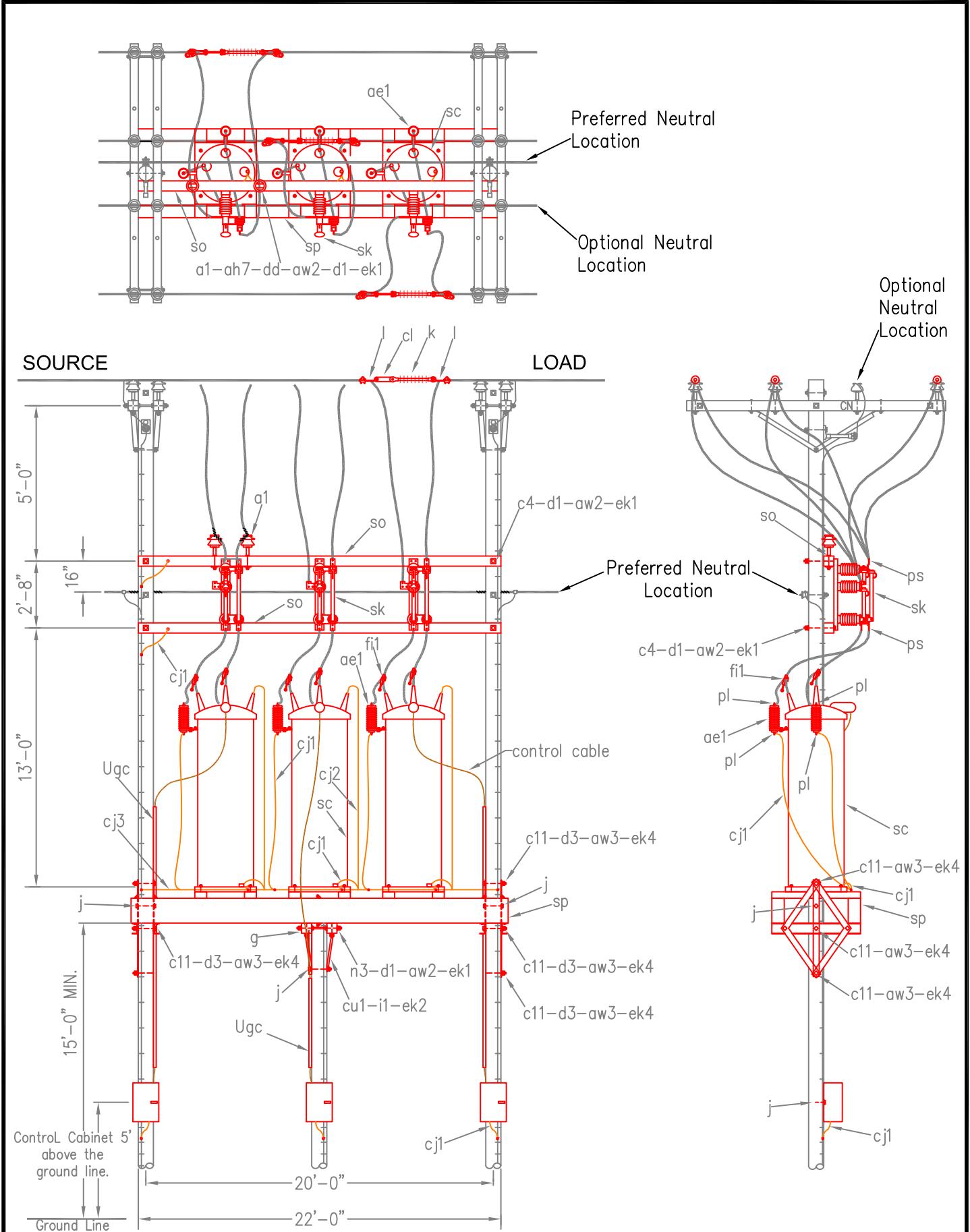
1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
REGULATOR PLATFORM ASSEMBLY

ISSUED 2/04/2008  
REVISED 2/11/2010  
STANDARD NUMBER VM7-3



## 14.4/24.9 kV, THREE PHASE REGULATOR PLATFORM ASSEMBLY

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	
VM7-3	

ITM.	QTY.	CATALOG No.	MATERIAL
ae2	6	0152-10-32	Arrester, 7.2 lightning, 10KV (Transformer Bracket)
a1	2	3423-10-10	Insulator, 14.4 pin 1 3/8 internal thread
ah7	2	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	16	7108-99-41	Washers, double spring lock, 5/8"
aw3	6	7108-99-51	Washers, double spring lock, 3/4"
c4	4	0638-05-14	Bolts, machine 5/8" x 14"
c11	6	0638-06-16	Bolts, machine 3/4" x 16"
cj1	80'	7250-06-01	Wire, #6 SD Cu
cj2	30'	1522-04-19	Cable, #4 Cu THHN 600V Str
cj3	20'	1522-02-19	Cable, #2 Cu THHN 600V Str
cl	3	3787-32-38	Straight connection link, 9 1/2" x 2" x 3/8", 3171
cu1	2	0753-51-26	Brace, crossarm 38" span 18" drop (pair)
cz	30	0630-04-02	Bolts, 1/2" x 2", zinc plated
d1	8	7102-04-91	Washers, square, 5/8"
d3	6	7101-30-91	Washers, heavy duty, 3/4" curved
dd	2	4561-23-05	Adapter, insulator equipment
dy	30	7107-54-97	Washer, lock, 1/2", zinc plated
dz	60	7103-54-97	Washer, flat, 1/2", zinc plated
ek1	17	4290-70-63	Locknuts 5/8"
ek2	4	4290-70-38	Locknuts 3/8"
ek4	6	4290-70-75	Locknuts 3/4"
ez	30	4290-90-50	Nuts, Hex, 1/2", zinc plated
fi1	6	1172-90-33	Clamp, hotline #6 - 4/0 TP
g	2	1809-01-01	Crossarm, Wood 8'
i1	4	0631-03-45	Bolts, carriage 3/8" x 4 1/2"
j	7	5550-44-40	Screw, lag 1/2 "x 4"
k	3	3428-60-60	Insulator, polymer suspension
l	6	1172-8X-XX	Shoe, deadend, (Specify conductor & size)
n3	3	0633-05-24	Bolts, DA 5/8" x 24"
pl	12	1781-17-80	Connectors, Lightning arrester
ps	12	1702-XX-XX	Connectors, Terminal, Hylug, (Specify conductor)
sc	3	513X-XX-XX	Regulator, 25kV, (Specify amp rating) SEE TABLE BELOW
sk	3	6562-60-00	Switch, regulator by-pass, 25kV, hookstick
so	1	4706-07-00	I-beam, Aluma-form 2B2-20 (Pair)
sp	1	4704-08-03	Platform, Aluma-form EHD2PAL-22 w/bracing & (2) eye beams
Ugc	3	1960-21-10	Cable riser shield, length as required

### REGULATORS

CoServ #	Size Amps
5136-09-20	100
5136-13-20	150
5136-19-20	219
5136-21-20	250
5136-23-20	288

### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

NOTES:

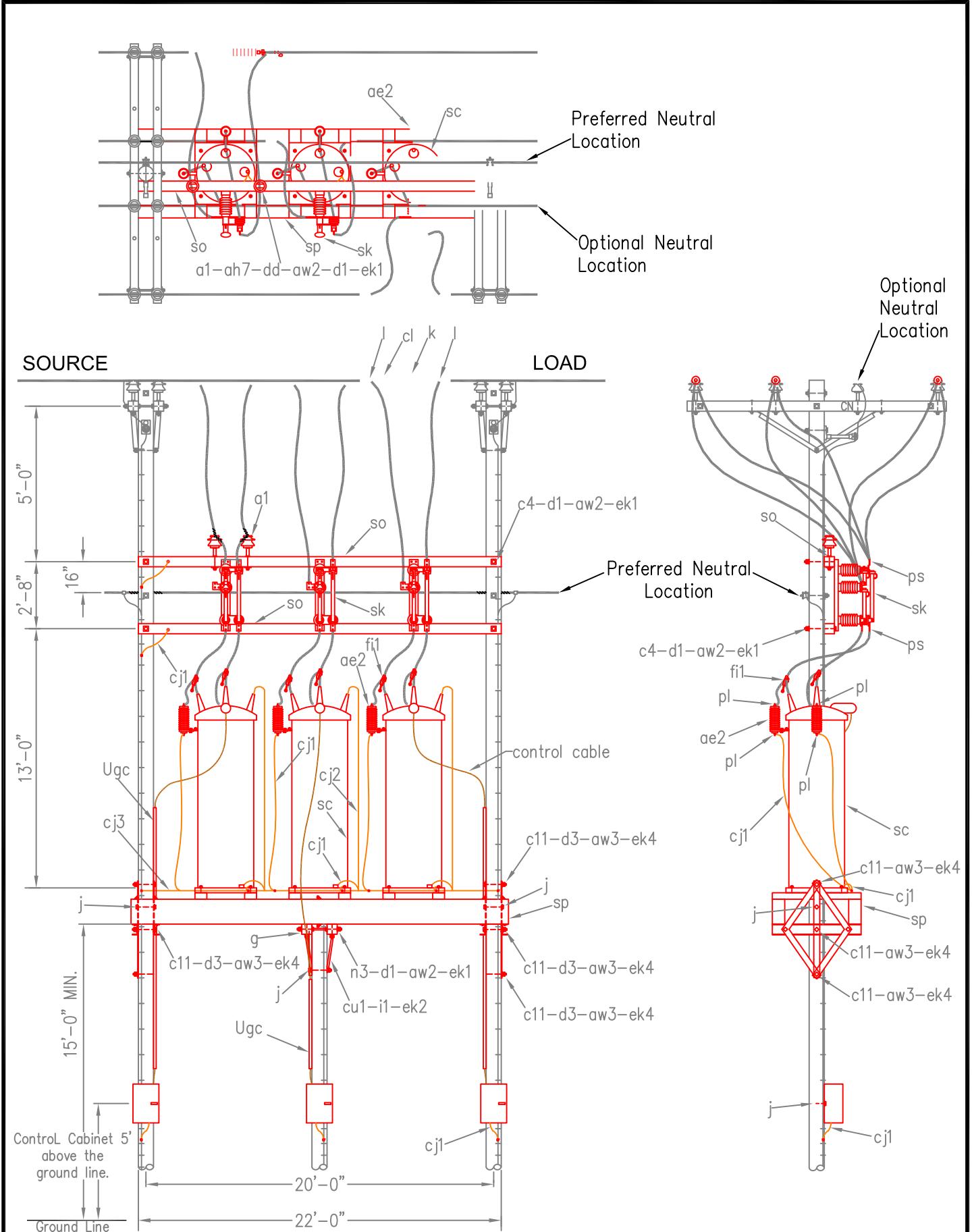
1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



DATE	REVISION

7.2/12.5 kV, THREE PHASE  
REGULATOR PLATFORM ASSEMBLY

ISSUED 2/04/2008  
REVISED 2/11/2010  
STANDARD NUMBER M7-3



## 7.2/12.5 kV, THREE PHASE REGULATOR PLATFORM ASSEMBLY

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	
M7-3	

ITM.	QTY.	MAT.CODE No	MATERIAL
af2	4	1831-22-12	Cutout 14.4, fuse (No Bracket)
aw2	2	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
c11	2	0638-06-16	Bolts, machine 3/4" x 16"
cj1	20'	7250-06-01	Wire, #6 SD Cu
d1	2	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	2	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
eq4	1	0780-28-03	Bracket, standoff, Fiberglass, 3Ø, double position
eq5	3	0780-95-00	Bracket, transformer mounted equipment

ITM.	QTY.	MAT.CODE No	METER SHOP MATERIAL
ae1	4	0152-19-39	Arrester, 14.4 lightning, 18kV (No Bracket) (Special Order)
an3	1	6933-11-02	Transformer, conventional, 24.9kV/14.4kV - 120/240, 1.5 kVA
bz1	3	1072-22-41	Capacitor switch, vacuum, 200 amp, 1Ø, non ZVC control
fc	X	1055-0X-XX	Capacitor, shunt, 24.9/14.4kV (Specify kVAR size) SEE TABLE BELOW
fd	1	3000-10-06	Hanger, capacitor
gb	1	5910-15-19	Meter base, 200 amp, ring type (Special Order)
99	1	0156-32-30	Arrester Secondary 175V Transformer Mount (Special Order)
jb	1	1065-05-21	Junction box, 8" x 6", Pelco, with weatherproof control cable
pl	8	1781-17-80	Connectors, Lightning arrester

BANK SIZE	QTY.	kVAR	CATALOG NO.
300	3	100	1055-05-44
450	3	50	1055-04-44
	3	100	1055-05-44
600	3	200	1055-07-44
900	3	100	1055-05-44
	3	200	1055-07-44
1200	6	200	1055-07-44

#### ADDITIONAL UNITS REQUIRED

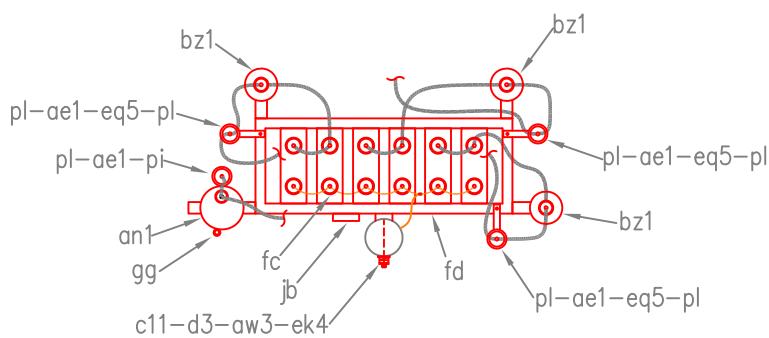
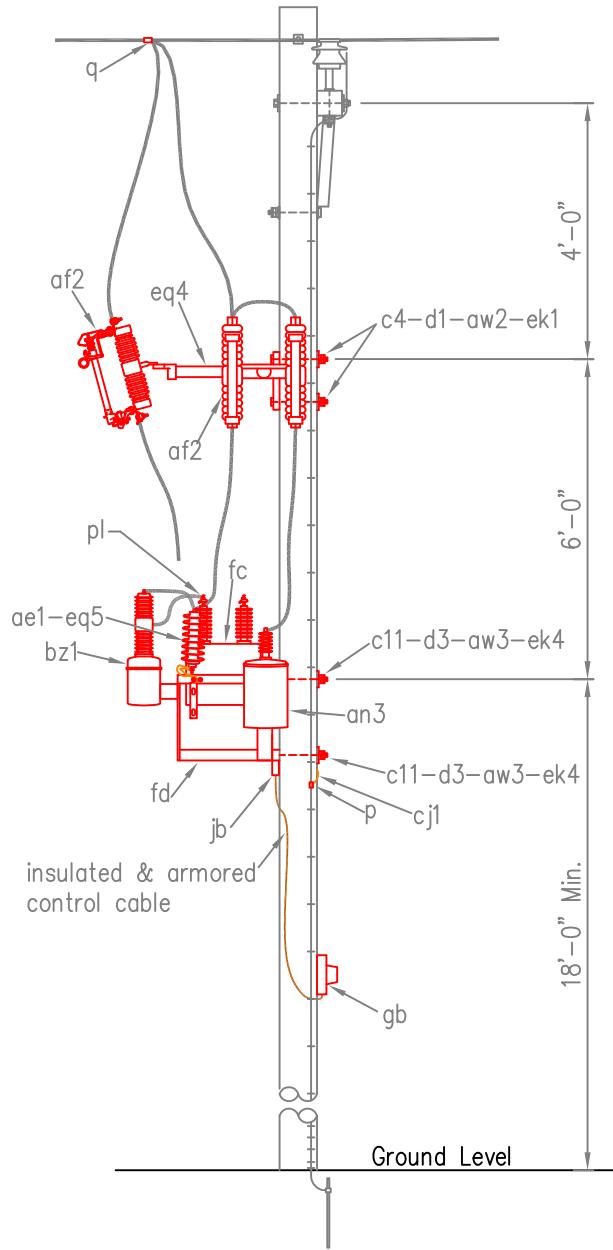
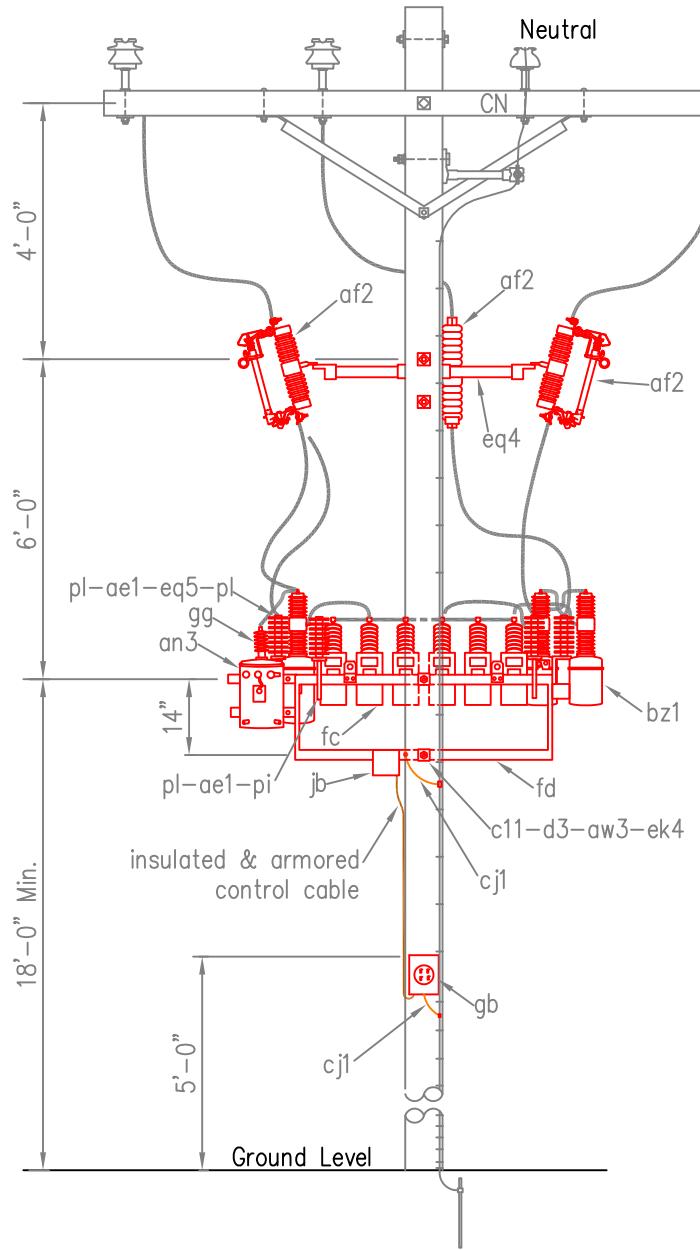
VM2-11-2 GROUNDING ASSEMBLY

Please specify capacitor controller.

#### NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

CoServ Electric	DATE	REVISION	14.4/24.9 kV, THREE PHASE CAPACITOR BANK FOR USE WITH NON-ZVC CONTROLLERS	ISSUED	2/04/2008
				REVISED	8/8/2011
				STANDARD NUMBER	
				VM9-13A	



REPRESENTS APPROXIMATE LOCATIONS OF  
CUTOUT CONNECTION af2

Please specify capacitor controller.



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CAPACITOR BANK FOR USE  
WITH NON-ZVC CONTROLLERS

ISSUED	2/04/2008
REVISED	8/8/2011
STANDARD NUMBER	VM9-13A

ITEM.	QTY.	MAT.CODE No	MATERIAL
af2	4	1831-22-12	Cutout 14.4, fuse (No Bracket)
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
c5	2	0638-05-16	Bolts, machine 5/8" x 16"
c11	2	0638-06-16	Bolts, machine 3/4" x 16"
cj1	20'	7250-06-01	Wire, #6 SD Cu
d1	4	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	4	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
eq4	1	0780-28-03	Bracket, standoff, Fiberglass, 3Ø, double position

ITEM.	QTY.	MAT.CODE No	METER SHOP MATERIAL
ae1	4	0152-19-39	Arrester, 14.4 lightning, 18KV (No Bracket) (Special Order)
an3	1	6933-11-02	Transformer, conventional, 24.9kV/14.4kV – 120/240, 1.5 KVA
bz2	3	1072-42-41	Capacitor switch, vacuum, 200 amp, 1Ø, ZVC contro (Special Order)
co	1	1060-22-1X	Cannon controller, (CBC7000)
fc	X	1055-0X-XX	Capacitor, shunt, 24.9/14.4kV (Specify kVAR size) SEE TABLE BELOW
fd	1	3000-10-06	Hanger, capacitor
gb	1	5910-15-19	Meter base, 200 amp, ring type (Special Order)
gg	1	0156-32-30	Arrester Secondary 175V Transformer Mount (Special Order)
jb	1	1065-05-21	Junction box, 8" x 6", Pelco, with weatherproof control cable
ph	1	7560-01-00	Pipe hub, offset, 1/2" (Special Order)
pl	8	1781-17-80	Connectors, Lightning arrester
pm	2	7560-03-00	Pipe locknut, 1/2" (Special Order)
pn	1	7560-04-00	Pipe nipple, galvanized, 1/2" x 8" (Special Order)
zvc	1	1060-53-09	Zero voltage control, Joslyn ZVC with mounting channel, aluminum, 44" welded (Special Order)

BANK SIZE	QTY.	kVAR	CATALOG NO.
300	3	100	1055-05-44
450	3	50	1055-04-44
	3	100	1055-05-44
600	3	200	1055-07-44
	3	100	1055-05-44
900	3	200	1055-07-44
	3	200	1055-07-44
1200	6	200	1055-07-44

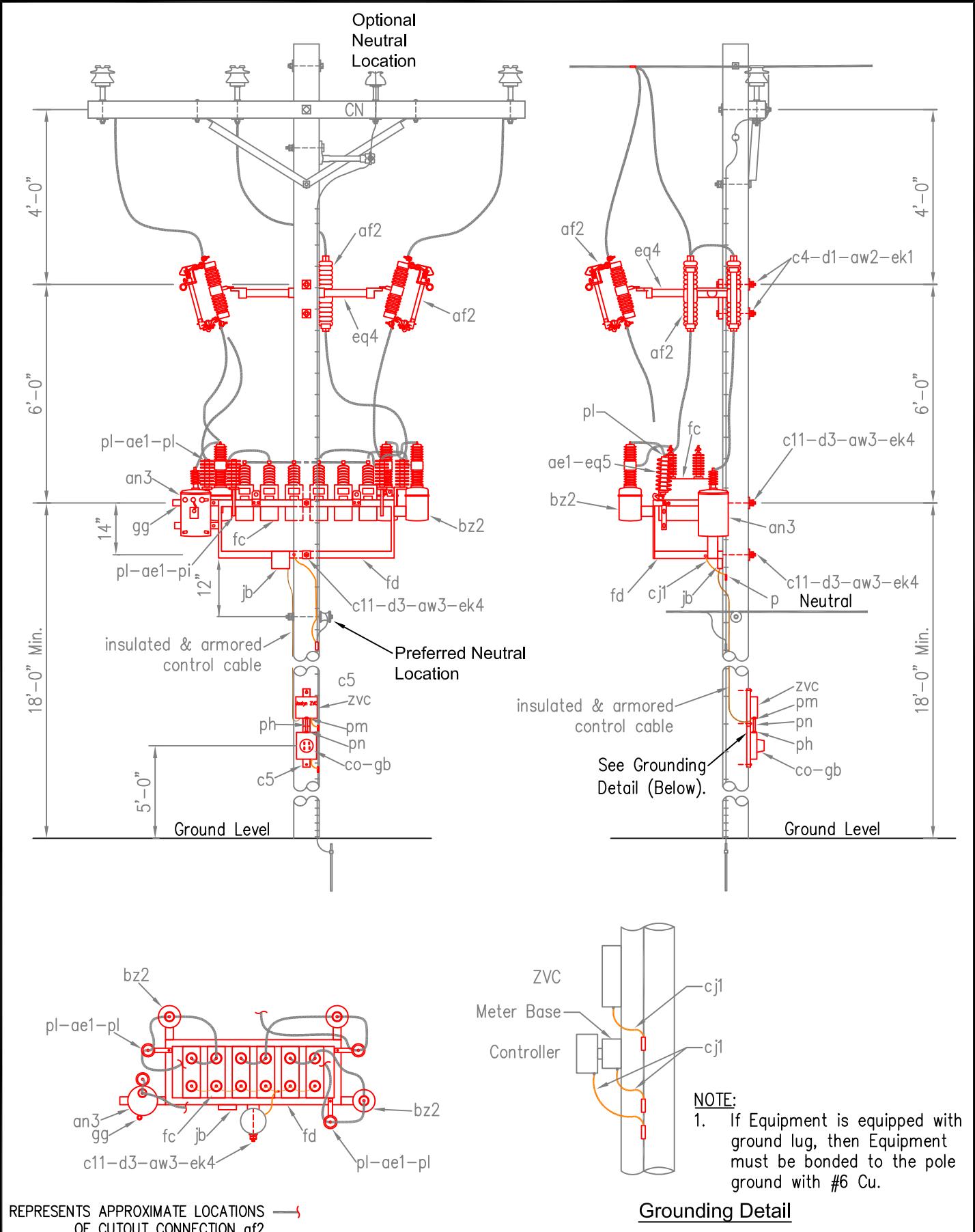
#### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

#### NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

CoServ Electric	DATE	REVISION	14.4/24.9 kV, THREE PHASE CAPACITOR BANK WITH JOSYLN ZERO VOLTAGE CONTROL	ISSUED	2/04/2008
				REVISED	8/08/20011
				STANDARD NUMBER	
				VM9-13S	



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
CAPACITOR BANK WITH  
JOSYLN ZERO VOLTAGE CONTROL

ISSUED	2/04/2008
REVISED	8/08/20011
STANDARD NUMBER	VM9-13S

ITEM.	QTY.	MAT.CODE No	MATERIAL
af2	4	1831-22-12	Cutout 14.4, fuse (No Bracket)
aw2	4	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
c5	2	0638-05-16	Bolts, machine 5/8" x 16"
c11	2	0638-06-16	Bolts, machine 3/4" x 16"
cj1	20'	7250-06-01	Wire, #6 SD Cu
d1	4	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
ek1	4	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
eq4	1	0780-28-03	Bracket, standoff, Fiberglass, 3Ø, double position

ITEM.	QTY.	MAT.CODE No	METER SHOP MATERIAL
ae2	4	0152-10-39	Arrester, 7.2 lightning, 10kV (No Bracket) (Special Order)
an6	1	6934-11-02	Transformer, conventional, DV 14400/7200 - 120/240, 1.5 kVA
bz2	3	1072-42-41	Capacitor switch, vacuum, 200 amp, 1Ø, ZVC control (Special Order)
co	1	1060-22-1X	Cannon controller, (CBC7000)
fc	X	1055-0X-XX	Capacitor, shunt, 12.5/7.2kV (Specify kVAR size) SEE TABLE BELOW
fd	1	3000-10-06	Hanger, capacitor
gb	1	5910-15-19	Meter base, 200 amp, ring type (Special Order)
gg	1	0156-32-30	Arrester Secondary 175V Transformer Mount (Special Order)
jb	1	1065-05-21	Junction box, 8" x 6", Pelco, with weatherproof control cable
ph	1	7560-01-00	Pipe hub, offset, 1/2" (Special Order)
pl	8	1781-17-80	Connectors, Lightning arrester
pm	2	7560-03-00	Pipe locknut, 1/2" (Special Order)
pn	1	7560-04-00	Pipe nipple, galvanized, 1/2" x 8" (Special Order)
zvc	1	1060-53-09	Zero voltage control, Joslyn ZVC with mounting channel, aluminum, 44" welded (Special Order)

BANK SIZE	QTY.	kVAR	CATALOG NO.
150	3	50	1055-04-20
300	3	100	1055-05-20
450	3	50	1055-04-20
	3	100	1055-05-20
600	3	200	1055-07-20

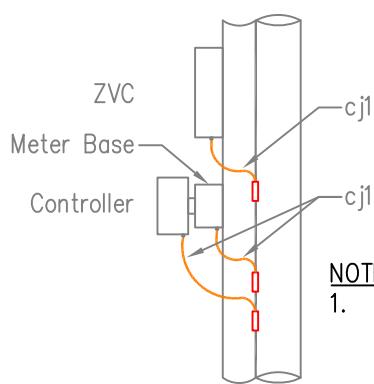
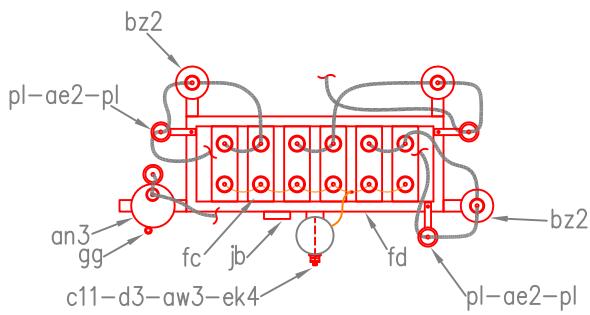
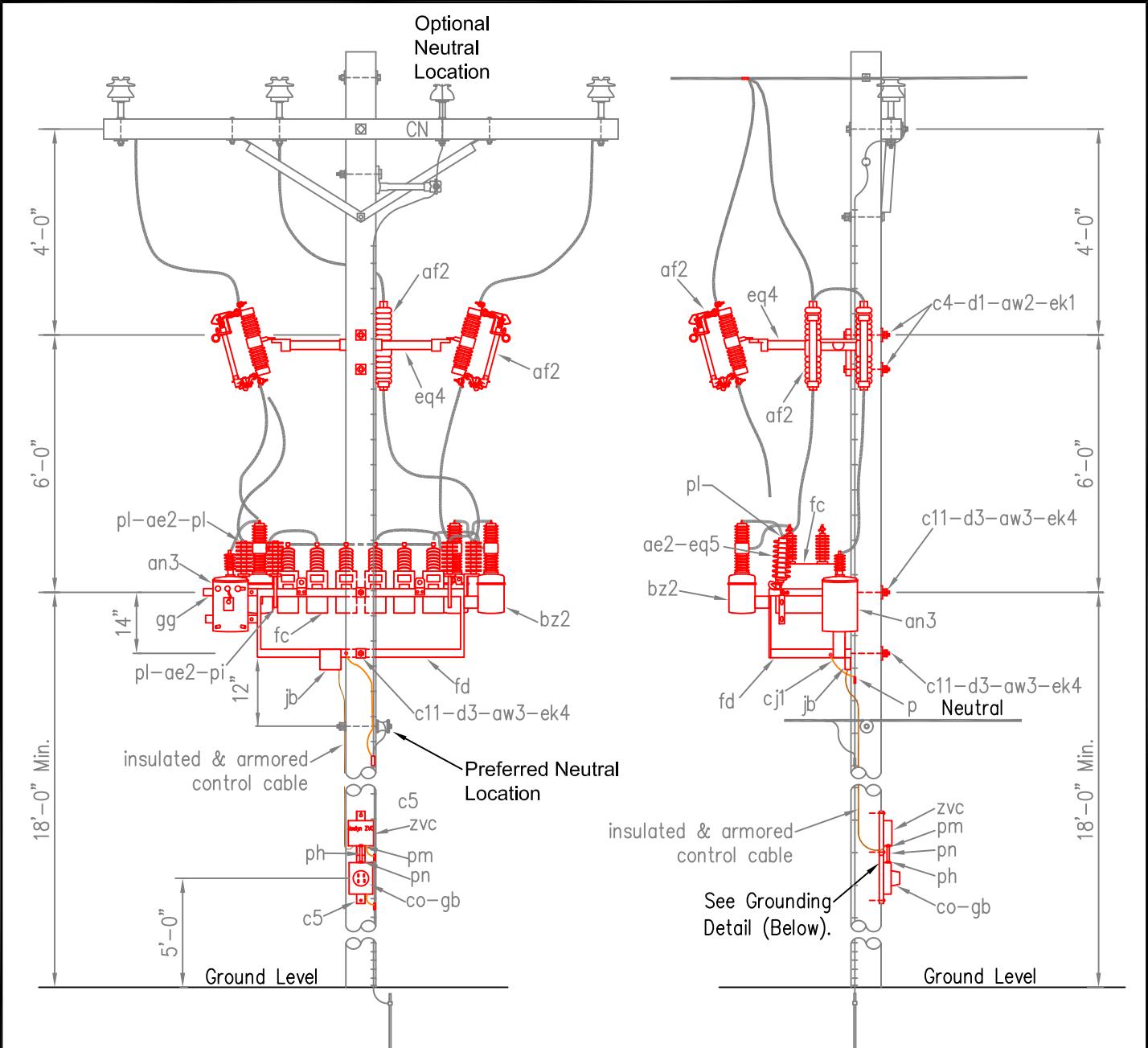
#### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

CoServ Electric	DATE	REVISION	7.2/12.5 kV, THREE PHASE CAPACITOR BANK WITH JOSYLN ZERO VOLTAGE CONTROL	ISSUED	2/04/2008
				REVISED	8/08/2011
				STANDARD NUMBER	
					M9-13S



#### Grounding Detail

7.2/12.5 kV, THREE PHASE  
CAPACITOR BANK WITH  
JOSYLN ZERO VOLTAGE CONTROL

ISSUED 2/04/2008  
REVISED 8/08/2011  
STANDARD NUMBER M9-13S



DATE	REVISION

ITEM.	QTY.	MAT.CODE No	MATERIAL
a1	1	3423-10-10	Insulator, 14.4 pin, 1 3/8" internal thread
af2	3	1831-22-12	Cutout 14.4, fuse (No Bracket)
ah7	1	6790-XX-77	Wrap lock tie, (Specify conductor size)
aw2	3	7108-99-41	Washers, double spring lock, 5/8"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c4	2	0638-05-14	Bolts, machine 5/8" x 14"
c11	2	0638-06-16	Bolts, machine 3/4" x 16"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d1	4	7102-04-91	Washers, square, 5/8"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
dd	1	4561-23-05	Adaptor, insulator
ek1	5	4290-70-63	Locknuts 5/8"
ek4	2	4290-70-75	Locknuts 3/4"
eq4	1	0780-28-03	Bracket, standoff, Fiberglass, 3Ø, double position
eq5	3	0780-95-00	Bracket, TRAN mounted Equipment
n2	1	0633-05-22	Bolts, DA 5/8" x 22"

ITEM.	QTY.	MAT.CODE No	METER SHOP MATERIAL
ae1	3	0152-19-39	Arrester, 14.4 lightning, 18kV (No Bracket) (Special Order)
fc	X	1055-0X-XX	Capacitor, shunt, 24.9/14.4kV (Specify kVAR size) SEE TABLE BELOW
fd	1	3000-10-06	Hanger, capacitor
pl	6	1781-17-80	Connectors, Lightning arrester

BANK SIZE	QTY.	kVAR	CATALOG NO.
300	3	100	1055-05-44
450	3	50	1055-04-44
	3	100	1055-05-44
600	3	200	1055-07-44
900	3	100	1055-05-44
	3	200	1055-07-44
1200	6	200	1055-07-44

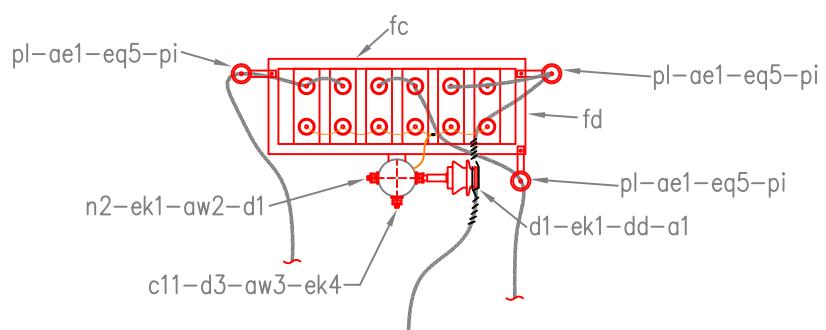
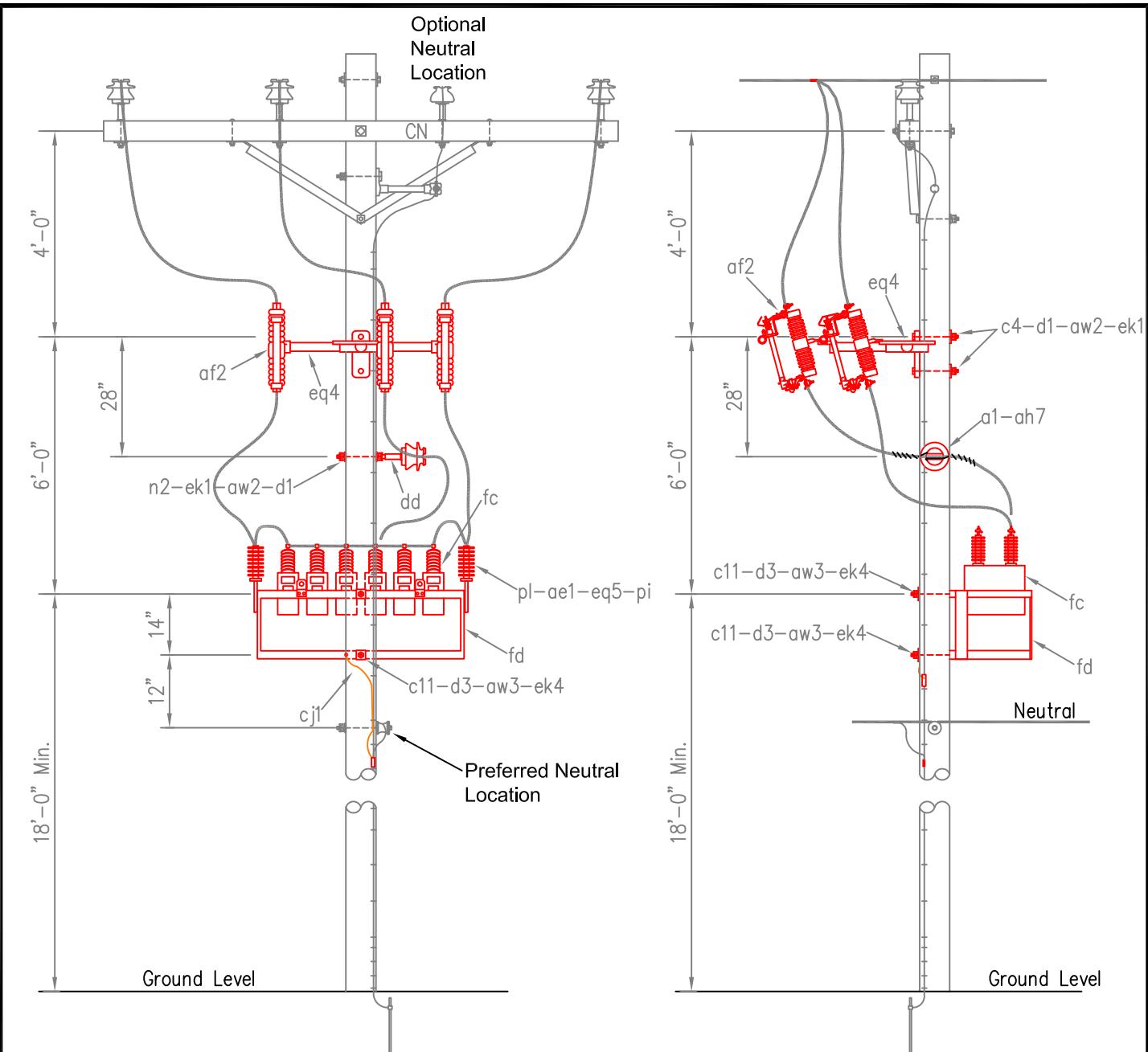
#### ADDITIONAL UNITS REQUIRED

VM2-11-2 GROUNDING ASSEMBLY

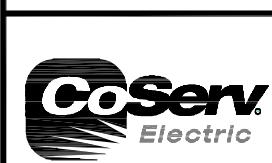
NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

	DATE	REVISION	14.4/24.9 kV, THREE PHASE FIXED CAPACITOR BANK	ISSUED	2/04/2008
				REVISED	8/8/2011
				STANDARD NUMBER	VM9-13F



REPRESENTS APPROXIMATE LOCATIONS OF  
CUTOUT CONNECTION af2



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
FIXED CAPACITOR BANK

ISSUED 2/04/2008

REVISED 8/8/2011

STANDARD NUMBER

VM9-13F

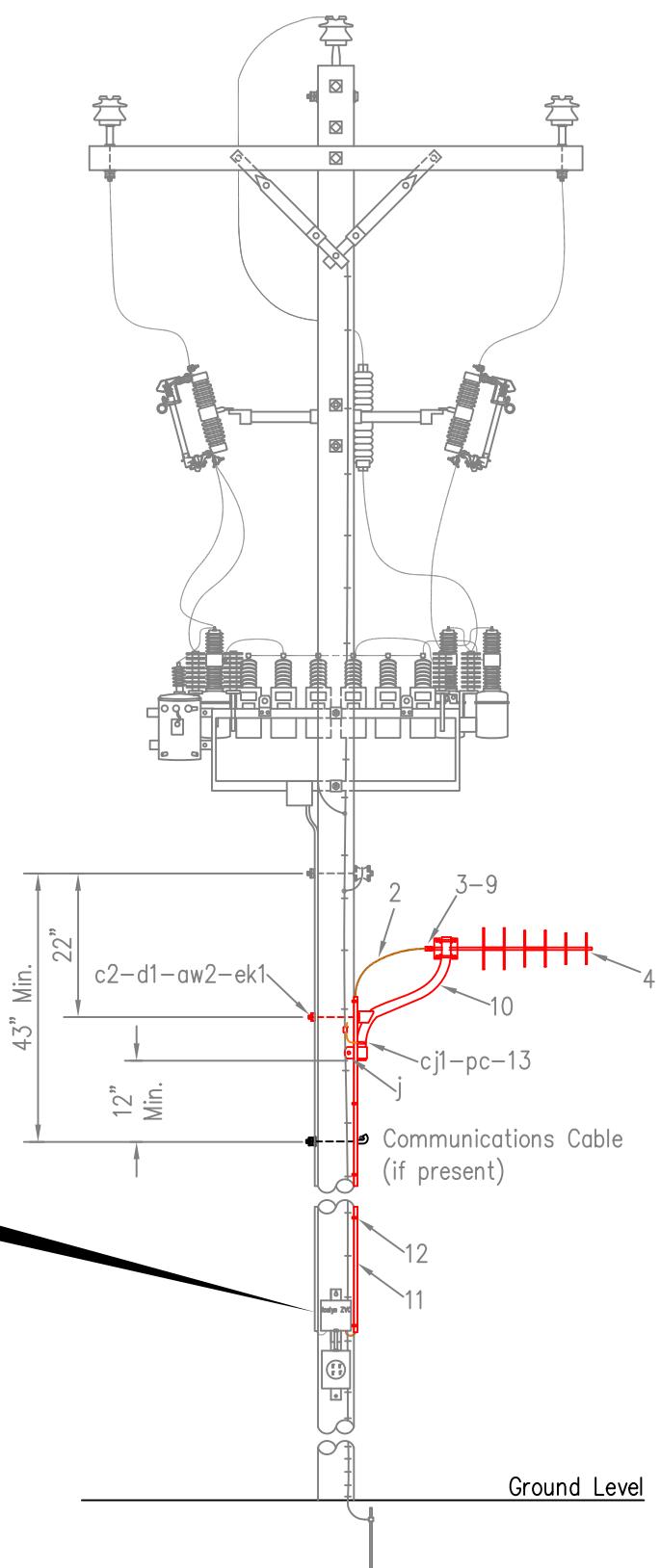
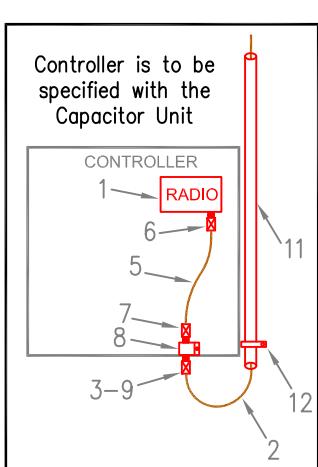
ITEM.	QTY.	MAT.CODE No	MATERIAL
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
c2	1	0638-05-12	Bolts, machine 5/8" x 12"
cj1	3'	7250-06-01	Wire, #6 SD Cu
d1	2	7102-04-91	Washers, square, 5/8"
ek1	1	4290-70-63	Locknuts 5/8"
j	2	5550-44-40	Screw, lag 1/2" x 4"
pc	1	1732-20-10	Pipe clamp, ground, 2" diameter
10	1	3870-00-15	Arm, 1.5', Pole Munted SF-18
11	25'	7534-21-02	Conduit, 1" Flex
12	5	7540-31-09	Conduit strap, 1" - 1 hole
13	1	1707-47-80	Connector, H Tap, 3-6 ACSR 8-14

ITEM.	QTY.	MAT.CODE No	METER SHOP MATERIAL
1	1	9610-00-01	MDS Radio
2	30'	9620-10-01	Foam Cable
3	2	9620-20-01	Connector, N(M), LMR-400
4	1	9630-10-01	Antenna, 6 Element Yagi
5	2'	9620-10-02	Coax, RG-58
6	1	9620-20-02	Connector, TNC Male for RG-58 Coax
7	1	9620-20-03	Connector, N Male connector for RG-58 Coax
8	1	9620-30-01	Arrestor, Surge
9	1	6600-21-11	Weather Proofing Kit

NOTES:

- Controller is to be specified with capacitor unit.

	DATE	REVISION	CAPACITOR BANK COMMUNICATIONS	ISSUED	2/15/2011
				REVISED	
					STANDARD NUMBER
					VM9-13 COMM



DATE	REVISION

## CAPACITOR BANK COMMUNICATIONS

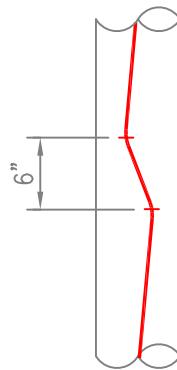
ISSUED	2/15/2011
REVISED	
STANDARD NUMBER	VM9-13 COMM

ITEM.	QTY.	MAT.CODE	NO.	MATERIAL
ep	1	N/A		Arcing Horn #4 or #2 HD copper, as req'd.
p	1	N/A		Connectors, as req'd.

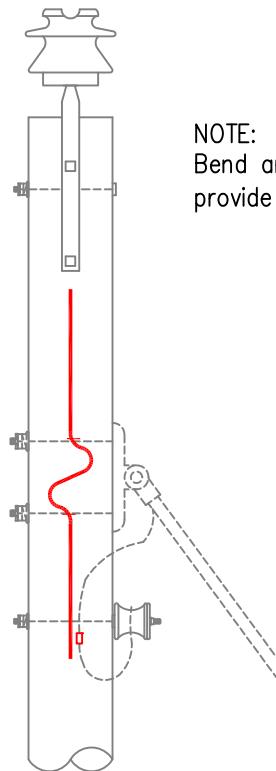
**FOR RETIREMENT ONLY**



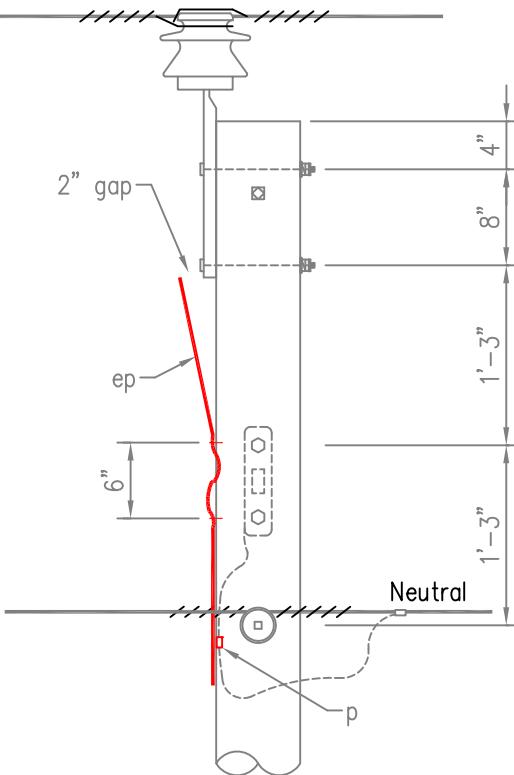
DATE	REVISION	14.4/24.9 KV, SINGLE PHASE ARCING HORN ASSEMBLIES 0° TO 30° ANGLE	ISSUED	7/24/2012
			REVISED	
			STANDARD NUMBER	VM10-14-R



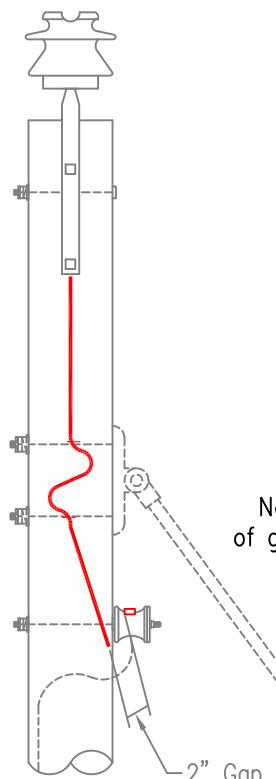
Arcing Horn bend  
when hand formed.



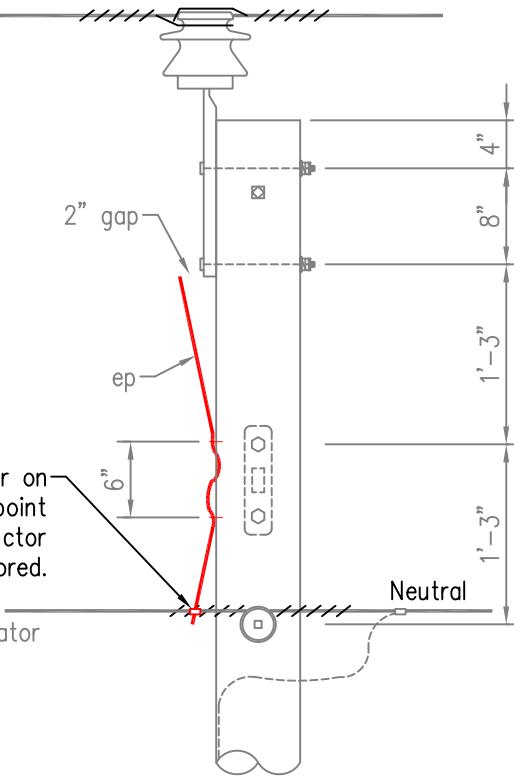
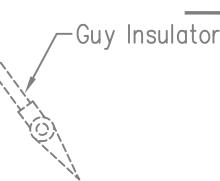
NOTE:  
Bend arcing horns to  
provide 2" gaps.



Arcing Horn Arrangement for Grounded Guy



Install connector on  
Neutral to form point  
of gap if the conductor  
is not armored.



