

Three-Phase