Arcing Horn Arrangement for Insulated Guy or Unguyed Pole

**FOR RETIREMENT ONLY**



DATE	REVISION

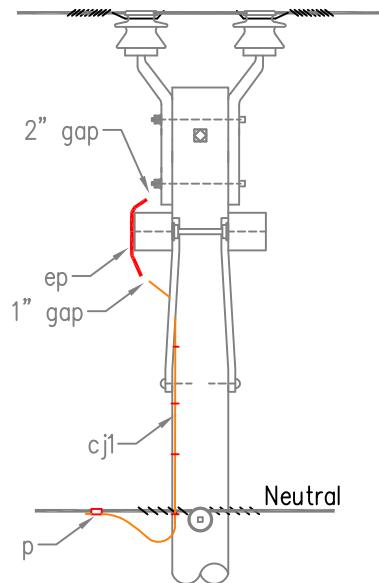
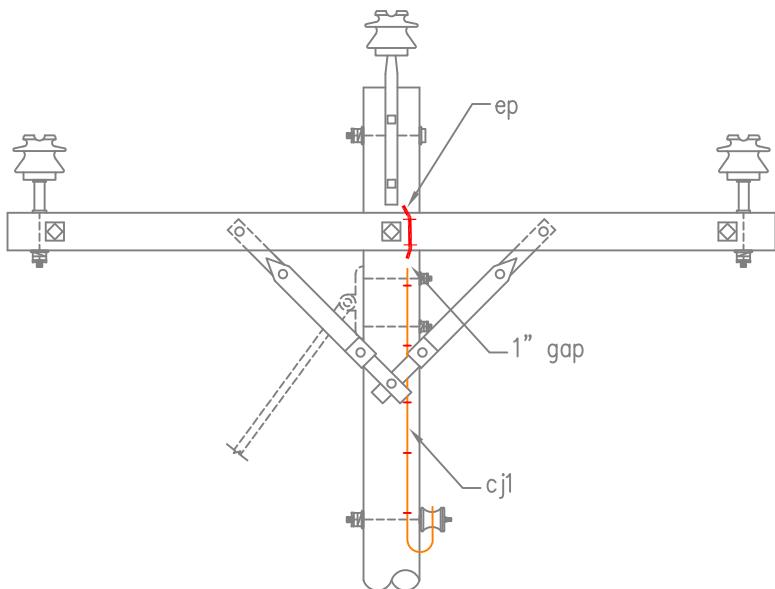
14.4/24.9 kV, SINGLE PHASE  
ARCING HORN ASSEMBLIES  
0° TO 30° ANGLE

ISSUED	7/24/2012
REVISED	
STANDARD NUMBER	VM10-14-R

ITEM.	QTY.	CATALOG No.	MATERIAL
cj1	10'	7250-06-01	Wire, #6 SD Copper
ep	1	N/A	Arcing Horn #4 or #2 HD copper, as req'd.
p	1	N/A	Connectors, as req'd.

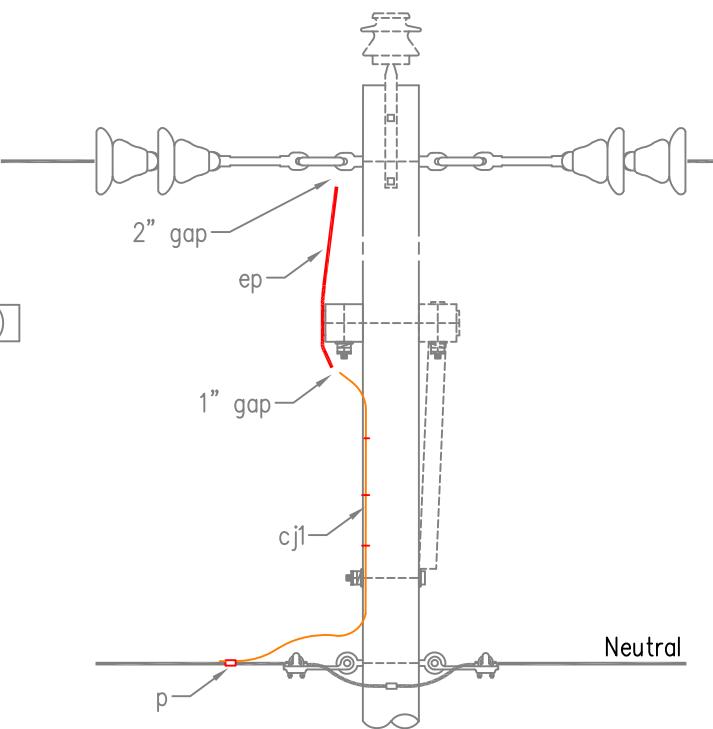
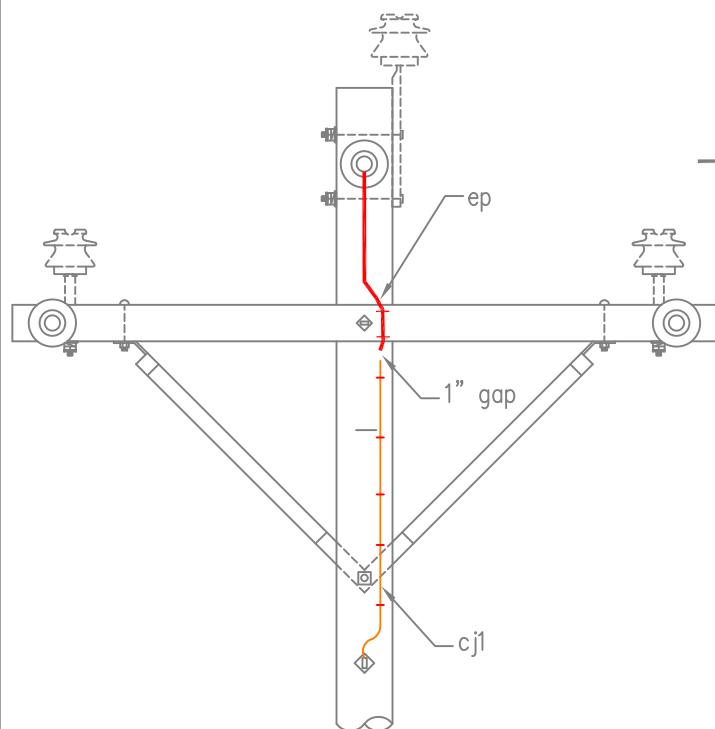
FOR RETIREMENT ONLY

	DATE	REVISION	14.4/24.9 kV, THREE PHASE ARCING HORN ASSEMBLIES	ISSUED	7/24/2012
				REVISED	
				STANDARD NUMBER	
				VM10-15-R	



NOTES:

1. Use similar design for single primary support, bending upper horn gap as necessary to form 2" gap to pole top pin through bolt.



**FOR RETIREMENT ONLY**



DATE	REVISION

14.4/24.9 kV, THREE PHASE  
ARCING HORN ASSEMBLIES

ISSUED 7/24/2012

REVISED

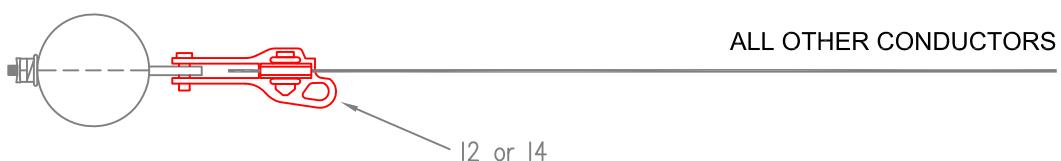
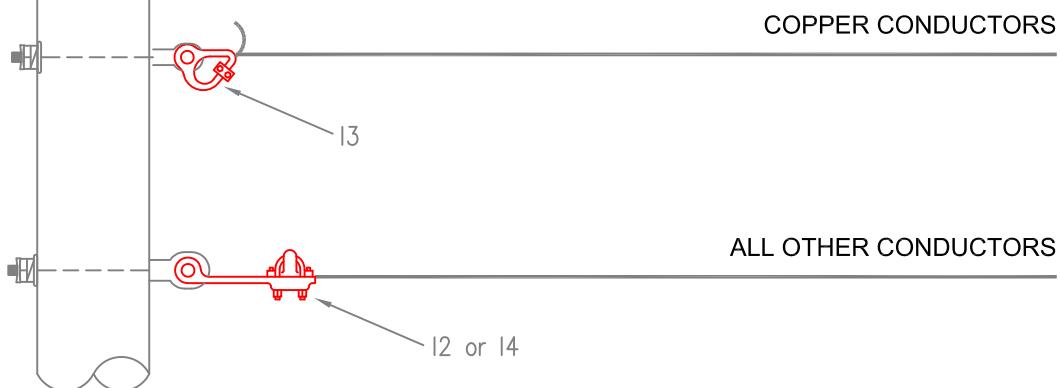
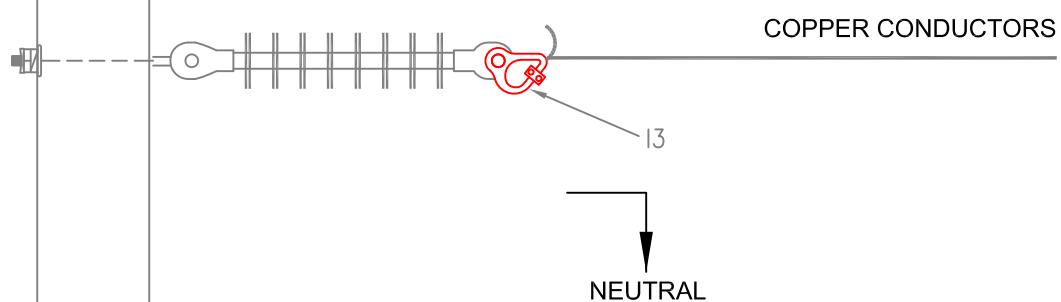
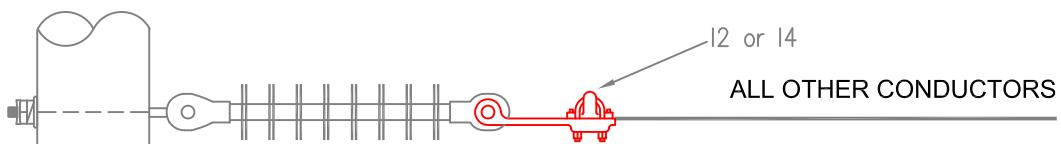
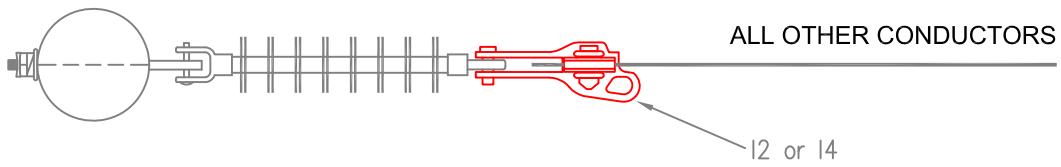
STANDARD NUMBER  
VM10-15-R

ITM.	QTY.	CATALOG No.	MATERIAL
<b>M42-11</b>			
I2	1	1172-82-27	Shoe, deadend, #4 – 1/0 ACSR
<b>M42-12</b>			
I3	1	1172-82-99	Shoe, deadend, copper conductor only
<b>M42-13</b>			
I4	1	1172-83-39	Shoe, deadend, 4/0 – 477 Aluminum

NOTES:

1. Use M42-11 for small conductors. Use M42-12 for copper conductors. Use M42-13 for large conductors.

	DATE	REVISION	<b>DEADEND ASSEMBLY GUIDE</b>	ISSUED	2/04/2008
				REVISED	
				STANDARD NUMBER	
				M42-11	



DATE	REVISION

#### DEADEND ASSEMBLY GUIDE

ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	M42-11 M42-12 M42-13

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**M45-21**

6063-02-20	Splice, #8 Cu	Compression	Full Tension
6063-06-40	Splice, #6 Cu	Compression	Full Tension
6063-10-60	Splice, #4 Al	Compression	Full Tension
6063-20-80	Splice, #2 Al	Compression	Full Tension
6063-34-00	Splice, #1/0 Al	Compression	Full Tension
6063-45-60	Splice, #4/0 Al	Compression	Full Tension



**M45-21A**

6061-11-30	Splice, #8 Cu	Automatic
6061-07-70	Splice, #6 Cu	Automatic
6061-18-50	Splice, #4 Al	Automatic
6061-27-50	Splice, #2 Al	Automatic
6061-38-30	Splice, #1/0 Al	Automatic
6061-58-00	Splice, #4/0 Al	Automatic
6061-60-50	Splice, #477 Al	Automatic



DATE

REVISION

OVERHEAD SPLICES

ISSUED 2/04/2008

REVISED

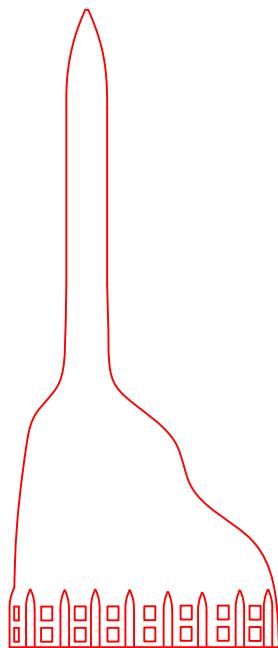
STANDARD NUMBER

M45

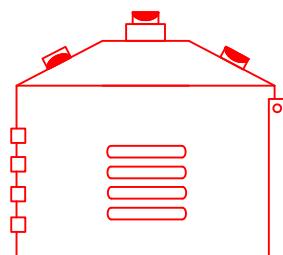
ITM.	QTY.	CATALOG No.	MATERIAL
<b>M46T</b>			
-	1	0160-02-01	Wildlife Guard (Shed mount)
<b>M46A</b>			
-	1	0160-01-01	Wildlife Guard (W/hand wheel)



DATE	REVISION	WILDLIFE PROTECTION	ISSUED	12/23/2009
			REVISED	
				SUPERSEDED NUMBER
				M46



**M46T**  
WILDLIFE PROTECTION TRANSFORMER



**M46A**  
WILDLIFE PROTECTION ARRESTER

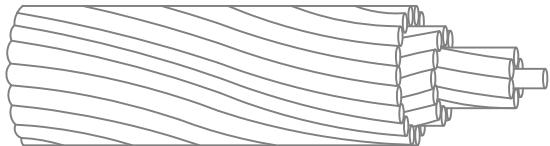


DATE	REVISION

WILDLIFE PROTECTION

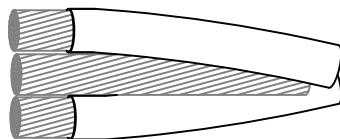
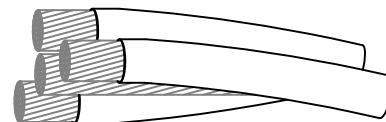
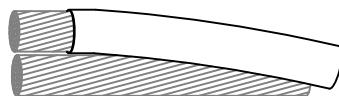
ISSUED	12/23/2009
REVISED	
STANDARD NUMBER	M46

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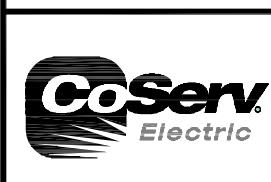
### PRIMARY

UNIT	DESCRIPTION	CoSERV I.D.#
D#4 ACSR	Conductor, #4 ACSR 7/1 (SWANATE)	1311-04-71
D#1/0 ACSR	Conductor #1/0 ACSR 6/1 (RAVEN)	1311-10-61
D#4/0 ACSR	Conductor #4/0 ACSR 6/1 (PENGUIN)	1311-40-61
D#477 ACSR	Conductor #477 ACSR 26/7 (HAWK)	1311-47-26
D#6A	#6A Cu RETIREMENT ONLY	N/A
D#8A	#8A Cu RETIREMENT ONLY	N/A
D#2 ACSR	#2 ACSA RETIREMENT ONLY	N/A



### SECONDARY

UNIT	DESCRIPTION	CoSERV I.D.#
D#6 DPLX	Wire, OH #6 AI DPLX Str. XLP 600V.	1612-06-01
D#4 TPLX	Wire, OH #4 AI TPLX Str. XLP 600V.	1613-04-01
D#2 TPLX	Wire, OH #2 AI TPLX Str. XLP 600V.	1613-02-01
D#1/0 TPLX	Wire, OH #1/0 AI TPLX Str. XLP 600V.	1613-10-01
D#4/0 TPLX	Wire, OH #4/0 AI TPLX Str. XLP 600V.	1613-40-01
D#1/0 QPLX	Wire, OH #1/0 AI QPLX Str. XLP 600V.	1614-10-01
D#4/0 QPLX	Wire, OH #4/0 AI QPLX Str. XLP 600V.	1614-40-01



DATE	REVISION

OVERHEAD CONDUCTOR

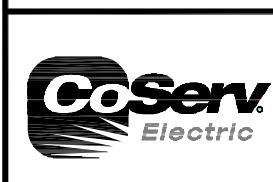
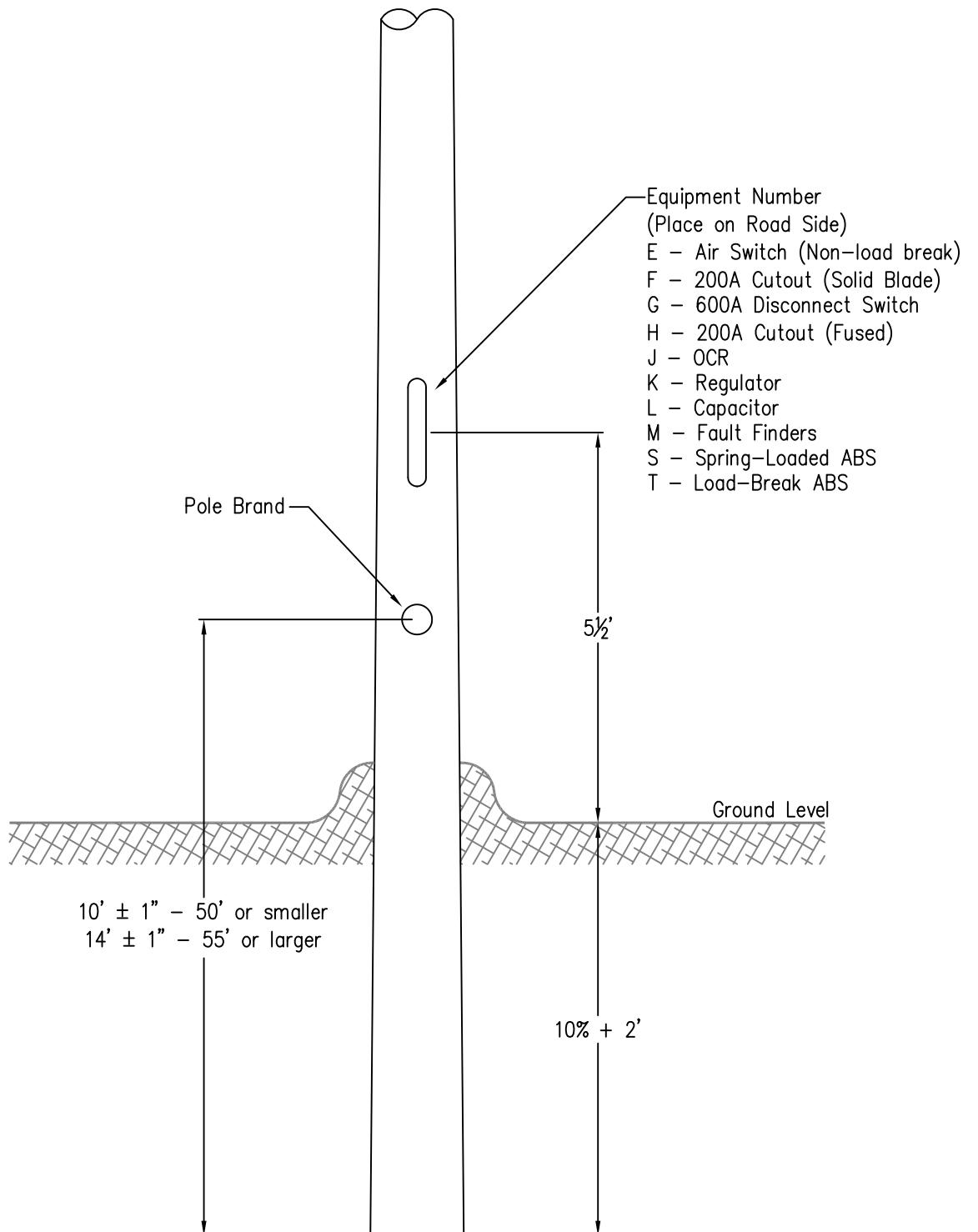
ISSUED	2/04/2008
REVISED	
STANDARD NUMBER	D#-X-X

UNIT	DESCRIPTION	CoSERV I.D. #
35-3	Pole, Wood 35' REA Class 3	4835-36-16
35-4	Pole, Wood 35' REA Class 4	4835-46-16
40-1	Pole, Wood 40' REA Class 1	4840-16-16
40-2	Pole, Wood 40' REA Class 2	4840-26-16
40-3	Pole, Wood 40' REA Class 3	4840-36-16
45-1	Pole, Wood 45' REA Class 1	4845-16-16
45-2	Pole, Wood 45' REA Class 2	4845-26-16
45-3	Pole, Wood 45' REA Class 3	4845-36-16
50-1	Pole, Wood 50' REA Class 1	4850-16-16
50-2	Pole, Wood 50' REA Class 2	4850-26-16
55-1	Pole, Wood 55' REA Class 1	4855-16-16
55-2	Pole, Wood 55' REA Class 2	4855-26-16
60-1	Pole, Wood 60' REA Class 1	4860-16-16
60-2	Pole, Wood 60' REA Class 2	4860-26-16
65-1	Pole, Wood 65' REA Class 1	4865-16-16
65-2	Pole, Wood 65' REA Class 2	4865-26-16
70-1	Pole, Wood 70' REA Class 1	4870-16-16
70-2	Pole, Wood 70' REA Class 2	4870-26-16
50-H1	Pole, Wood 50' REA Class HI	4850-86-16
55-H1	Pole, Wood 55' REA Class HI	4855-86-16
60-H1	Pole, Wood 60' REA Class HI	4860-86-16
65-H1	Pole, Wood 65' REA Class HI	4865-86-16
70-H1	Pole, Wood 70' REA Class HI	4870-86-16

UNIT	DESCRIPTION	CoSERV I.D. #
C45	Pole, Concrete 45' Tangent (Special Order)	N/A
C45-SS	Pole, Concrete 45' Self-support (Special Order)	N/A
C50	Pole, Concrete 50' Tangent (Special Order)	N/A
C50-SS	Pole, Concrete 50' Self-support (Special Order)	N/A
C55	Pole, Concrete 55' Tangent (Special Order)	N/A
C55-SS	Pole, Concrete 55' Self-support (Special Order)	N/A
C60	Pole, Concrete 60' Tangent (Special Order)	N/A
C60-SS	Pole, Concrete 60' Self-support (Special Order)	N/A
C65	Pole, Concrete 65' Tangent (Special Order)	N/A
C65-SS	Pole, Concrete 65' Self-support (Special Order)	N/A
C70	Pole, Concrete 70' Tangent (Special Order)	N/A
C70-SS	Pole, Concrete 70' Self-support (Special Order)	N/A
C75	Pole, Concrete 75' Tangent (Special Order)	N/A
C75-SS	Pole, Concrete 75' Self-support (Special Order)	N/A
C80	Pole, Concrete 80' Tangent (Special Order)	N/A
C80-SS	Pole, Concrete 80' Self-support (Special Order)	N/A
C85	Pole, Concrete 85' Tangent (Special Order)	N/A
C85-SS	Pole, Concrete 85' Self-support (Special Order)	N/A
C90	Pole, Concrete 90' Tangent (Special Order)	N/A
C90-SS	Pole, Concrete 90' Self-support (Special Order)	N/A
C95	Pole, Concrete 95' Tangent (Special Order)	N/A
C95-SS	Pole, Concrete 95' Self-support (Special Order)	N/A
C100	Pole, Concrete 100' Tangent (Special Order)	N/A
C100-SS	Pole, Concrete 100' Self-support (Special Order)	N/A

UNIT	DESCRIPTION	CoSERV I.D. #
F40-1	Pole, Fiberglass 40' Distribution, Class 1	4840-19-12
F40-3	Pole, Fiberglass 40' Distribution, Class 3	4840-39-12
F45-1	Pole, Fiberglass 45' Distribution, Class 1	4845-19-12
F45-3	Pole, Fiberglass 45' Distribution, Class 3	4845-39-12

	DATE	REVISION	<b>POLE</b>	ISSUED	2/18/2008
				REVISED	10/1/2009
				STANDARD NUMBER	
					POLE



DATE

REVISION

POLE

ISSUED

2/28/2012

REVISED

STANDARD NUMBER

POLE

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**Tab 'Ugewt kw{ 'Nki j v**

**INDEX SECURITY LIGHT**

**SECURITY LIGHT ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
M26-5	SECURITY LIGHT – 100WATT HPS OR MH
M26-5-C	COBRA HEAD LIGHT – 150W AND 250W HPS
M26-5-F	FLOOD LIGHT – 400W HPS OR MH

ITM.	QTY.	MAT.CODE No	MATERIAL
<b>M26-5-100W HPS</b>			
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
c2	1	0638-05-12	Bolts, machine 5/8" x 12"
d1	1	7102-04-91	Washers, square, 5/8"
ek1	1	4290-70-63	Locknuts 5/8"
li	1	3810-10-20	Security light package, 100W HPS

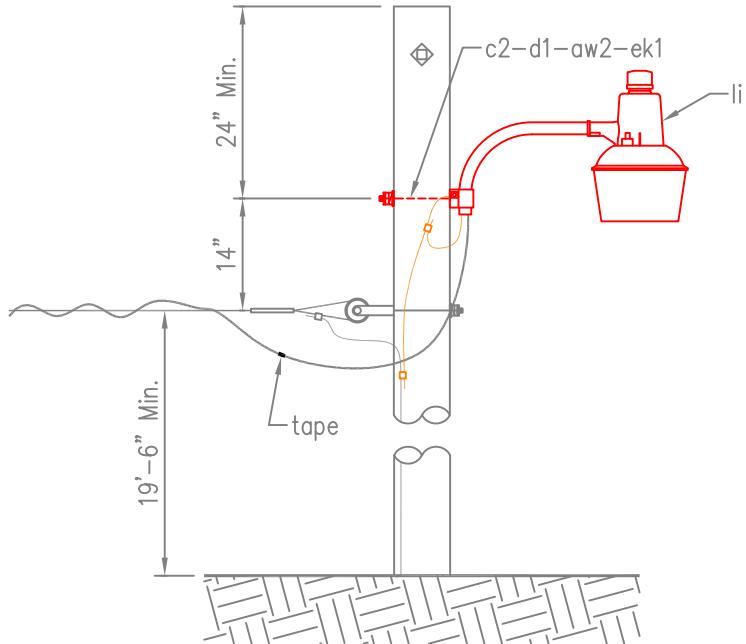
**M26-5-100W MH**

aw2	1	7108-99-41	Washers, double spring lock, 5/8"
c2	1	0638-05-12	Bolts, machine 5/8" x 12"
d1	1	7102-04-91	Washers, square, 5/8"
ek1	1	4290-70-63	Locknuts 5/8"
li	1	3840-10-20	Security light package, 100W MH

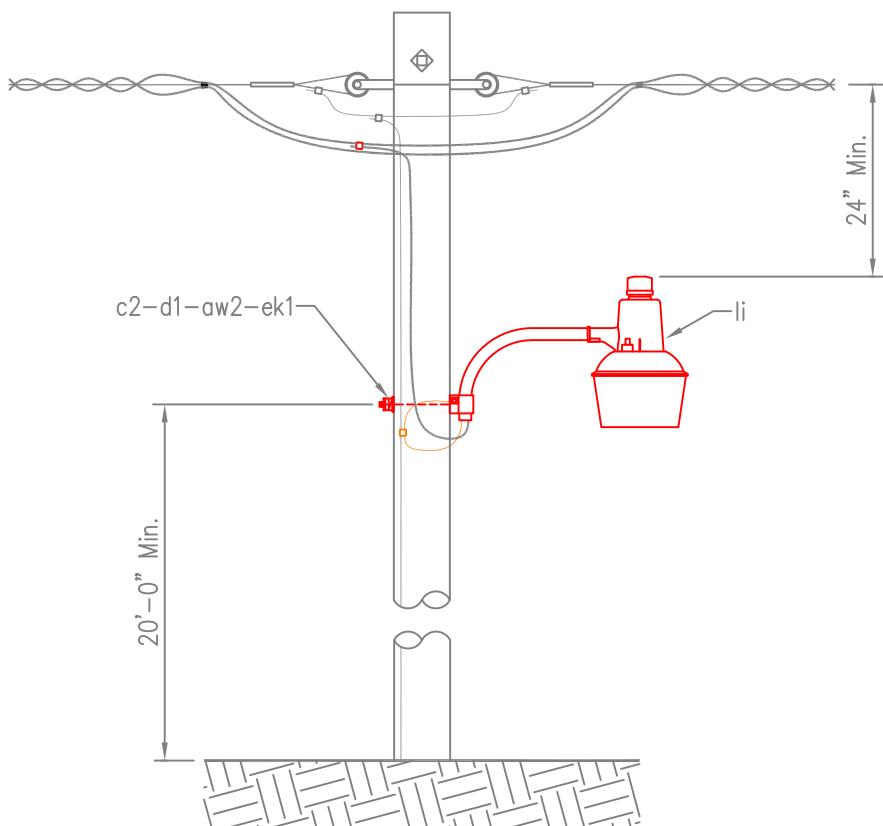
NOTES:

1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.

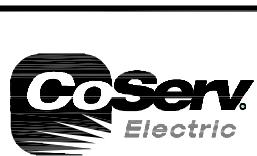
	DATE	REVISION	<b>SECURITY LIGHT 100 WATT HPS OR MH</b>	ISSUED	2/04/2008
				REVISED	8/09/2011
				STANDARD NUMBER	
					M26-5



DEADEND POLE



TANGENT POLE



DATE	REVISION

SECURITY LIGHT  
100 WATT  
HPS OR MH

ISSUED	2/04/2008
REVISED	8/09/2011
STANDARD NUMBER	M26-5

ITM.	QTY.	MAT.CODE No	MATERIAL
<b>M26-5-C-150W-HPS-2</b>			
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
c2	1	0638-05-12	Bolts, machine 5/8" x 12"
d1	2	7102-04-91	Washers, square, 5/8"
ek1	1	4290-70-63	Locknuts 5/8"
-	1	3860-00-26	Lumin, Grey, Cobra HD Fixture
-	1	3820-12-01	Lamp, 150W HPS Mogul Bulb
-	1	3880-00-21	Photo Cell control, 1.5 ANSI Standard
-	1	3870-00-13	Arm, Security, 2' Pole Mounted
-	3	1707-47-80	Connector, H Tap, 3-6 ACSR-8-14
<b>M26-5-C-150W-HPS-6</b>			
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
c2	1	0638-05-12	Bolts, machine 5/8" x 12"
d1	2	7102-04-91	Washers, square, 5/8"
ek1	1	4290-70-63	Locknuts 5/8"
-	1	3860-00-26	Lumin, Grey, Cobra HD Fixture
-	1	3820-12-01	Lamp, 150W HPS Mogul Bulb
-	1	3880-00-21	Photo Cell control, 1.5 ANSI Standard
-	1	3876-00-10	Arm, Aluminum, street Light, 2"x6'
-	3	1707-47-80	Connector, H Tap, 3-6 ACSR-8-14
j	2	5550-44-40	Screw, lag 1/2" X 4"
<b>M26-5-C-250W-HPS-2</b>			
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
c2	1	0638-05-12	Bolts, machine 5/8" x 12"
d1	2	7102-04-91	Washers, square, 5/8"
ek1	1	4290-70-63	Locknuts 5/8"
-	1	3830-16-02	Lumin, Grey, Cobra HD Fixture 250W HPS (Package)
<b>M26-5-C-250W-HPS-6</b>			
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
c2	1	0638-05-12	Bolts, machine 5/8" x 12"
d1	2	7102-04-91	Washers, square, 5/8"
ek1	1	4290-70-63	Locknuts 5/8"
-	1	3830-16-02	Lumin, Grey, Cobra HD Fixture 250W HPS (Package)
-	1	3876-00-10	Arm, Aluminum, street Light, 2"x6'
j	2	5550-44-40	Screw, lag 1/2" X 4"

## NOTES:

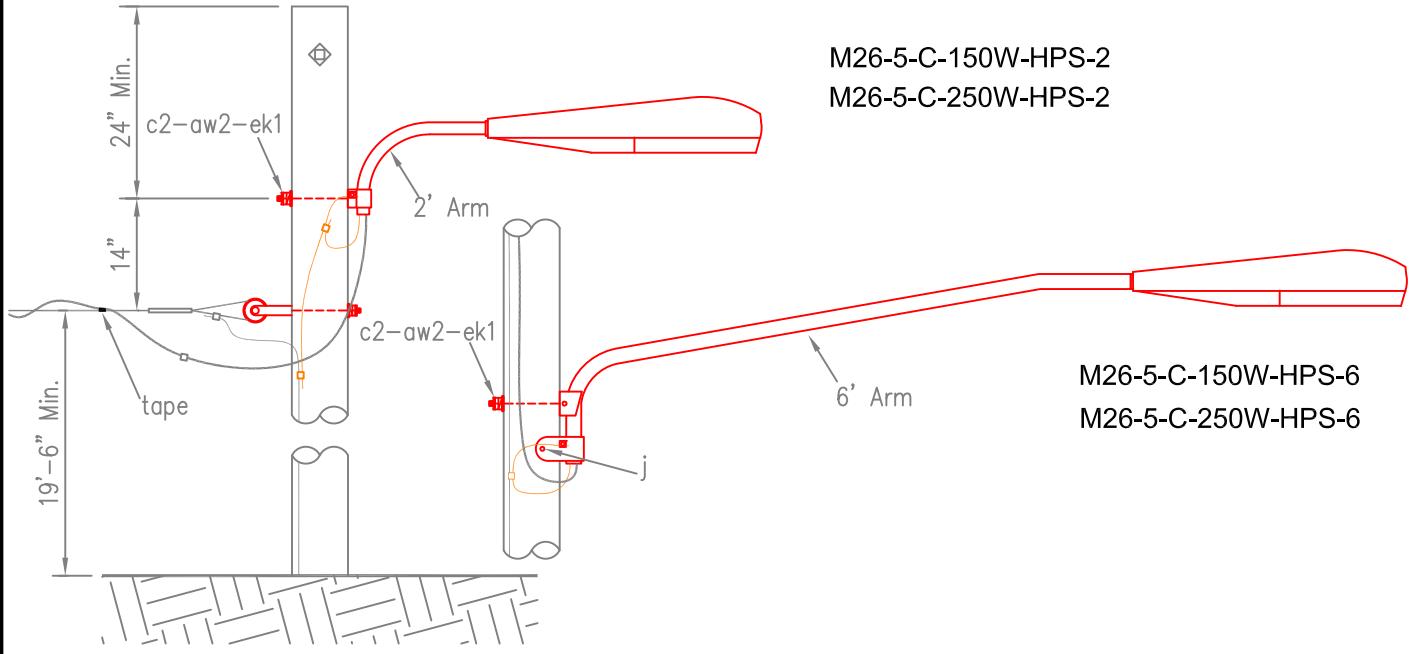
1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.



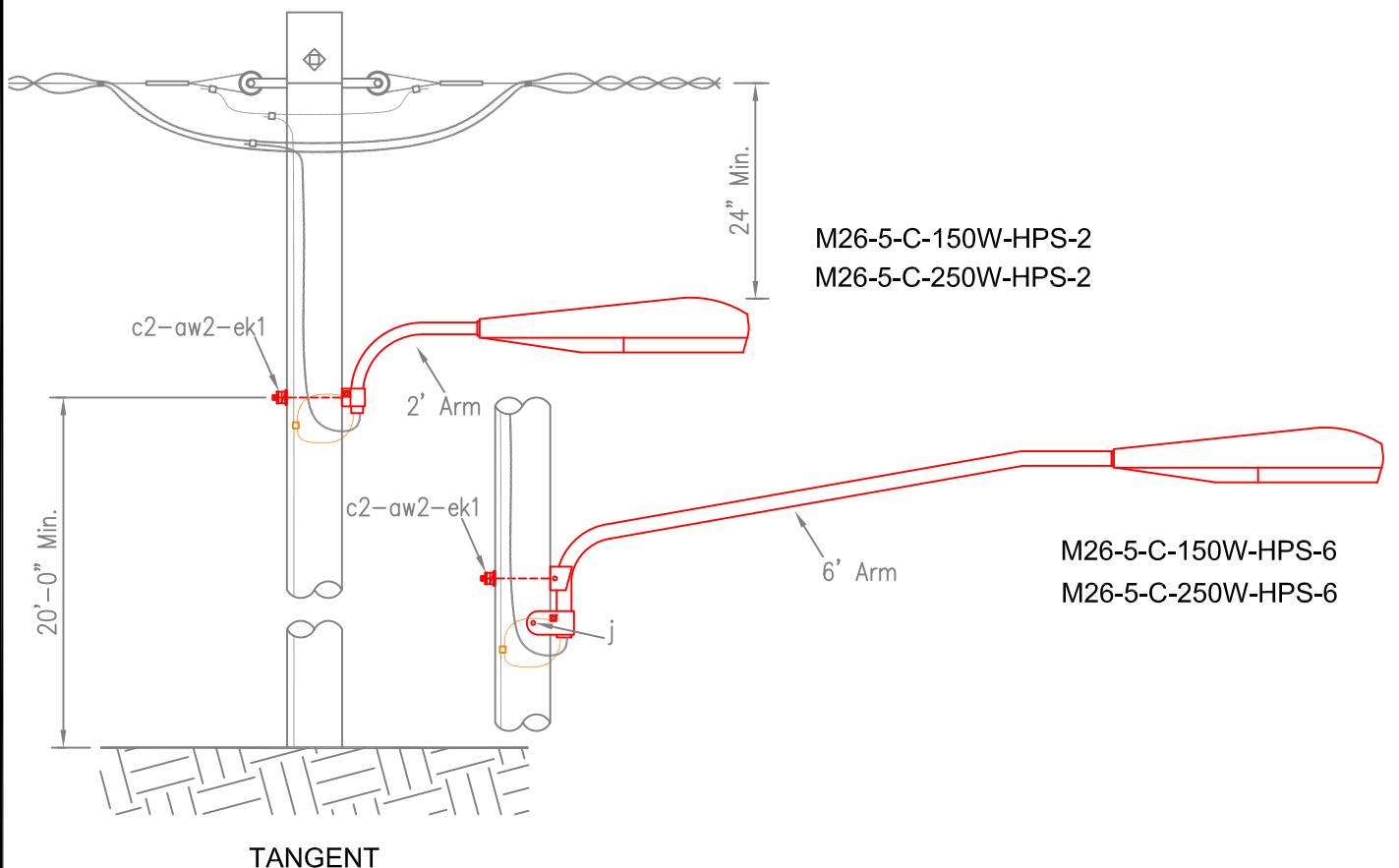
DATE	REVISION

COBRA HEAD LIGHT  
(150w & 250w HPS)

ISSUED	2/04/2008
REVISED	10/16/2009
STANDARD NUMBER	M26-5-C



DEADEND



TANGENT

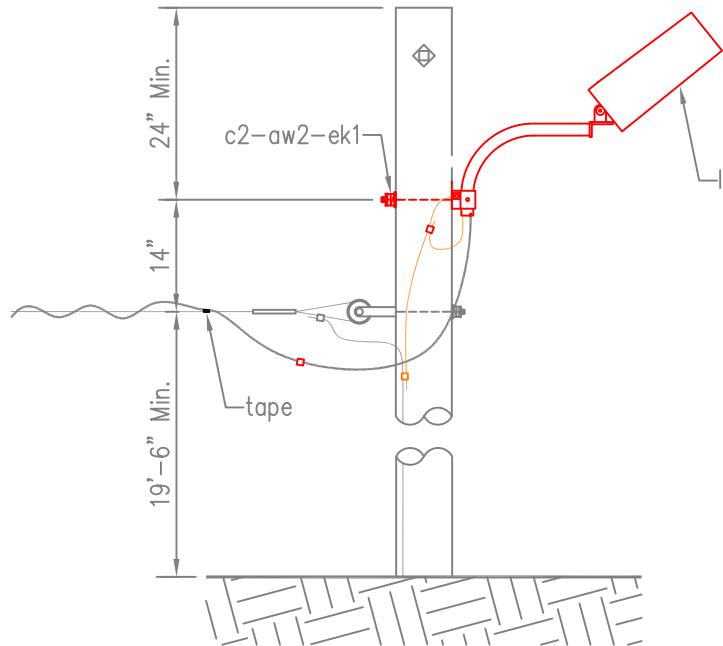


DATE	REVISION

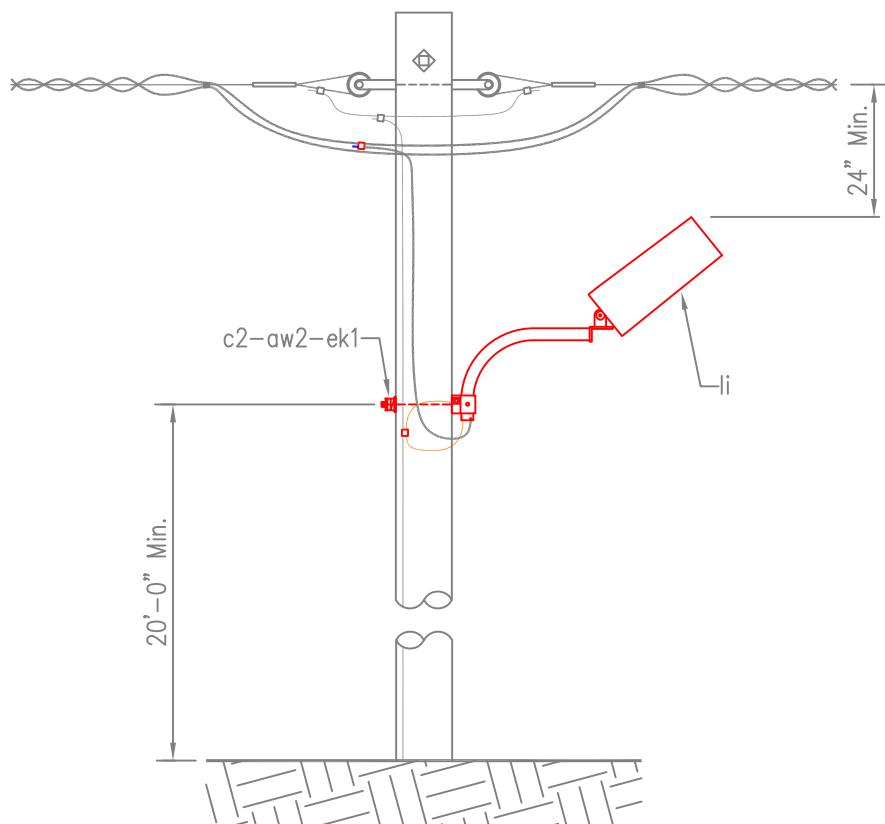
COBRA HEAD LIGHT  
(150w & 250w HPS)

ISSUED	2/04/2008
REVISED	10/16/2009
STANDARD NUMBER	M26-5-C

ITM.	QTY.	MAT.CODE No	MATERIAL		
<b>M26-5-F-400W HPS</b>					
-	1	3800-50-40	Fixture, 400W HPS Floodlight (package)		
-	1	3810-40-99	Bracket, Floodlight MTG 18" w/hardware		
c2	1	0638-05-12	Bolt, machine 5/8" X 12"		
aw2	1	7108-99-41	Washer, double spring lock 5/8"		
d1	1	7102-04-91	Washer, square 5/8"		
ek1	1	4290-70-63	Locknut 5/8"		
j	2	5550-44-40	Screw, lag 1/2" X 4"		
<b>M26-5-F-400W MH</b>					
-	1	3820-22-07	Fixture, 400W MH Floodlight		
-	-	3820-22-06	Lamp, 400W MH Mogul Bulb Pulse Start		
-	1	3880-00-21	Photo Cell control, 1.5 ANSI Standard		
-	3	1707-47-80	Connector, H Tap, 3-6 ACSR-8-14		
-	1	3810-40-99	Bracket, Floodlight MTG 18" w/hardware		
c2	1	0638-05-12	Bolt, machine 5/8" X 12"		
aw2	1	7108-99-41	Washer, double spring lock 5/8"		
d1	1	7102-04-91	Washer, square 5/8"		
ek1	1	4290-70-63	Locknut 5/8"		
j	2	5550-44-40	Screw, lag 1/2" X 4"		
NOTES:					
1. Bolt lengths are calculated for minimum circumference of poles per American standard dimensions of Southern Pine and Douglas Fir.					
	DATE	REVISION	FLOOD LIGHT 400w HPS & 400w MH	ISSUED	2/04/2008
				REVISED	10/16/2009
				STANDARD NUMBER	M26-5-F



DEADEND



TOP VIEW

TANGENT



DATE	REVISION

FLOOD LIGHT  
400w HPS & 400w MH

ISSUED	2/04/2008
REVISED	10/16/2009
STANDARD NUMBER	M26-5-F

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**INDEX ROUTERS****ROUTERS ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
EP-ROUTER	RF ROUTER INSTALLATION ON EXISTING POLE
ES-ROUTER	RF ROUTER INSTALLATION ON EXISTING SECONDARY POLE
SL-ROUTER	RF ROUTER INSTALLATION ON EXISTING SECURITY LIGHT OR COBRA HEAD
TLC-ROUTER	RF ROUTER INSTALLATION ON EXISTING THOROUGHFARE COBRA HEAD LIGHT
TLS-ROUTER	RF ROUTER INSTALLATION ON EXISTING THOROUGHFARE SHOEBOX LIGHT
RSL-ROUTER	RF ROUTER INSTALLATION ON EXISTING RESIDENTIAL STREETLIGHT

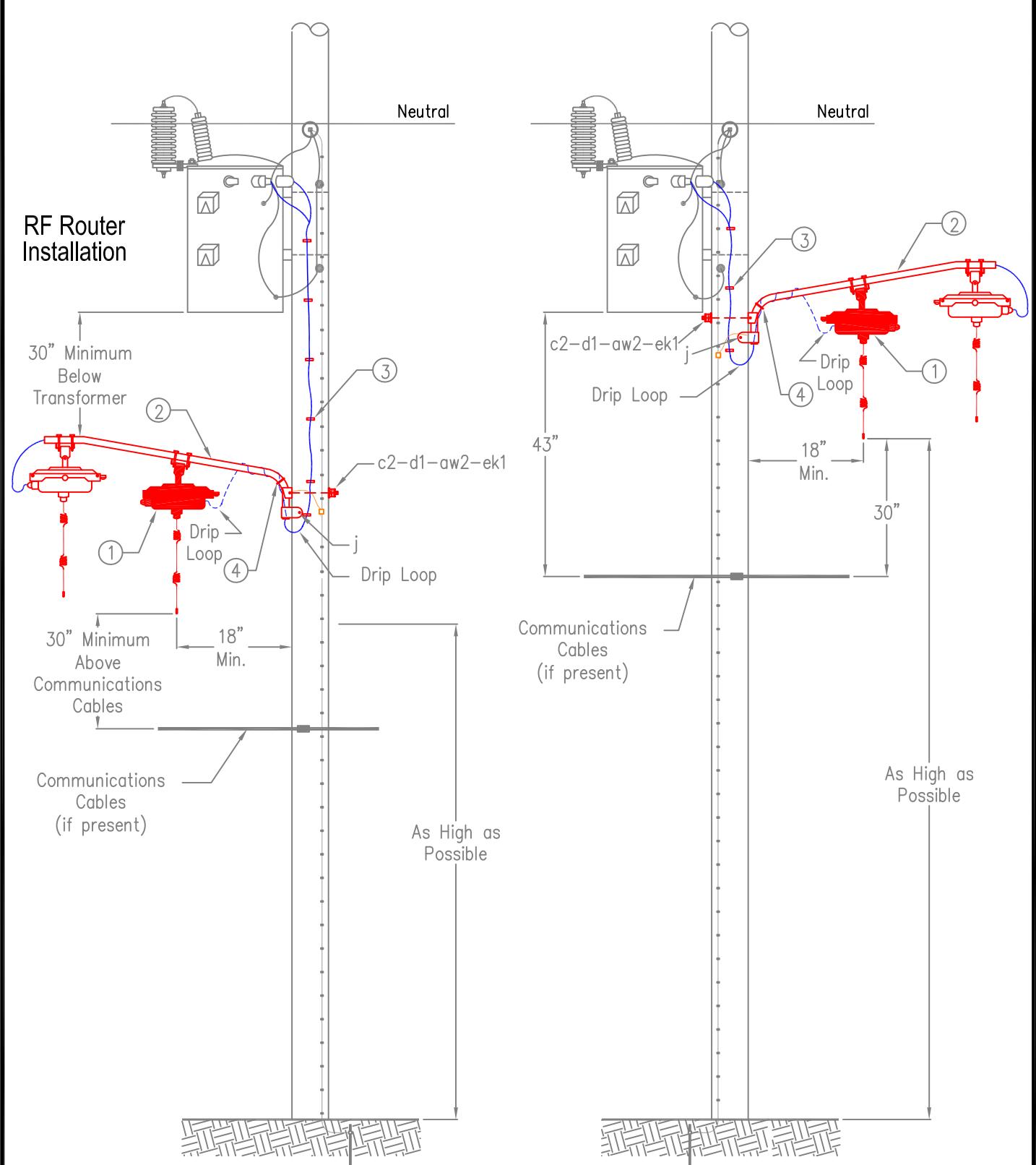
ITM.	QTY.	MAT.CODE No	MATERIAL
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
c2	1	0638-05-12	Bolts, machine 5/8" x 12"
d1	2	7102-04-91	Washers, square, 5/8"
ek1	1	4290-70-63	Locknuts 5/8"
j	2	5550-44-40	Screw, lag 1/2" x 4"
2	1	3876-00-10	Arm, Aluminum, street Light, 2"x6'

ITM.	QTY.	CATALOG No.	METER SHOP MATERIAL
1	1	9800-00-01	Gridstream Router Kit – Router, Bracket w/20' Power Cable
3	3	7540-51-12	Cable Hanger, 1/2" – 1 hole, Black, Weatherproof w/#8 Screw
4	1	6812-01-01	Cable Tie, Black 7.94"

NOTES:

1. Customer to provide and install all materials.
2. To install & maintain equipment workers must be qualified to work in supply space & use supply work rules & methods.
3. Supply cable for packet antenna & communication equipment to be jacketed multiple conductor cable.
4. Only 1 piece of communication equipment can be mounted on the bracket arm.
5. Bracket arm shall be bonded to pole ground with #6 SD bare copper conductor
6. Communication line clearances shall be as per the NESC and shall not interfere with the mounting bracket.
7. Router to be installed facing road
8. Install 1.5kva, 120/240v, single phase transformer if transformer is not existing.

	DATE	REVISION	RF ROUTER INSTALLATION ON EXISTING POLE	ISSUED	9/2/2010
				REVISED	
				STANDARD NUMBER	
				EP-ROUTER	



# RF ROUTER INSTALLATION ON EXISTING POLE

ISSUED 9/2/2010

REVISED

**STANDARD NUMBER**

EP-ROUTER

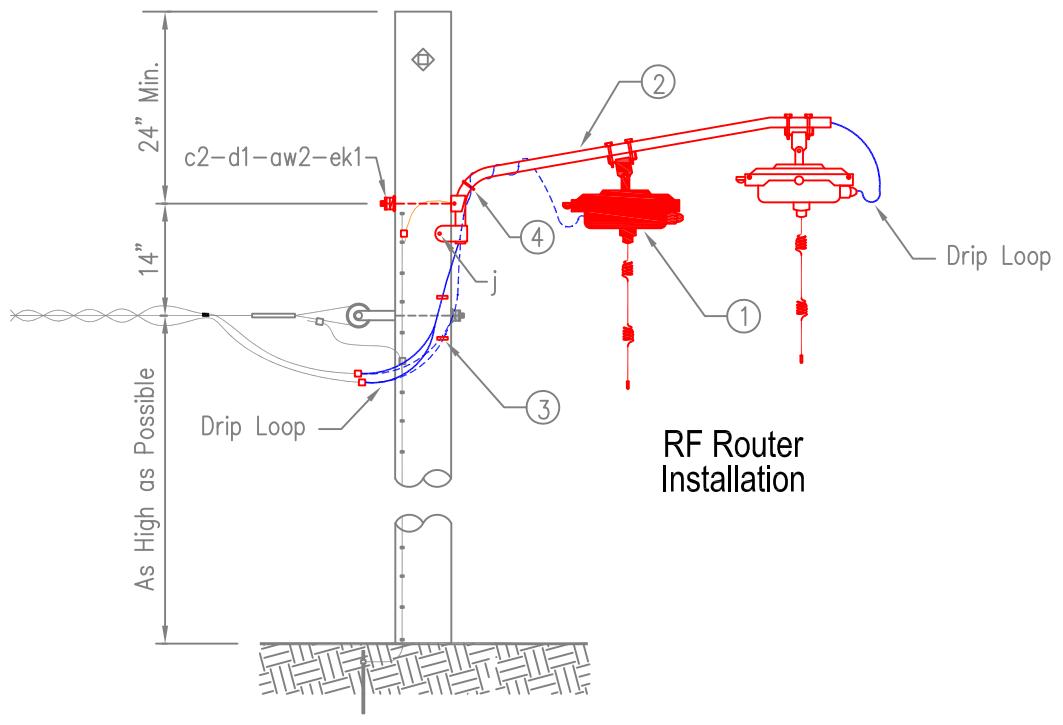
ITEM.	QTY.	MAT.CODE No	MATERIAL
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
c2	1	0638-05-12	Bolts, machine 5/8" x 12"
d1	2	7102-04-91	Washers, square, 5/8"
ek1	1	4290-70-63	Locknuts 5/8"
j	2	5550-44-40	Screw, lag 1/2" x 4"
2	1	3876-00-10	Arm, Aluminum, streetlight, 2"x6'

ITEM.	QTY.	CATALOG No.	METER SHOP MATERIAL
1	1	9800-00-01	Gridstream Router Kit – Router, Bracket w/20' Power Cable
3	3	7540-51-12	Cable Hanger, 1/2" – 1 hole, Black, Weatherproof w/#8 Screw
4	1	6812-01-01	Cable Tie, Black 7.94"

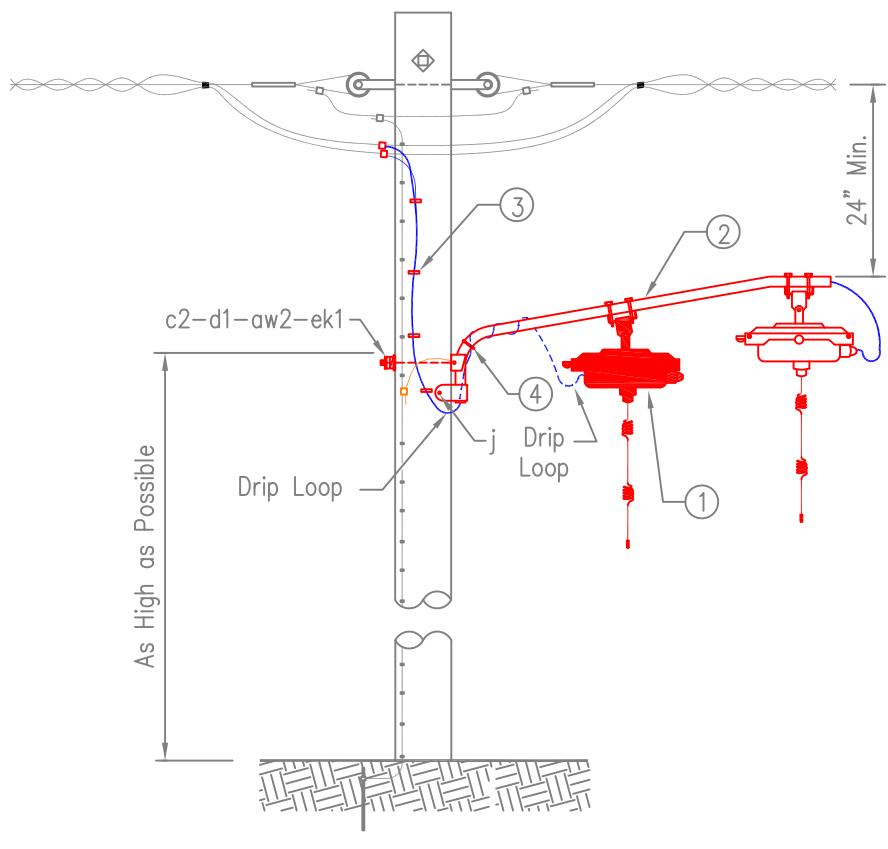
NOTES:

- Supply cable for packet antenna & communication equipment to be jacketed multiple conductor cable.
- If there is no existing streetlight bracket arm, use bracket arm listed in item. When a bracket arm is installed solely to mount communication equipment, the jacketed multiple conductor supply cable should be installed inside the bracket arm. See sheet 103-256.
- Maximum weight of communication equipment not to exceed 15 lbs. when installed on existing streetlight bracket arm. Communication equipment to be installed a maximum of 3 feet from pole on existing bracket arm.
- Customer to provide & install bracket arm, connectors & jacketed multiple conductor cable as required.
- To install & maintain equipment workers must be qualified to work in supply space & use supply work rules & methods.
- Bracket arm shall be bonded to pole ground with #6 SD bare copper conductor.
- Router to be installed facing road.

	DATE	REVISION	RF ROUTER INSTALLATION ON EXISTING SECONDARY POLE	ISSUED	9/2/2010
				REVISED	
				STANDARD NUMBER	
				ES-ROUTER	



DEADEND POLE



TANGENT POLE



DATE	REVISION

RF ROUTER INSTALLATION ON  
EXISTING SECONDARY POLE

ISSUED	9/2/2010
REVISED	
STANDARD NUMBER	ES-ROUTER

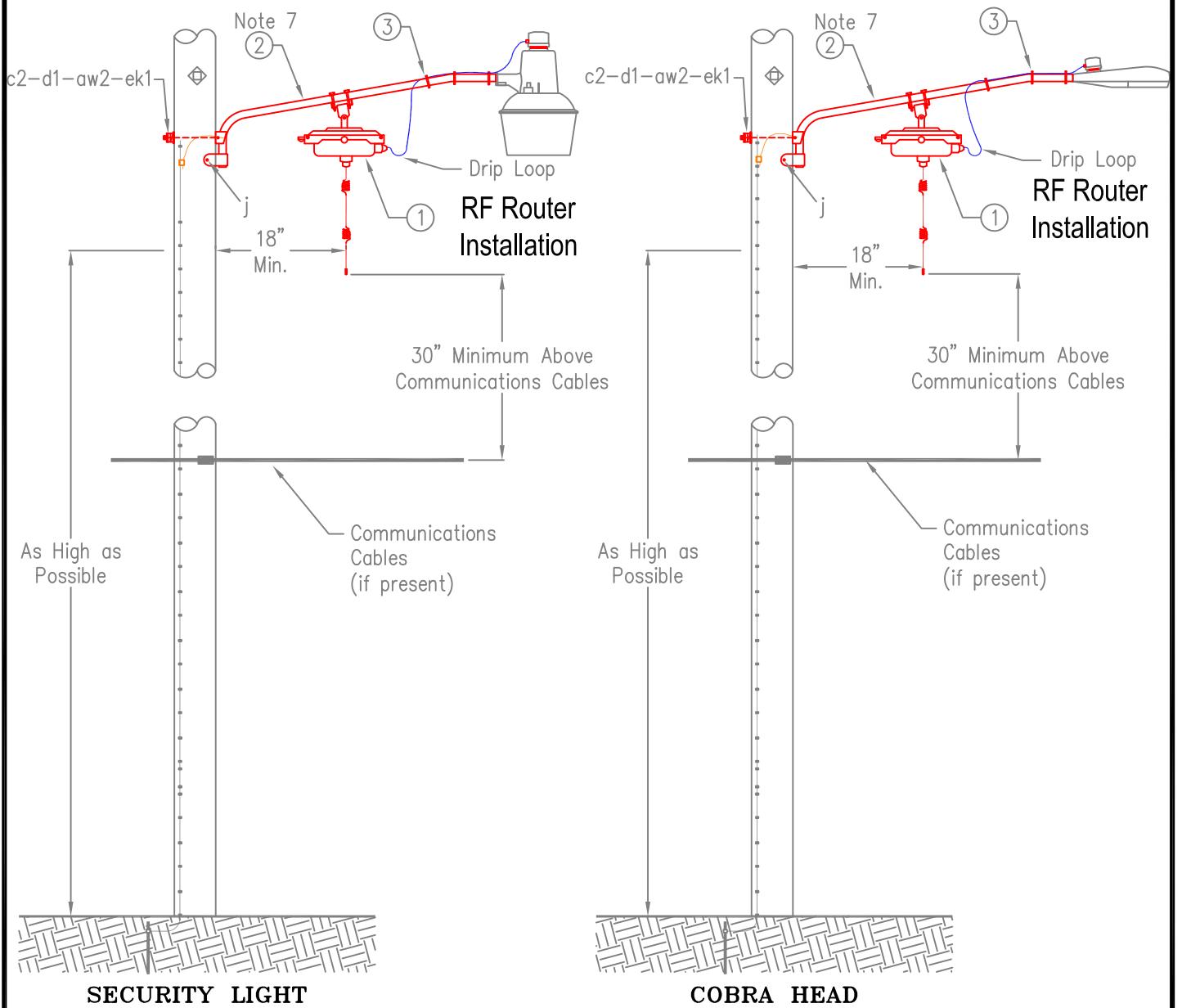
ITEM.	QTY.	MAT.CODE No	MATERIAL
aw2	1	7108-99-41	Washers, double spring lock, 5/8"
c2	1	0638-05-12	Bolts, machine 5/8" x 12"
d1	2	7102-04-91	Washers, square, 5/8"
ek1	1	4290-70-63	Locknuts 5/8"
j	2	5550-44-40	Screw, lag 1/2" x 4"
2	1	3876-00-10	Arm, Aluminum, streetlight, 2"x6'

ITEM.	QTY.	CATALOG No.	METER SHOP MATERIAL
1	1	9800-00-02	Gridstream Router Kit – Router, Bracket w/4' Power Cable
3	3	6812-01-01	Cable Tie, Black 7.94"

NOTES:

- Supply cable for packet antenna & communication equipment to be jacketed multiple conductor cable.
- If there is no existing streetlight bracket arm, use bracket arm listed in item. When a bracket arm is installed solely to mount communication equipment, the jacketed multiple conductor supply cable should be installed inside the bracket arm. See sheet 103-256.
- Maximum weight of communication equipment not to exceed 15 lbs when installed on existing streetlight bracket arm. Communication equipment to be installed a maximum of 3 feet from pole on existing bracket arm.
- Customer to provide & install bracket arm, connectors & jacketed multiple conductor cable as required.
- To install & maintain equipment workers must be qualified to work in supply space & use supply work rules & methods.
- Bracket arm shall be bonded to pole ground with #6 SD bare copper conductor.
- When installing router on existing light, CoServ will need to change the 2' arm out with a 2"x6' arm and using new mounting hardware.

	DATE	REVISION	RF ROUTER INSTALLATION ON EXISTING SECURITY LIGHT OR COBRA HEAD	ISSUED	9/2/2010
				REVISED	
				STANDARD NUMBER	
				SL-ROUTER	



DATE	REVISION

**RF ROUTER INSTALLATION ON  
EXISTING SECURITY LIGHT OR  
COBRA HEAD**

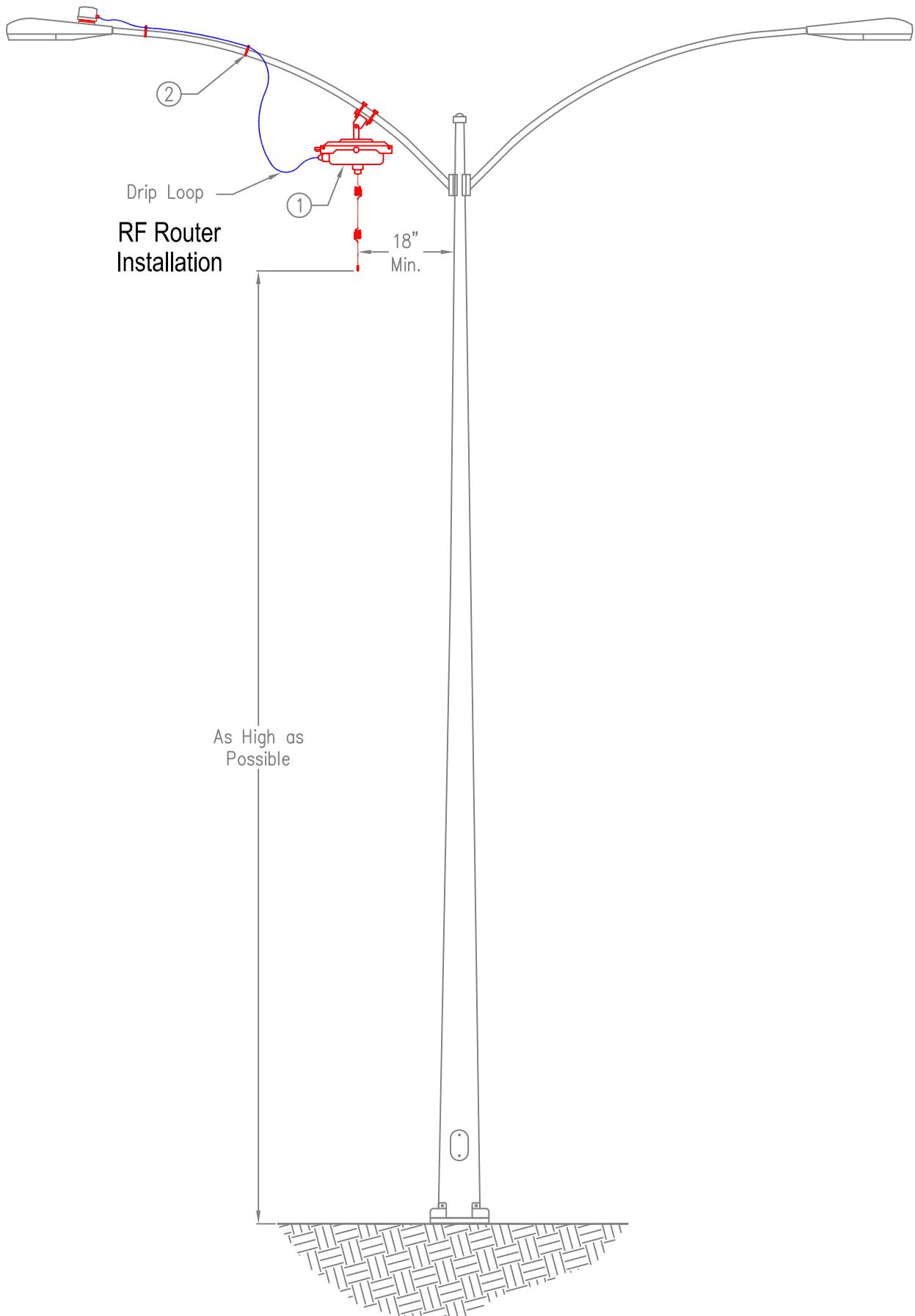
ISSUED 9/2/2010  
REVISED  
STANDARD NUMBER  
**SL-ROUTER**

ITEM.	QTY.	CATALOG No.	METER SHOP MATERIAL
1	1	9800-00-02	Gridstream Router Kit – Router, Bracket w/4' Power Cable
2	2	6812-01-01	Cable Tie, Black 7.94"

Notes:

1. Maximum weight of communication equipment not to exceed 15 lbs when installed on existing streetlight bracket arm.
2. Only 1 piece of communication equipment can be mounted on a streetlight pole or bracket arm..
3. Supply cable must be jacketed multiple conductor. Jacket must enclose entire cable assembly.
4. To install & maintain equipment workers must be qualified to work in supply space & use supply work rules & methods.
5. Metal enclosures shall be bonded to streetlight mast arm by an approved method.
6. Router to be installed facing roads.

	DATE	REVISION	RF ROUTER INSTALLATION ON EXISTING THOROUGHFARE COBRA HEAD LIGHT	ISSUED	9/02/2010
				REVISED	
				STANDARD NUMBER	
				TLC-ROUTER	



DATE	REVISION

RF ROUTER INSTALLATION ON  
EXISTING THOROUGHFARE  
COBRA HEAD LIGHT

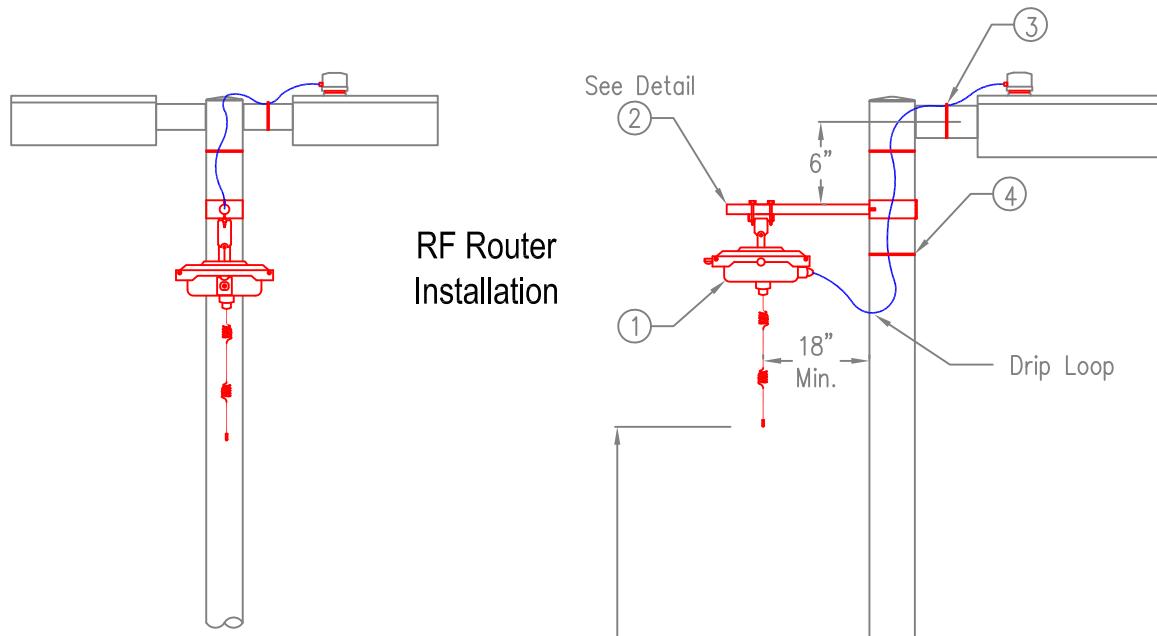
ISSUED	9/02/2010
REVISED	
STANDARD NUMBER	TLC-ROUTER

ITM.	QTY.	CATALOG No.	METER SHOP MATERIAL
<b>TLS-R ROUTER</b>			
1	1	9800-00-02	Gridstream Router Kit – Router, Bracket w/4' Power Cable
2	1	9890-00-01	Shoebox RF Router Arm (Round Pole)
3	1	6822-06-03	Cable Tie, Heavy Duty, Black 15"
4	2	6832-15-06	Cable Tie, Extra Heavy Duty, Black 36"

**TLS-S ROUTER**

1	1	9800-00-02	Gridstream Router Kit – Router, Bracket w/4' Power Cable
2	1	9890-00-02	Shoebox RF Router Arm (Square Pole)
3	1	6822-06-03	Cable Tie, Heavy Duty, Black 15"
4	2	6832-15-06	Cable Tie, Extra Heavy Duty, Black 36"

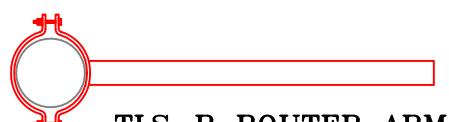
	DATE	REVISION	RF ROUTER INSTALLATION ON EXISTING THOROUGHFARE SHOEBOX LIGHT	ISSUED	9/02/2010
				REVISED	
				STANDARD NUMBER	
				TLS-ROUTER	



**TLS2  
DOUBLE ARM**

**RF Router  
Installation**

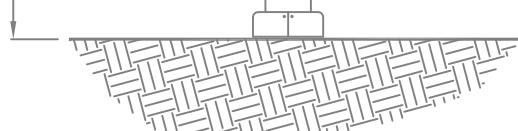
As High as  
Possible



**TLS-R ROUTER ARM**  
ROUND POLE



**TLS-S ROUTER ARM**  
SQUARE POLE



**TLS1  
SINGLE ARM**



DATE

REVISION

RF ROUTER INSTALLATION ON  
EXISTING THOROUGHFARE  
SHOEBOX LIGHT

ISSUED 09/02/2010

REVISED

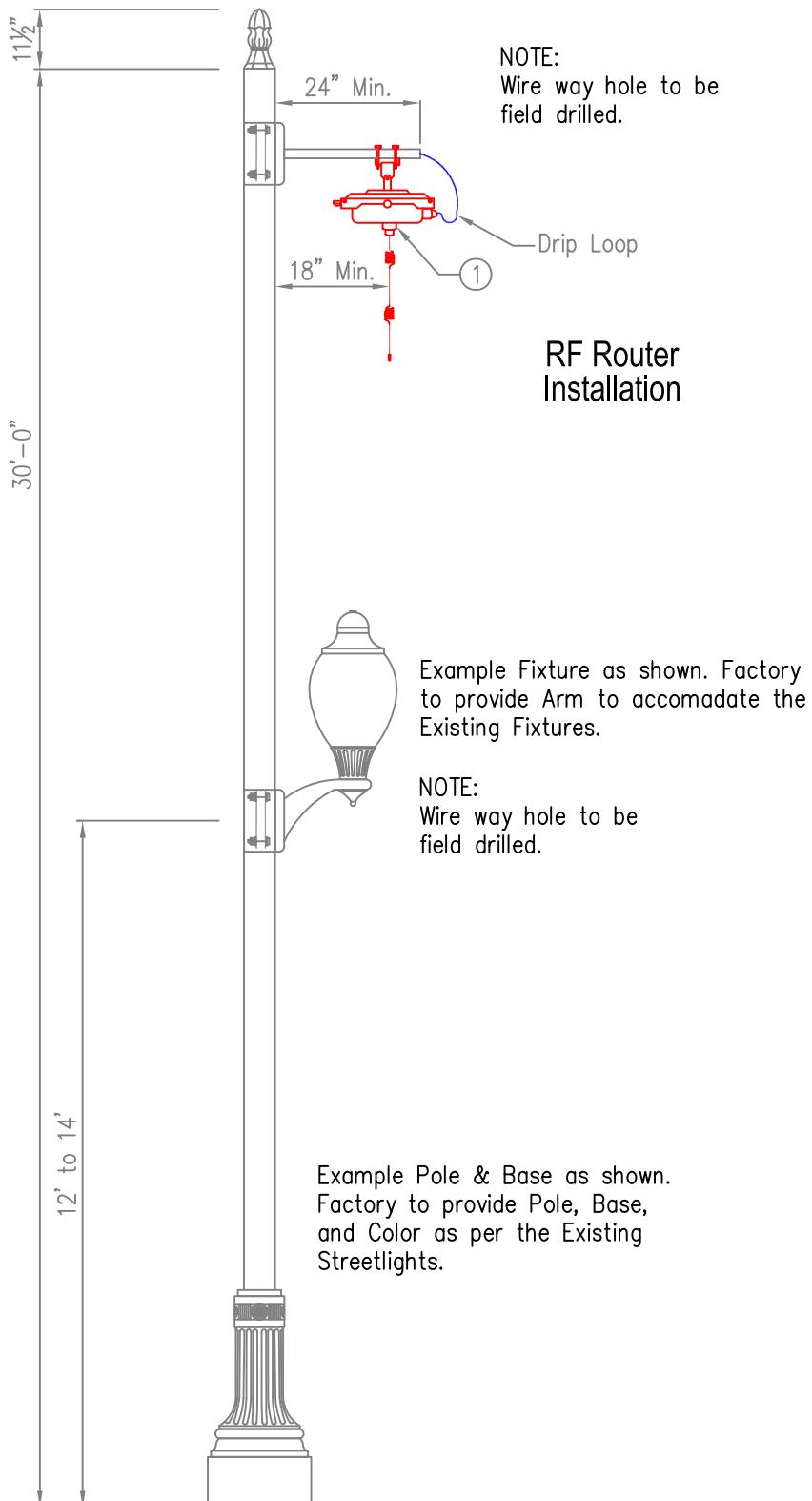
STANDARD NUMBER

**TLS-ROUTER**

ITM.	QTY.	CATALOG No.	MATERIAL
ITM.	QTY.	CATALOG No.	METER SHOP MATERIAL
1	1	9800-00-01	Gridstream Router Kit – Router, Bracket w/20' Power Cable



DATE	REVISION	RF ROUTER INSTALLATION ON EXISTING RESIDENTIAL STREETLIGHT	ISSUED	8/27/2012
			REVISED	
				STANDARD NUMBER
				RSL-ROUTER



DATE	REVISION

**RF ROUTER INSTALLATION ON  
EXISTING RESIDENTIAL  
STREETLIGHT**

ISSUED	8/27/2012
REVISED	
STANDARD NUMBER	RSL-ROUTER

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# **Tab JNT & CLEARANCES**

# **Tab JNT & CLEARANCES**

## **INDEX JNT & CLEARANCES**

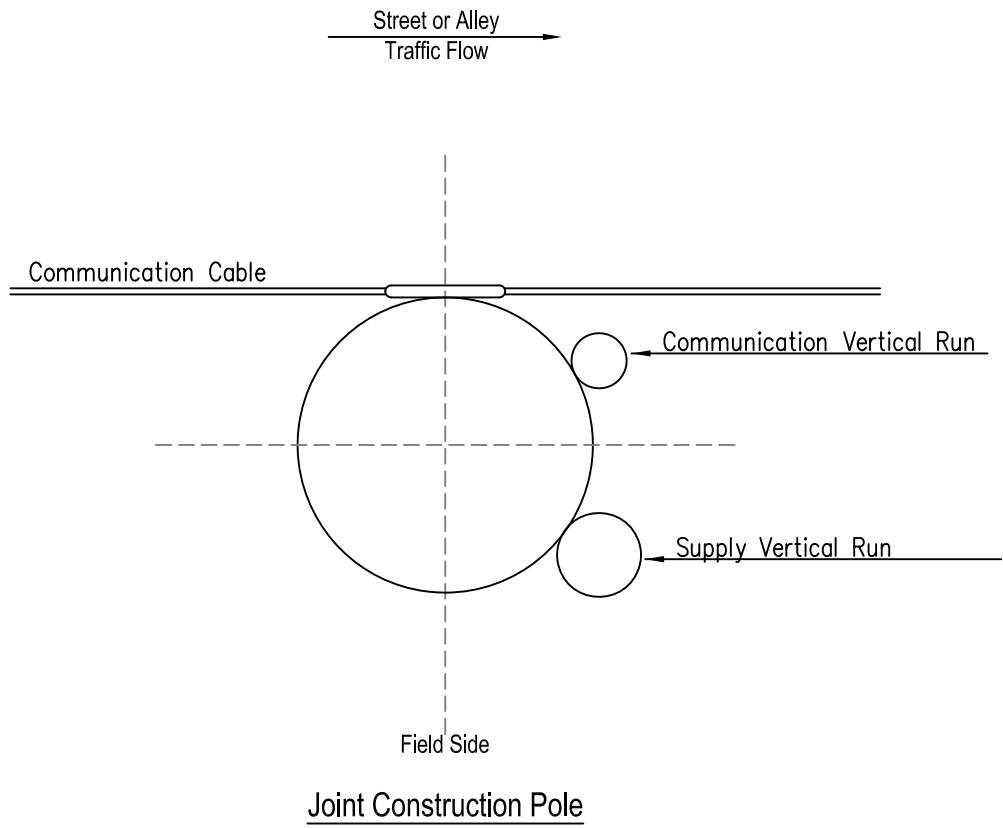
### **JOINT USE & CLEARANCES**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
JNT-001	LOCATIONS OF VERTICAL RUNS
JNT-002	CLIMBING SPACE THRU COMMUNICATION SERVICE DROP
JNT-003	COMMUNICATION ATTACHMENT AND SERVICE DROP
JNT-004	SUPPLY AND COMMUNICATION CLEARANCES
JNT-005	SUPPLY AND COMMUNICATION CLEARANCES
JNT-006	SUPPLY AND COMMUNICATION CLEARANCES AT POLE
JNT-007A	SUPPLY AND COMMUNICATION CLEARANCES AT MIDSPAN
JNT-007B	SUPPLY AND COMMUNICATION CLEARANCES AT MIDSPAN
JNT-008	SUPPLY AND COMMUNICATION EQUIPMENT
JNT-009	COMMUNICATION FACILITIES TAGGING
JNT-010	TEMPORARY COMMUNICATION COMPANY ATTACHMENTS FOR FIBER OPTIC CABLE
JNT-011	METHOD FOR TRANSITIONING POSITION OF COMMUNICATION COMPANY ATTACHMENT ON TANGENT POLE
JNT-012	METHOD FOR TRANSITIONING POSITION OF COMMUNICATION COMPANY ATTACHMENT ON DEADEND POLE
JNT-013	SUPPLY AND COMMUNICATION DOWN GUYS
JNT-014	COMMUNICATION COMPANY STRAND BONDING TO POLE GROUND
JNT-015	COMMUNICATION ANTENNA MOUNTED ON PRIMARY POLE
JNT-016	COMMUNICATION ANTENNA MOUNTED ON SECONDARY POLE

## INDEX JNT & CLEARANCES (cont.)

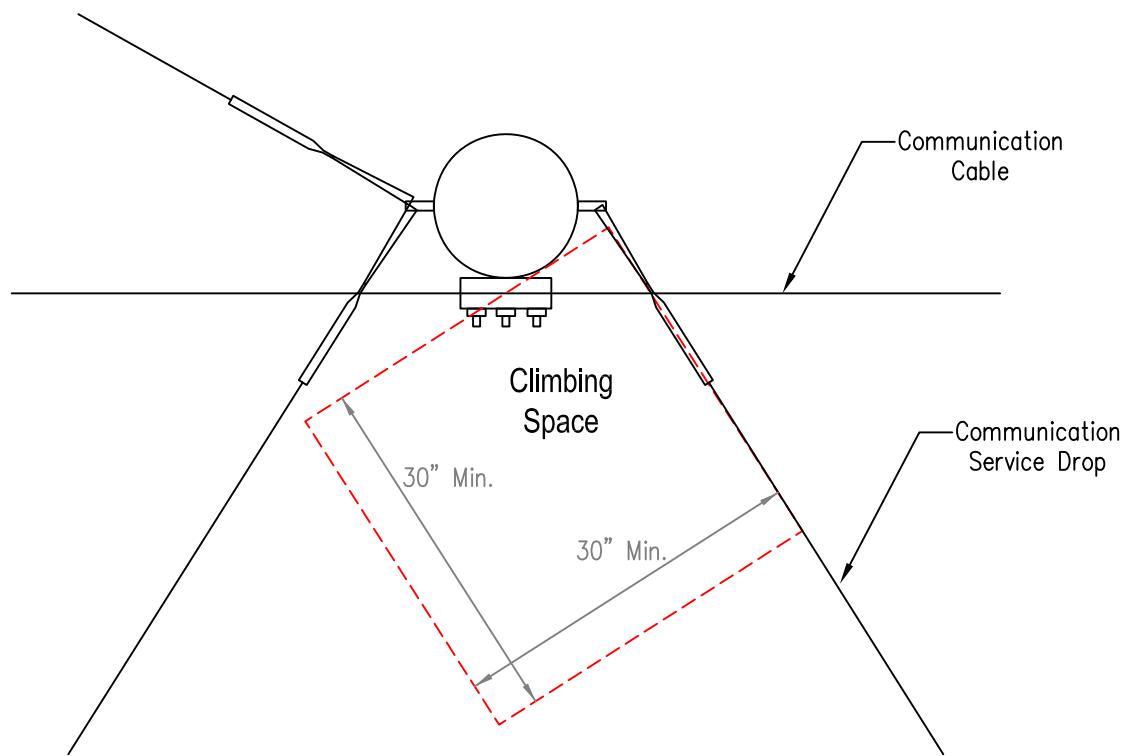
### JOINT USE & CLEARANCES

DRAWING NUMBER	DRAWING TITLE (DESCRIPTION)
JNT-017	COMMUNICATION ANTENNA MOUNTED ON EXISTING LIGHT
JNT-018	COMMUNICATION ANTENNA MOUNTED ON EXISTING THOROUGHFARE COBRA HEAD LIGHT
JNT-019	COMMUNICATION ANTENNA MOUNTED ON EXISTING THOROUGHFARE SHOEBOX LIGHT
JNT-020	COMMON USE POLE CROSSARM CONSTRUCTION TANGENT
JNT-021	COMMON USE POLE CROSSARM CONSTRUCTION SMALL ANGLE – DOUBLE PIN
JNT-022	COMMON USE POLE CROSSARM CONSTRUCTION DOUBLE DEADEND
JNT-023	COMMON USE POLE CROSSARM CONSTRUCTION DEADEND
JNT-024	COMMON USE POLE CROSSARM CONSTRUCTION CORNER
JNT-025	COMMON USE POLE CROSSARM CONSTRUCTION 3Ø TAP
JNT-026	COMMON USE POLE CROSSARM CONSTRUCTION 3Ø TYPICAL CROSSING
JNT-027	COMMON USE POLE CROSSARM CONSTRUCTION FOUR-WAY CROSSING
JNT-028	COMMON USE POLE CROSSARM CONSTRUCTION 1Ø TAP
JNT-029	COMMON USE POLE CROSSARM CONSTRUCTION 1Ø TYPICAL CROSSING
JNT-030	COMMON USE POLE CROSSARM CONSTRUCTION SECONDARY CROSSING
JNT-031	COMMON USE POLE TRANSFORMER INSTALLATION

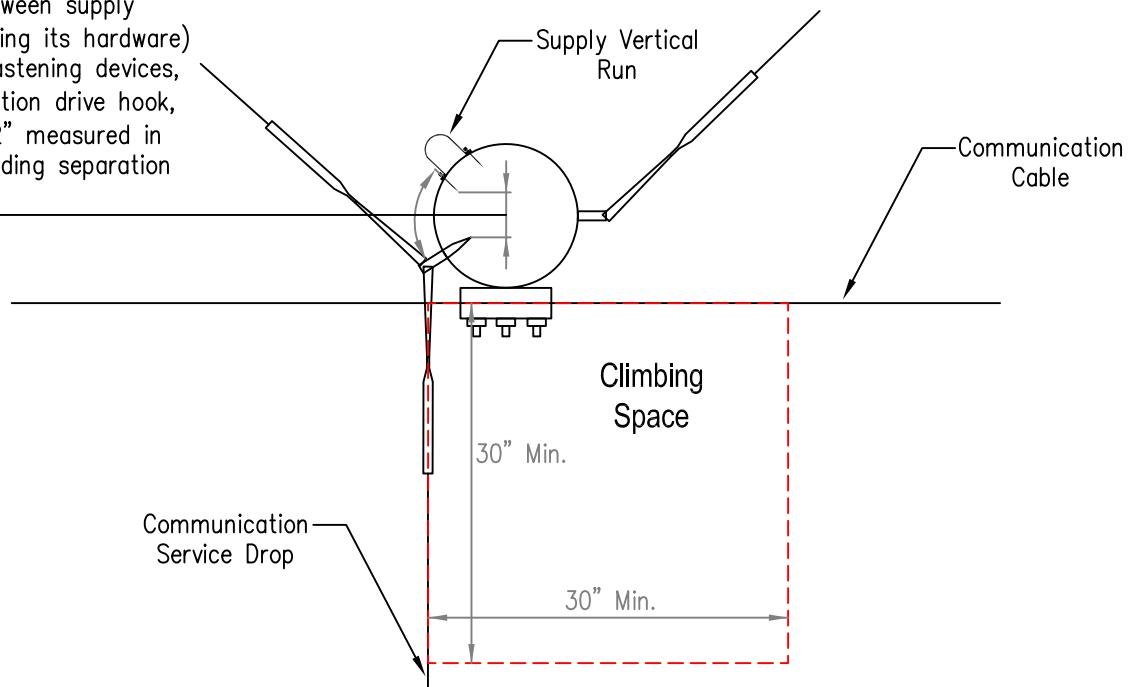


## NOTES:

1. Supply and communication vertical runs shall not be made on the same pole where it is practicable to place them on separate poles.
  2. Supply vertical runs shall be on quarter of pole opposite communication cable if existing, otherwise in field quarter of pole when along street or alley.
  3. Locate supply vertical runs on side of pole away from the normal traffic flow where practicable.
  4. Communication vertical runs shall be made on quarter of pole adjacent to communication cable and on side of pole away from the normal traffic flow where practicable.
  5. All vertical runs shall be so arranged as not to interfere with climbing or working space. When the addition of a communication vertical run on a pole with an existing supply vertical run obstructing more than 25% of the pole surface, the additional communication vertical run shall be mounted on standoff brackets a minimum of 4" and a maximum of 12" off the pole. Vertical runs facilitate climbing space as per the NESC. Vertical runs on standoff brackets should be in conduit as approved by the NESC.
  6. Consult Section 239 of the NESC for situations not covered by this standard.



The separation between supply vertical run (including its hardware) and other bolts, fastening devices, and/or communication drive hook, shall be at least 2" measured in any direction, including separation within the pole.



DATE

REVISION

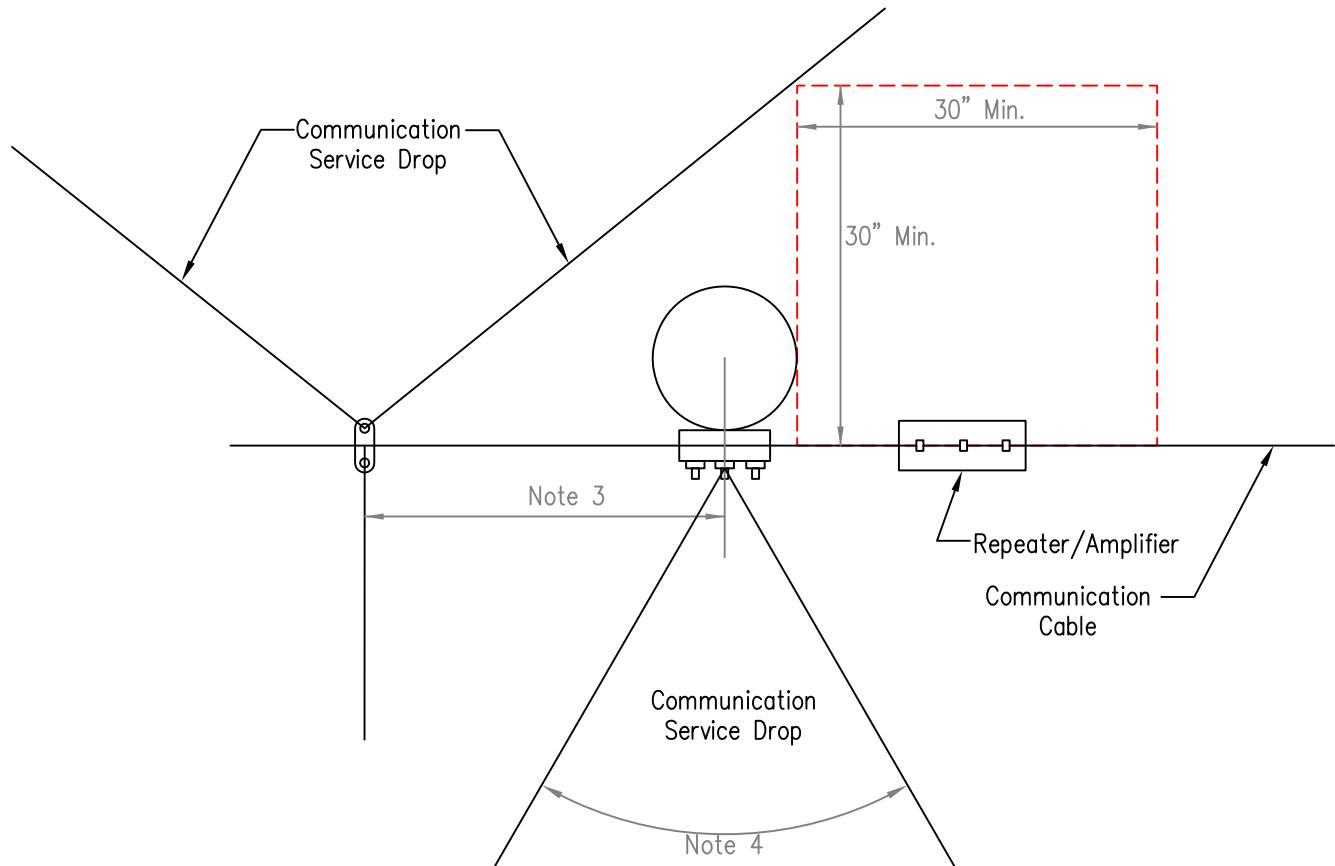
### CLIMBING SPACE THRU COMMUNICATION SERVICE DROP

ISSUED 1/20/2012

REVISED —

STANDARD NUMBER

JNT-002

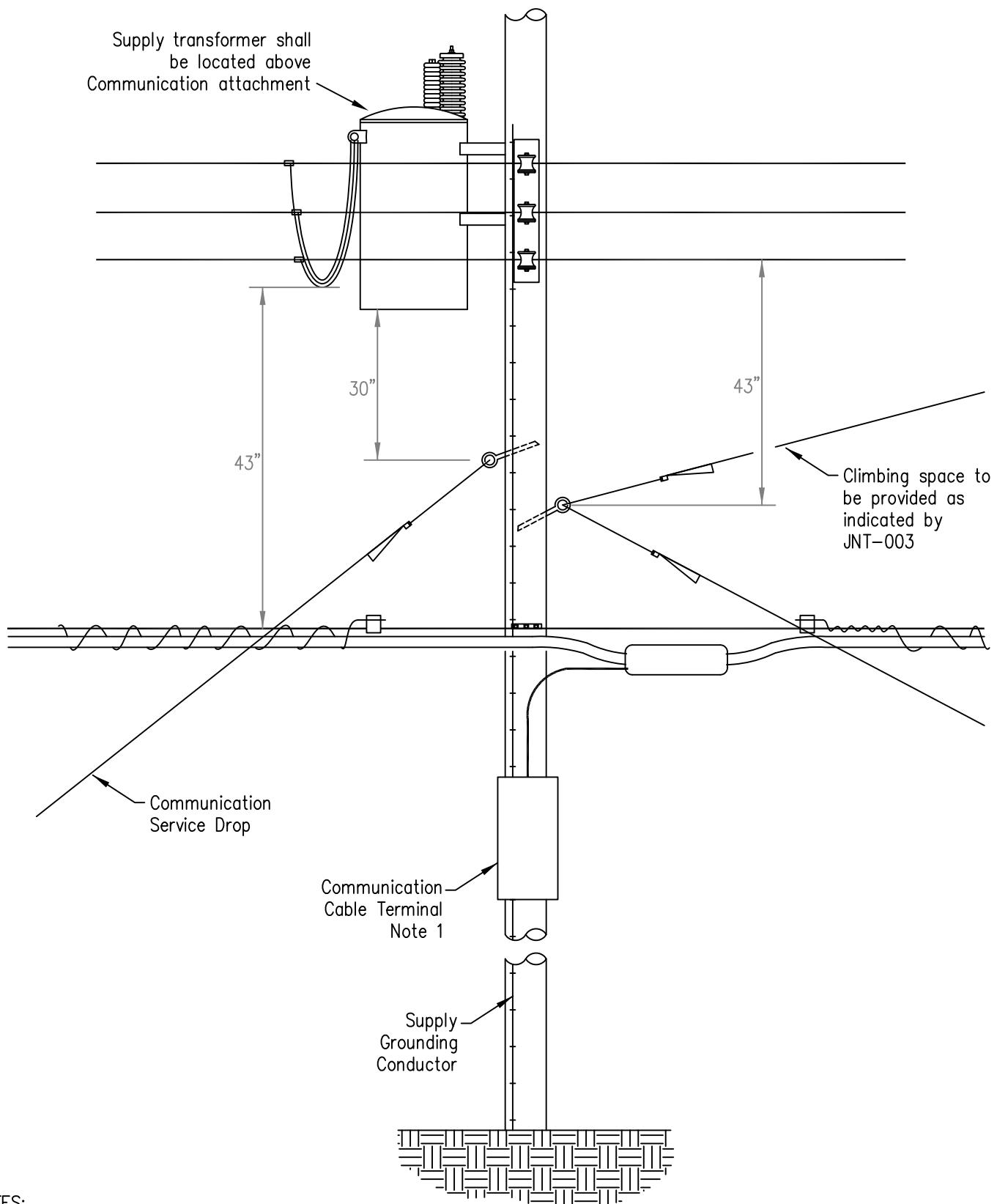


NOTES:

1. See JNT-001 for placing vertical runs on poles.
2. See Design Criteria Section 2.0 for requirements on which side of pole attachment must be made.
3. Make this distance sufficient to clear the climbing space with the nearest service drop.
4. Service drops on the street or alley side of poles should be pulled off the pole.

DATE	REVISION	COMMUNICATION ATTACHMENT & SERVICE DROP	ISSUED	1/23/2012	
			REVISED	--	
STANDARD NUMBER				JNT-003	





NOTES:

- When communication cable terminal obstructs more than 25% of pole surface, the terminal shall be placed on standoff brackets a minimum of 4" and a maximum of 12" from the pole to facilitate climbing space as per the NESC.



DATE

REVISION

SUPPLY AND COMMUNICATION CLEARANCES

ISSUED

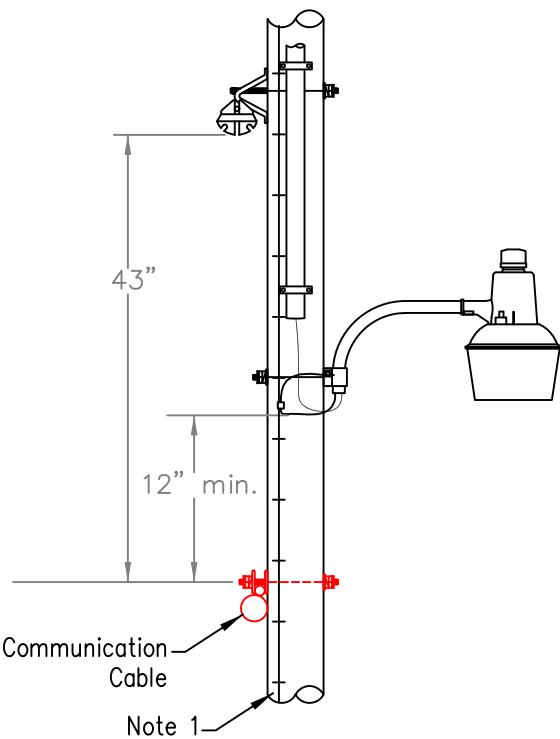
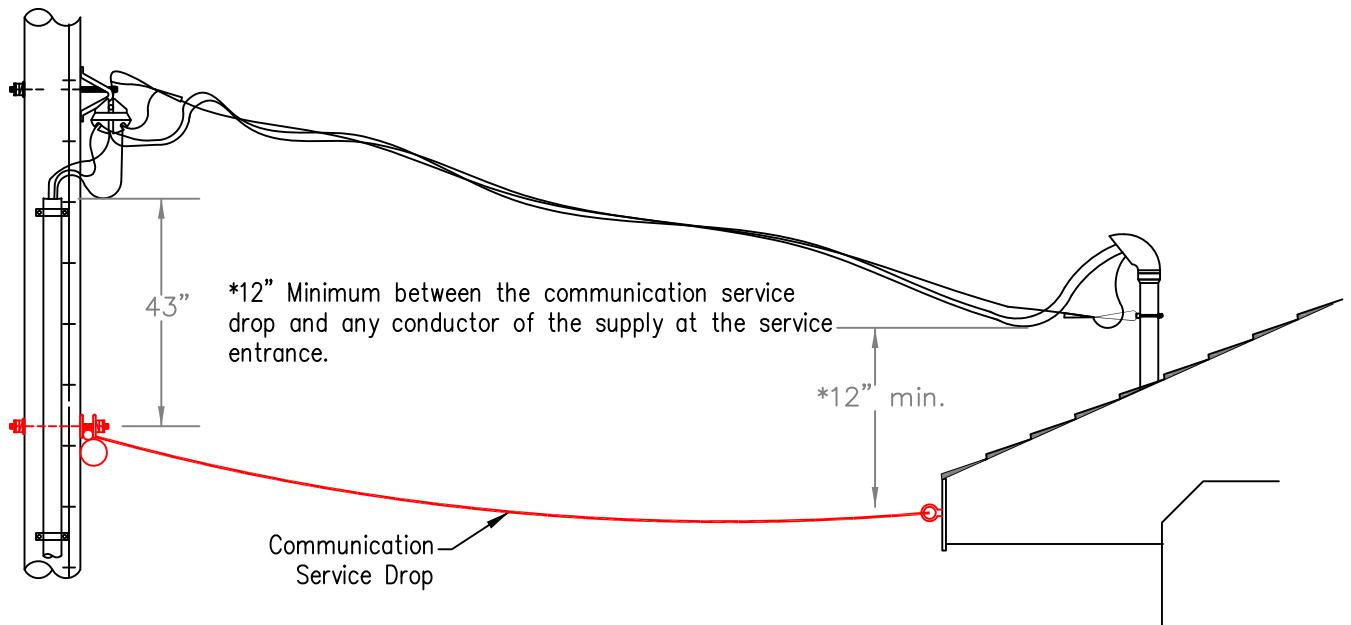
1/23/2012

REVISED

-

STANDARD NUMBER

JNT-004



NOTES:

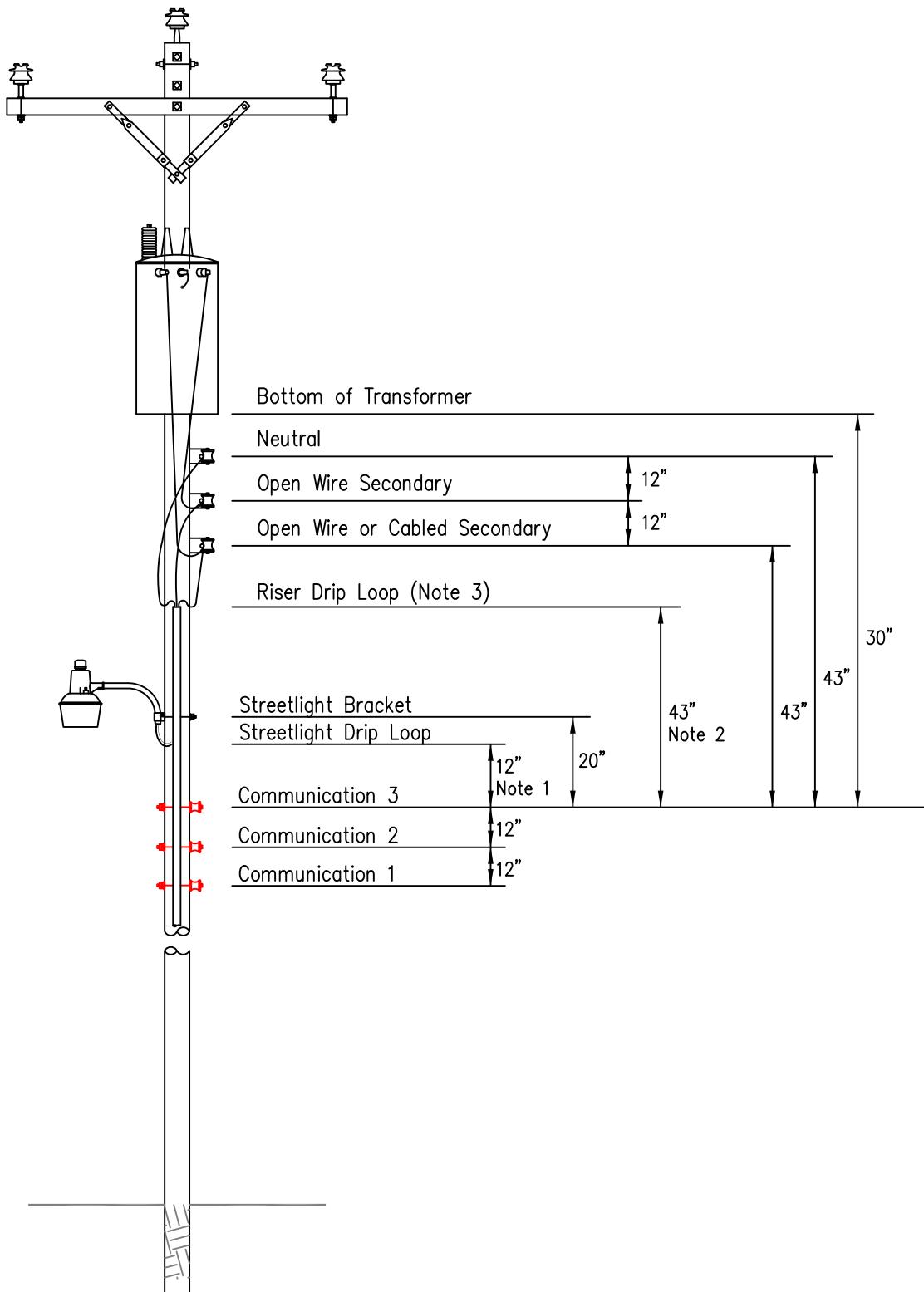
1. Minimum clearance of 2" of air or wood between all hardware and grounds.



DATE	REVISION

SUPPLY AND COMMUNICATION  
CLEARANCES

ISSUED	1/23/2012
REVISED	-
STANDARD NUMBER	JNT-005



NOTES:

1. May be reduced to 3" if streetlight drip loop covered entirely with a non-metallic covering.
2. Communication shall be minimum 43" below supply drip loops.
3. Includes the top of primary and secondary risers, including drip loops (whichever is lower).



DATE	REVISION

SUPPLY AND COMMUNICATION  
CLEARANCES AT POLE

ISSUED	1/23/2012
REVISED	-
STANDARD NUMBER	JNT-006

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NOTES:

1. General
  - a) Vertical clearances shall be maintained under the following conductor temperature and loading conditions whichever produces the largest final sag:
    1. 120° F, no wind.
    2. The maximum conductor temperature for which the line is designed to operate, if greater than 120° F, no wind.
    3. 32° F, no wind with  $\frac{1}{2}$ " radial thickness of ice.
  - b) Greater clearances than shown on JNT-007B shall be provided where required by local codes and ordinances or crossing permits issued by other companies or governmental agencies.
2. Trucks are defined as any vehicle exceeding 8 feet in height. Areas not subjected to truck traffic are areas where truck traffic is not normally encountered nor reasonably anticipated.
3. Spaces and ways subject to pedestrian or restricted traffic only are those areas where riders on horseback or other large animals, vehicles or other mobile units exceeding 8 feet in height are prohibited by regulation or permanent terrain configuration or are otherwise not normally encountered nor reasonably anticipated.
4. Where a supply or communication line along a road is located relative to fences, ditches, embankments, etc, so that the ground under the line would not be expected to be traveled except by pedestrians, this clearance may be reduced to the following values:

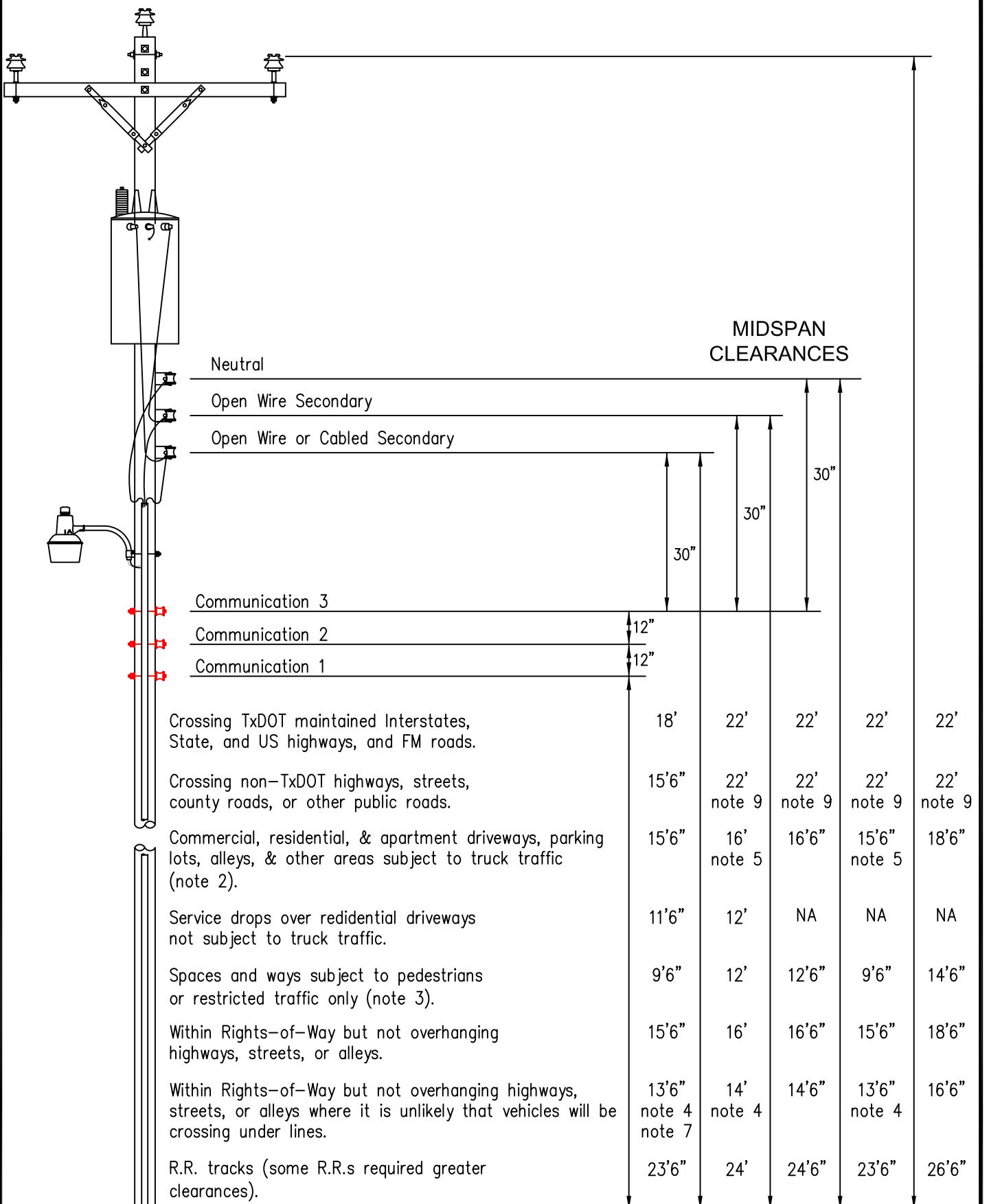
a) Insulated communication conductor and communication cables	9.5 ft.
b) Cabled supply conductors 0–150V to ground	10.0 ft.
c) Insulated supply conductors 0–300V to ground	12.5 ft.
d) Grounded Guys	9.5 ft.
e) Neutral supply conductor	9.5 ft.
5. Where this construction crosses over or runs along driveways, parking lots or alleys not subject to truck traffic, this clearance may be reduced to 15 feet.
6. When designing a line to accommodate oversized vehicles, these clearance values shall be increased by the difference between the known height of the oversized vehicle and 14 feet.
7. This clearance may be reduced to 13 feet for insulated communication conductors and communication guys.
8. See JNT-005 for clearance between supply and communication service drops.
9. Existing installations in non-TxDOT right-of-way that meet the clearances of the applicable edition of the NESC are acceptable. If the pole is replaced, all electric and communication facilities shall be adjusted to meet current CoServ standards.



DATE	REVISION

SUPPLY AND COMMUNICATION  
CLEARANCES AT MIDSPAN

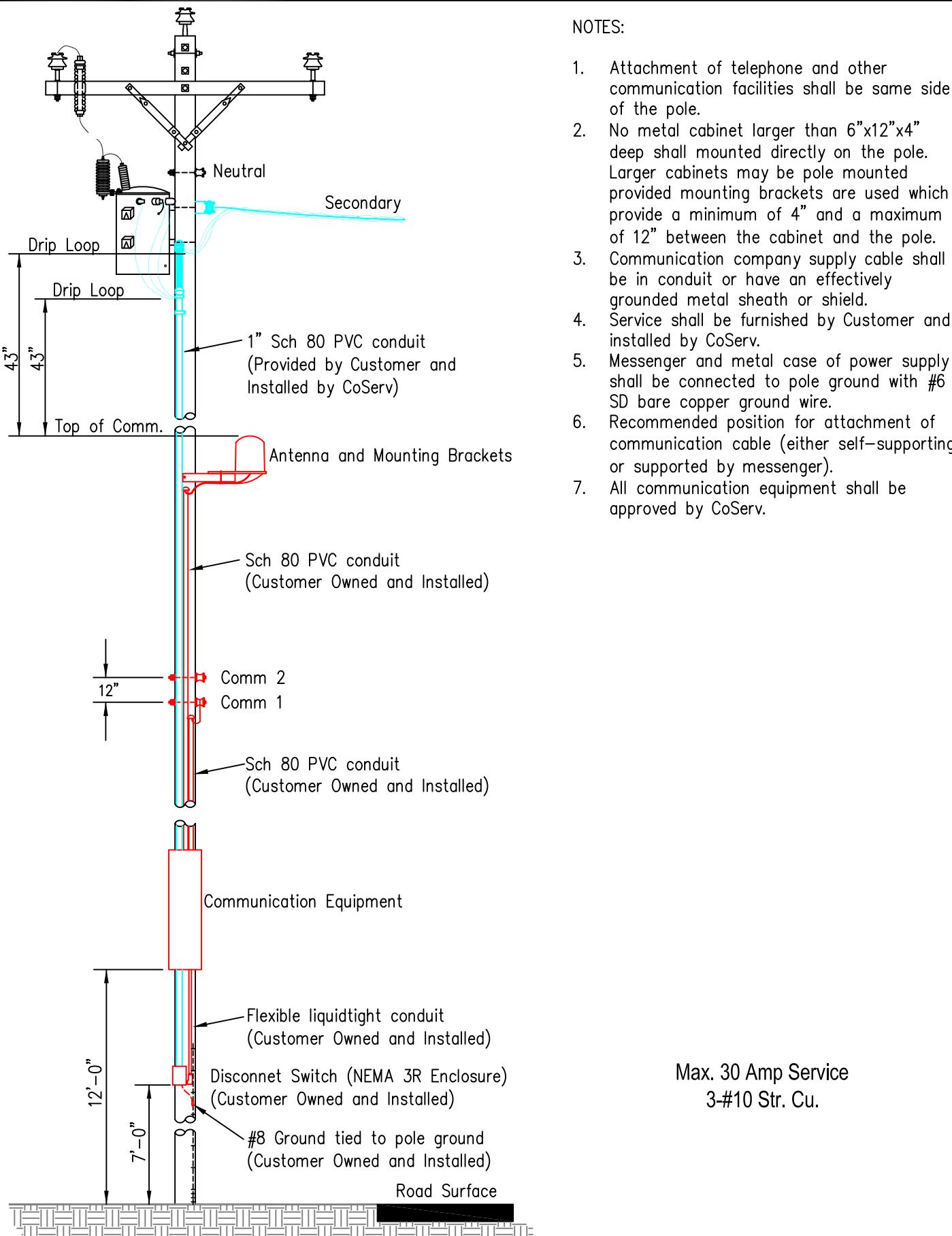
ISSUED	1/23/2012
REVISED	—
STANDARD NUMBER	JNT-007A



For Notes, Reference JNT-007A

DATE	REVISION	SUPPLY AND COMMUNICATION CLEARANCES AT MIDSPAN	ISSUED	1/23/2012
			REVISED	-
STANDARD NUMBER				JNT-007B





DATE	REVISION	SUPPLY AND COMMUNICATION EQUIPMENT	ISSUED	2/09/2012
			REVISED	-
			STANDARD NUMBER	JNT-008

To facilitate identification of attachments to CoServ Electric poles, the following standards apply to all joint use attachers. These requirements will also assist in contacting the attached party as needed.

A tag must be installed which includes the following information:

1. Company name or generally recognizable company logo
2. Emergency telephone number

Tagging requirements:

1. Locations:

- (a) The starting and deadend poles of all attached facilities
- (b) The beginning of all lateral taps
- (c) All overhead to underground transitions
- (d) All roadway crossings

Tags should be installed on a minimum of every fourth pole.

2. Tagging must take place upon installation of facilities.
3. Companies are required to tag their facilities as an ongoing practice in order to meet these requirements.
4. Tag must be replaced when the company name and/or contact number are no longer legible from the ground.
5. Missing tags must be replaced as soon as possible.
6. The attaching company may choose the method, color, material, construction and dimensions of the tag as long as the following requirements are met:
  - (a) Tags to remain permanently affixed to the attaching company's facilities.
  - (b) Color and text must be designed to last at least five (5) years.
  - (c) The company name and contact number must be easily readable and visible from the ground. A minimum of  $\frac{1}{2}$  inch high lettering is required.
  - (d) Avoid the use of sharp edges and corners if constructed of metal.
  - (e) Tags should be consistent in appearance for a given company throughout CoServ Electric service territory.

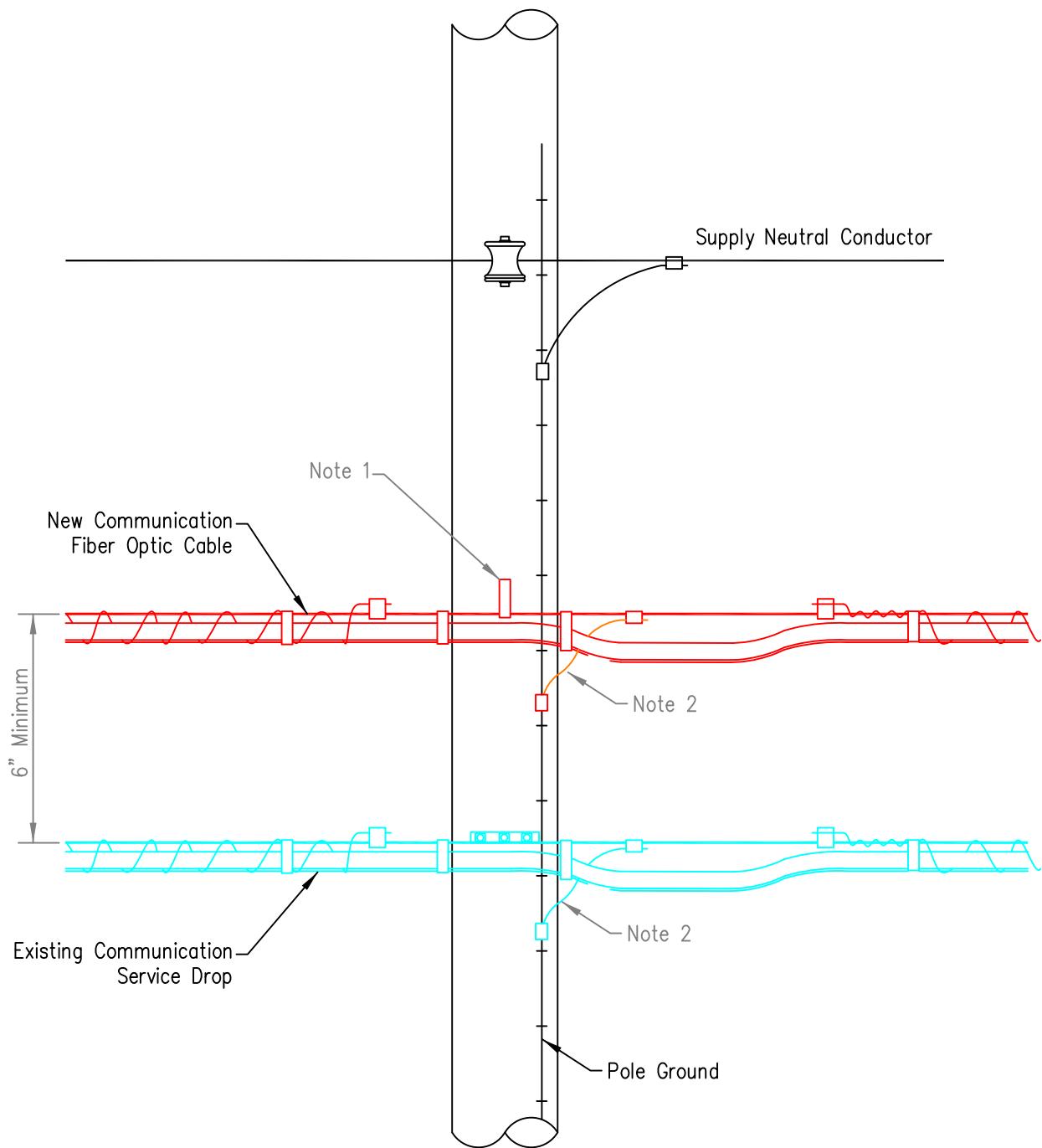


DATE	REVISION

COMMUNICATION FACILITIES  
TAGGING

ISSUED	1/23/2012
REVISED	—
STANDARD NUMBER	JNT-009

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NOTES:

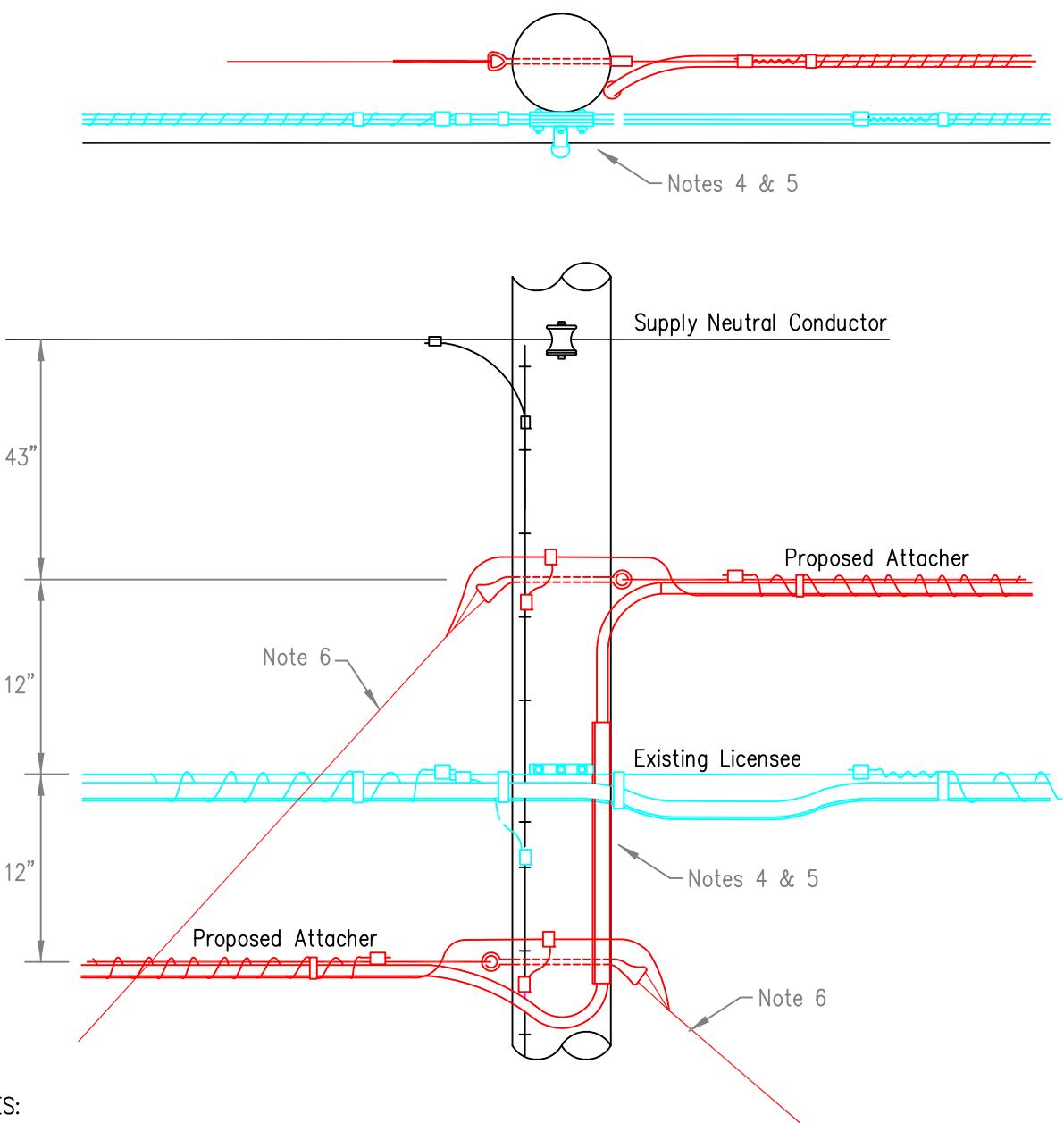
1. This type temporary construction of communication company fiber optic cable on Joslyn j-hook to be used on all tangent construction except street crossings shall be attached with three bolt clamp as per existing coaxial cable.
2. Communication cable company to furnish #6 SD bare copper bonding wire and connectors to pole ground as per JNT-014.
3. Communication company to treat all leftover holes with Osmose Osmoweld upon permanent attachment of the fiber optic cable.



DATE	REVISION

TEMPORARY COMMUNICATION  
COMPANY ATTACHMENT FOR  
FIBER OPTIC CABLE

ISSUED	1/24/2012
REVISED	-
STANDARD NUMBER	JNT-010

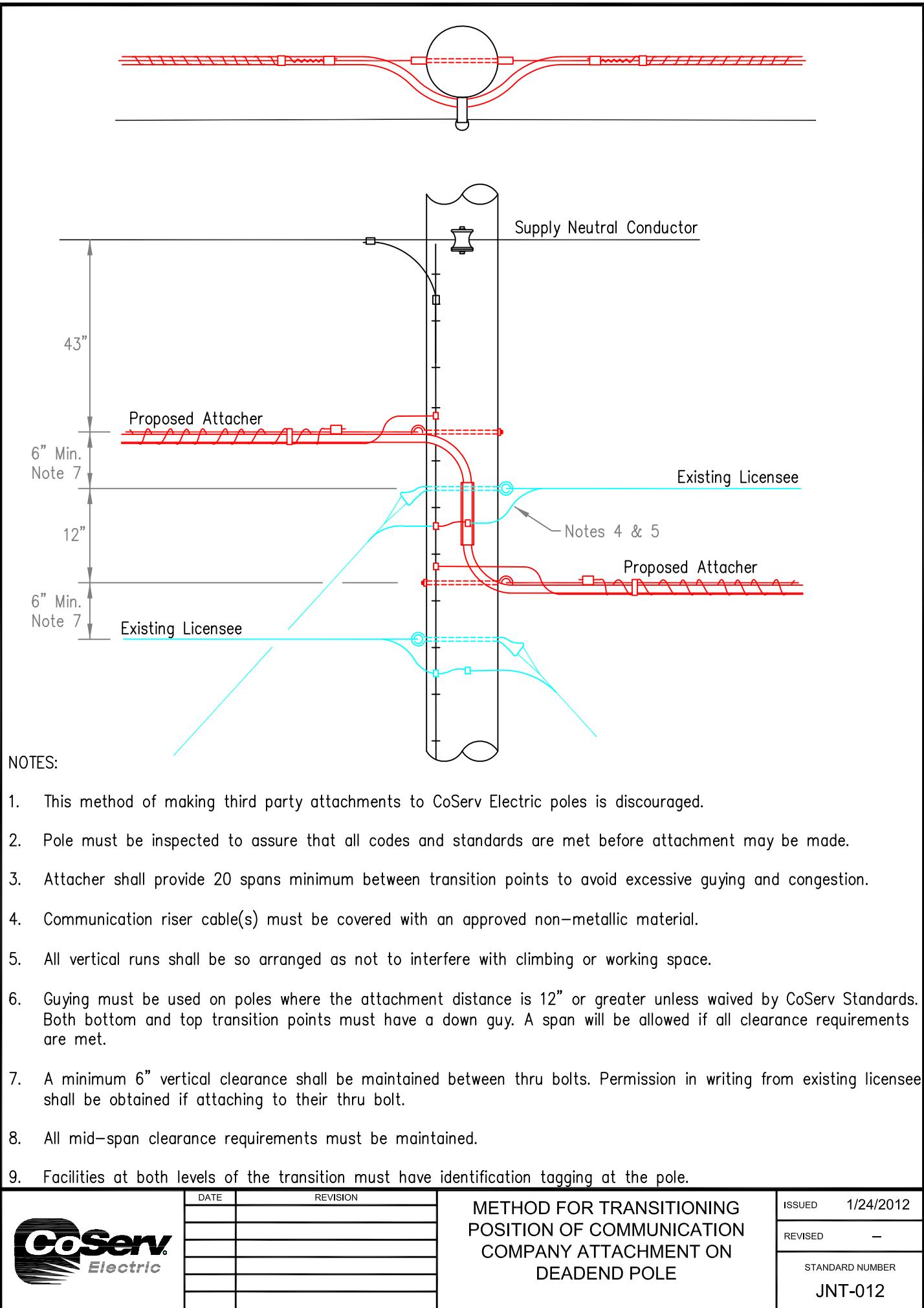


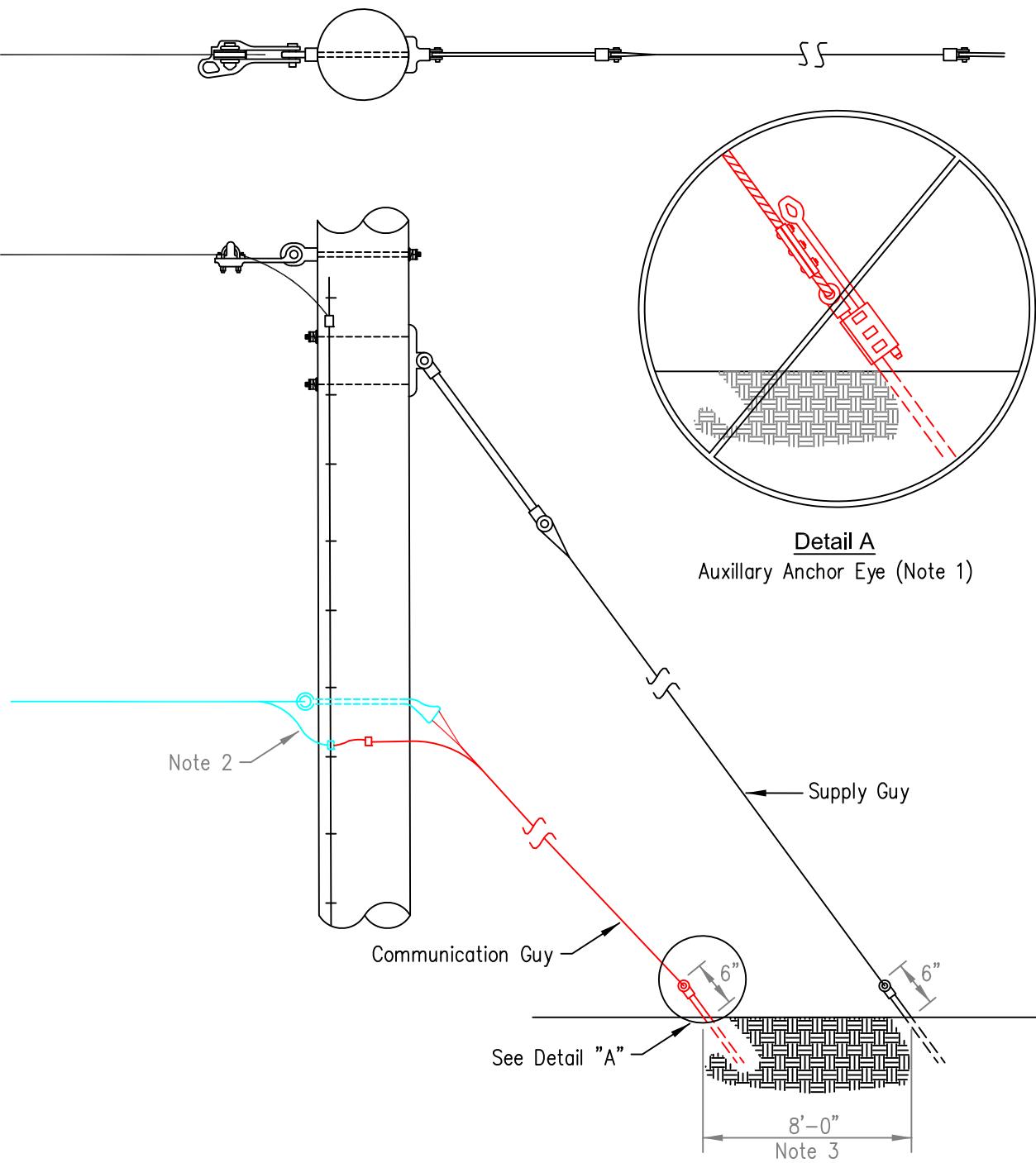
NOTES:

1. This method of making third party attachments to CoServ Electric poles is discouraged.
2. Pole must be inspected to assure that all codes and standards are met before attachment may be made.
3. Attacher shall provide 20 spans minimum between transition points to avoid excessive guying and congestion.
4. Communication riser cable(s) must be covered with an approved non-metallic material.
5. All vertical runs shall be so arranged as not to interfere with climbing or working space.
6. Guying must be used on poles where the attachment distance is 12" or greater unless waived by CoServ Standards. Both bottom and top transition points must have a down guy. A span will be allowed if all clearance requirements are met.
7. All mid-span clearance requirements must be maintained.
8. Facilities at both levels of the transition must have identification tagging at the pole.



DATE	REVISION	METHOD FOR TRANSITIONING POSITION OF COMMUNICATION COMPANY ATTACHMENT ON TANGENT POLE	ISSUED	1/24/2012
			REVISED	-
			STANDARD NUMBER	JNT-011



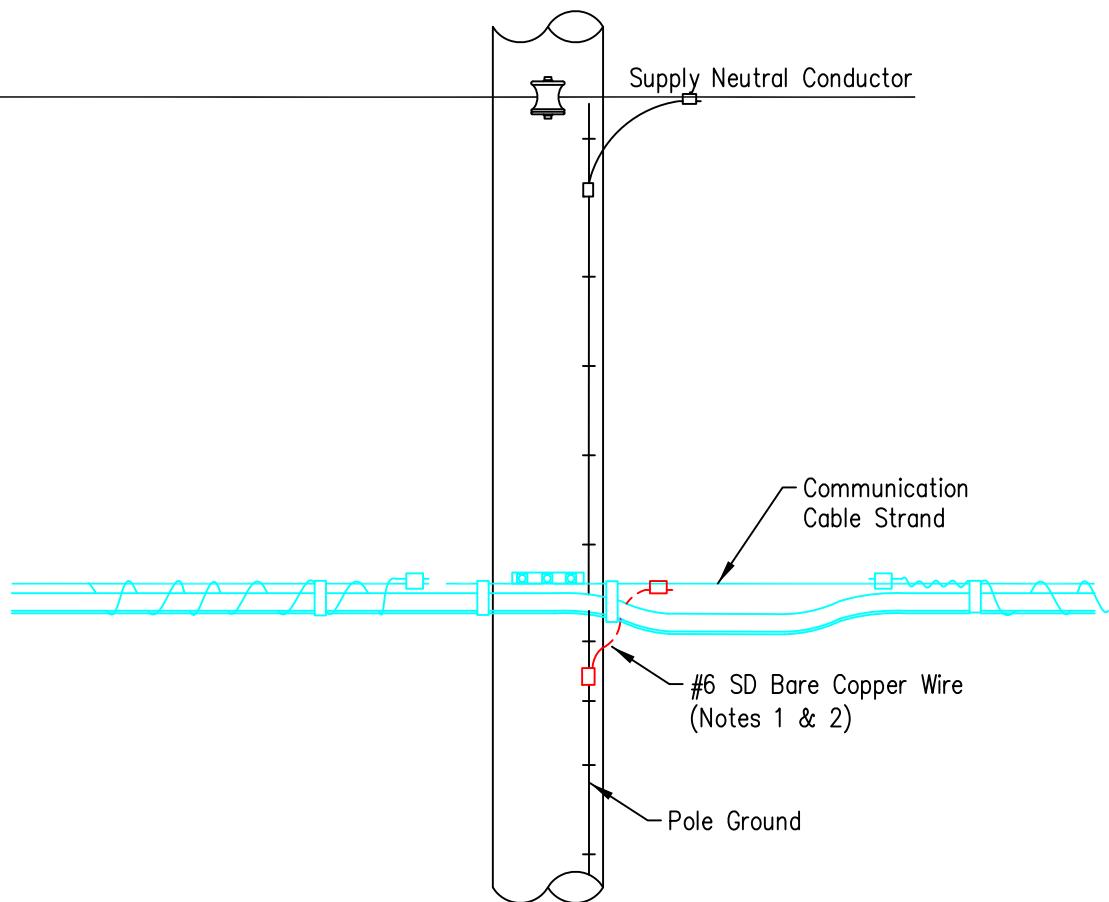


NOTES:

1. Each company (supply and communication) shall install independent guys and anchors for their respective facilities. Auxiliary anchor eyes on supply anchor rods shall not be allowed.
2. Communication cable strand and down guy shall be bonded and connected to pole ground. Communication company to furnish #6 SD copper bare wire and connectors and connect to pole ground.
3. Every effort should be made to place anchors 8' apart. However, a minimum spacing of 5' can be used in situations where spacing must be reduced. Multiple communication company guy attachments to common communication anchors shall be designed as a system to support the total loads applied.



DATE	REVISION	SUPPLY AND COMMUNICATION DOWN GUYS	ISSUED	1/24/2012
			REVISED	-
			STANDARD NUMBER	JNT-013



NOTES:

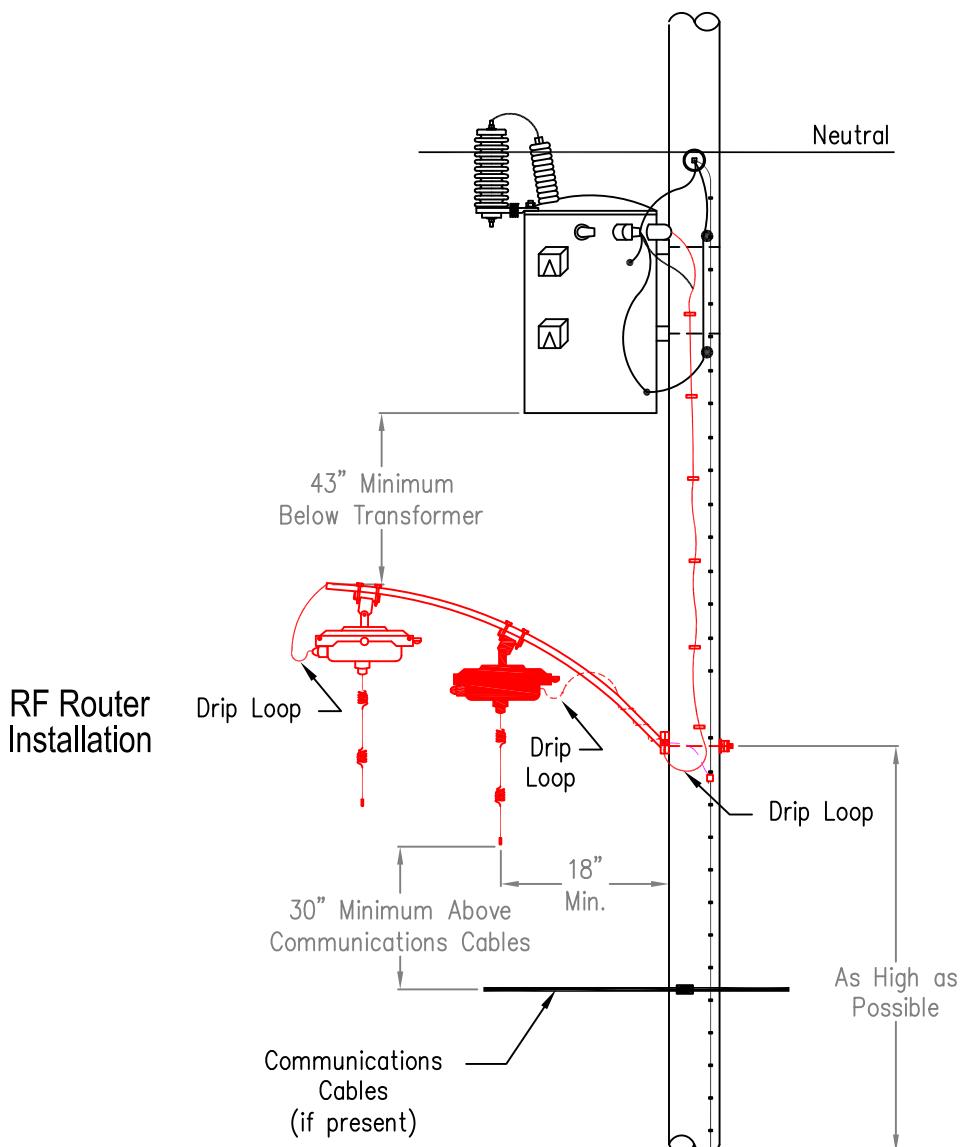
1. Communication cable strand shall be bonded to pole ground on every pole.
2. Communication cable company to furnish #6 SD bare copper wire bonding wire and connectors and connect to pole ground.



DATE	REVISION

COMMUNICATION COMPANY  
STRAND BONDING TO  
POLE GROUND

ISSUED	1/24/2012
REVISED	-
STANDARD NUMBER	JNT-014



NOTES:

1. Customer to provide and install all materials.
2. To install & maintain equipment workers must be qualified to work in supply space & use supply work rules & methods.
3. Supply cable for packet antenna & communication equipment to be jacketed multiple conductor cable.
4. Only 1 piece of communication equipment can be mounted on the bracket arm.
5. Bracket arm shall be bonded to pole ground with #6 SD bare copper conductor
6. Communication line clearances shall be as per the NESC and shall not interfere with the mounting bracket.
7. Router to be installed facing road
8. Install 1.5kva, 120/240v, single phase transformer if transformer is not existing.



DATE

REVISION

COMMUNICATION ANTENNA  
MOUNTED ON PRIMARY POLE

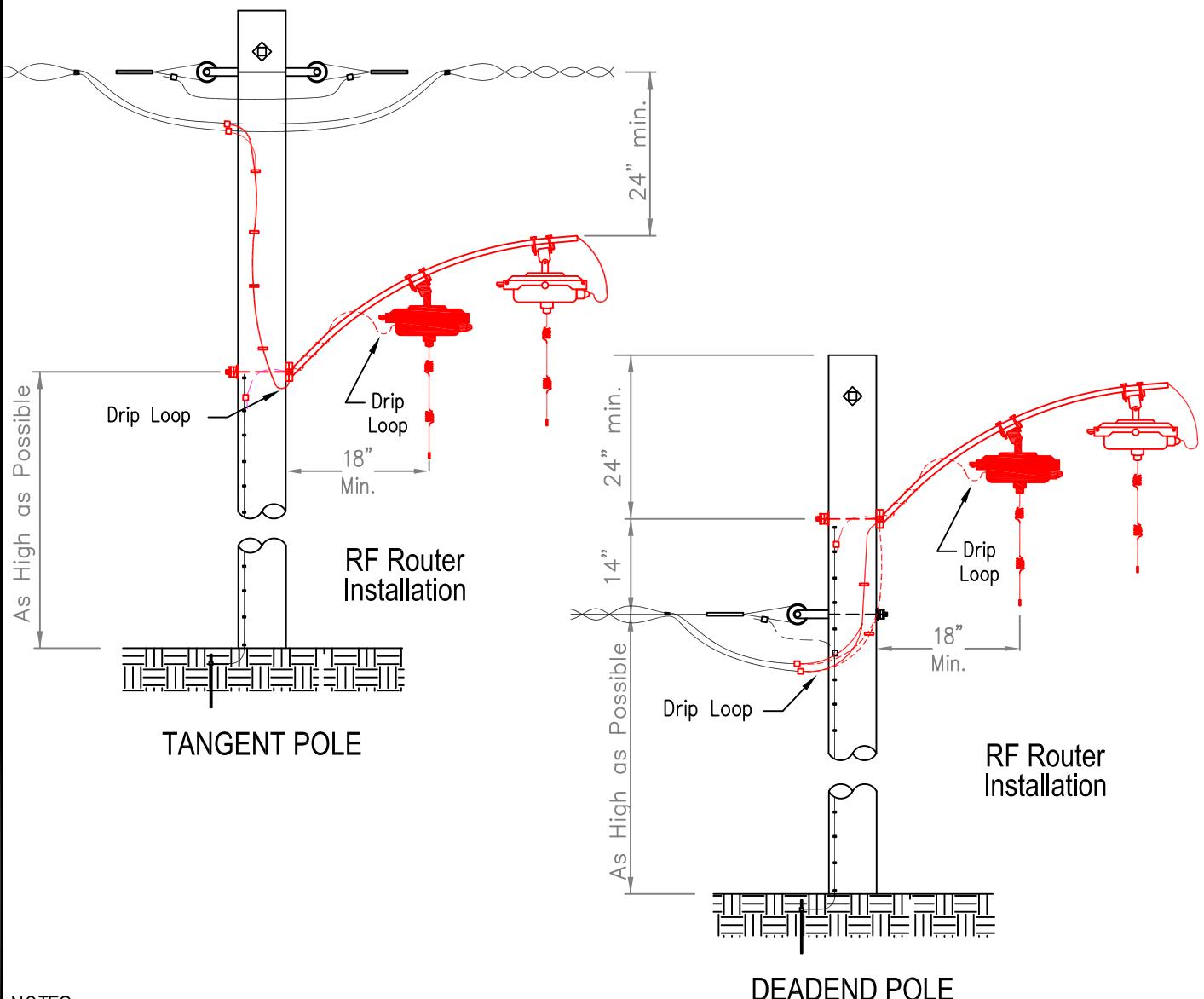
ISSUED

1/25/2012

REVISED

STANDARD NUMBER

JNT-015



NOTES:

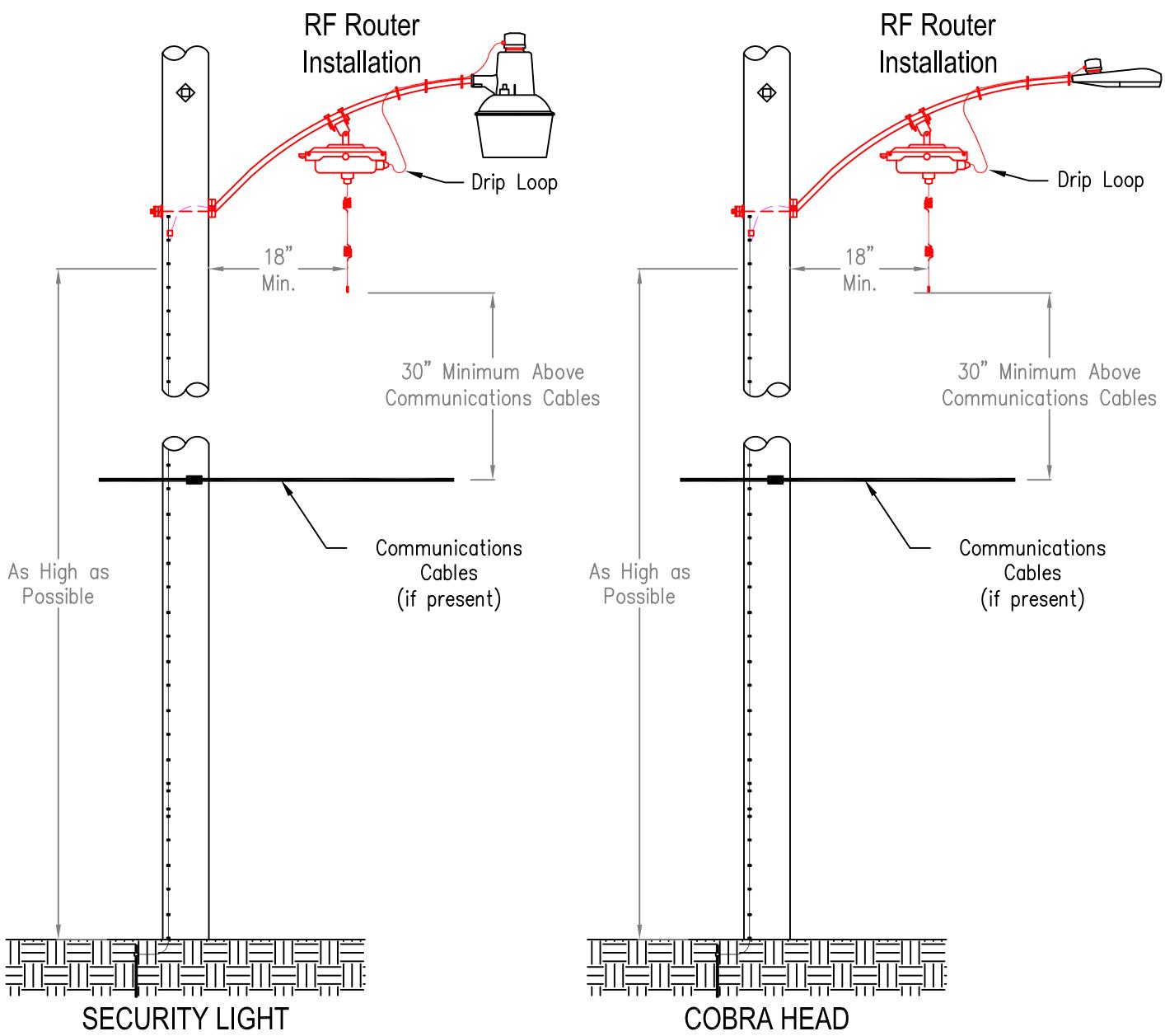
1. Supply cable for packet antenna & communication equipment to be jacketed multiple conductor cable.
2. If there is no existing streetlight bracket arm, use bracket arm listed in item. When a bracket arm is installed solely to mount communication equipment, the jacketed multiple conductor supply cable should be installed inside the bracket arm. See JNT-018.
3. Maximum weight of communication equipment not to exceed 15 lbs. when installed on existing streetlight bracket arm. Communication equipment to be installed a maximum of 3 feet from pole on existing bracket arm.
4. Customer to provide & install bracket arm, connectors & jacketed multiple conductor cable as required.
5. To install & maintain equipment workers must be qualified to work in supply space & use supply work rules & methods.
6. Bracket arm shall be bonded to pole ground with #6 SD bare copper conductor.
7. Router to be installed facing road.



DATE	REVISION

COMMUNICATION ANTENNA  
MOUNTED ON SECONDARY POLE

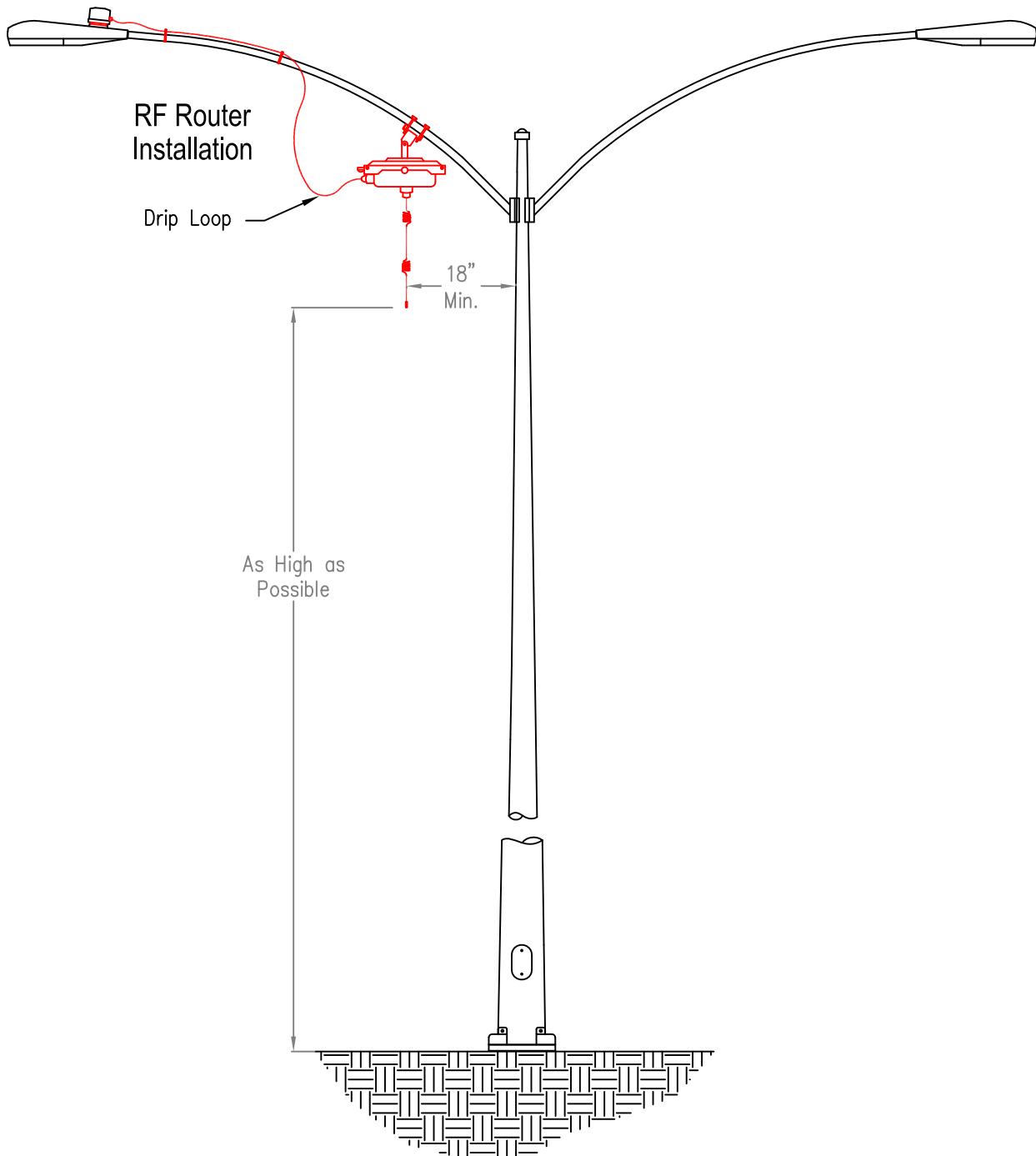
ISSUED	1/25/2012
REVISED	
STANDARD NUMBER	JNT-016



NOTES:

1. Supply cable for packet antenna & communication equipment to be jacketed multiple conductor cable.
2. If there is no existing streetlight bracket arm, use bracket arm listed in item. When a bracket arm is installed solely to mount communication equipment, the jacketed multiple conductor supply cable should be installed inside the bracket arm. See JNT-018.
3. Maximum weight of communication equipment not to exceed 15 lbs when installed on existing streetlight bracket arm. Communication equipment to be installed a maximum of 3 feet from pole on existing bracket arm.
4. Customer to provide & install bracket arm, connectors & jacketed multiple conductor cable as required.
5. To install & maintain equipment workers must be qualified to work in supply space & use supply work rules & methods.
6. Bracket arm shall be bonded to pole ground with #6 SD bare copper conductor

DATE	REVISION	COMMUNICATION ANTENNA MOUNTED ON EXISTING LIGHT	ISSUED	9/2/2010
			REVISED	
			STANDARD NUMBER	JNT-017

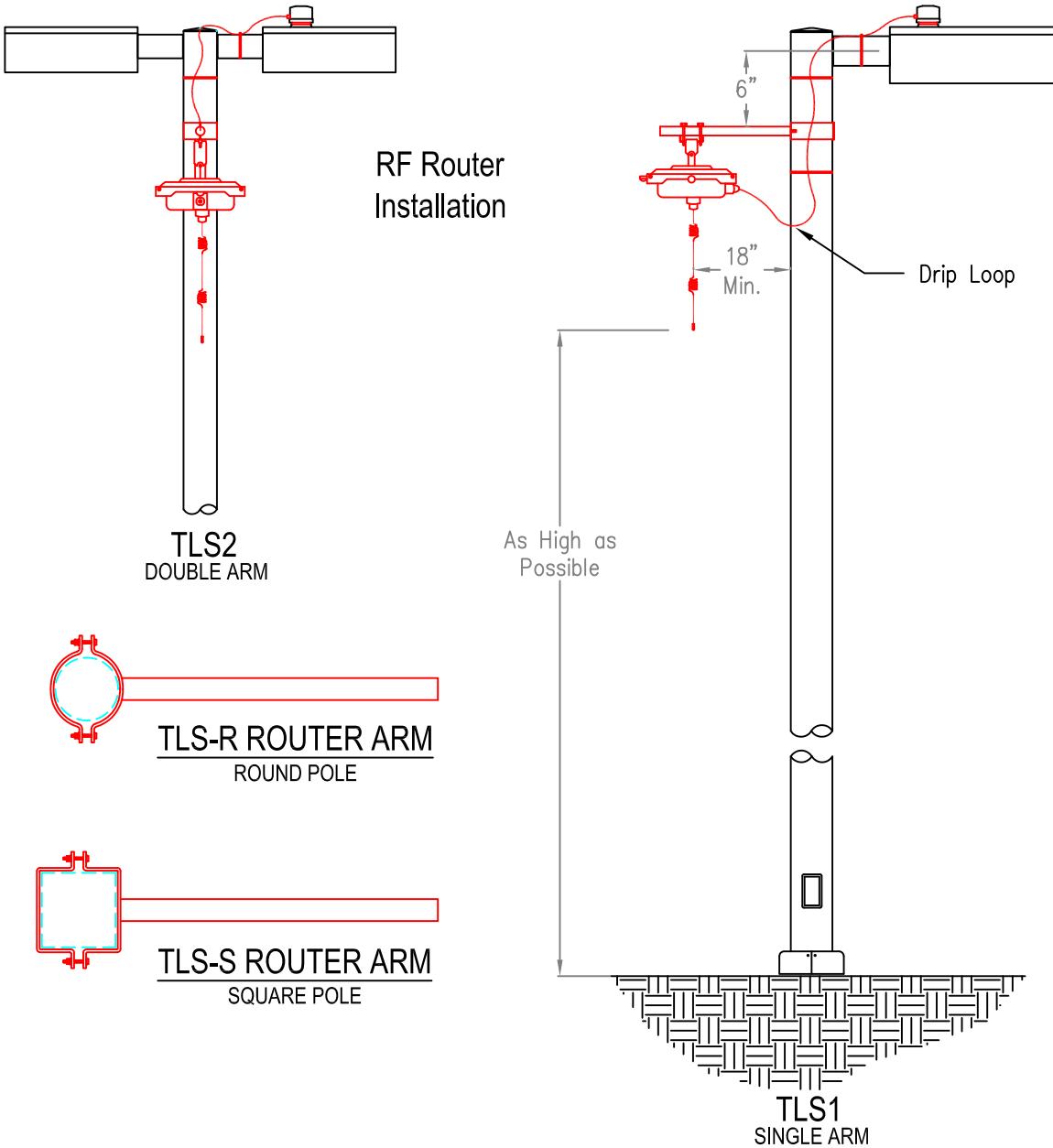


NOTES:

1. Maximum weight of communication equipment not to exceed 15 lbs. when installed on existing streetlight bracket arm.
2. Only 1 piece of communication equipment can be mounted on a streetlight pole or bracket arm..
3. Supply cable must be jacketed multiple conductor. Jacket must enclose entire cable assembly.
4. To install & maintain equipment workers must be qualified to work in supply space & use supply work rules & methods.
5. Metal enclosures shall be bonded to streetlight mast arm by an approved method.
6. Router to be installed facing roads.



DATE	REVISION	COMMUNICATION ANTENNA MOUNTED ON EXISTING THOROUGHFARE COBRA HEAD LIGHT	ISSUED	1/25/2012
			REVISED	
			STANDARD NUMBER	JNT-018



#### NOTES:

1. Maximum weight of communication equipment not to exceed 15 lbs when installed on existing streetlight bracket arm.
2. Only 1 piece of communication equipment can be mounted on a streetlight pole or bracket arm..
3. Supply cable must be jacketed multiple conductor. Jacket must enclose entire cable assembly.
4. To install & maintain equipment workers must be qualified to work in supply space & use supply work rules & methods.
5. Metal enclosures shall be bonded to streetlight mast arm by an approved method.
6. Router to be installed facing roads.

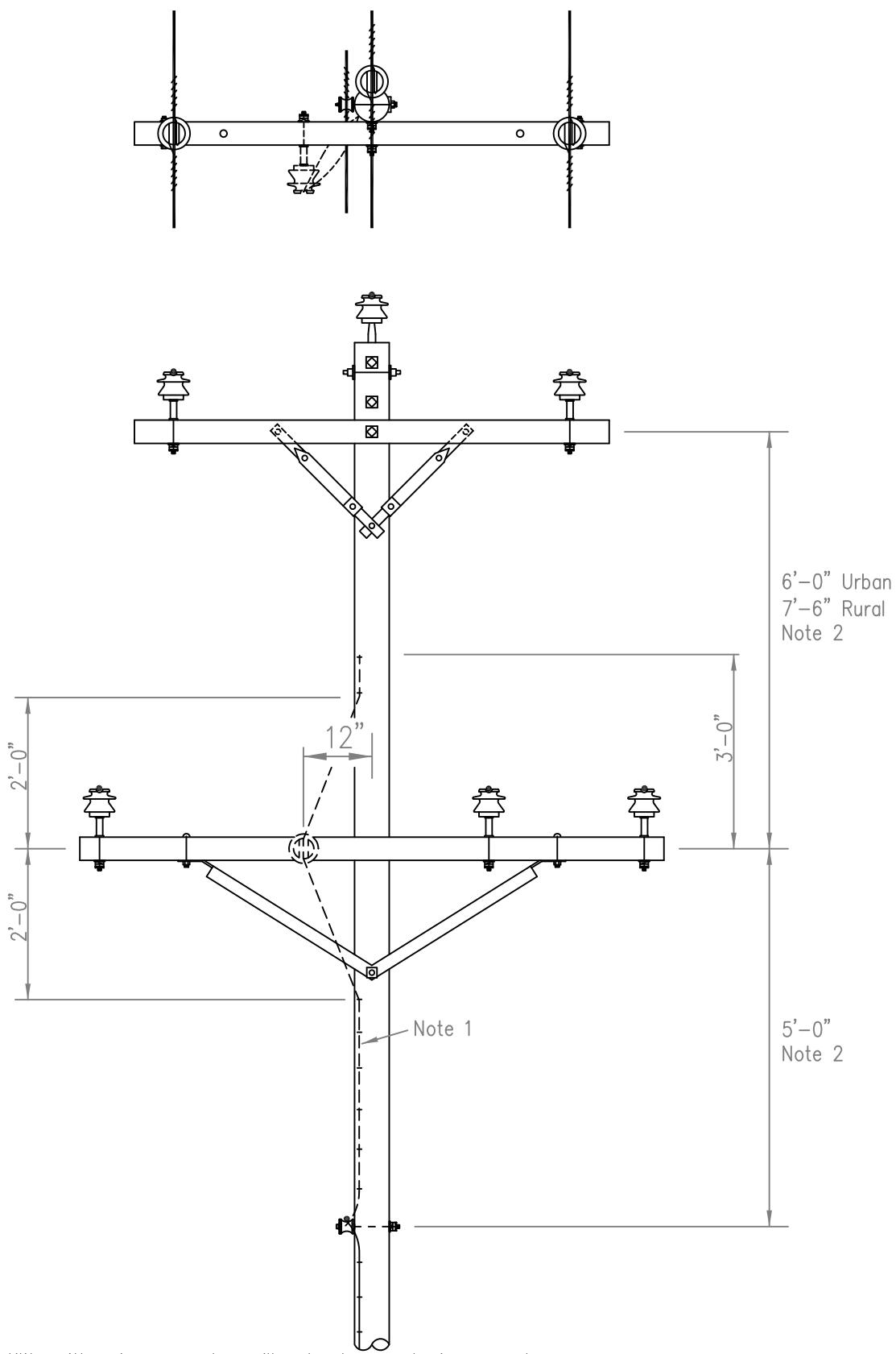


DATE	REVISION

COMMUNICATION ANTENNA  
MOUNTED ON EXISTING  
THOROUGHFARE SHOEBOX LIGHT

ISSUED	1/25/2012
REVISED	
STANDARD NUMBER	JNT-019

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NOTES:

1. When required, utility with primary on top will extend ground wire up pole.
2. Spacings indicated are based on standard CoServ sag values. Actual sags need to be verified to determine appropriate spacing. Consult CoServ Standards.



DATE

REVISION

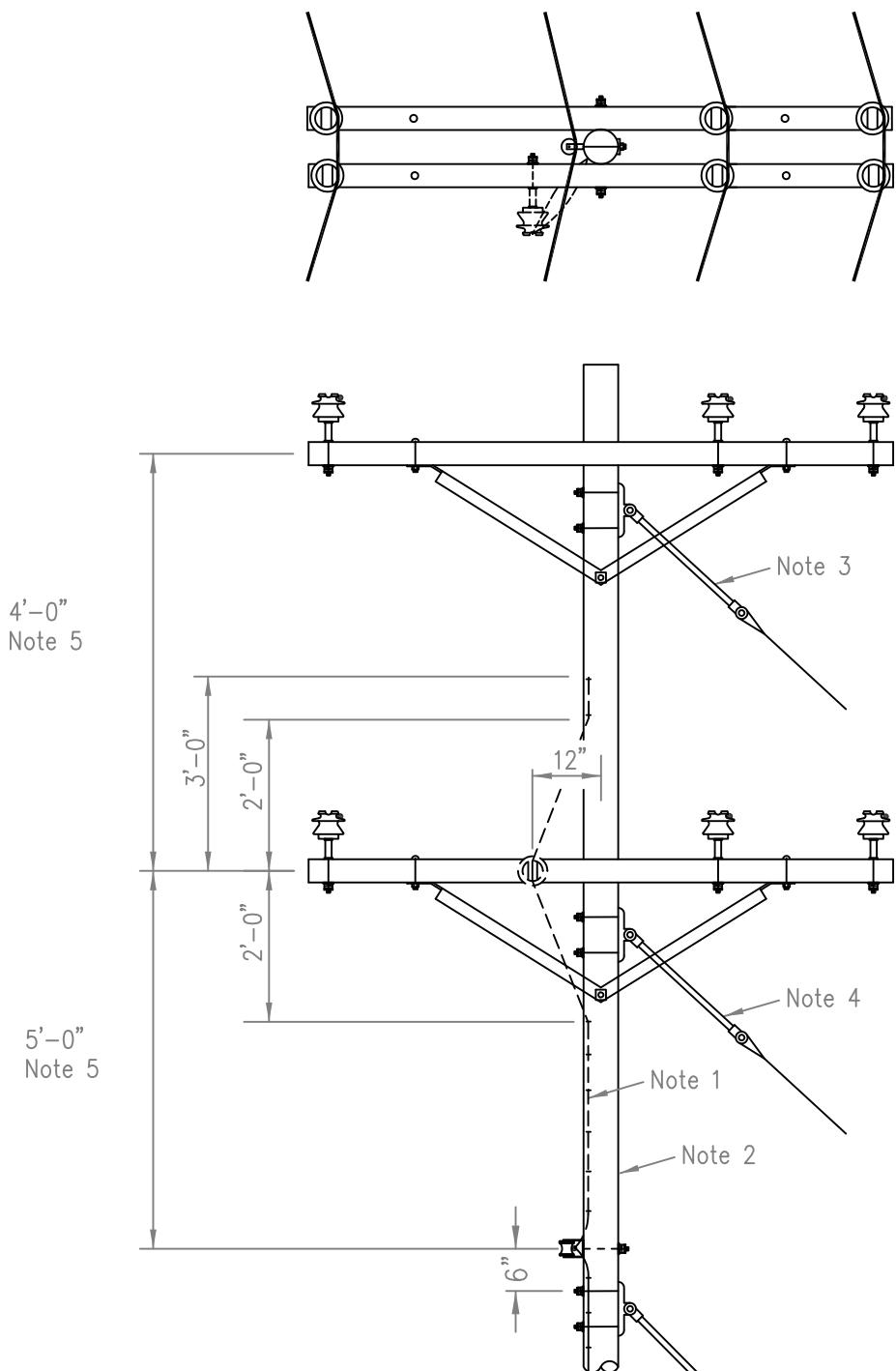
COMMON USE POLE  
CROSSARM CONSTRUCTION  
TANGENT

ISSUED 1/23/2012

REVISED —

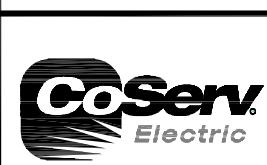
STANDARD NUMBER

JNT-020



NOTES:

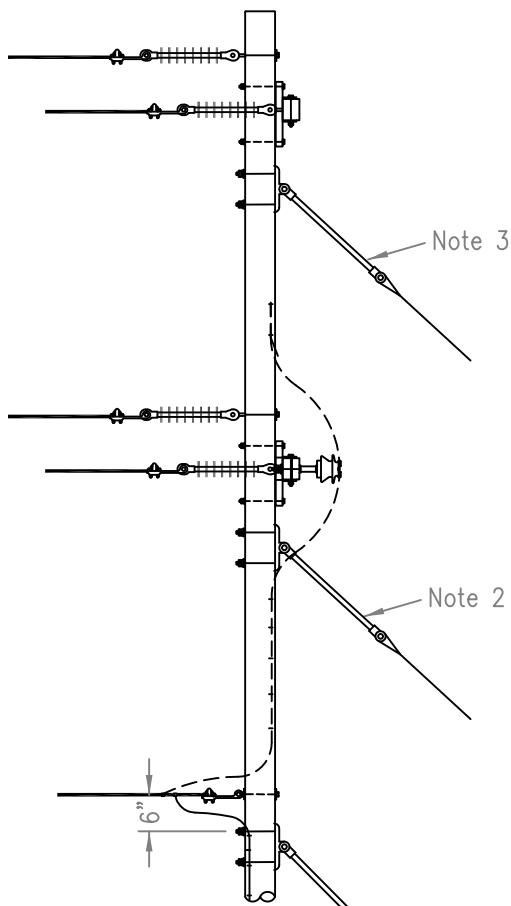
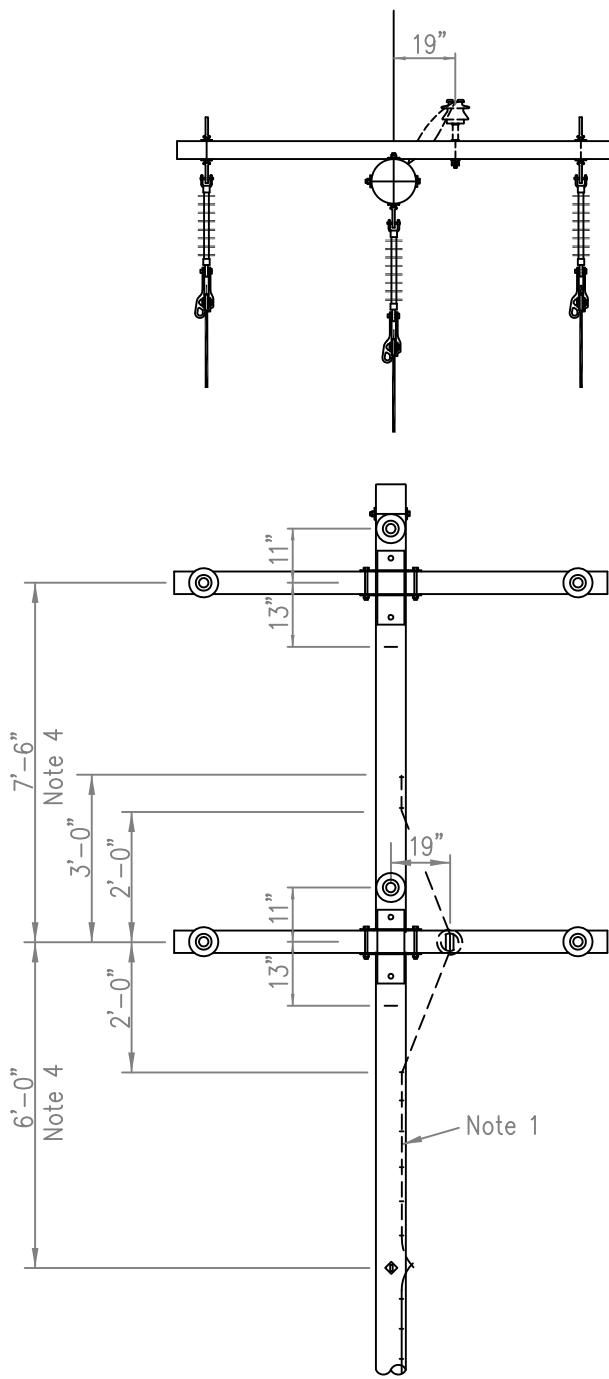
1. When required, utility with primary on top will extend ground wire up pole.
2. Minimum class 3 pole required.
3. Two 60" guy extensions required.
4. One 60" guy extension required.
5. Spacings indicated are based on standard CoServ sag values. Actual sags need to be verified to determine appropriate spacing. Consult CoServ Standards.



DATE	REVISION

COMMON USE POLE  
CROSSARM CONSTRUCTION  
SMALL ANGLE DOUBLE PIN

ISSUED	1/23/2012
REVISED	-
STANDARD NUMBER	JNT-021



NOTES:

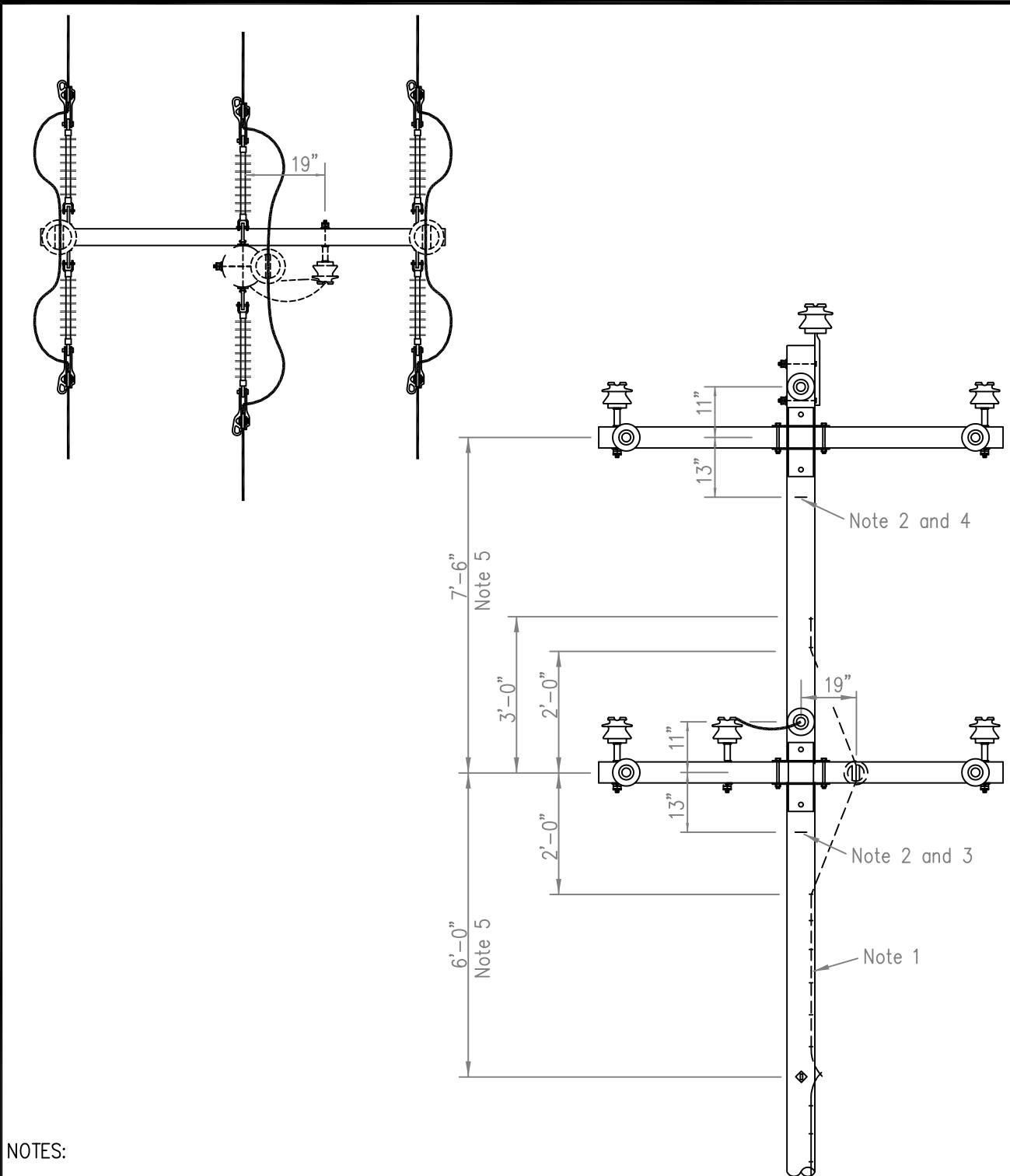
1. When required, utility with primary on top will extend ground wire up pole.
2. One 60" guy strain insulator extension required.
3. Two 60" guy strain insulator extensions required.
4. Spacings indicated are based on standard CoServ sag values. Actual sags need to be verified to determine appropriate spacing. Consult CoServ Standards.



DATE	REVISION

COMMON USE POLE  
CROSSARM CONSTRUCTION  
DEADEND

ISSUED	1/23/2012
REVISED	-
STANDARD NUMBER	JNT-022



NOTES:

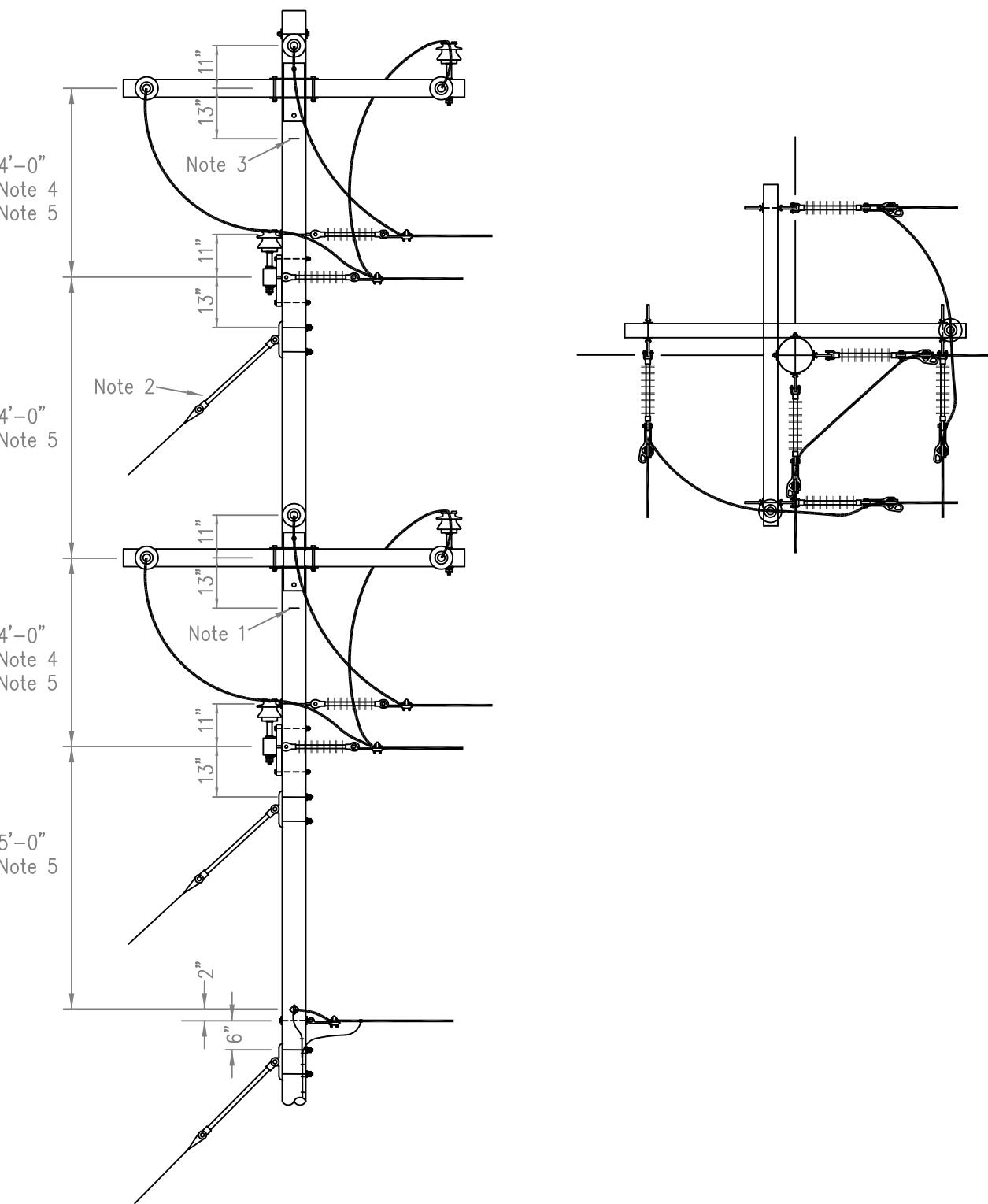
1. When required, utility with primary on top will extend ground wire up pole.
2. Guy as required where conductors change size. Guy is required when total guying tension is greater than 500 lbs.
3. One 60" guy extension required.
4. Two 60" guy extensions required.
5. Spacings indicated are based on standard CoServ sag values. Actual sags need to be verified to determine appropriate spacing. Consult CoServ Standards.



DATE	REVISION

COMMON USE POLE  
CROSSARM CONSTRUCTION  
DOUBLE DEADEND

ISSUED	1/23/2012
REVISED	-
STANDARD NUMBER	JNT-023



NOTES:

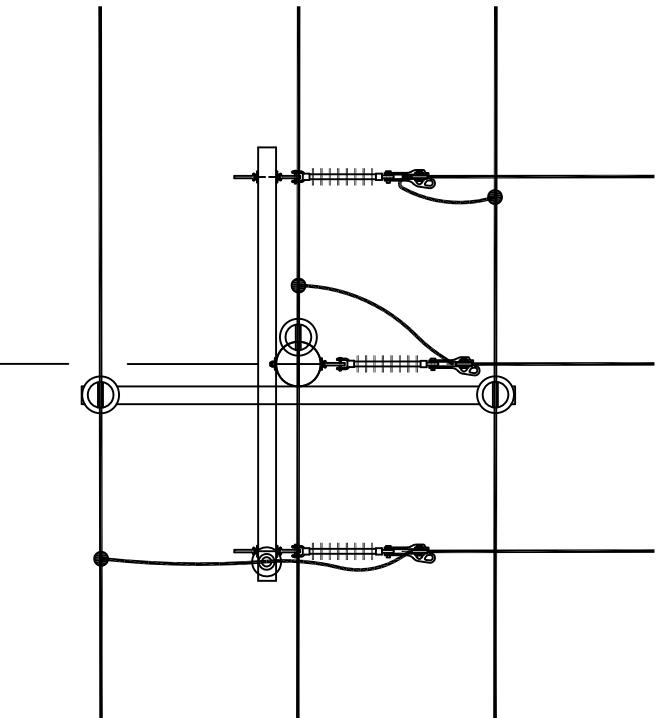
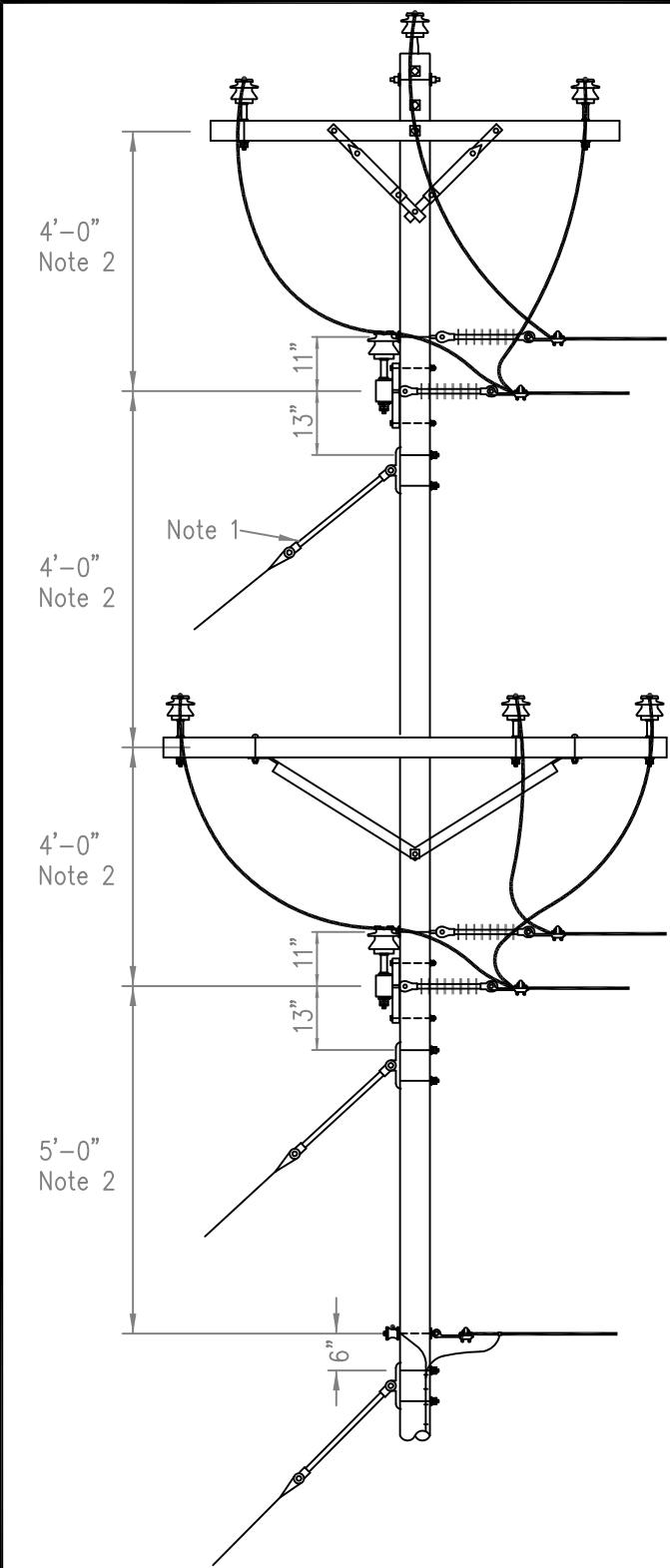
1. One 60" guy strain insulator extension required.
2. Two 60" guy strain insulator extensions required.
3. Three 60" guy strain insulator extensions required.
4. This dimension may be adjusted (minus 12") to provide for minimum clearances.
5. Spacings indicated are based on standard CoServ sag values. Actual sags need to be verified to determine appropriate spacings. Consult CoServ Standards.



DATE	REVISION

COMMON USE POLE  
CROSSARM CONSTRUCTION  
CORNER

ISSUED	1/23/2012
REVISED	-
STANDARD NUMBER	JNT-024



NOTES:

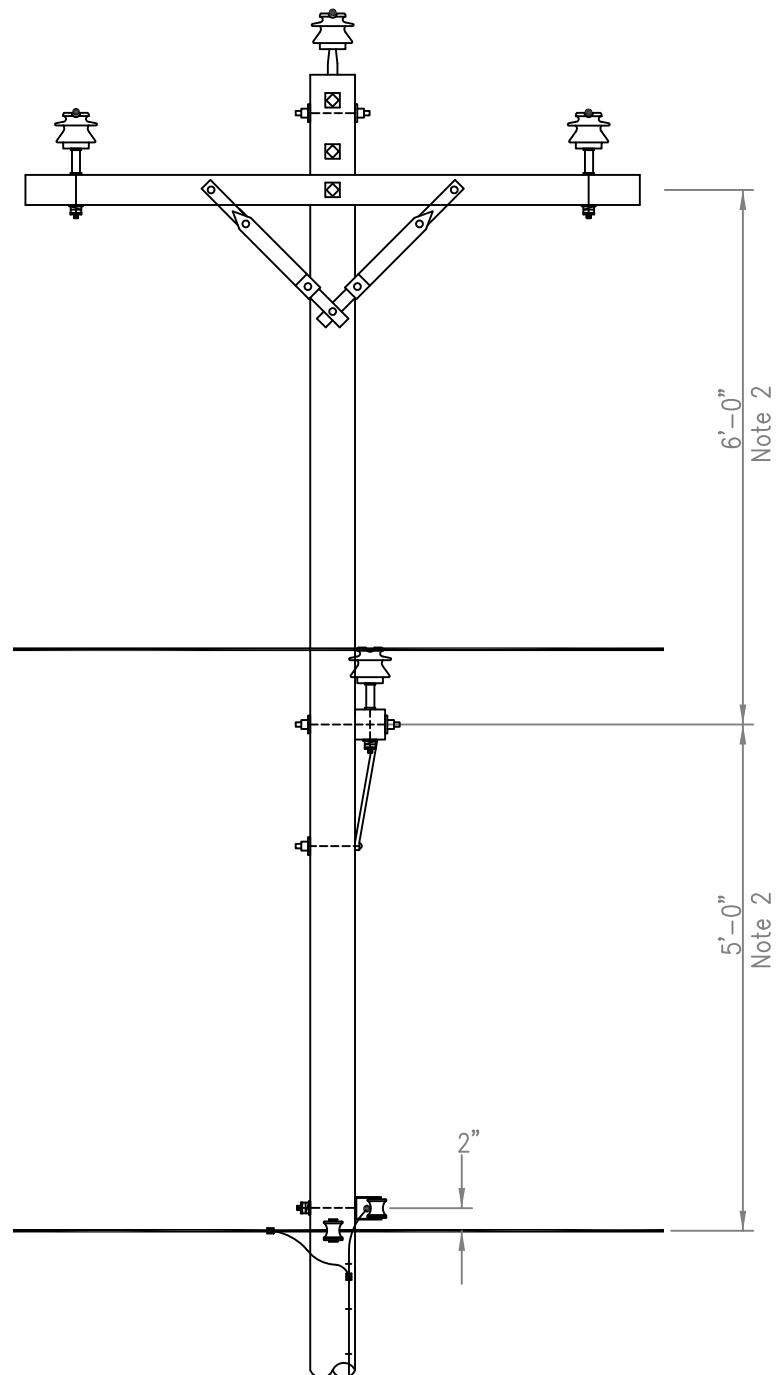
1. Two 60" guy extensions required.
2. Spacings indicated are based on standard CoServ sag values. Actual sags need to be verified to determine appropriate spacing. Consult CoServ Standards.



DATE	REVISION

COMMON USE POLE  
CROSSARM CONSTRUCTION  
THREE PHASE TAP

ISSUED	1/23/2012
REVISED	-
STANDARD NUMBER	JNT-025

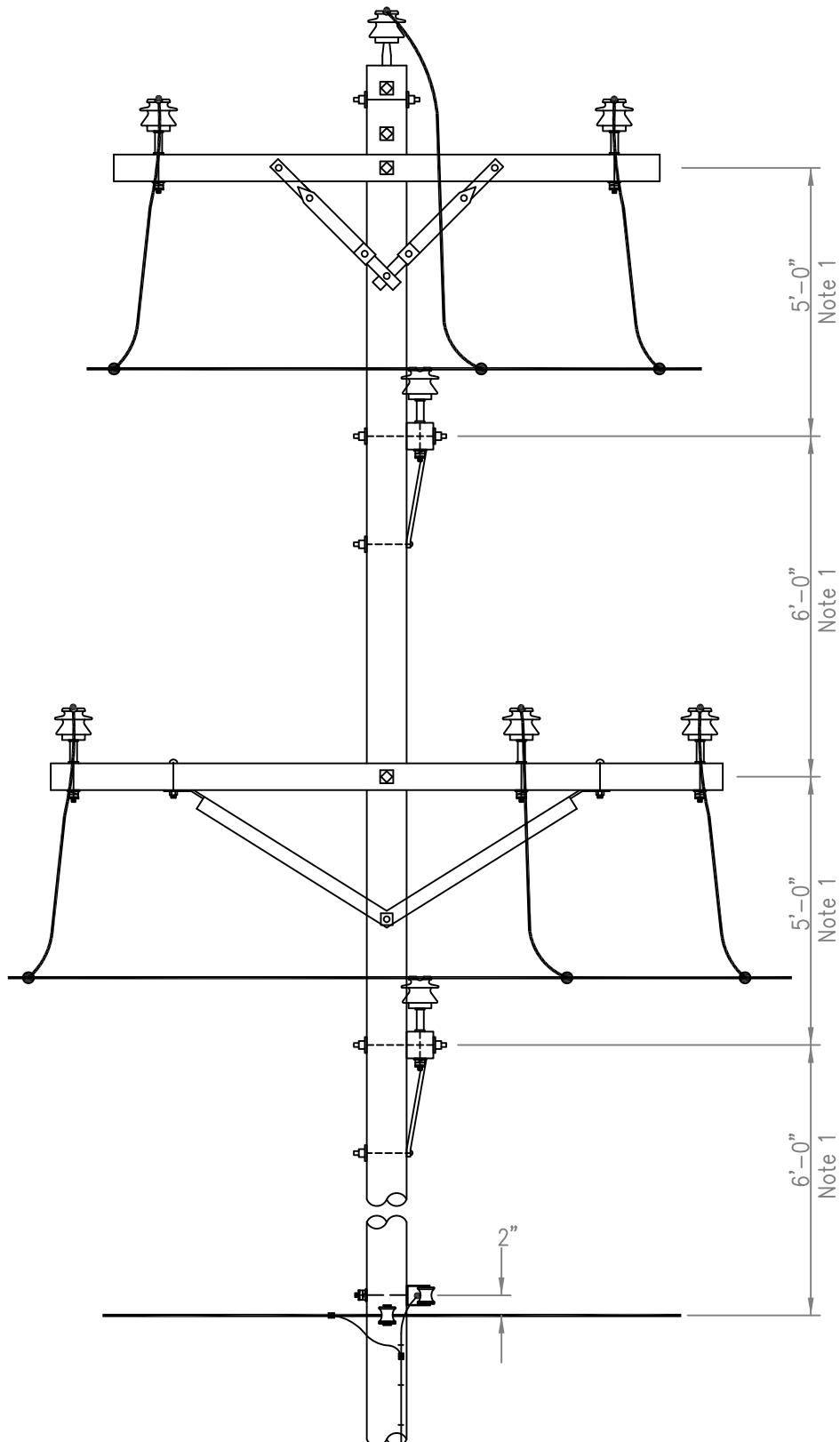


NOTES:

1. Each neutral shall be bonded to pole ground with a minimum #6 SD bare copper bonding wire.
2. Spacings indicated are based on standard CoServ Electric sag values. Actual sags need to be verified to determine appropriate spacing. Consult CoServ Standards.



DATE	REVISION	COMMON USE POLE CROSSARM CONSTRUCTION THREE PHASE TYPICAL CROSSING	ISSUED	1/25/2012
			REVISED	-
			STANDARD NUMBER	JNT-026

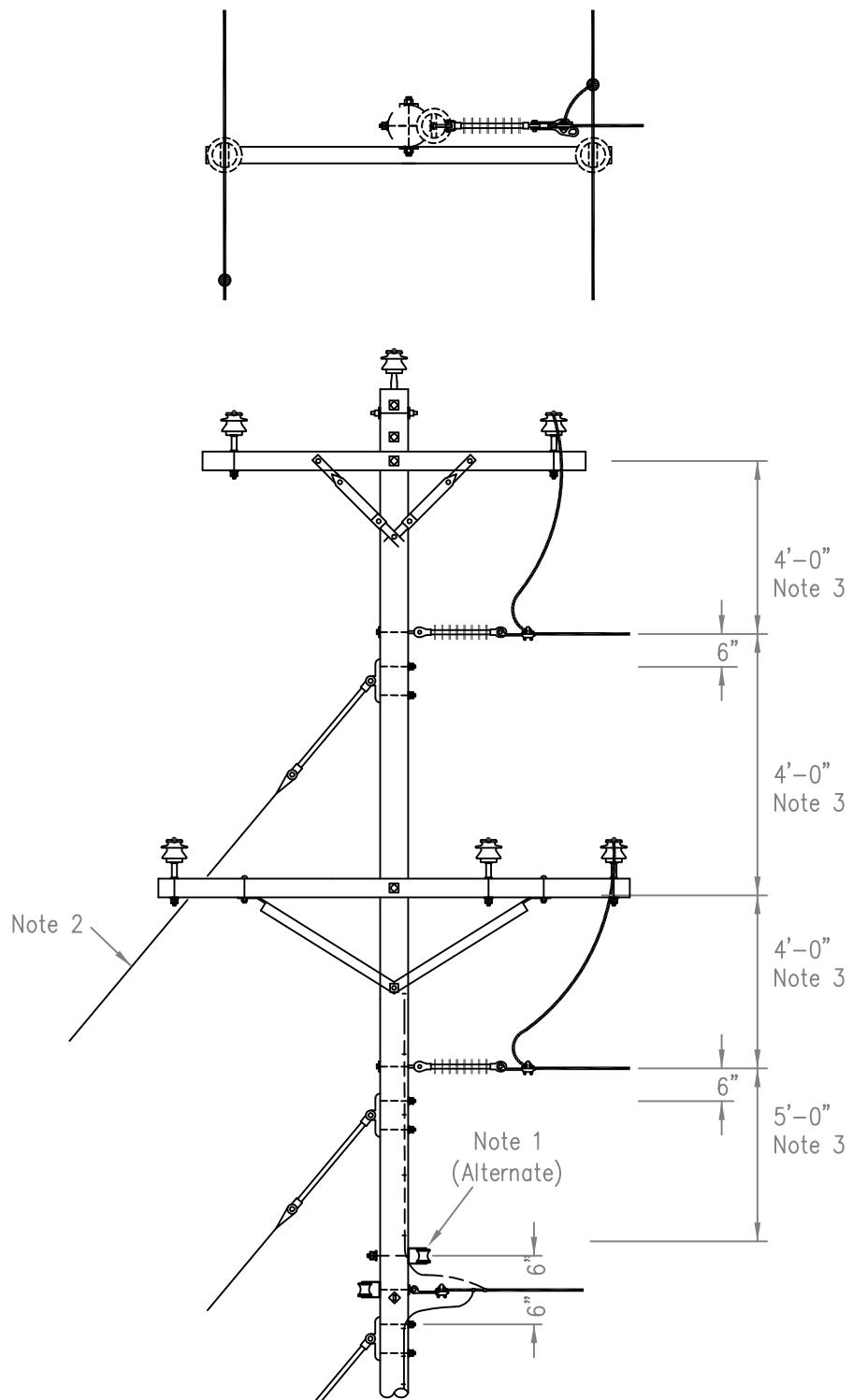


NOTES:

1. Spacings indicated are based on standard CoServ sag values. Actual sags need to be verified to determine appropriate spacing. Consult CoServ Standards.



DATE	REVISION	COMMON USE POLE CROSSARM CONSTRUCTION FOUR-WAY CROSSING	ISSUED	1/25/2012
			REVISED	-
			STANDARD NUMBER	JNT-027



NOTES:

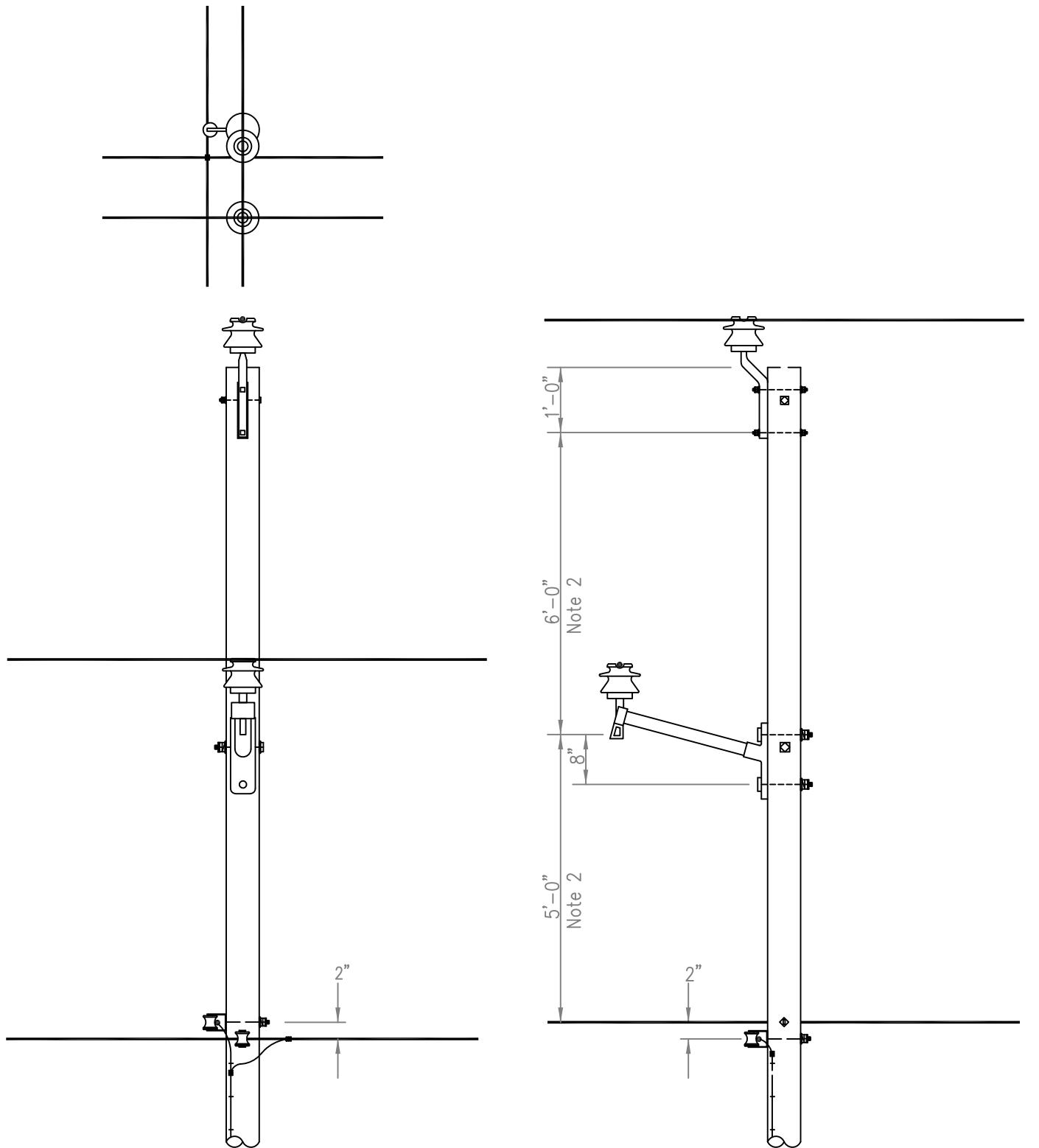
1. Alternate position for existing construction.
2. Two 60" guy strain insulator extensions required.
3. Spacings indicated are based on standard CoServ sag values. Actual sags need to be verified to determine appropriate spacing. Consult CoServ Standards.



DATE	REVISION

COMMON USE POLE  
CROSSARM CONSTRUCTION  
SINGLE PHASE TAP

ISSUED	1/25/2012
REVISED	-
STANDARD NUMBER	JNT-028

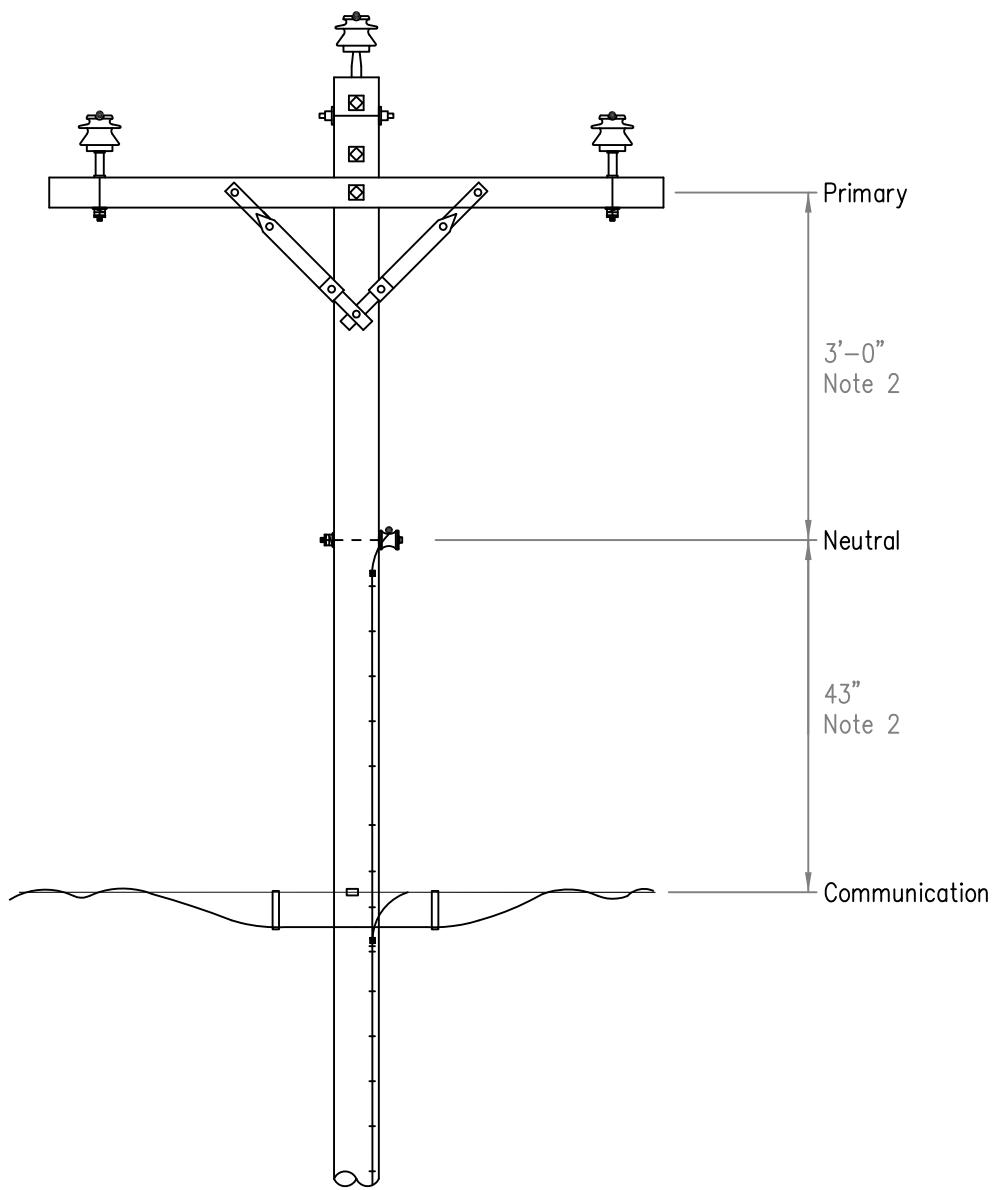


NOTES:

1. Each neutral shall be bonded to pole ground with a minimum #6 SD bare copper bonding wire.
2. Spacings indicated are based on standard CoServ Electric sag values. Actual sags need to be verified to determine appropriate spacing. Consult CoServ Standards.



DATE	REVISION	COMMON USE POLE CROSSARM CONSTRUCTION SINGLE PHASE TYPICAL CROSSING	ISSUED	1/25/2012
			REVISED	-
			STANDARD NUMBER	JNT-029

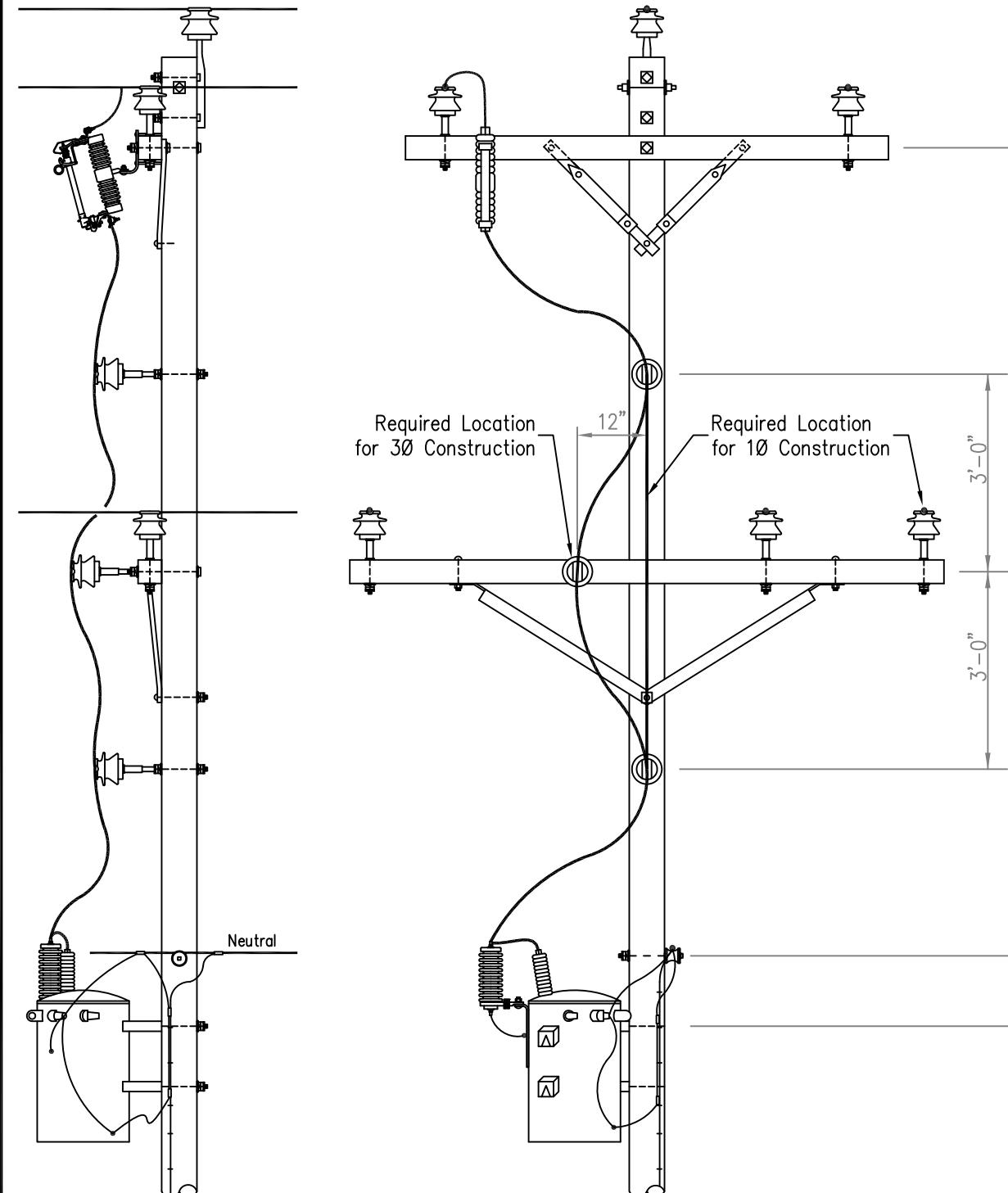


NOTES:

1. Neutral and messenger shall be bonded to pole ground with minimum #6 SD bare copper bonding wire.
2. Spacings indicated are based on standard CoServ Electric sag values. Actual sags need to be verified to determine appropriate spacing. Consult CoServ Standards.



DATE	REVISION	COMMON USE POLE CROSSARM CONSTRUCTION 90° SECONDARY CROSSING	ISSUED	1/25/2012
			REVISED	-
			STANDARD NUMBER	JNT-030



CoServ

6'-0" Urban  
7'-6" Rural  
Note 1

Other  
Utility

5'-0"  
Note 1

1'-0"

Neutral

NOTES:

1. Spacings indicated are based on standard CoServ sag values. Actual sags need to be verified to determine appropriate spacing. Consult CoServ Standards.



DATE	REVISION

COMMON USE POLE  
TRANSFORMER INSTALLATION  
FOR ROUTER EQUIPMENT

ISSUED	6/21/2012
REVISED	-
STANDARD NUMBER	JNT-031

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**Tab'J GPFTKZ**

**Tab'J GPFTKZ**

## INDEX HENDRIX

### HENDRIX CONSTRUCTION ASSEMBLY UNITS

DRAWING NUMBER	DRAWING TITLE (DESCRIPTION)
VC1-H	SINGLE SUPPORT – TANGENT (AC1244-02)
VC1A-H	SINGLE SUPPORT – MEDIUM ANGLE 0° TO 60° (AC1277-02)
VC1B-H	SINGLE SUPPORT – TANGENT – MESSENGER DEADEND FOR LONG SPANS (AC1249-02)
VC2-H	SINGLE SUPPORT – MEDIUM ANGLE 7° TO 60° (AC1241-02)
VC2-2-H	DOUBLE SUPPORT – LARGE ANGLE 61° TO 90° (AC1246-02)
VC4-H	DOUBLE DEADEND ANGLE – 61° TO 90°, VERTICAL (AC1263-02)
VC4A-H	DEADEND ANGLE (AC1256-02)
VC7-H	SINGLE DEADEND (AC1252-02)
VC7X-H	DOUBLE DEADEND – TRANSITION: ACSR TO HENDRIX CABLE (AC1248-02)
VC8-H	DOUBLE DEADNED – FIBERGLASS CROSSARM (AC1265-02)
VC8A-H	DOUBLE DEADEND (AC1259-02)
DC-VC1-H	DOUBLE CIRCUIT – SINGLE SUPPORT – TANGENT (AC1244-02)
DC-VC2-H	DOUBLE CIRCUIT – DOUBLE SUPPORT – MEDIUM ANGLE 7° TO 60° (AC1257-02)
DC-VC2-2-H	DOUBLE CIRCUIT – DOUBLE SUPPORT – LARGE ANGLE 61° TO 90° (AC1258-02)
VM5-BA335-H	BRACKET – ANGLE (HENDRIX BA3-35)
VM5-BA435-H	BRACKET – ANGLE (HENDRIX BA4-35)
VM5-BA615-H	BRACKET – ANGLE, DOUBLE CIRCUIT (HENDRIX BA6-15)

**INDEX HENDRIX (cont.)****HENDRIX CONSTRUCTION ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
VM5-BAS24F-H	BRACKET – TANGENT, ANTI-SWAY (HENDRIX BAS-24F)
VM5-BD35-H	BRACKET – DEADEND (HENDRIX BD-35)
VM5-BM14-H	BRACKET – TANGENT, 14" STANDOFF (HENDRIX BM-14)
VM5-BM24-H	BRACKET – TANGENT, MESSENGER, 24" STANDOFF (HENDRIX BM-24)
VM5-BV35-H	BRACKET – TAP, VERTICAL (HENDRIX BV-35)
VM5-DEINS25-H	INSULATOR – 25Kv, DEADEND (HENDRIX DEINS-25)
VM5-HPI25VTP-H	INSULATOR – 25Kv, PIN, 1" INTERNAL THREAD (HENDRIX HPI-25VTP)
VM5-LSP1-H	PIN – CROSSARM, 25Kv, $\frac{3}{4}$ " shank, 1" INTERNAL THREAD, PHASE (HENDRIX LSP-1)
VM5-SSP2-H	PIN – BRACKET, 25Kv, $\frac{3}{4}$ " shank, 1" INTERNAL THREAD, PHASE (HENDRIX SSP-2)
VM5-RTL46-H	INSULATOR – 25Kv, SPACER, TANGENT (HENDRIX RTL-46)
VM5-HDTC-H	CLEVIS – MESSENGER, THIMBLE, HEAVY DUTY (HENDRIX HDTC)
VM5-SC-H	CLEVIS – SHACKLE (HENDRIX SC)
VM5-TC-H	CLEVIS – THIMBLE (HENDRIX HPI-TC)
VM5-CMA1-H	CLAMP – ANGLE, MESSENGER (HENDRIX CMA-1)
VM5-MC2-H	CLAMP – TANGENT, MESSENGER (HENDRIX MC-2)
VM5-TS1-H	STIRRUP – TANGENT (HENDRIX TS-1)
VM5-2IP-H	PLATE – DOUBLE INSULATOR (HENDRIX 2IP)

**INDEX HENDRIX (cont.)**

**HENDRIX CONSTRUCTION ASSEMBLY UNITS**

<b>DRAWING NUMBER</b>	<b>DRAWING TITLE (DESCRIPTION)</b>
VM5-CG01XX-H	GRIP – CONDUCTOR, COATED, PRESHAPED (HENDRIX CG-01XX)
VM5-MG41XX-H	GRIP – MESSENGER, PRESHAPED (HENDRIX MG-41XX)
VM5-LINEDUC-H	GUARD – TAP, PROTECTIVE, 2 5/8" x 1" x 8' (HENDRIX LINEDUC)
GUIDE	HENDRIX SPACER CABLE INSTALLATION
GUIDE	SINGLE PHASE TRANSFORMER INSTALLATION – TAP
GUIDE	THREE PHASE TRANSFORMER INSTALLATION – TAP
GUIDE	MULTIPLE CIRCUITS – VERTICAL, MEDIUM ANGLE $7^\circ$ TO $60^\circ$
GUIDE	MULTIPLE CIRCUITS – VERTICAL, TANGENT
GUIDE	200A RISER
GUIDE	600A RISER

ITM.	QTY.	MAT.CODE No	MATERIAL
h4	1	9900-00-04	Bracket, Tangent, Anti-sway, (Hendrix BAS-24F)
h7	1	9900-00-07	Bracket, Tangent, Messenger, (Hendrix BM-24)
h13	1	9900-00-13	Insulator, 25kV, Spacer, Tangent, (Hendrix RTL-46)
h19	1	9900-00-19	Stirrup, Tangent, (Hendrix TS-1)
aw1	1	7108-99-21	Washers, double spring lock, 1/2"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
c14	1	0638-04-12	Bolts, machine 1/2" x 12"
d3	2	7101-30-91	Washers, heavy duty, 3/4" curved
d5	1	7102-04-21	Washers, square, 1/2"
ek3	1	4290-70-50	Locknuts 1/2"
ek4	2	4290-70-75	Locknuts 3/4"

#### ADDITIONAL UNITS REQUIRED FOR WOOD POLES

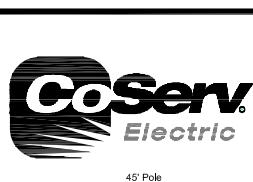
VM2-11 or VUM6-6-6                    GROUNDING ASSEMBLY

#### ADDITIONAL UNITS REQUIRED FOR CONCRETE POLES

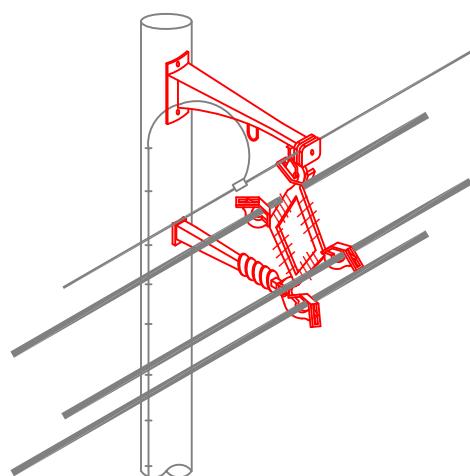
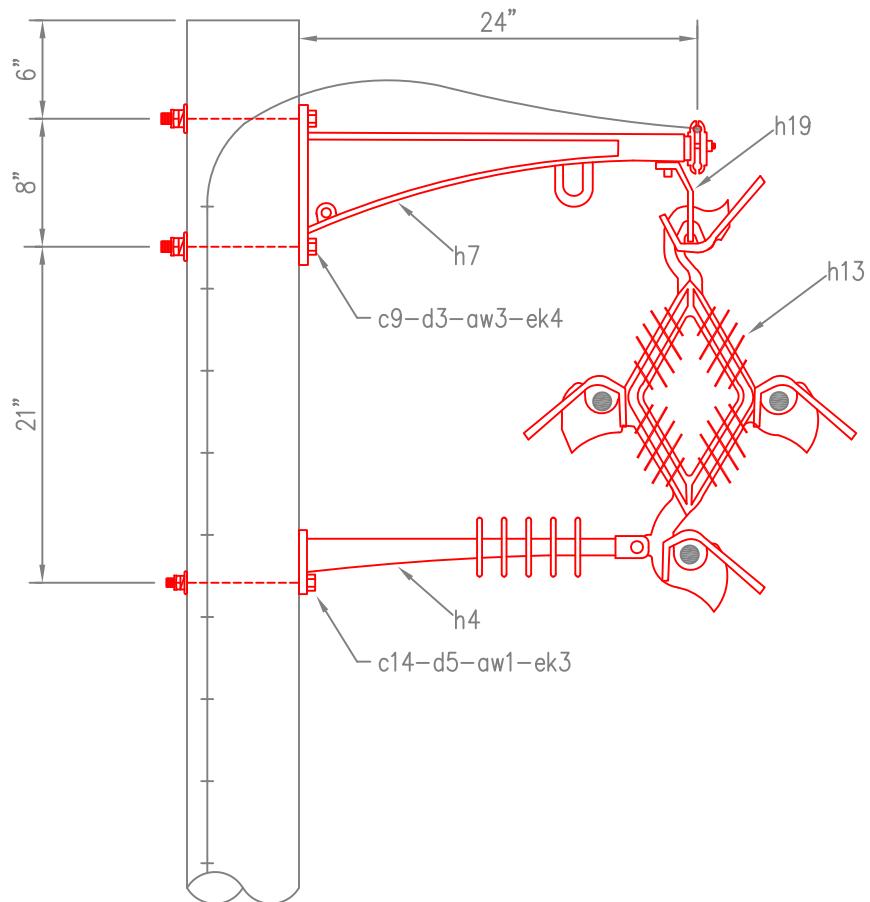
VM2-11-4 or VUM6-6-4	GROUNDING ASSEMBLY
(1) VM5-40-1	BONDING CLIP
(1) VM5-40-3	BONDING CLIP

#### NOTES:

1. Bonding Clip required for Concrete Pole use "ONLY".
2. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.



DATE	REVISION	14.4/24.9 kV THREE PHASE HENDRIX CONSTRUCTION SINGLE PRIMARY SUPPORT TANGENT (AC1244-02)	ISSUED	4/04/2012
			REVISED	
			STANDARD NUMBER	
				VC1-H



DATE	REVISION

14.4/24.9 kV THREE PHASE  
HENDRIX CONSTRUCTION  
SINGLE PRIMARY SUPPORT  
TANGENT  
(AC1244-02)

ISSUED	4/04/2012
REVISED	
STANDARD NUMBER	VC1-H

ITEM.	QTY.	MAT. CODE No	MATERIAL
h1	1	9900-00-01	Bracket, Angle (Hendrix BA3-35)
h7	1	9900-00-07	Bracket, Tangent, Messenger, (Hendrix BM-24)
h10	3	9900-00-10	Insulator, 25kV, Pin, 1" internal thread, (Hendrix HPI-25VTP)
h12	3	9900-00-12	Pin, bracket, 25kV, 3/4" shank, 1" internal thread, phase, (Hendrix SSP-2)
aw3	4	7108-99-51	Washers, double spring lock, 3/4"
c9	4	0638-06-12	Bolts, machine 3/4" x 12"
cj1	5'	7250-06-01	Wire, #6 SD Cu
d3	4	7101-30-91	Washers, heavy duty, 3/4" curved
ek4	4	4290-70-75	Locknuts 3/4"

#### ADDITIONAL UNITS REQUIRED FOR WOOD POLES

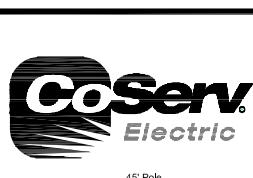
VM2-11 or VUM6-6-6                    GROUNDING ASSEMBLY

#### ADDITIONAL UNITS REQUIRED FOR CONCRETE POLES

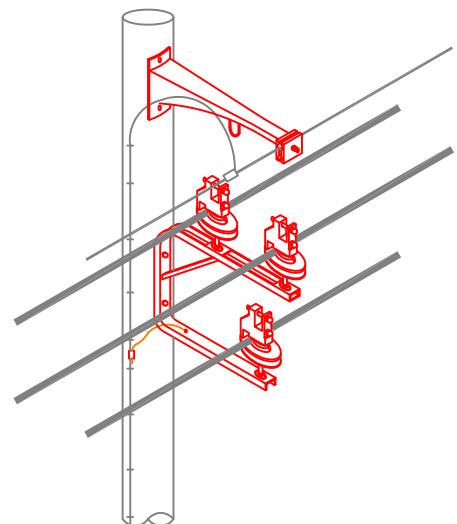
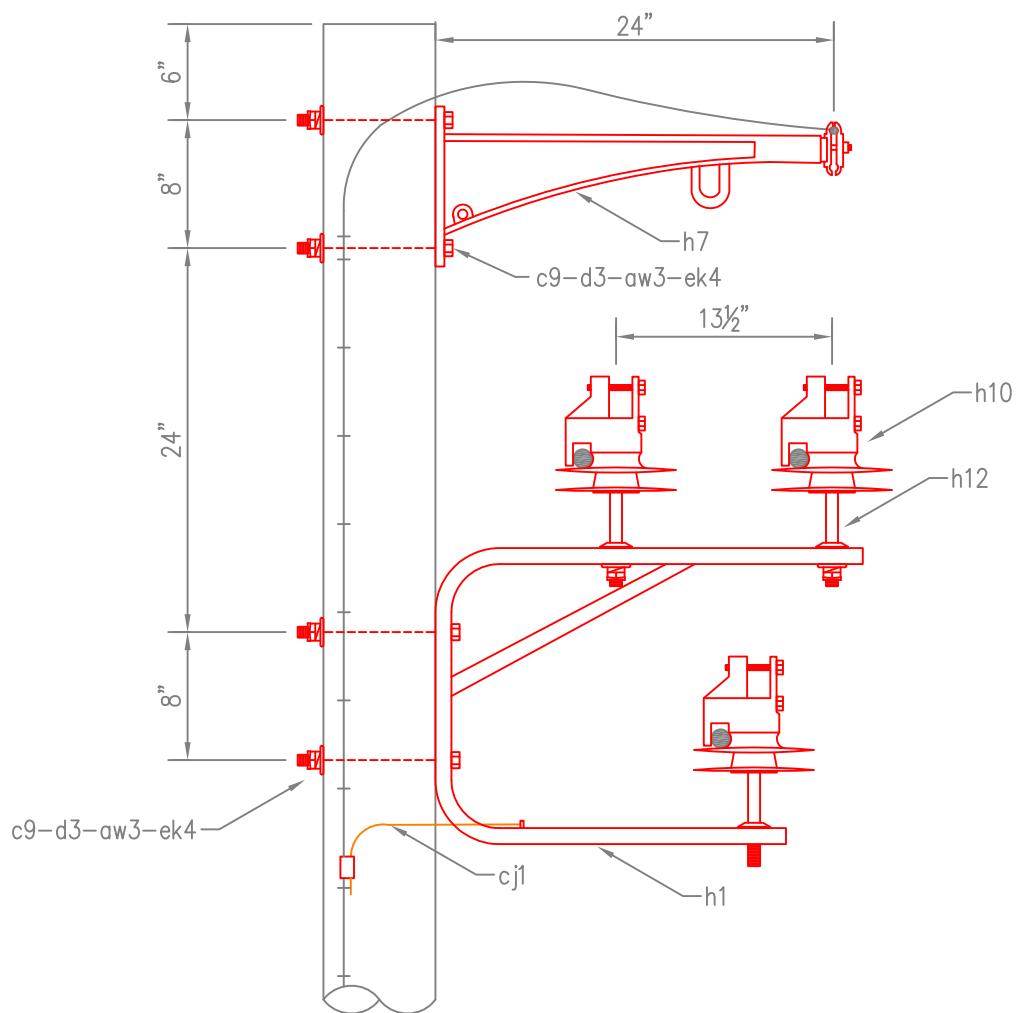
VM2-11-4 or VUM6-6-4                    GROUNDING ASSEMBLY  
 (2) VM5-40-3                              BONDING CLIP

#### NOTES:

1. Bonding Clip required for Concrete Pole use "ONLY".
2. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.



DATE	REVISION	14.4/24.9 kV THREE PHASE HENDRIX CONSTRUCTION SINGLE PRIMARY SUPPORT 0° TO 60° ANGLE (AC1277-02)	ISSUED	4/04/2012
			REVISED	
			STANDARD NUMBER	
				VC1A-H



DATE	REVISION

14.4/24.9 kV THREE PHASE  
HENDRIX CONSTRUCTION  
SINGLE PRIMARY SUPPORT  
0° TO 60° ANGLE  
(AC1277-02)

ISSUED	4/04/2012
REVISED	
STANDARD NUMBER	VC1A-H

ITM.	QTY.	MAT.CODE No	MATERIAL
h1	1	9900-00-01	Bracket, Angle (Hendrix BA3-35)
h10	3	9900-00-10	Insulator, 25kV, Pin, 1" internal thread, (Hendrix HPI-25VTP)
h12	3	9900-00-12	Pin, bracket, 25kV, 3/4" shank, 1" internal thread, phase, (Hendrix SSP-2)
h14	2	9900-00-14	Clevis, Messenger, Thimble, heavy duty, (Hendrix HDTC)
h22	2	9900-00-22	Grip, messenger, preformed, (Hendrix MG-41XX) (Specify Messenger Wire Size)
aa2	1	4290-40-75	Nuts, Ovaley 3/4"
aw3	3	7108-99-51	Washers, double spring lock, 3/4"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
cj1	5'	7250-06-01	Wire, #6 SD Cu
d3	4	7101-30-91	Washers, heavy duty, 3/4" curved
ek4	3	4290-70-75	Locknuts 3/4"
o7	1	0636-16-12	Bolts, ovaleye 3/4" x 12"

#### ADDITIONAL UNITS REQUIRED FOR WOOD POLES

VM2-11 or VUM6-6-6                    GROUNDING ASSEMBLY

#### ADDITIONAL UNITS REQUIRED FOR CONCRETE POLES

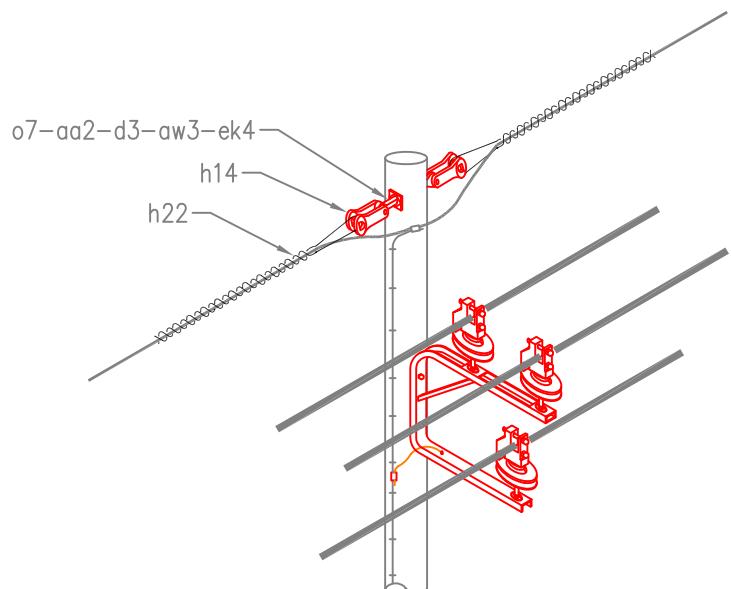
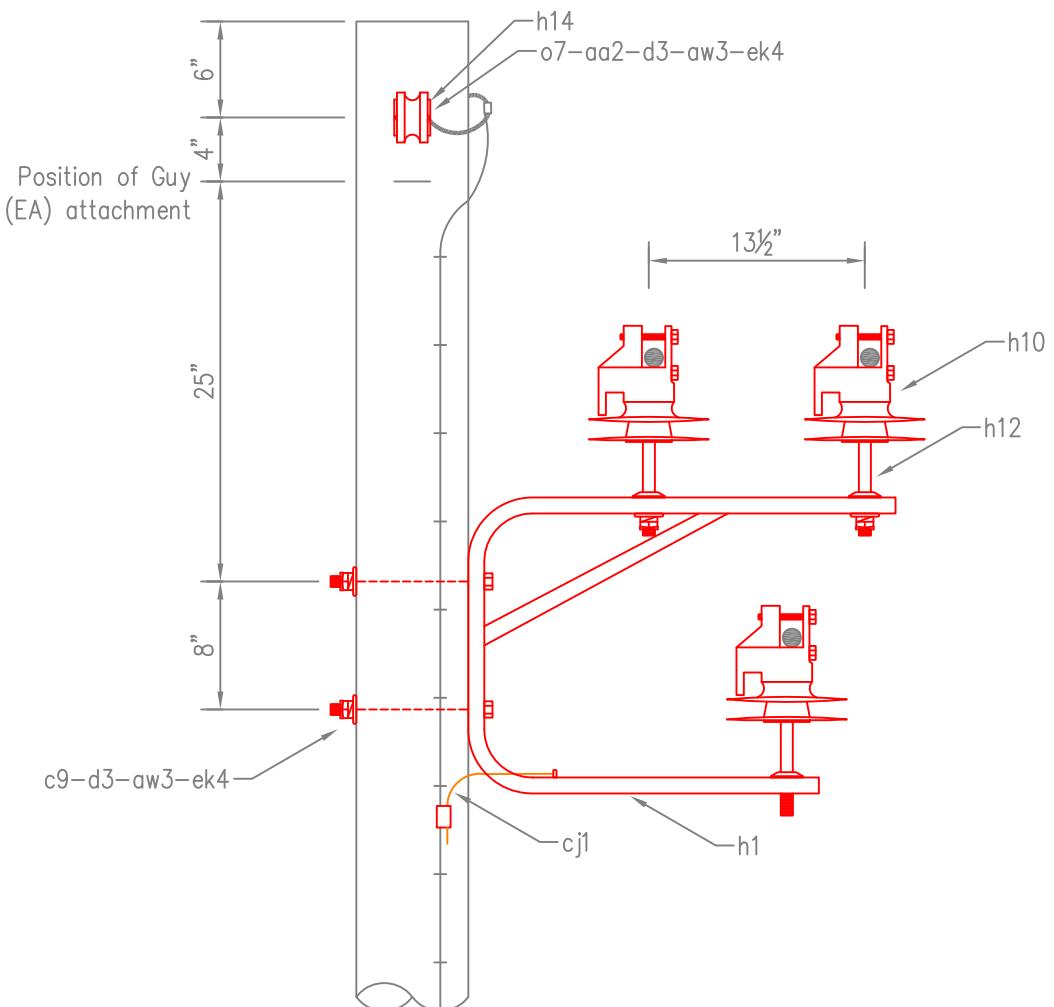
VM2-11-4 or VUM6-6-4                    GROUNDING ASSEMBLY  
 (2) VM5-40-3                              BONDING CLIP

#### NOTES:

1. Bonding Clip required for Concrete Pole use "ONLY".
2. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.



DATE	REVISION	14.4/24.9 kV THREE PHASE HENDRIX CONSTRUCTION SINGLE PRIMARY SUPPORT TANGENT - MESSENGER DEADEND FOR LONG SPANS (AC1249-02)	ISSUED	4/04/2012
			REVISED	
			STANDARD NUMBER	VC1B-H



DATE	REVISION

14.4/24.9 kV THREE PHASE  
HENDRIX CONSTRUCTION  
SINGLE PRIMARY SUPPORT  
TANGENT - MESSENGER DEADEND  
FOR LONG SPANS (AC1249-02)

ISSUED	4/04/2012
REVISED	
STANDARD NUMBER	VC1B-H

ITM.	QTY.	MAT. CODE No	MATERIAL
h1	1	9900-00-01	Bracket, Angle (Hendrix BA3-35)
h10	3	9900-00-10	Insulator, 25kV, Pin, 1" internal thread, (Hendrix HPI-25VTP)
h12	3	9900-00-12	Pin, bracket, 25kV, 3/4" shank, 1" internal thread, phase, (Hendrix SSP-2)
h17	1	9900-00-17	Clamp, Angle, messenger, (Hendrix CMA-1)
aw3	3	7108-99-51	Washers, double spring lock, 3/4"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
cj1	5'	7250-06-01	Wire, #6 SD Cu
d3	4	7101-30-91	Washers, heavy duty, 3/4" curved
ek4	3	4290-70-75	Locknuts 3/4"
o7	1	0636-16-12	Bolts, ovaleye 3/4" x 12"

#### ADDITIONAL UNITS REQUIRED FOR WOOD POLES

VM2-11 or VUM6-6-6                    GROUNDING ASSEMBLY

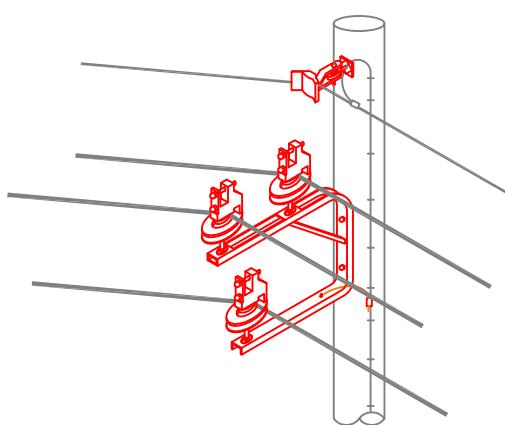
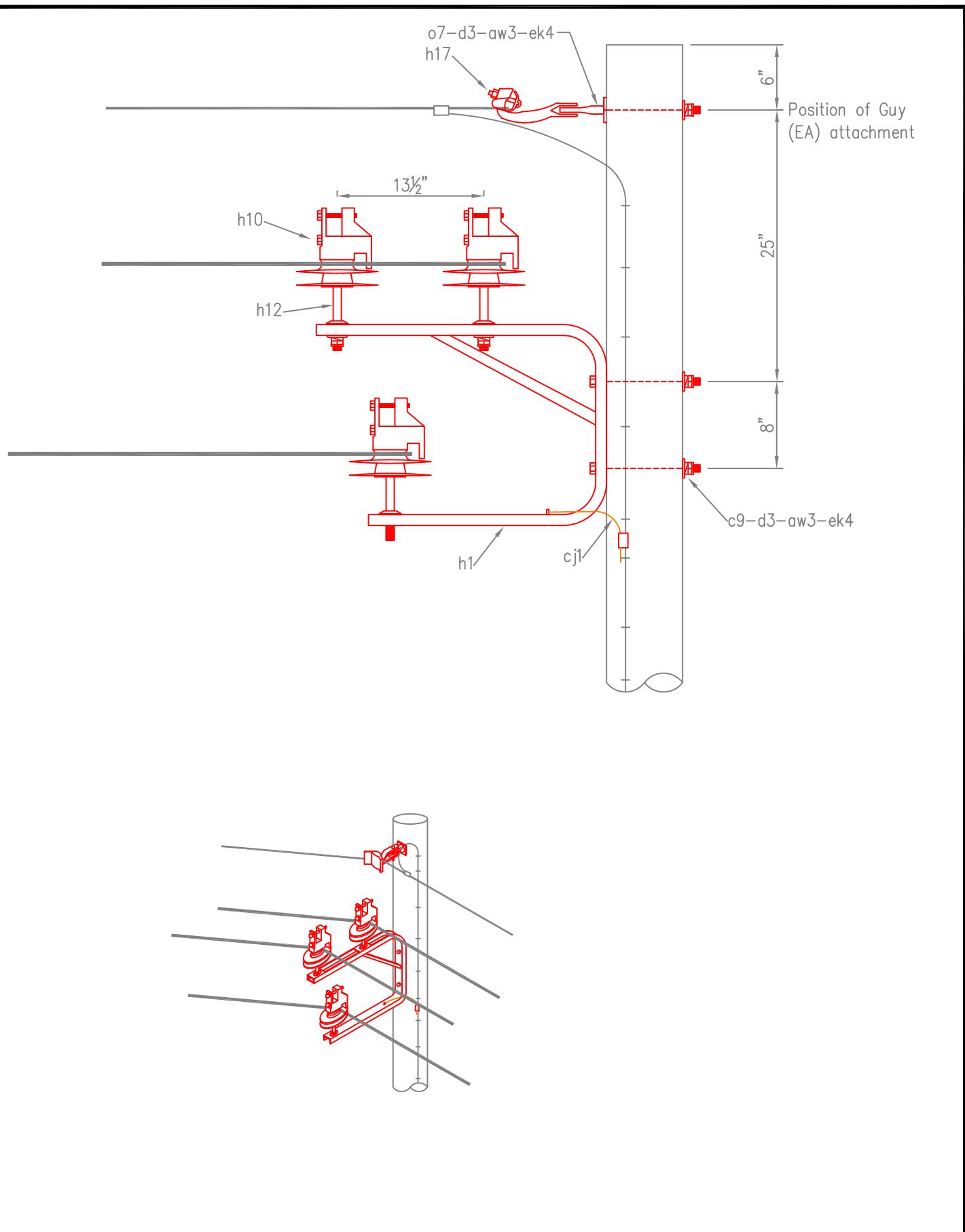
#### ADDITIONAL UNITS REQUIRED FOR CONCRETE POLES

VM2-11-4 or VUM6-6-4                    GROUNDING ASSEMBLY  
 (2) VM5-40-3                              BONDING CLIP

#### NOTES:

1. Bonding Clip required for Concrete Pole use "ONLY".
2. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

 <p>45' Pole 12' Crossarms @ 5' Spacing</p>	DATE	REVISION	14.4/24.9 kV THREE PHASE HENDRIX CONSTRUCTION SINGLE PRIMARY SUPPORT 7° TO 60° ANGLE (AC1241-02)	ISSUED	4/04/2012
				REVISED	
				STANDARD NUMBER	
					VC2-H



DATE	REVISION

14.4/24.9 kV THREE PHASE  
HENDRIX CONSTRUCTION  
SINGLE PRIMARY SUPPORT  
7° TO 60° ANGLE  
(AC1241-02)

ISSUED	4/04/2012
REVISED	
STANDARD NUMBER	VC2-H

ITM.	QTY.	MAT. CODE No	MATERIAL
h1	1	9900-00-01	Bracket, Angle (Hendrix BA3-35)
h10	6	9900-00-10	Insulator, 25kV, Pin, 1" internal thread, (Hendrix HPI-25VTP)
h12	6	9900-00-12	Pin, bracket, 25kV, 3/4" shank, 1" internal thread, phase, (Hendrix SSP-2)
h14	2	9900-00-14	Clevis, Messenger, Thimble, heavy duty, (Hendrix HDTC)
h20	3	9900-00-20	Plate, Double Insulator, (Hendrix 2IP)
h22	2	9900-00-22	Grip, Messenger, preshaped, (Hendrix MG-41XX) (Specify Messenger Wire Size)
aw3	4	7108-99-51	Washers, double spring lock, 3/4"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
cj1	5'	7250-06-01	Wire, #6 SD Cu
d3	6	7101-30-91	Washers, heavy duty, 3/4" curved
ek4	4	4290-70-75	Locknuts 3/4"
o7	2	0636-16-12	Bolts, ovaleye 3/4" x 12"

#### ADDITIONAL UNITS REQUIRED FOR WOOD POLES

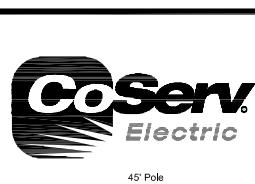
VM2-11 or VUM6-6-6                    GROUNDING ASSEMBLY

#### ADDITIONAL UNITS REQUIRED FOR CONCRETE POLES

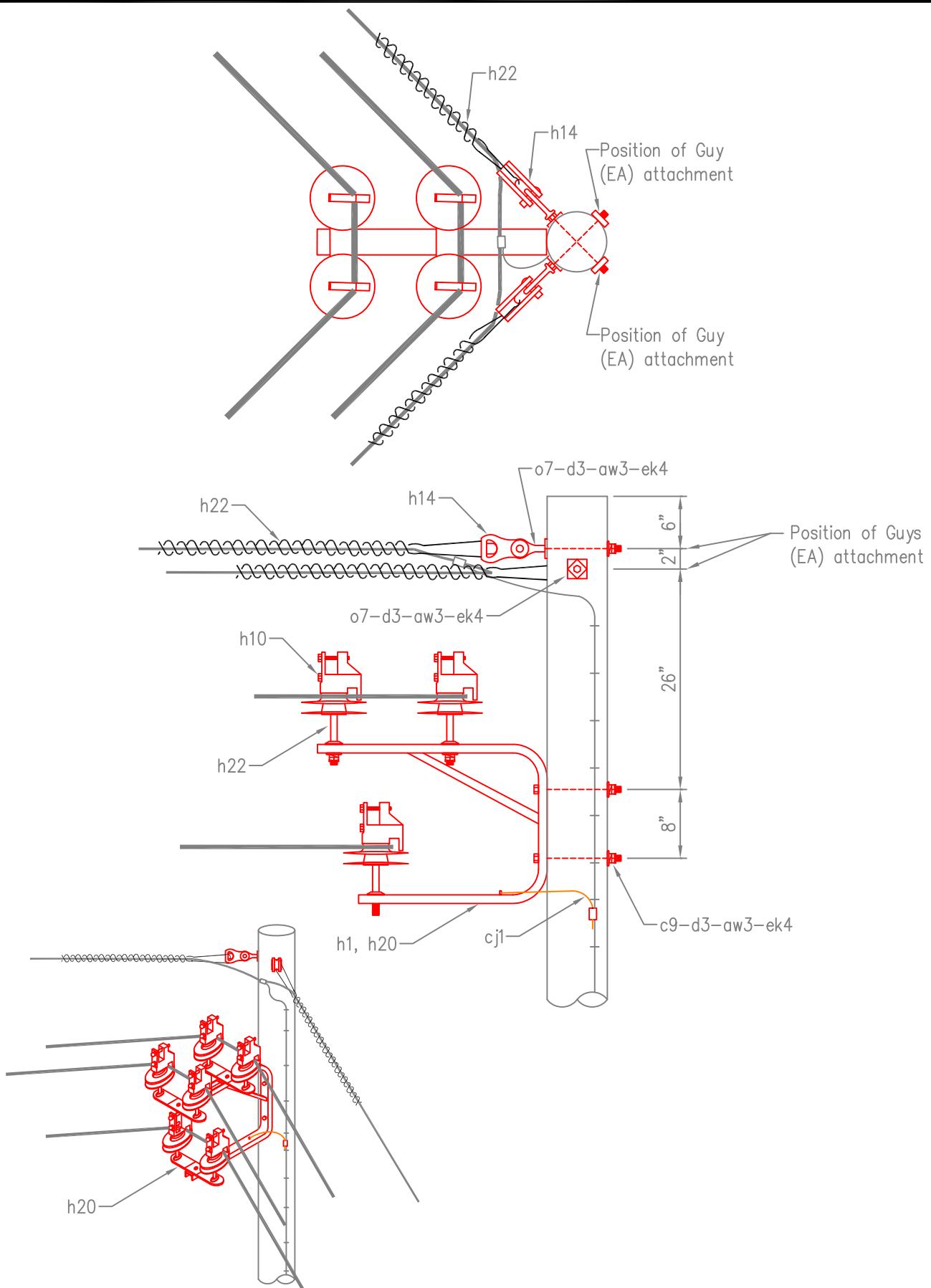
VM2-11-4 or VUM6-6-4                    GROUNDING ASSEMBLY  
 (3) VM5-40-3                              BONDING CLIP

#### NOTES:

1. Bonding Clip required for Concrete Pole use "ONLY".
2. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.



DATE	REVISION	14.4/24.9 kV THREE PHASE HENDRIX CONSTRUCTION DOUBLE PRIMARY SUPPORT 61° TO 90° ANGLE (AC1246-02)	ISSUED	4/04/2012
			REVISED	
			STANDARD NUMBER	
				VC2-2-H



DATE	REVISION

14.4/24.9 kV THREE PHASE  
HENDRIX CONSTRUCTION  
DOUBLE PRIMARY SUPPORT  
61° TO 90° ANGLE  
(AC1246-02)

ISSUED 4/04/2012  
REVISED  
STANDARD NUMBER  
VC2-2-H

ITM.	QTY.	MAT.CODE No	MATERIAL
h9	6	9900-00-09	Insulator, 25kV, Deadend, (Hendrix DEINS-25)
h14	2	9900-00-14	Clevis, Messenger, Thimble, heavy duty, (Hendrix HDTC)
h16	6	9900-00-16	Clevis, Thimble, (Hendrix TC)
h21	6	9900-00-21	Grip, Conductor, coated, preshaped, (Hendrix CG-01XX) (Specify Conductor Size)
h22	2	9900-00-22	Grip, messenger, preformed, (Hendrix MG-41XX) (Specify Messenger Wire Size)
aw3	8	7108-99-51	Washers, double spring lock, 3/4"
d3	16	7101-30-91	Washers, heavy duty, 3/4" curved
ek4	8	4290-70-75	Locknuts 3/4"
o7	8	0636-16-12	Bolts, ovaleye 3/4" x 12"

#### ADDITIONAL UNITS REQUIRED FOR WOOD POLES

VM2-11 or VUM6-6-6                    GROUNDING ASSEMBLY

#### ADDITIONAL UNITS REQUIRED FOR CONCRETE POLES

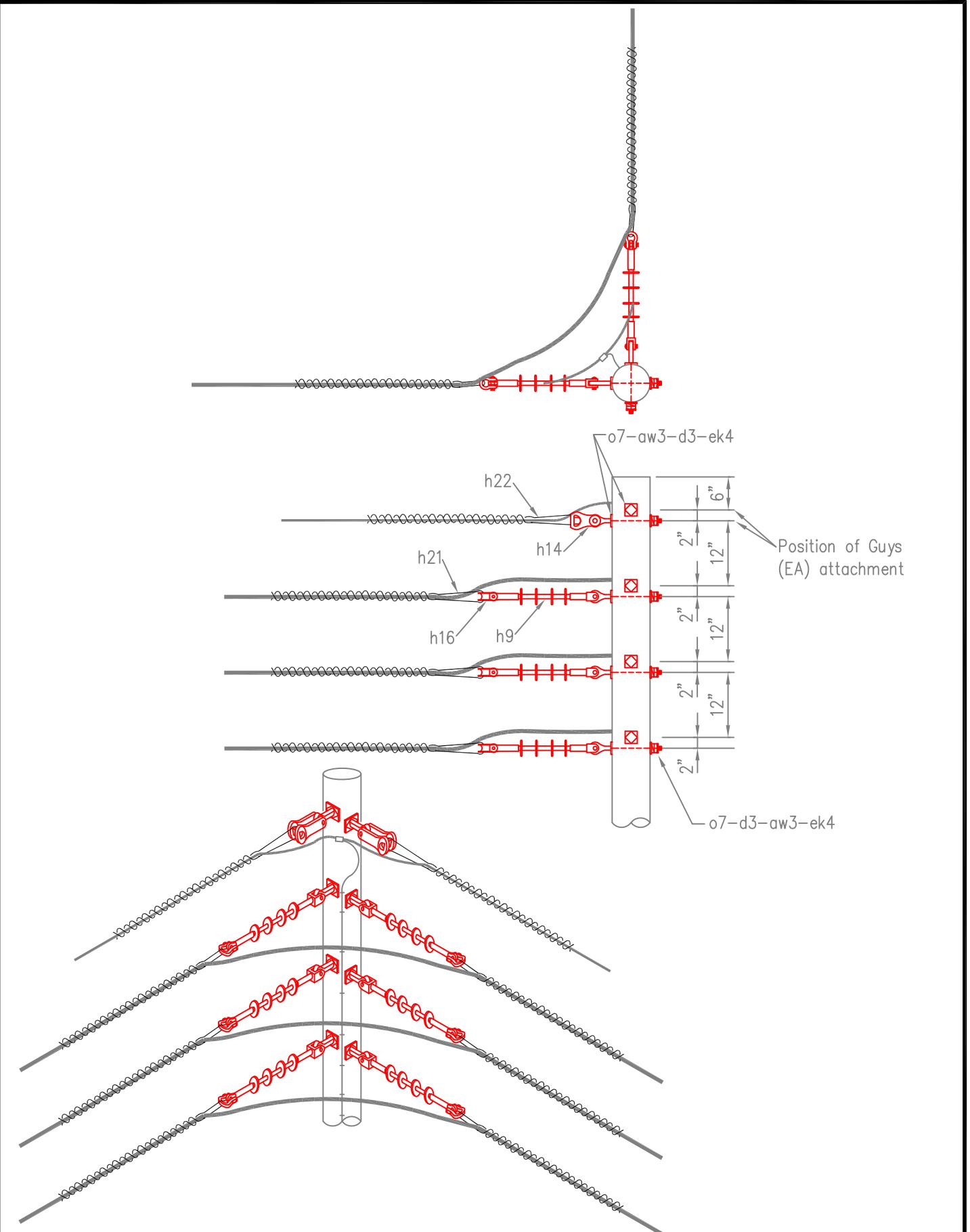
VM2-11-4 or VUM6-6-4                    GROUNDING ASSEMBLY  
 (8) VM5-40-3                              BONDING CLIP

#### NOTES:

1. Bonding Clip required for Concrete Pole use "ONLY".
2. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.



DATE	REVISION	14.4/24.9 kV THREE PHASE HENDRIX CONSTRUCTION VERTICAL DOUBLE DEADEND 61° TO 90° ANGLE (AC1263-02)	ISSUED	4/04/2012
			REVISED	
			STANDARD NUMBER	
				VC4-H



DATE	REVISION	14.4/24.9 kV THREE PHASE HENDRIX CONSTRUCTION VERTICAL DOUBLE DEADEND 61° TO 90° ANGLE (AC1263-02)	ISSUED	4/04/2012
			REVISED	
			STANDARD NUMBER	VC4-H



ITM.	QTY.	MAT. CODE No	MATERIAL
h5	2	9900-00-05	Bracket, Deadend, (Hendrix BD-35)
h9	6	9900-00-09	Insulator, 25kV, Deadend, (Hendrix DEINS-25)
h10	2	9900-00-10	Insulator, 25kV, Pin, 1" internal thread, (Hendrix HPI-25VTP)
h12	2	9900-00-12	Pin, bracket, 25kV, 3/4" shank, 1" internal thread, phase, (Hendrix SSP-2)
h14	2	9900-00-14	Clevis, Messenger, Thimble, heavy duty, (Hendrix HDTC)
h15	6	9900-00-15	Clevis, Shackle, (Hendrix SC)
h16	6	9900-00-16	Clevis, Thimble, (Hendrix TC)
h21	6	9900-00-21	Grip, Conductor, coated, preshaped, (Hendrix CG-01XX) (Specify Conductor Size)
h22	2	9900-00-22	Grip, messenger, preformed, (Hendrix MG-41XX) (Specify Messenger Wire Size)
aw3	6	7108-99-51	Washers, double spring lock, 3/4"
c9	4	0638-06-12	Bolts, machine 3/4" x 12"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d3	8	7101-30-91	Washers, heavy duty, 3/4" curved
ek4	6	4290-70-75	Locknuts 3/4"
o7	2	0636-16-12	Bolts, ovaleye 3/4" x 12"

#### ADDITIONAL UNITS REQUIRED FOR WOOD POLES

VM2-11 or VUM6-6-6                    GROUNDING ASSEMBLY

#### ADDITIONAL UNITS REQUIRED FOR CONCRETE POLES

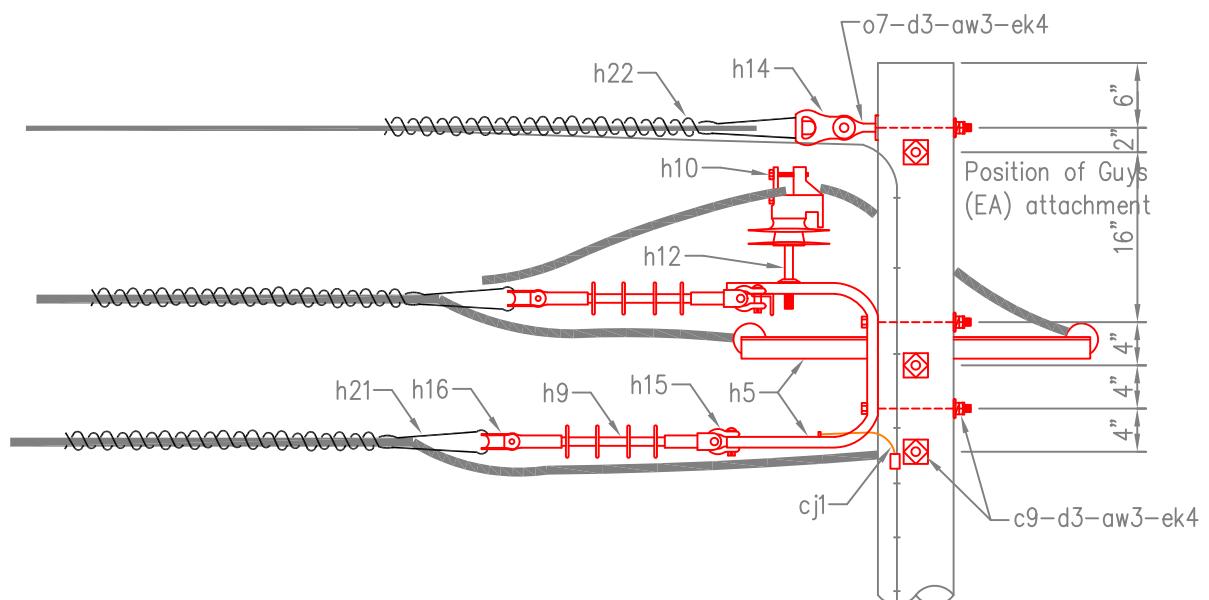
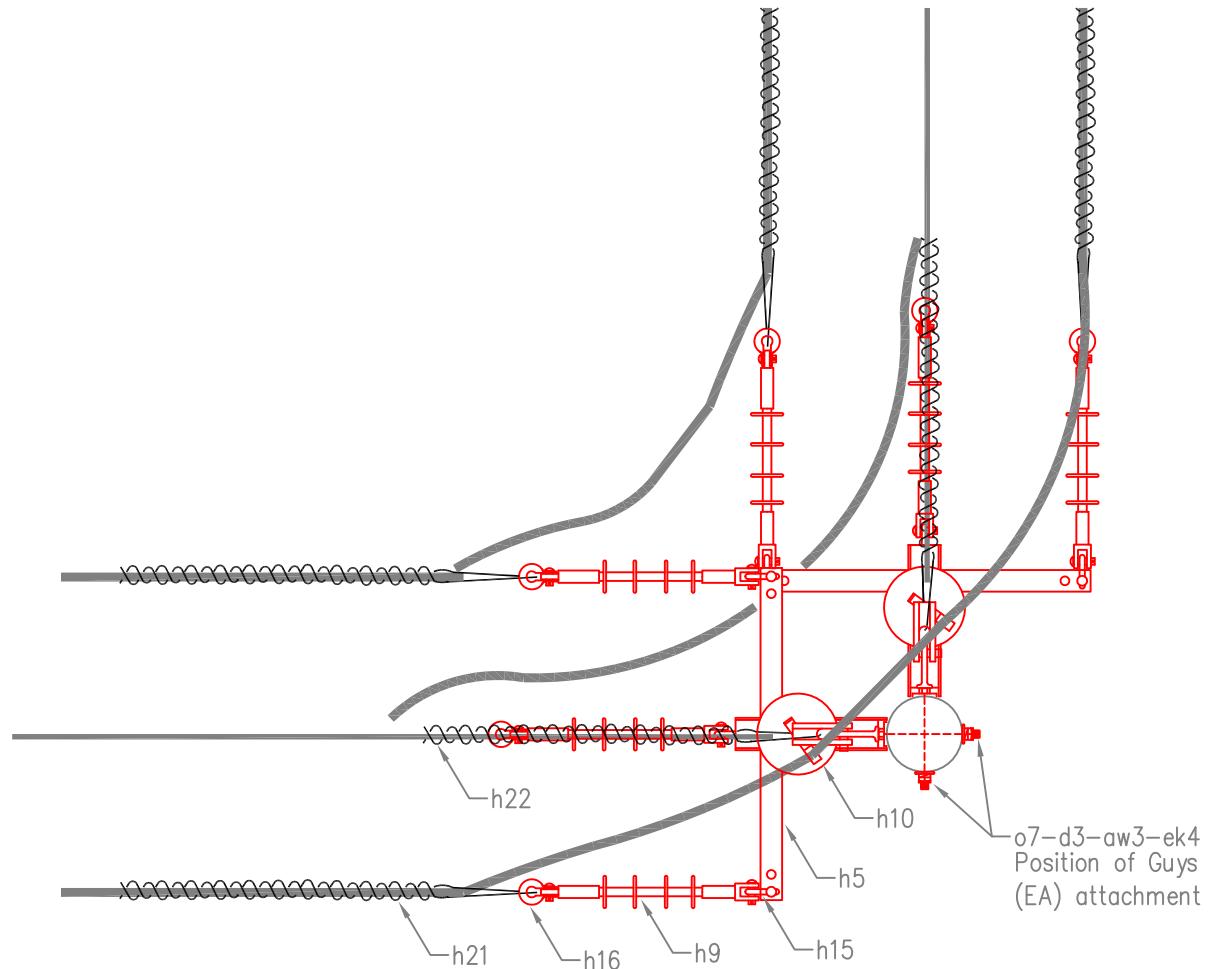
VM2-11-4 or VUM6-6-4                    GROUNDING ASSEMBLY  
 (4) VM5-40-3                              BONDING CLIP

#### NOTES:

1. Bonding Clip required for Concrete Pole use "ONLY".
2. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.



DATE	REVISION	14.4/24.9 kV THREE PHASE HENDRIX CONSTRUCTION DEADEND ANGLE (AC1256-02)	ISSUED	4/04/2012
			REVISED	
			STANDARD NUMBER	
				VC4A-H



DATE

REVISION

14.4/24.9 kV THREE PHASE  
HENDRIX CONSTRUCTION  
DEADEND ANGLE  
(AC1256-02)

ISSUED

4/04/2012

REVISED

STANDARD NUMBER

VC4A-H

ITM.	QTY.	MAT.CODE No	MATERIAL
h5	1	9900-00-05	Bracket, Deadend, (Hendrix BD-35)
h9	3	9900-00-09	Insulator, 25Kv, Deadend, (25KV) (Hendrix DEINS-25)
h14	1	9900-00-14	Clevis, Messenger, Thimble, heavy duty, (Hendrix HDTC)
h15	3	9900-00-15	Clevis, Shackle, (Hendrix SC)
h16	3	9900-00-16	Clevis, Thimble, (Hendrix TC)
h21	3	9900-00-21	Grip, Conductor, coated, preshaped, (Hendrix CG-01XX) (Specify Conductor Size)
h22	1	9900-00-22	Grip, messenger, preformed, (Hendrix MG-41XX) (Specify Messenger Wire Size)
ae1	3	0152-19-39	Arrester, 14.4 lightning 18KV (No Bracket) (Special Order)
aw3	5	7108-99-51	Washers, double spring lock, 3/4"
c9	4	0638-06-12	Bolts, machine 3/4" x 12"
cj1	20'	7250-06-01	Wire, #6 SD Cu
d3	6	7101-30-91	Washers, heavy duty, 3/4" curved
ek4	5	4290-70-75	Locknuts 3/4"
eq4	1	0780-28-03	Bracket, standoff, Fiberglass, 3Ø, double position
o7	1	0636-16-12	Bolts, ovaleye 3/4" x 12"
pl	6	1781-17-80	Connectors, Lightning Arrester

#### ADDITIONAL UNITS REQUIRED FOR WOOD POLES

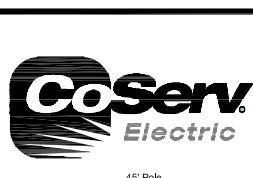
VM2-11 or VUM6-6-6                    GROUNDING ASSEMBLY

#### ADDITIONAL UNITS REQUIRED FOR CONCRETE POLES

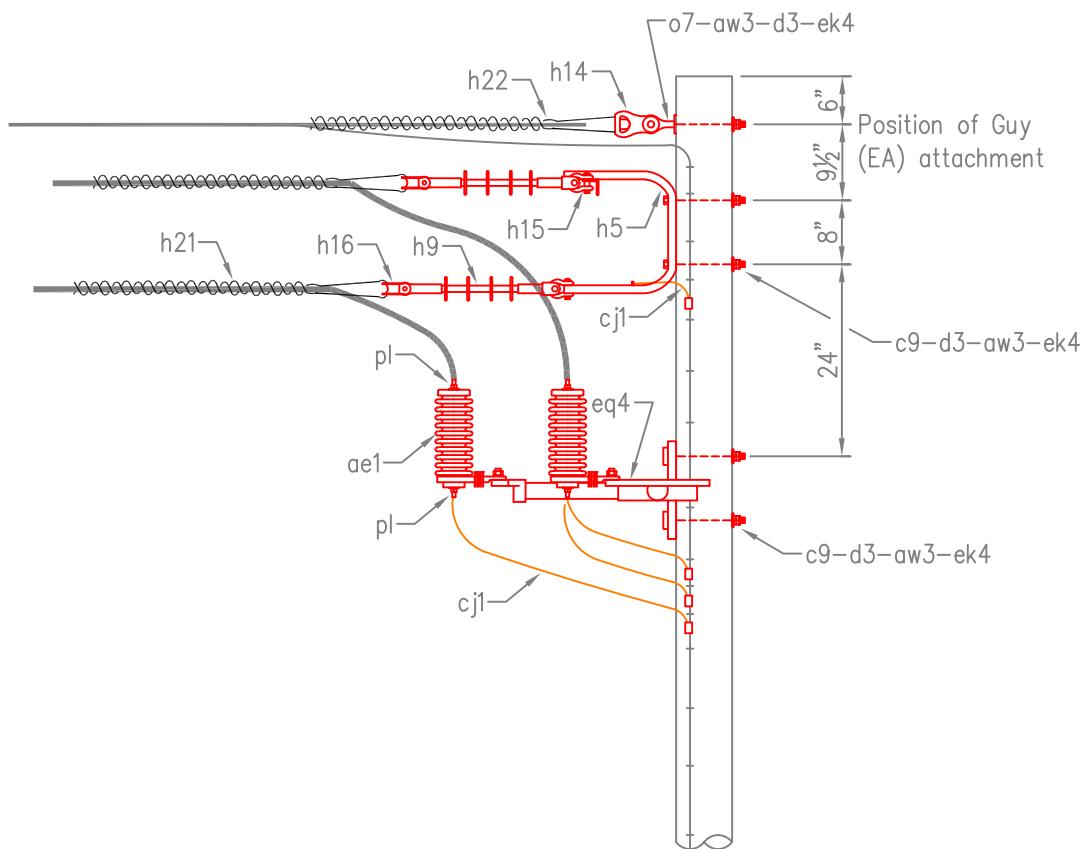
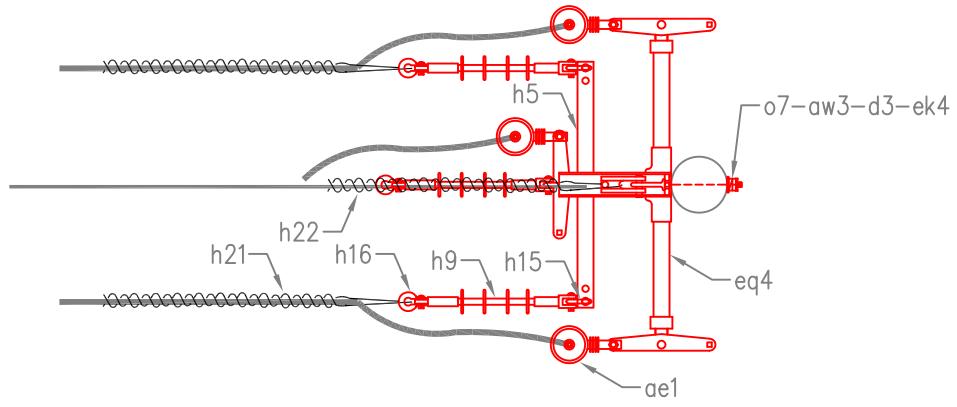
VM2-11-4 or VUM6-6-4                    GROUNDING ASSEMBLY  
 (3) VM5-40-3                              BONDING CLIP

#### NOTES:

1. Bonding Clip required for Concrete Pole use "ONLY".
2. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.



DATE	REVISION	14.4/24.9 kV THREE PHASE HENDRIX CONSTRUCTION DEADEND (AC1252-02)	ISSUED	4/04/2012
			REVISED	
			STANDARD NUMBER	
				VC7-H



DATE	REVISION

14.4/24.9 kV THREE PHASE  
HENDRIX CONSTRUCTION  
DEADEND  
(AC1252-02)

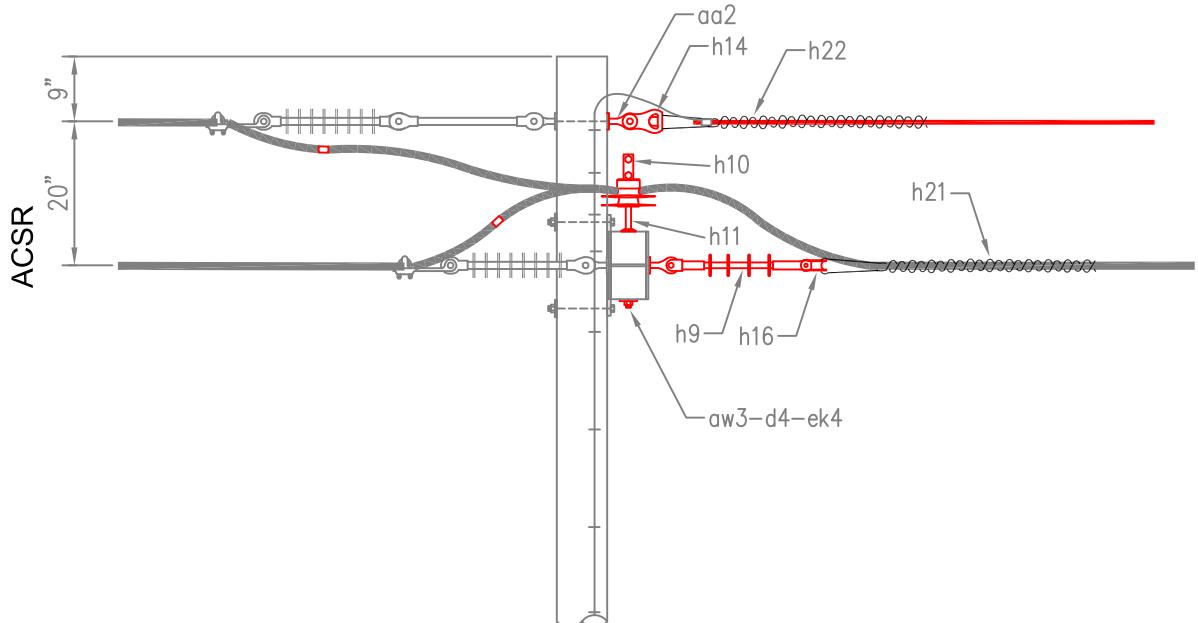
ISSUED	4/04/2012
REVISED	
STANDARD NUMBER	VC7-H

ITM.	QTY.	MAT.CODE No	MATERIAL
h9	3	9900-00-09	Insulator, 25kV, Deadend, (Hendrix DEINS25)
h10	3	9900-00-10	Insulator, 25kV, Pin, 1" internal thread, (Hendrix HPI-25VTP)
h11	3	9900-00-11	Pin, Crossarm, 25kV, 3/4" shank, phase, (Hendrix LSP-1)
h14	1	9900-00-14	Clevis, Thimble, heavy duty, (Hendrix HDTc)
h16	3	9900-00-16	Clevis, Thimble, (Hendrix TC)
h21	3	9900-00-21	Grip, Conductor, coated, preshaped, (Hendrix CG-01XX) (Specify Conductor Size)
h22	1	9900-00-22	Grip, Messenger, preshaped, (Hendrix MG-41XX) (Specify Messenger Wire Size)
aa2	1	4290-40-75	Nuts, ovaleye 3/4"
aw3	3	7108-99-51	Washers, double spring lock, 3/4"
d4	3	7102-04-51	Washers, square, 3/4"
ek4	3	4290-70-75	Locknuts 3/4"

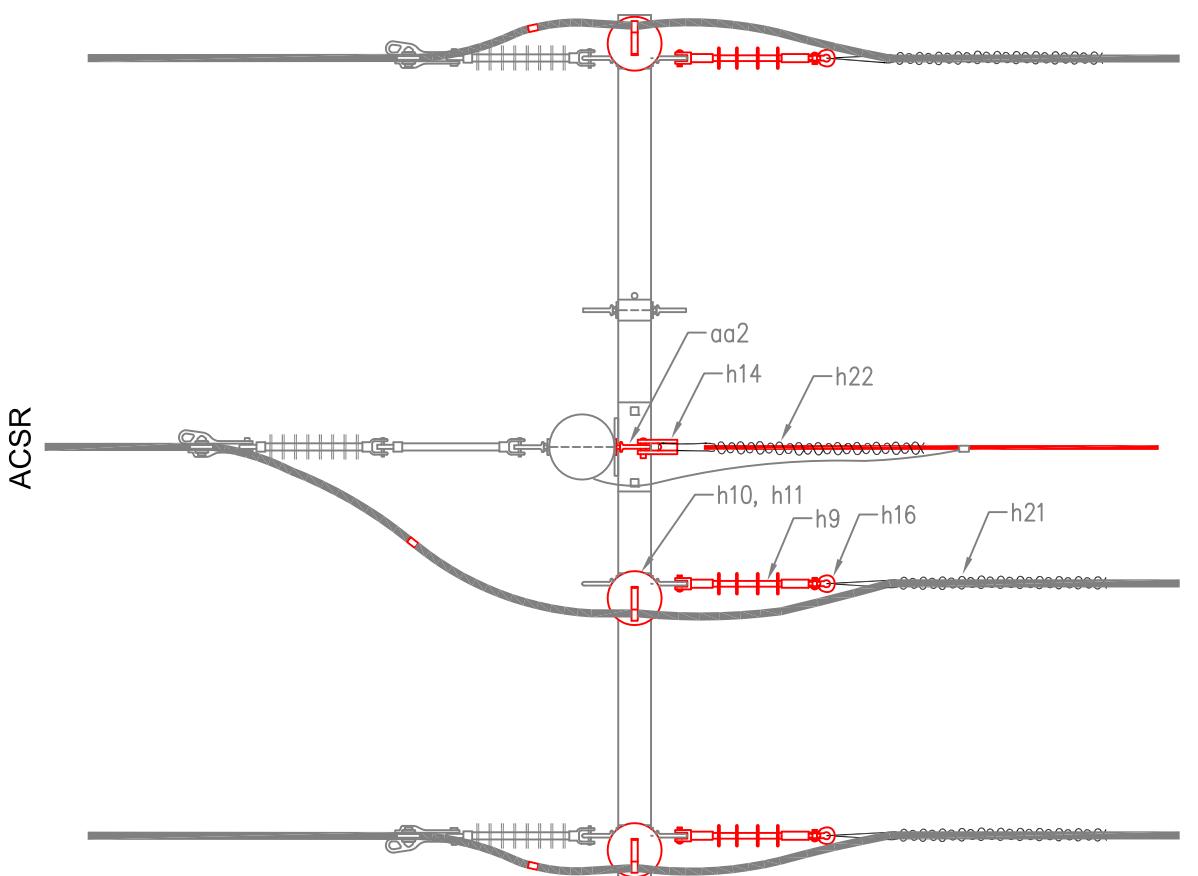
NOTES:

- Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

 <small>45' Poles 12' Crossarms @ 5' Spacing</small>	DATE	REVISION	14.4/24.9 kV THREE PHASE HENDRIX CONSTRUCTION DEADEND TRANSITION: ACSR TO HENDRIX CABLE (AC1248-02)	ISSUED	6/18/2012
				REVISED	
				STANDARD NUMBER	
				VC7X-H	



HENDRIX CABLE



HENDRIX CABLE



DATE	REVISION

14.4/24.9 kV THREE PHASE  
HENDRIX CONSTRUCTION  
DEADEND TRANSITION:  
ACSR TO HENDRIX CABLE  
(AC1248-02)

ISSUED	6/18/2012
REVISED	
STANDARD NUMBER	VC7X-H

ITM.	QTY.	MAT.CODE No	MATERIAL
h9	6	9900-00-09	Insulator, 25kV, Deadend, (Hendrix DEINS-25)
h10	3	9900-00-10	Insulator, 25kV, Pin, 1" internal thread, (Hendrix HPI-25VTP)
h11	3	9900-00-11	Pin, Crossarm, 25kV, 3/4" shank, 1" internal thread, phase, (Hendrix LSP-1)
h14	2	9900-00-14	Clevis, Messenger, Thimble, heavy duty, (Hendrix HDTC)
h16	6	9900-00-16	Clevis, Thimble, (Hendrix TC)
h21	6	9900-00-21	Grip, Conductor, coated, preshaped, (Hendrix CG-01XX) (Specify Conductor Size)
h22	2	9900-00-22	Grip, messenger, preformed, (Hendrix MG-41XX) (Specify Messenger Wire Size)
aa2	1	4290-40-75	Nuts, ovaleye 3/4"
aw3	6	7108-99-51	Washers, double spring lock, 3/4"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cj1	5'	7250-06-01	Wire, #6 SD Cu
d3	4	7101-30-91	Washers, heavy duty, 3/4" curved
d4	3	7102-04-51	Washers, square, 3/4"
ek4	6	4290-70-75	Locknuts 3/4"
g0	1	1809-09-17	Crossarm, Fiberglass 10' DA 3200-120
o7	1	0636-16-12	Bolts, ovaleye 3/4" x 12"

#### ADDITIONAL UNITS REQUIRED FOR WOOD POLES

VM2-11 or VUM6-6-6                    GROUNDING ASSEMBLY

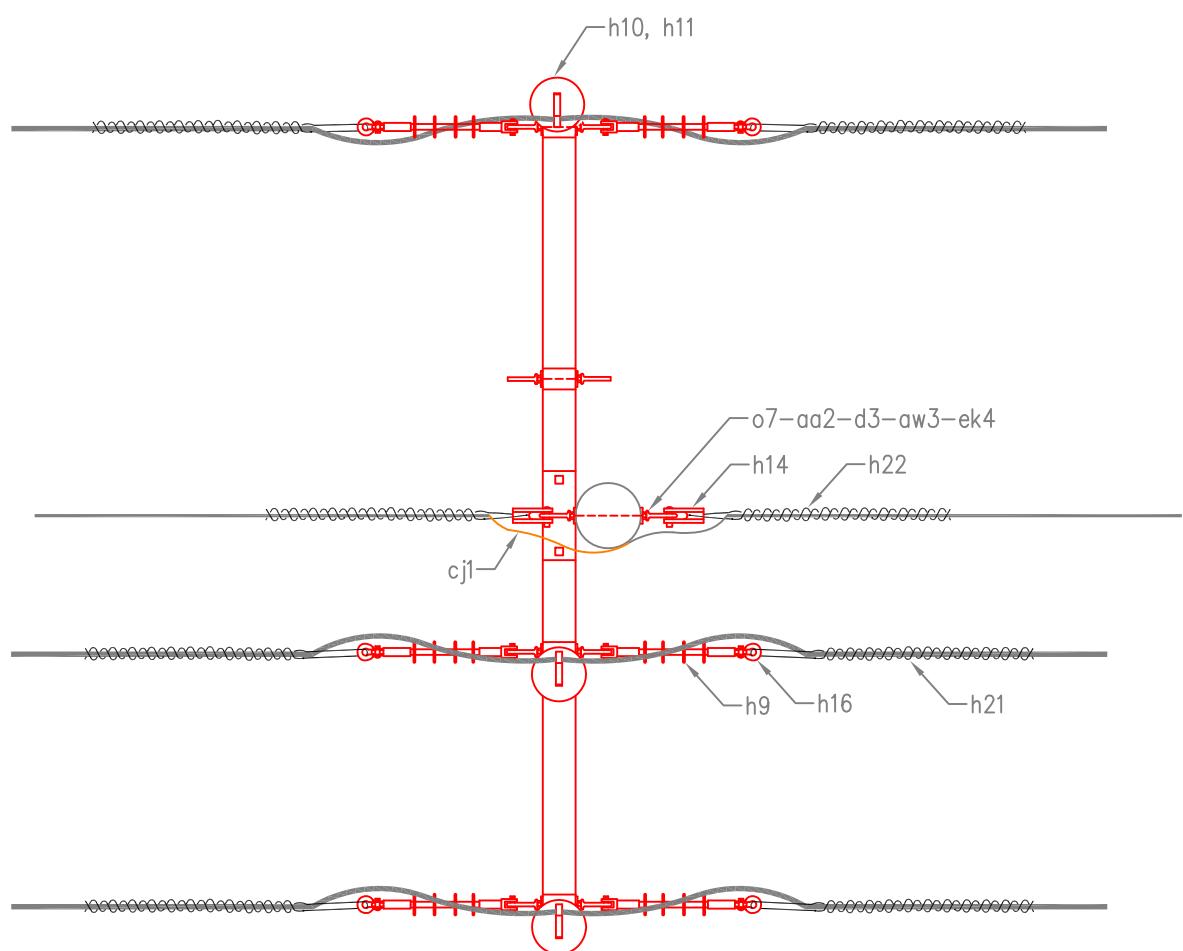
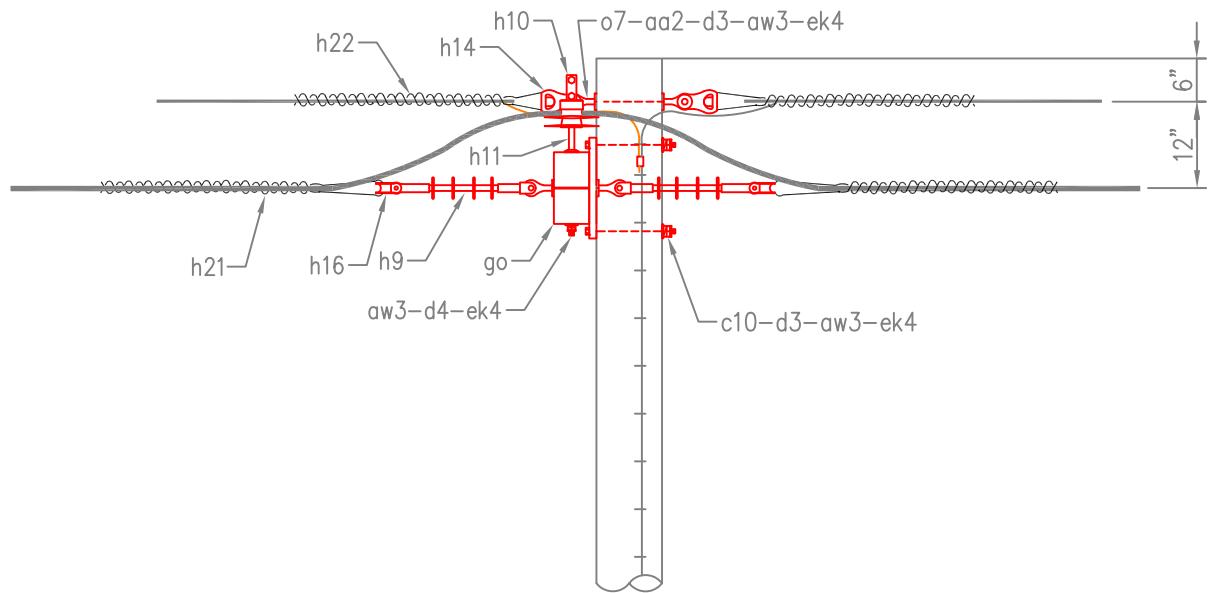
#### ADDITIONAL UNITS REQUIRED FOR CONCRETE POLES

VM2-11-4 or VUM6-6-4                    GROUNDING ASSEMBLY  
 (2) VM5-40-3                              BONDING CLIP

#### NOTES:

1. Bonding Clip required for Concrete Pole use "ONLY".
2. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

 <p>45' Pole 12' Crossarms @ 5' Spacing</p>	DATE	REVISION	14.4/24.9 kV THREE PHASE HENDRIX CONSTRUCTION FIBERGLASS CROSSARM DOUBLE DEADEND (AC1265-02)	ISSUED	4/04/2012
				REVISED	
				STANDARD NUMBER	
					VC8-H



DATE	REVISION

14.4/24.9 kV THREE PHASE  
HENDRIX CONSTRUCTION  
FIBERGLASS CROSSARM  
DOUBLE DEADEND  
(AC1265-02)

ISSUED 4/04/2012  
REVISED  
STANDARD NUMBER  
VC8-H

ITM.	QTY.	MAT. CODE No	MATERIAL
h5	2	9900-00-05	Bracket, Deadend, (Hendrix BD-35)
h6	1	9900-00-06	Bracket, Tangent, (Hendrix BM-14)
h9	6	9900-00-09	Insulator, 25kV, Deadend, (Hendrix DEINS-25)
h10	5	9900-00-10	Insulator, 25kV, Pin, 1" internal thread, (Hendrix HPI-25VTP)
h12	5	9900-00-12	Pin, bracket, 25kV, 3/4" shank, 1" internal thread, phase, (Hendrix SSP-2)
h14	2	9900-00-14	Clevis, Messenger, Thimble, heavy duty, (Hendrix HDTC)
h15	6	9900-00-15	Clevis, Shackle, (Hendrix SC)
h16	6	9900-00-16	Clevis, Thimble, (Hendrix TC)
h21	6	9900-00-21	Grip, Conductor, coated, preshaped, (Hendrix CG-01XX) (Specify Conductor Size)
h22	2	9900-00-22	Grip, messenger, preformed, (Hendrix MG-41XX) (Specify Messenger Wire Size)
aa2	1	4290-40-75	Nuts, ovaleye 3/4"
aw3	5	7108-99-51	Washers, double spring lock, 3/4"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
cj1	10'	7250-06-01	Wire, #6 SD Cu
d3	4	7101-30-91	Washers, heavy duty, 3/4" curved
ek4	5	4290-70-75	Locknuts 3/4"
o7	1	0636-16-12	Bolts, ovaleye 3/4" x 12"

#### ADDITIONAL UNITS REQUIRED FOR WOOD POLES

VM2-11 or VUM6-6-6                    GROUNDING ASSEMBLY

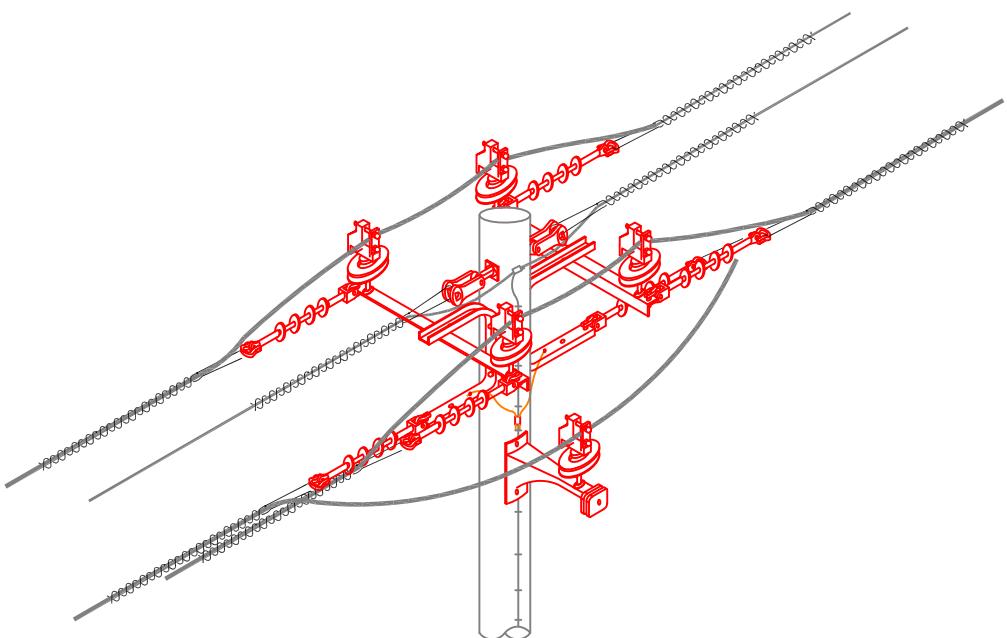
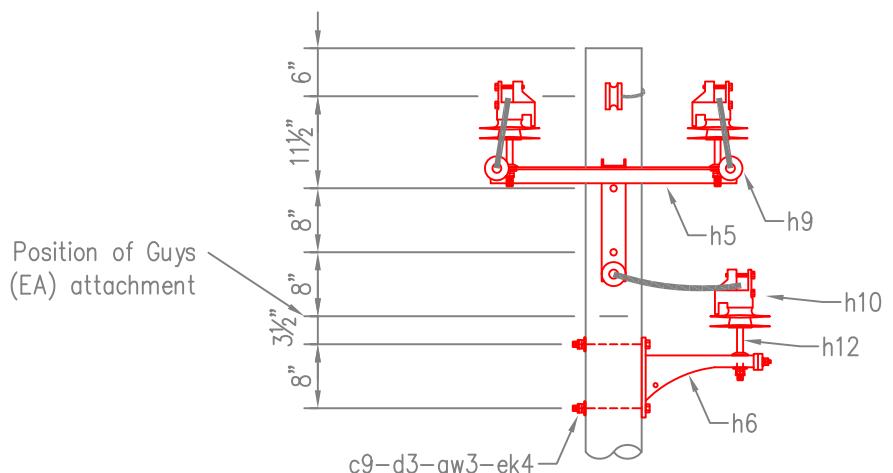
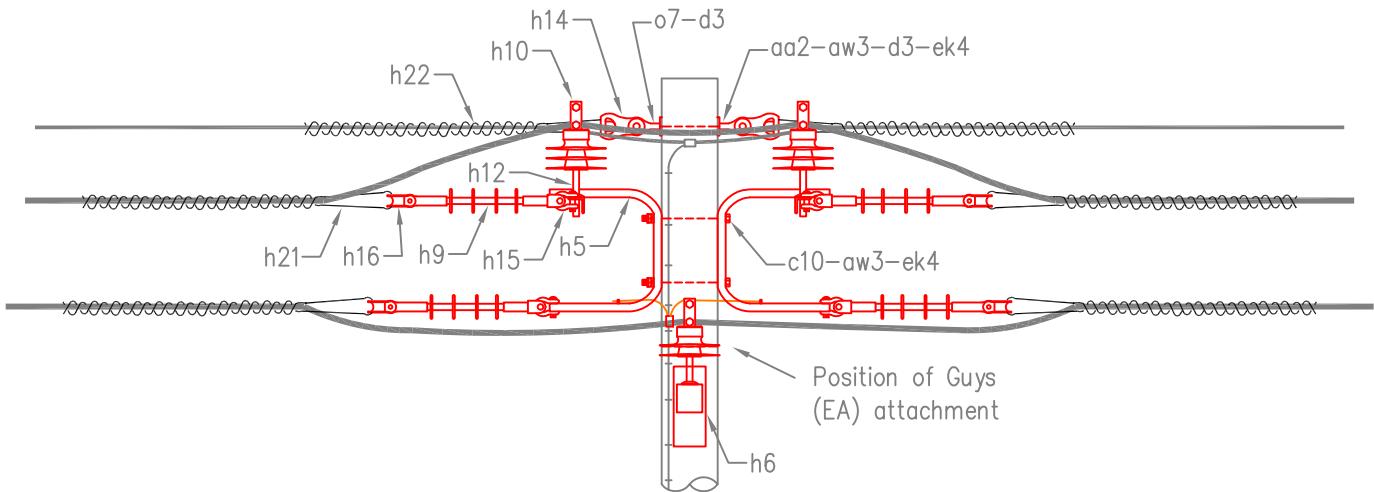
#### ADDITIONAL UNITS REQUIRED FOR CONCRETE POLES

VM2-11-4 or VUM6-6-4                    GROUNDING ASSEMBLY  
 (2) VM5-40-3                            BONDING CLIP  
 (1) VM5-41-3                            BONDING CLIP

#### NOTES:

1. Bonding Clip required for Concrete Pole use "ONLY".
2. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

 <p>45' Pole 12' Crossarms @ 5' Spacing</p>	DATE	REVISION	14.4/24.9 kV THREE PHASE HENDRIX CONSTRUCTION DOUBLE DEADEND (AC1259-02)	ISSUED	4/04/2012
				REVISED	
				STANDARD NUMBER	
				VC8A-H	



DATE	REVISION

14.4/24.9 kV THREE PHASE  
HENDRIX CONSTRUCTION  
DOUBLE DEADEND  
(AC1259-02)

ISSUED	4/04/2012
REVISED	
STANDARD NUMBER	VC8A-H

ITM.	QTY.	MAT.CODE No	MATERIAL
h4	2	9900-00-04	Bracket, Tangent, Anti-sway, (Hendrix BAS-24F)
h7	2	9900-00-07	Bracket, Tangent, Messenger, (Hendrix BM-24)
h13	2	9900-00-13	Insulator, 25kV, Spacer, Tangent, (Hendrix RTL-46)
h19	2	9900-00-19	Stirrup, Tangent, (Hendrix TS-1)
aw1	1	7108-99-21	Washers, double spring lock, 1/2"
aw3	2	7108-99-51	Washers, double spring lock, 3/4"
c10	2	0638-06-14	Bolts, machine 3/4" x 14"
c15	1	0638-04-14	Bolts, machine 1/2" x 14"
ek3	1	4290-70-50	Locknuts 1/2"
ek4	2	4290-70-75	Locknuts 3/4"

#### ADDITIONAL UNITS REQUIRED FOR WOOD POLES

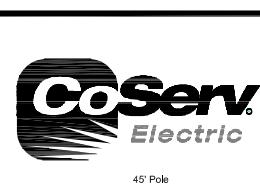
VM2-11 or VUM6-6-6                    GROUNDING ASSEMBLY

#### ADDITIONAL UNITS REQUIRED FOR CONCRETE POLES

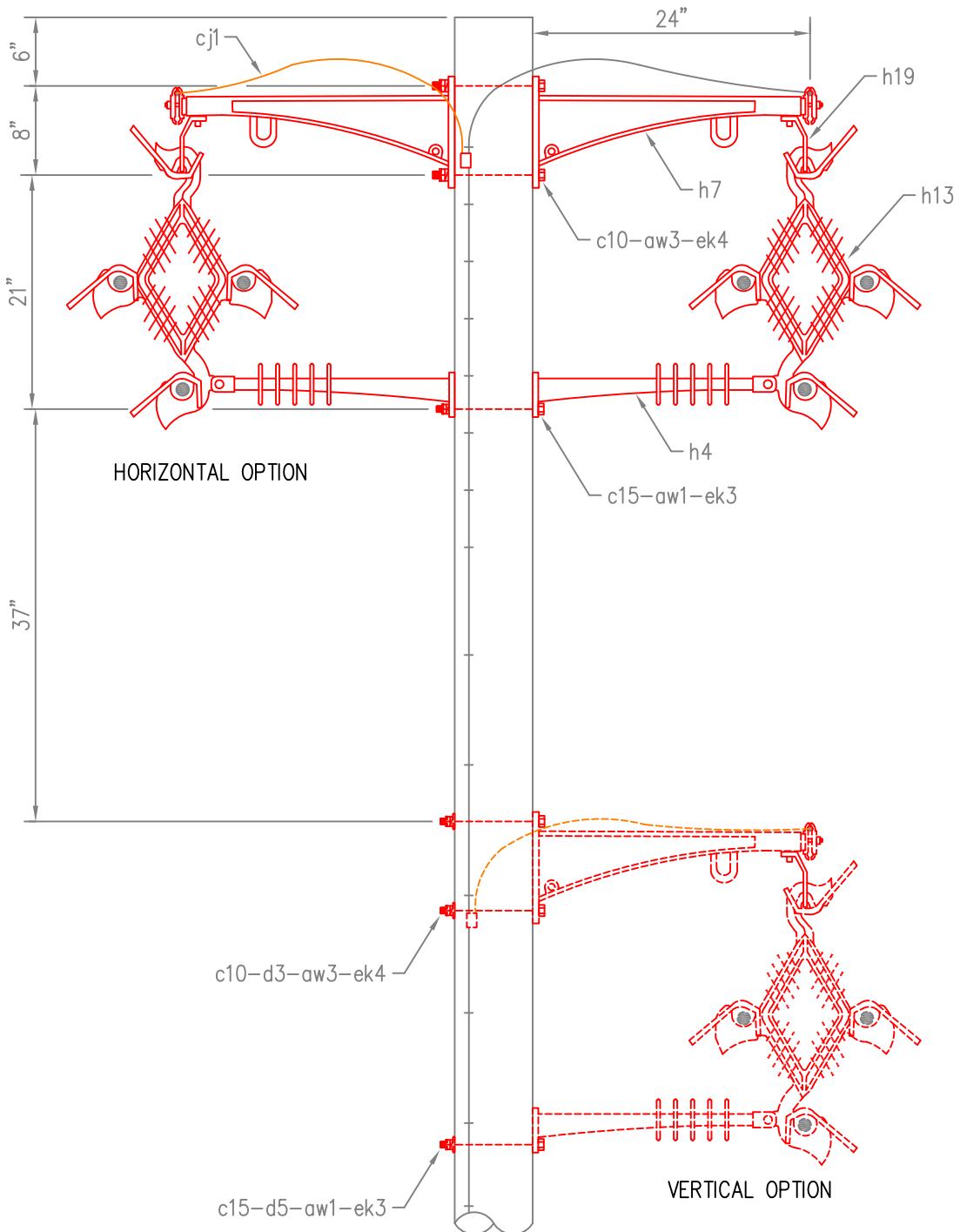
VM2-11-4 or VUM6-6-4	GROUNDING ASSEMBLY
(2) VM5-40-1	BONDING CLIP
(2) VM5-40-3	BONDING CLIP

#### NOTES:

1. Bonding Clip required for Concrete Pole use "ONLY".
2. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.



DATE	REVISION	14.4/24.9 kV THREE PHASE DOUBLE CIRCUIT HENDRIX CONSTRUCTION SINGLE PRIMARY SUPPORT TANGENT (AC1244-02)	ISSUED	6/15/2012
			REVISED	
			STANDARD NUMBER	
				DC-VC1-H



DATE	REVISION

14.4/24.9 kV THREE PHASE  
DOUBLE CIRCUIT  
HENDRIX CONSTRUCTION  
SINGLE PRIMARY SUPPORT  
TANGENT (AC1244-02)

ISSUED	6/15/2012
REVISED	
STANDARD NUMBER	DC-VC1-H

ITM.	QTY.	MAT.CODE No	MATERIAL
h3	1	9900-00-03	Bracket, Angle, Double Circuit, (HendriX BA6-15) (25-35Kv)
h10	6	9900-00-10	Insulator, 25kV, Pin, 1" internal thread, (Hendrix HPI-25VTP)
h12	6	9900-00-12	Pin, bracket, 25kV, 3/4" shank, 1" internal thread, phase, (Hendrix SSP-2)
h17	2	9900-00-17	Clamp, Angle, messenger, (Hendrix CMA-1)
aw3	4	7108-99-51	Washers, double spring lock, 3/4"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
cj1	5'	7250-06-01	Wire, #6 SD Cu
d3	5	7101-30-91	Washers, heavy duty, 3/4" curved
ek4	4	4290-70-75	Locknuts 3/4"
o7	2	0636-16-12	Bolts, ovaleye 3/4" x 12"

#### ADDITIONAL UNITS REQUIRED FOR WOOD POLES

VM2-11 or VUM6-6-6                    GROUNDING ASSEMBLY

#### ADDITIONAL UNITS REQUIRED FOR CONCRETE POLES

VM2-11-4 or VUM6-6-4                    GROUNDING ASSEMBLY  
 (2) VM5-40-3                            BONDING CLIP

#### NOTES:

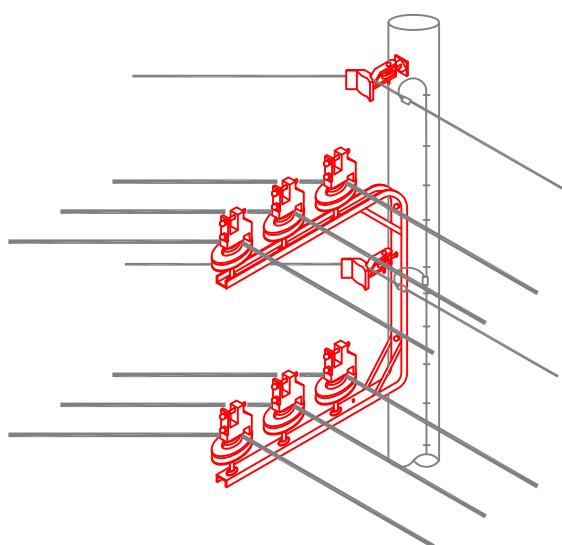
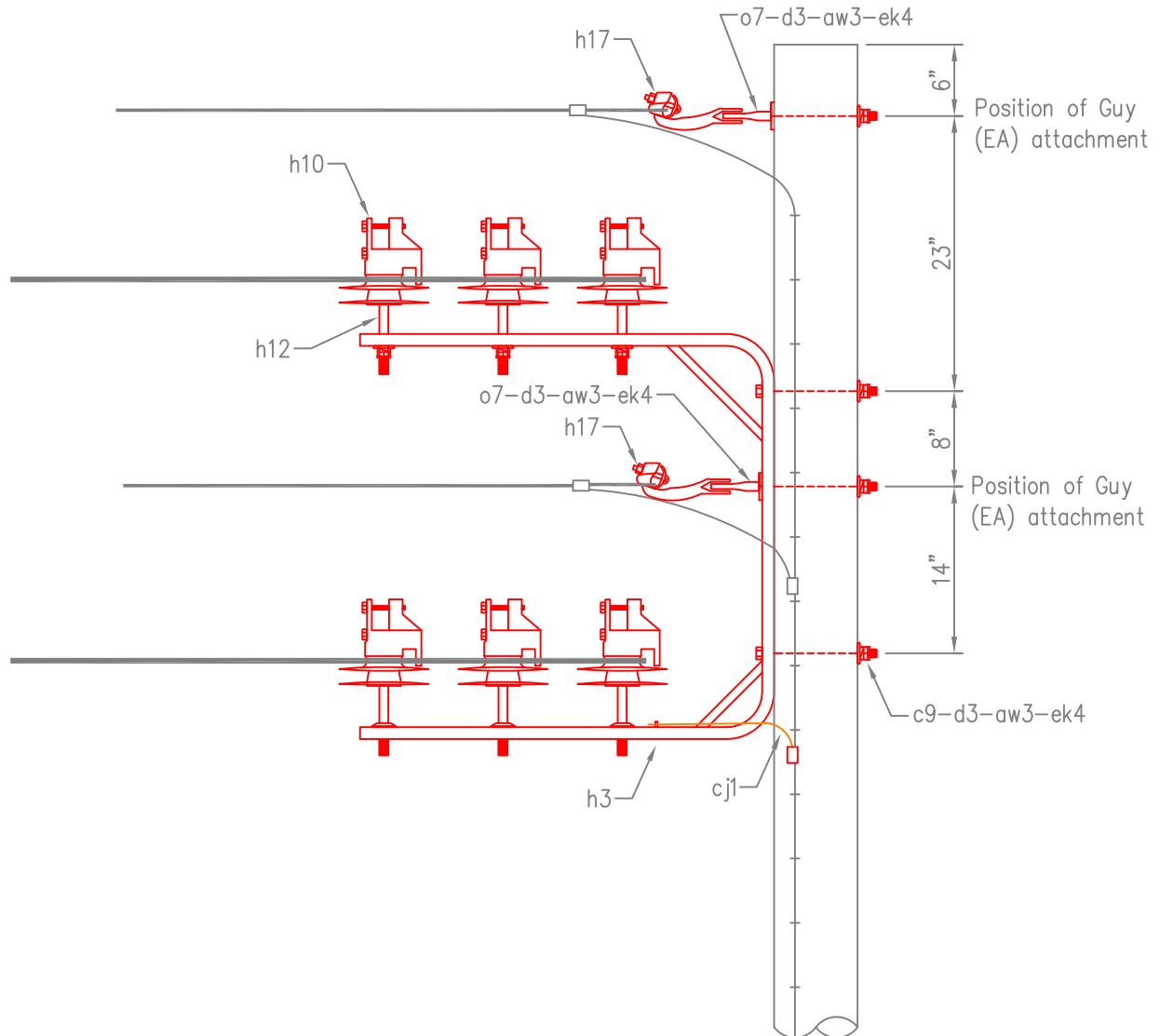
1. Bonding Clip required for Concrete Pole use "ONLY".
2. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.



DATE	REVISION

14.4/24.9 kV THREE PHASE  
 DOUBLE CIRCUIT  
 HENDRIX CONSTRUCTION  
 DOUBLE PRIMARY SUPPORT  
 7° TO 60° ANGLE (AC1257-02)

ISSUED	4/04/2012
REVISED	
STANDARD NUMBER	DC-VC2-H



DATE	REVISION

14.4/24.9 kV THREE PHASE  
DOUBLE CIRCUIT  
HENDRIX CONSTRUCTION  
DOUBLE PRIMARY SUPPORT  
7° TO 60° ANGLE (AC1257-02)

ISSUED	4/04/2012
REVISED	
STANDARD NUMBER	DC-VC2-H

ITM.	QTY.	MAT.CODE No	MATERIAL
h3	1	9900-00-03	Bracket, Angle, Double Circuit, (Hendrix BA6-15)
h10	12	9900-00-10	Insulator, 25kV, Pin, 1" internal thread, (Hendrix HPI-25VTP)
h12	12	9900-00-12	Pin, bracket, 25Kv, 3/4" shank, 1" internal thread, phase, (Hendrix SSP-2)
h14	4	9900-00-14	Clevis, Thimble, heavy duty, (Hendrix HDTc)
h20	6	9900-00-20	Plate, Double Insulator, (Hendrix 2IP)
h22	4	9900-00-22	Grip, messenger, preformed, (Hendrix MG-41XX) (Specify Messenger Wire Size)
aw3	6	7108-99-51	Washers, double spring lock, 3/4"
c9	2	0638-06-12	Bolts, machine 3/4" x 12"
cj1	5'	7250-06-01	Wire, #6 SD Cu
d3	8	7101-30-91	Washers, heavy duty, 3/4" curved
ek4	6	4290-70-75	Locknuts 3/4"
o7	4	0636-16-12	Bolts, ovaleye 3/4" x 12"

#### ADDITIONAL UNITS REQUIRED FOR WOOD POLES

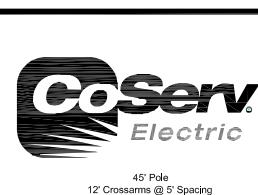
VM2-11 or VUM6-6-6                    GROUNDING ASSEMBLY

#### ADDITIONAL UNITS REQUIRED FOR CONCRETE POLES

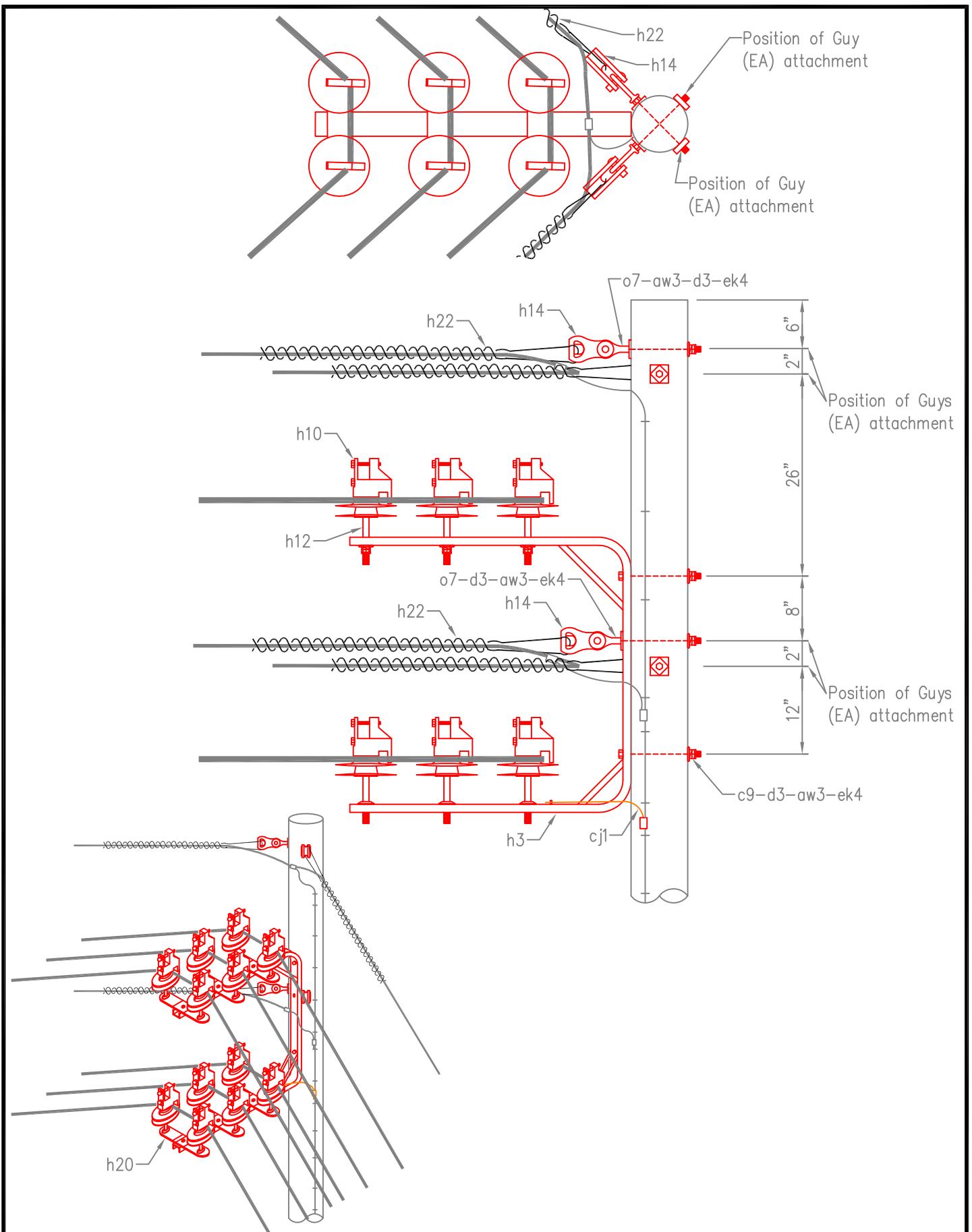
VM2-11-4 or VUM6-6-4                    GROUNDING ASSEMBLY  
 (4) VM5-40-3                              BONDING CLIP

#### NOTES:

1. Bonding Clip required for Concrete Pole use "ONLY".
2. Bolt lengths will be determined by the pole diameter at the position of the bolt locations.

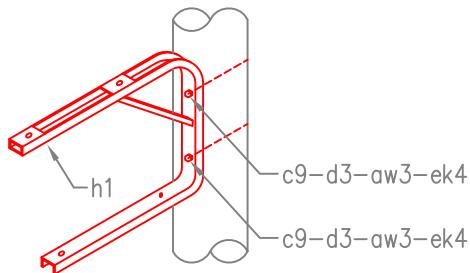


DATE	REVISION	14.4/24.9 kV THREE PHASE DOUBLE CIRCUIT HENDRIX CONSTRUCTION DOUBLE PRIMARY SUPPORT 61° TO 90° ANGLE (AC1258-02)	ISSUED 4/04/2012
			REVISED
			STANDARD NUMBER DC-VC2-2-H

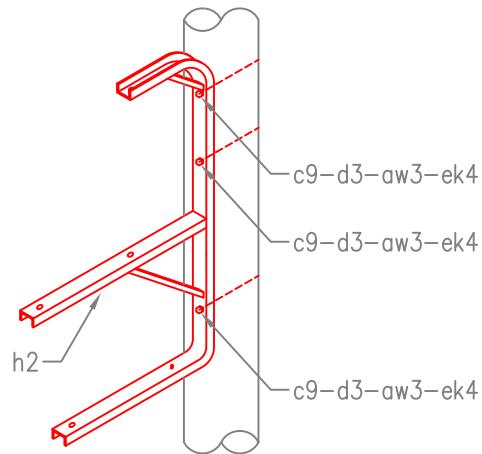


DATE	REVISION	14.4/24.9 kV THREE PHASE DOUBLE CIRCUIT HENDRIX CONSTRUCTION DOUBLE PRIMARY SUPPORT 61° TO 90° ANGLE (AC1258-02)	ISSUED	4/04/2012
			REVISED	
			STANDARD NUMBER	DC-VC2-2-H

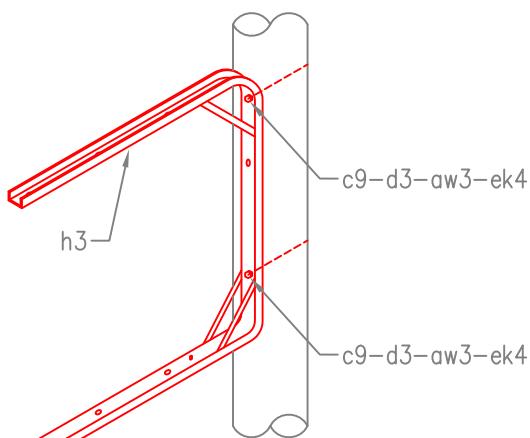
ITM.	QTY.	MAT.CODE	No	MATERIAL
<b>VM5-BA335-H</b>				
aw3	2	7108-99-51		Washers, double spring lock, 3/4"
c9	2	0638-06-12		Bolts, machine 3/4" x 12"
d3	2	7101-30-91		Washers, heavy duty, 3/4" curved
ek4	2	4290-70-75		Locknuts 3/4"
h1	1	9900-00-01		Bracket, Angle (Hendrix BA3-35)
<b>VM5-BA435-H</b>				
aw3	3	7108-99-51		Washers, double spring lock, 3/4"
c9	3	0638-06-12		Bolts, machine 3/4" x 12"
d3	3	7101-30-91		Washers, heavy duty, 3/4" curved
ek4	3	4290-70-75		Locknuts 3/4"
h2	1	9900-00-02		Bracket, Angle (Hendrix BA4-35)
<b>VM5-BA615-H</b>				
aw3	2	7108-99-51		Washers, double spring lock, 3/4"
c9	2	0638-06-12		Bolts, machine 3/4" x 12"
d3	2	7101-30-91		Washers, heavy duty, 3/4" curved
ek4	2	4290-70-75		Locknuts 3/4"
h3	1	9900-00-03		Bracket, Angle, Double Circuit, (Hendrix BA6-15)
<b>VM5-BAS24F-H</b>				
aw1	2	7108-99-21		Washers, double spring lock, 1/2"
c14	1	0638-04-12		Bolts, machine 1/2" x 12"
d5	1	7102-04-21		Washers, square, 1/2"
ek3	1	4290-70-50		Locknuts 1/2"
h4	1	9900-00-04		Bracket, Tangent, Anti-sway, (Hendrix BAS-24F)
<b>VM5-BD35-H</b>				
aw3	2	7108-99-51		Washers, double spring lock, 3/4"
c9	2	0638-06-12		Bolts, machine 3/4" x 12"
d3	2	7101-30-91		Washers, heavy duty, 3/4" curved
ek4	2	4290-70-75		Locknuts 3/4"
h5	1	9900-00-05		Bracket, Deadend, (Hendrix BD-35)
<b>VM5-BM14-H</b>				
aw3	2	7108-99-51		Washers, double spring lock, 3/4"
c9	2	0638-06-12		Bolts, machine 3/4" x 12"
d3	2	7101-30-91		Washers, heavy duty, 3/4" curved
ek4	2	4290-70-75		Locknuts 3/4"
h6	1	9900-00-06		Bracket, Tangent, (Hendrix BM-14)
<b>VM5-BM24-H</b>				
aw3	2	7108-99-51		Washers, double spring lock, 3/4"
c9	2	0638-06-12		Bolts, machine 3/4" x 12"
d3	2	7101-30-91		Washers, heavy duty, 3/4" curved
ek4	2	4290-70-75		Locknuts 3/4"
h7	1	9900-00-07		Bracket, Tangent, Messenger, (Hendrix BM-24)
		DATE	REVISION	
14.4/24.9kV MISCELLANEOUS PRIMARY ASSEMBLIES (SHEET 1 OF 3)				ISSUED 6/18/2012
				REVISED
				STANDARD NUMBER
				VM5- * -H



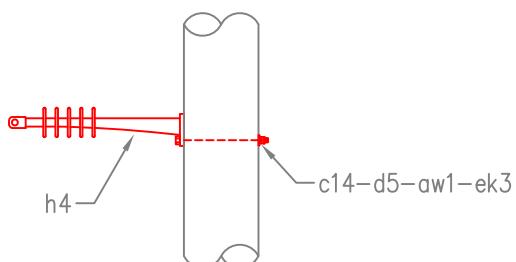
**VM5-BA335-H**  
BRACKET, ANGLE  
(BA3-35)



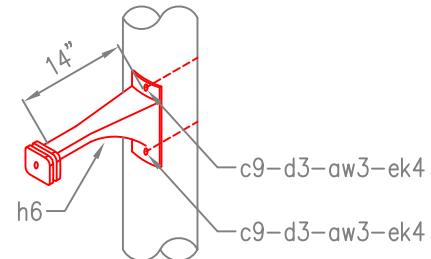
**VM5-BA435-H**  
BRACKET, ANGLE  
(BA4-35)



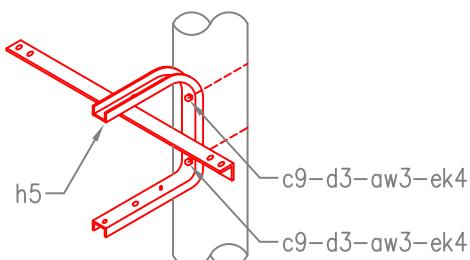
**VM5-BA615-H**  
BRACKET, ANGLE  
DOUBLE CIRCUIT  
(BA6-15)



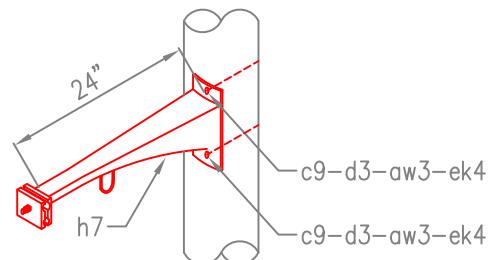
**VM5-BAS24F-H**  
BRACKET, TANGENT  
ANTI-SWAY  
(BAS-24F)



**VM5-BM14-H**  
BRACKET, TANGENT  
14" STANDOFF  
(BM-14)



**VM5-BD35-H**  
BRACKET, DEADEND  
(BD-35)



**VM5-BM24-H**  
BRACKET, TANGENT, MESSENGER  
24" STANDOFF  
(BM-24)



DATE	REVISION

14.4/24.9kV  
MISCELLANEOUS PRIMARY  
ASSEMBLIES  
(SHEET 1 OF 3)

ISSUED	6/18/2012
REVISED	
STANDARD NUMBER	VM5- * -H

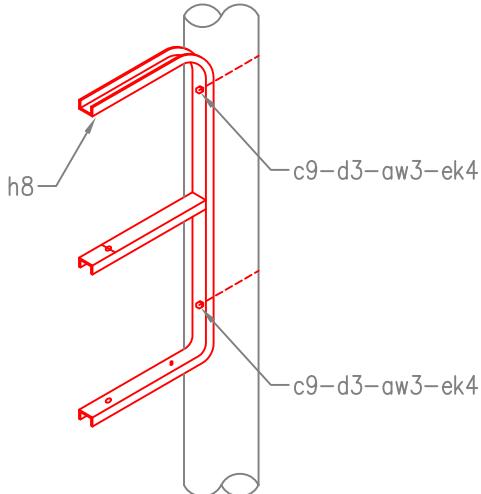
ITM.	QTY.	MAT.CODE	No	MATERIAL
<b>VM5-BV35-H</b>				
aw3	2	7108-99-51		Washers, double spring lock, 3/4"
c9	2	0638-06-12		Bolts, machine 3/4" x 12"
d3	2	7101-30-91		Washers, heavy duty, 3/4" curved
ek4	2	4290-70-75		Locknuts 3/4"
h8	1	9900-00-08		Bracket, Tap, vertical, (Hendrix BV-35)
<b>VM5-DEINS25-H</b>				
h9	1	9900-00-09		Insulator, 25kV, Deadend, (Hendrix DEINS-25)
<b>VM5-HPI25VTP-H</b>				
h10	1	9900-00-10		Insulator, 25kV, Pin, 1" internal thread, (Hendrix HPI-25VTP)
<b>VM5-LSP1-H</b>				
h11	1	9900-00-11		Pin, Crossarm, 25kV, 3/4" shank, 1" internal thread, phase, (Hendrix LSP-1)
<b>VM5-SSP2-H</b>				
h12	1	9900-00-12		Pin, bracket, 25kV, 3/4" shank, 1" internal thread, phase, (Hendrix SSP-2)
<b>VM5-RTL46-H</b>				
h13	1	9900-00-13		Insulator, 25kV, Spacer, Tangent, (Hendrix RTL-46)
<b>VM5-HDTC-H</b>				
h14	1	9900-00-14		Clevis, Messenger, Thimble, heavy duty, (Hendrix HDTC)
<b>VM5-SC-H</b>				
h15	1	9900-00-15		Clevis, Shackle, (Hendrix SC)
<b>VM5-TC-H</b>				
h16	1	9900-00-16		Clevis, Thimble, (Hendrix TC)
<b>VM5-CMA1-H</b>				
h17	1	9900-00-17		Clamp, Angle, messenger, (Hendrix CMA-1)



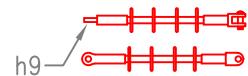
DATE  
REVISION

14.4/24.9kV  
MISCELLANEOUS PRIMARY  
ASSEMBLIES  
(SHEET 2 OF 3)

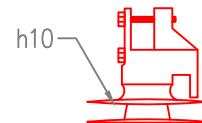
ISSUED 6/18/2012  
REVISED  
STANDARD NUMBER  
VM5- \* -H



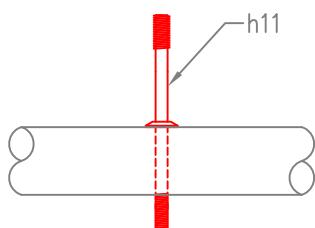
**VM5-BV35-H**  
BRACKET, TAP  
VERTICAL  
(BV-35)



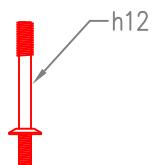
**VM5-DEINS25-H**  
DEADEND  
SUSPENSION INSULATOR  
(DEINS-25)



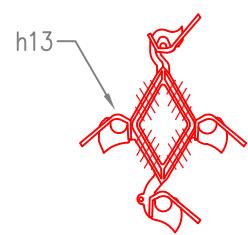
**VM5-HPI25VTP-H**  
25kV PIN TYPE  
INSULATOR - VISE TOP  
(HPI-25VTP)



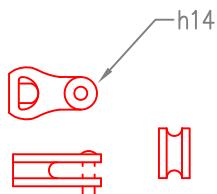
**VM5-LSP1-H**  
CROSSARM PHASE  
INSULATOR PIN  
(LSP-1)



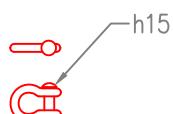
**VM5-SSP2-H**  
BRACKET PHASE  
INSULATOR PIN  
(SSP-2)



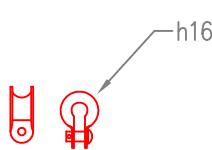
**VM5-RTL46-H**  
SPACER, PHASE  
INSULATOR - TANGENT  
(RTL-46)



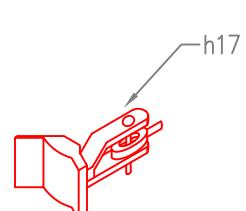
**VM5-HDTC-H**  
CLEVIS, MESSENGER  
HEAVY DUTY THIMBLE  
(HDTC)



**VM5-SC-H**  
CLEVIS, SHACKLE  
(SC)



**VM5-TC-H**  
CLEVIS, THIMBLE  
(TC)



**VM5-CMA1-H**  
CLAMP, ANGLE  
MESSENGER  
(CMA-1)



DATE	REVISION

14.4/24.9kV  
MISCELLANEOUS PRIMARY  
ASSEMBLIES  
(SHEET 2 OF 3)

ISSUED	6/18/2012
REVISED	
STANDARD NUMBER	VM5- * -H

ITM.	QTY.	MAT. CODE	No	MATERIAL
<b>VM5-MC2-H</b>				
h18	1	9900-00-18		Clamp, Tangent, messenger, (Hendrix MC-2)
<b>VM5-TS1-H</b>				
h19	1	9900-00-19		Stirrup, Tangent, (Hendrix TS-1)
<b>VM5-2IP-H</b>				
h20	1	9900-00-20		Plate, Double Insulator, (Hendrix 2IP)
<b>VM5-CG01XX-H</b>				
h21	1	9900-00-21		Grip, Conductor, coated, preshaped, (Hendrix CG-01XX) (Specify Conductor Size)
<b>VM5-MG41XX-H</b>				
h22	1	9900-00-22		Grip, messenger, preformed, (Hendrix MG-41XX) (Specify Messenger Wire Size)
<b>VM5-LINEDUC-H</b>				
h23	1	9900-00-23		Guard, Tap, protective, (2 5/8"x1"x8'), (Hedrix LINEDUC)



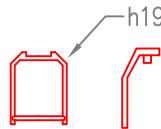
DATE	REVISION

14.4/24.9kV  
MISCELLANEOUS PRIMARY  
ASSEMBLIES  
(SHEET 3 OF 3)

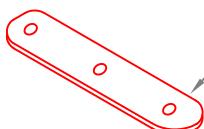
ISSUED	6/18/2012
REVISED	
STANDARD NUMBER	VM5- * -H



**VM5-MC2-H**  
CLAMP, MESSENGER  
BRACKET, TANGENT  
(MC-2)



**VM5-TS1-H**  
STIRRUP, SPACER  
BRACKET, TANGENT  
(TS-1)



**VM5-2IP-H**  
PLATE, BRACKET  
DOUBLE INSULATOR  
(2IP)



**VM5-CG0XXX-H**  
GRIP, PHASE  
DEADEND  
(CG-0XXX)



**VM5-MG41XX-H**  
GRIP, MESSENGER  
DEADEND  
(MG-41XX)



**VM5-LINEDUC-H**  
GUARD, MESSENGER  
TAP, PROTECTIVE  
(LINEDUC)



DATE

REVISION

14.4/24.9kV  
MISCELLANEOUS PRIMARY  
ASSEMBLIES  
(SHEET 3 OF 3)

ISSUED

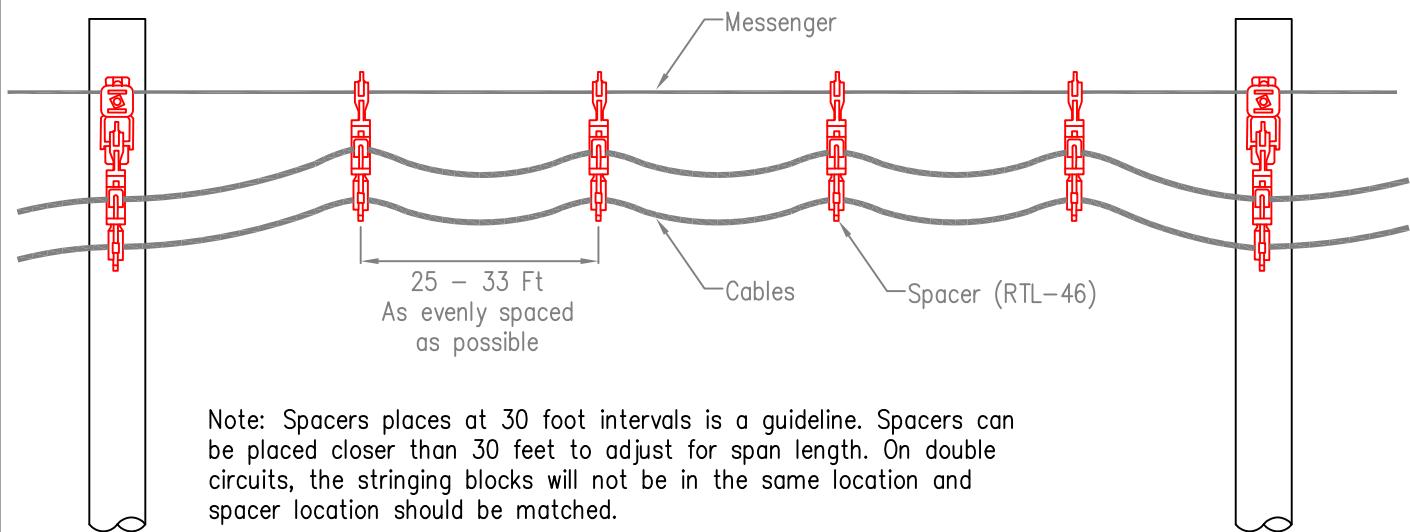
6/18/2012

REVISED

STANDARD NUMBER

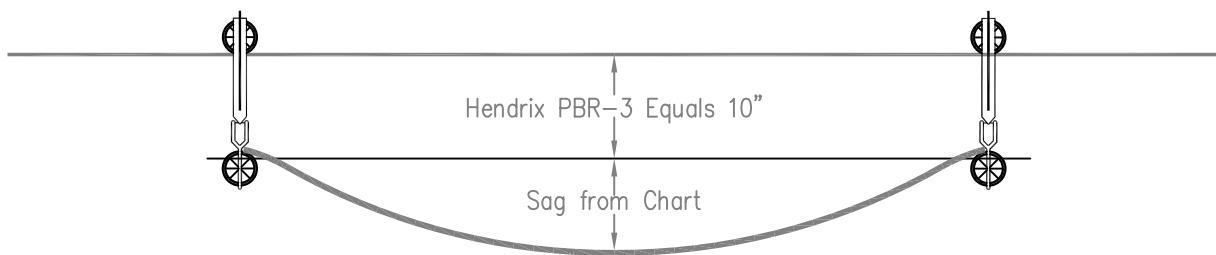
VM5-\* -H

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Note: Spacers places at 30 foot intervals is a guideline. Spacers can be placed closer than 30 feet to adjust for span length. On double circuits, the stringing blocks will not be in the same location and spacer location should be matched.

### Spacer Cable Installation



Sag Between Roll-by-Blocks (inches)		
Ambient Temperature during installation (F)	Regions with expected low temperature of -20F	Regions with expected low temperature of -50F
10-29	3	7
30-49	4	8
50-69	5	9
70-89	6	10
90-109	7	11
110+	8	12

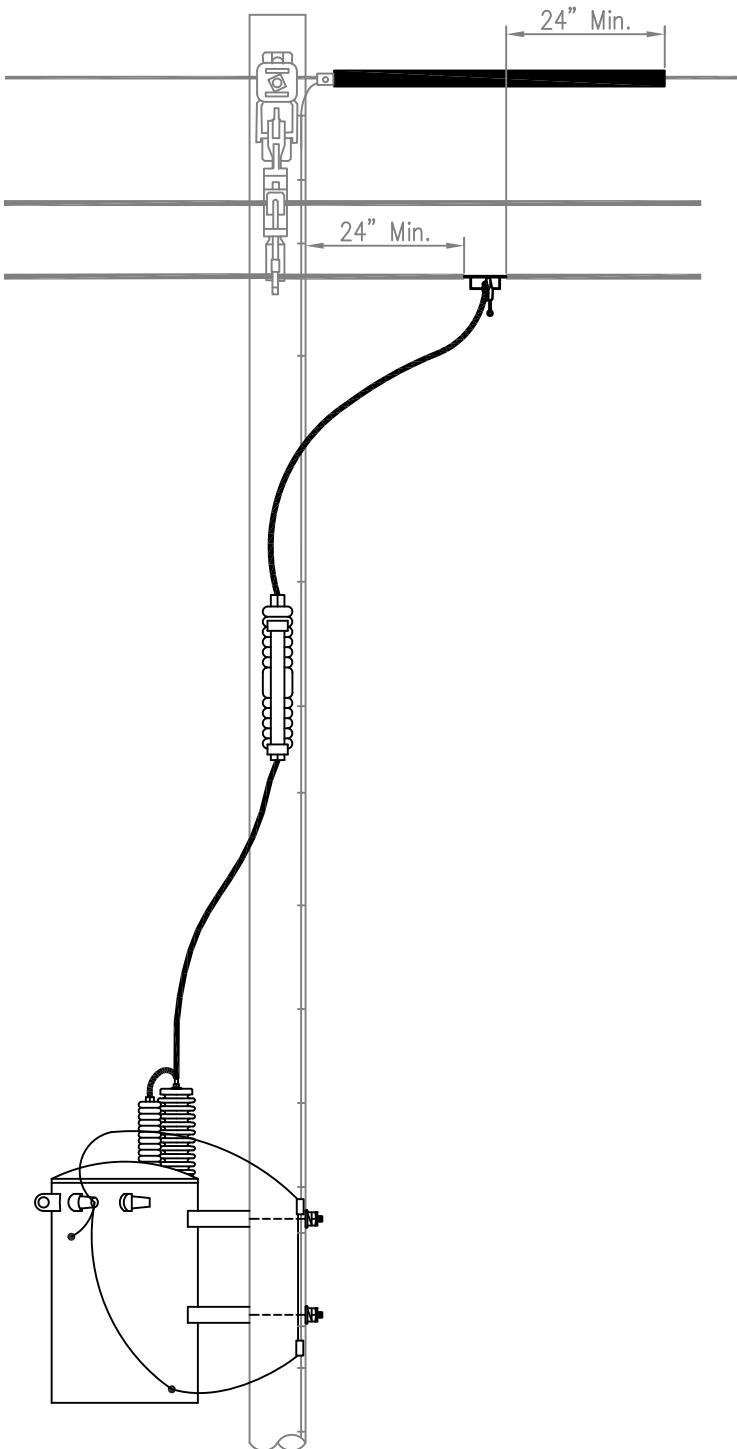
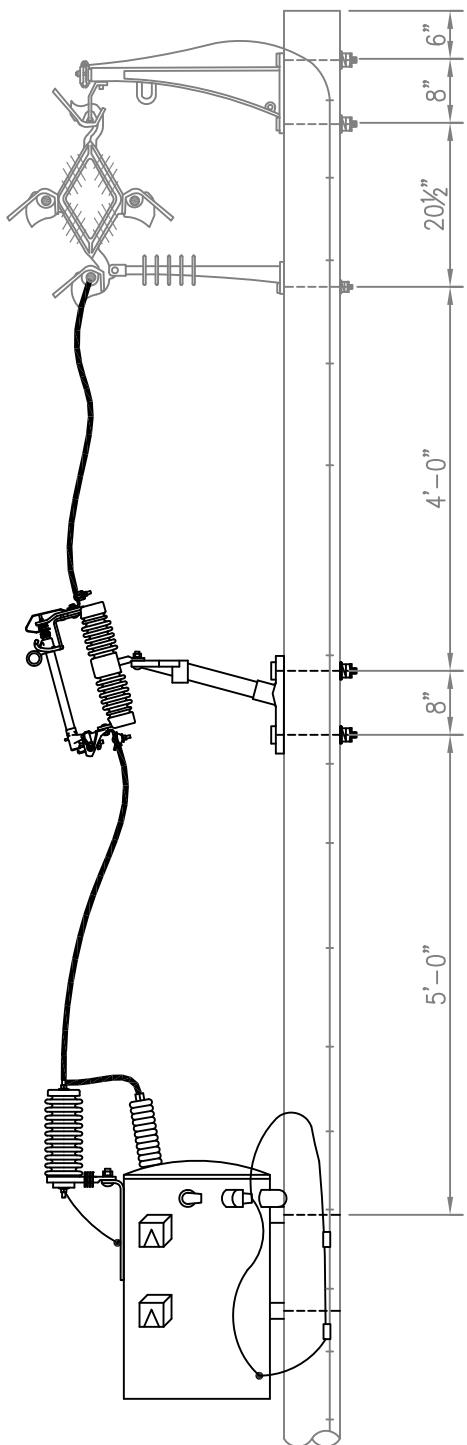
Sag Chart



DATE	REVISION

### 14.4/24.9KV THREE PHASE HENDRIX CONSTRUCTION SPACER CABLE INSTALLATION - GUIDE

ISSUED	05/15/2012
REVISED	
STANDARD NUMBER	GUIDE



DATE

REVISION

**14.4/24.9 kV THREE PHASE  
HENDRIX CONSTRUCTION  
1Ø TRANSFORMER INSTALLATION -  
GUIDE**

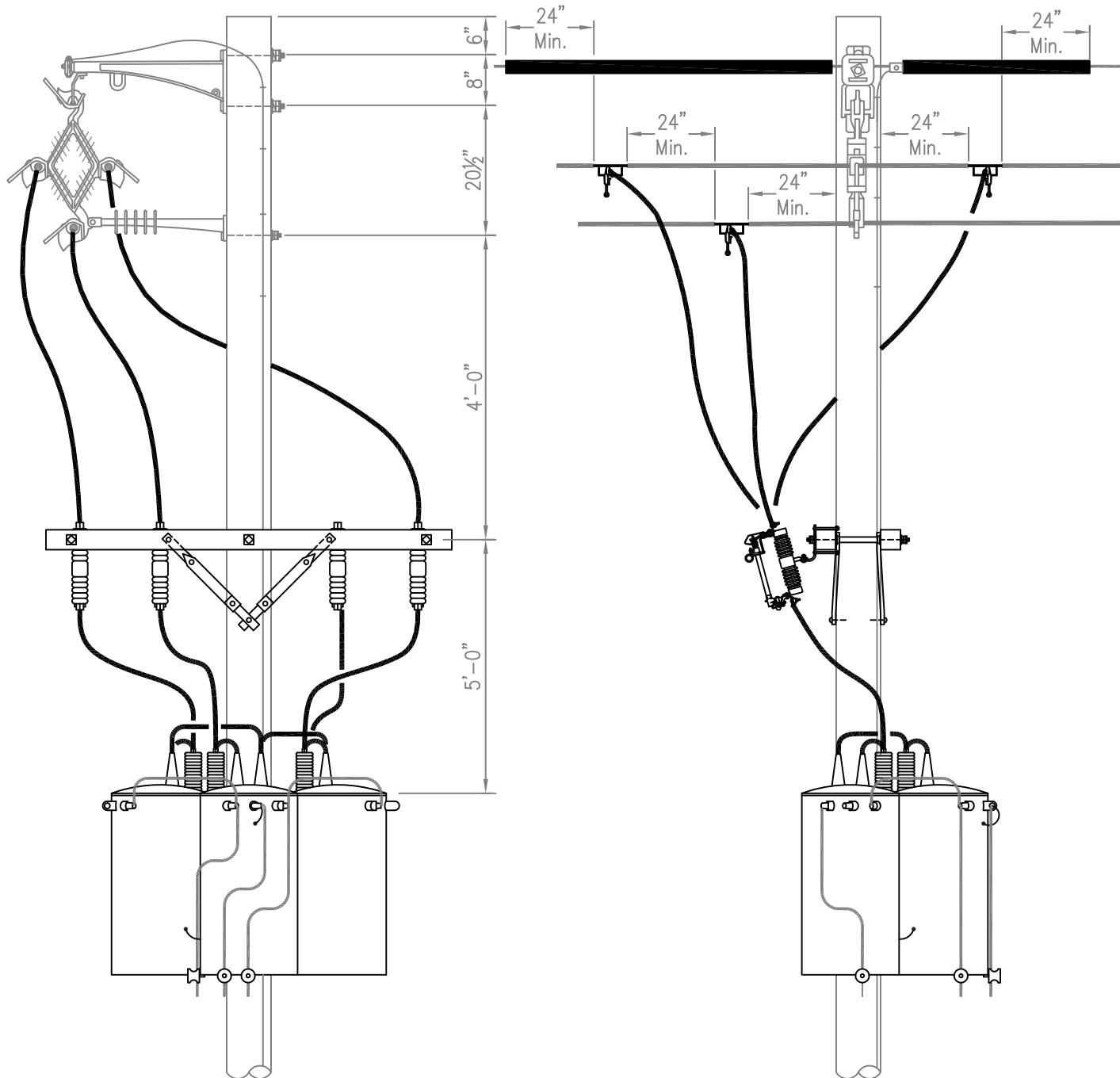
ISSUED

6/18/2012

REVISED

STANDARD NUMBER

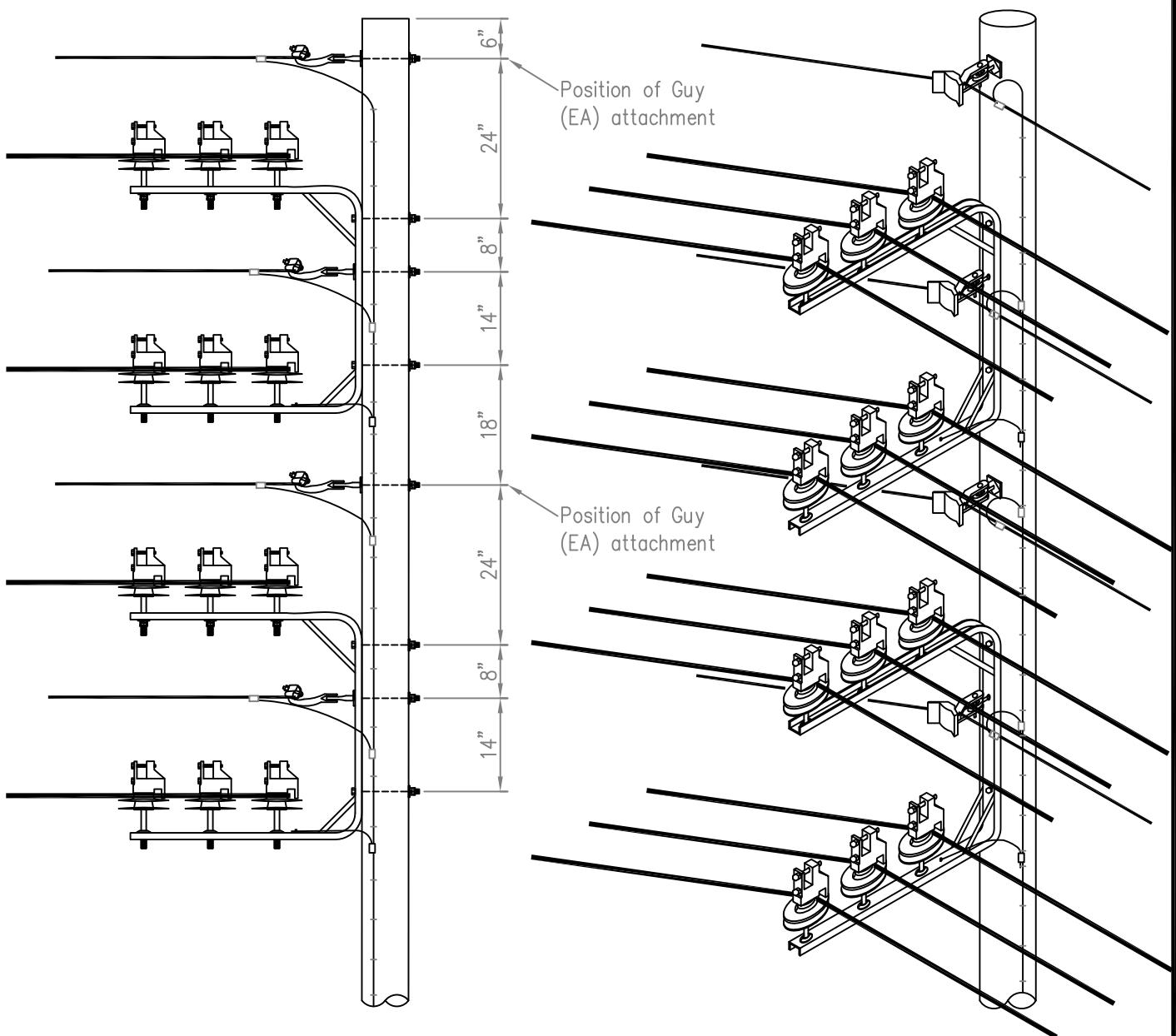
GUIDE



DATE	REVISION

14.4/24.9 kV THREE PHASE  
HENDRIX CONSTRUCTION  
3Ø TRANSFORMER INSTALLATION -  
GUIDE

ISSUED	6/18/2012
REVISED	
STANDARD NUMBER GUIDE	



DATE

REVISION

14.4/24.9 kV THREE PHASE  
HENDRIX CONSTRUCTION  
MULTIPLE CIRCUITS -  
VERTICAL 7° TO 60° ANGLE-  
GUIDE

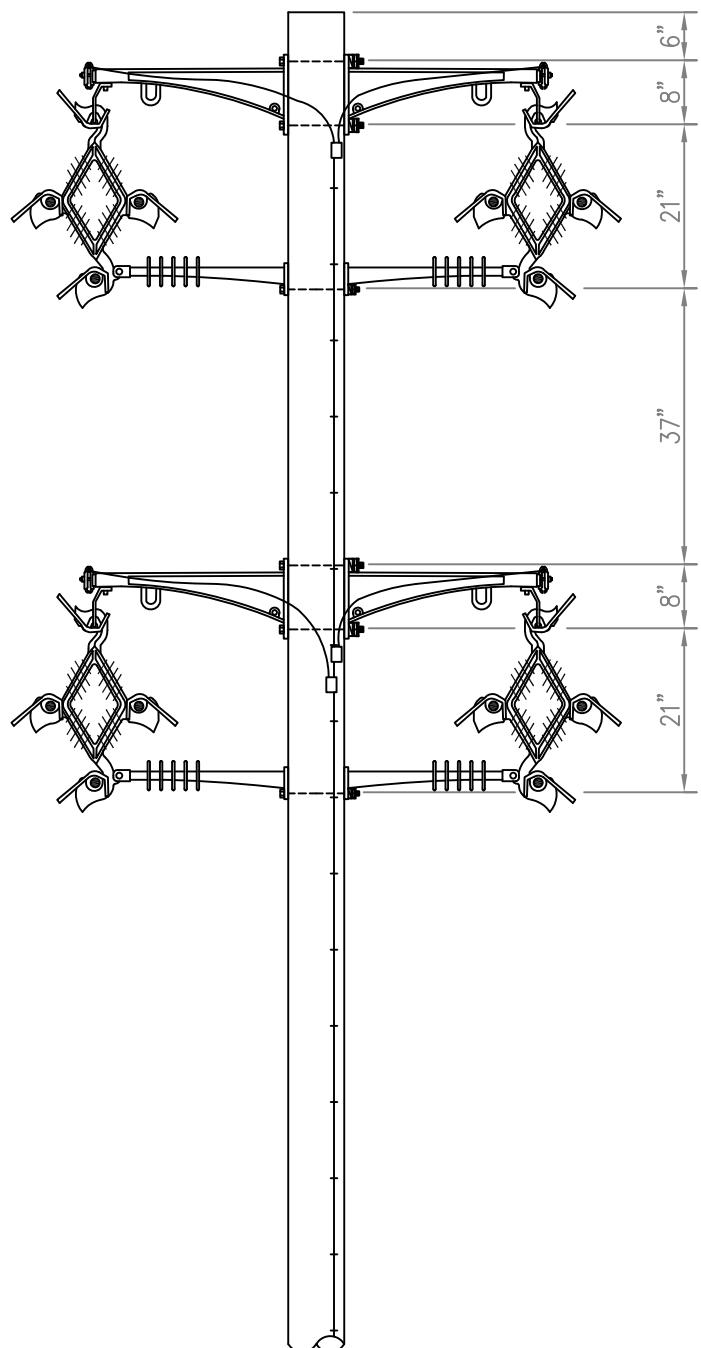
ISSUED

6/18/2012

REVISED

STANDARD NUMBER

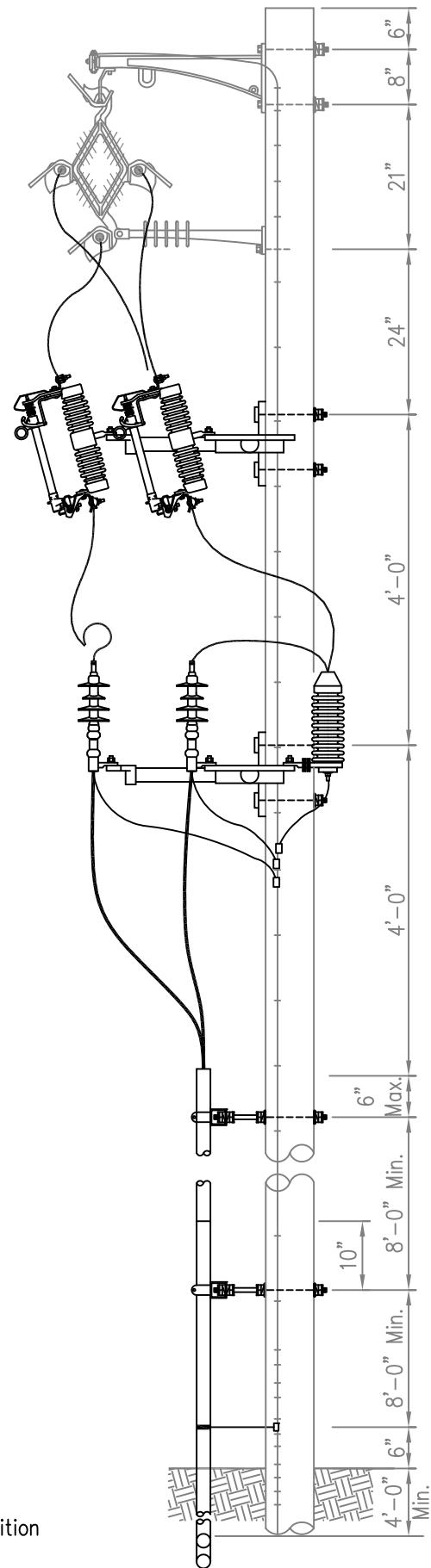
GUIDE



DATE	REVISION

14.4/24.9 kV THREE PHASE  
HENDRIX CONSTRUCTION  
MULTIPLE CIRCUITS -  
VERTICAL TANGENT - GUIDE

ISSUED	6/18/2012
REVISED	
STANDARD NUMBER GUIDE	



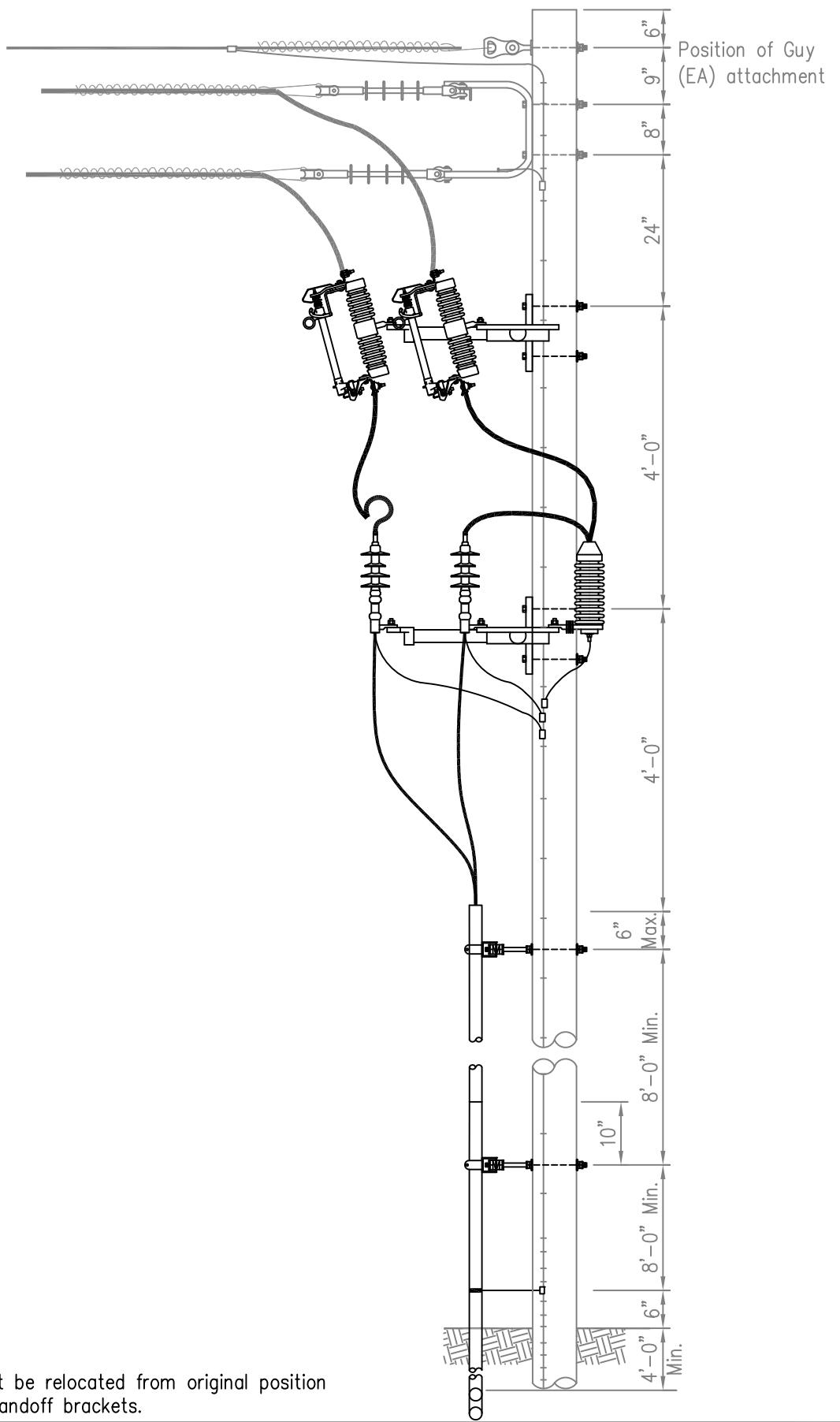
NOTE: Neutral position must be relocated from original position to accommodate for the standoff brackets.



DATE	REVISION

14.4/24.9 kV THREE PHASE  
HENDRIX CONSTRUCTION  
200A RISER - GUIDE

ISSUED	6/18/2012
REVISED	
STANDARD NUMBER	GUIDE



DATE	REVISION

14.4/24.9 kV THREE PHASE  
HENDRIX CONSTRUCTION  
600A RISER - GUIDE

ISSUED	4/04/2012
REVISED	
STANDARD NUMBER	GUIDE

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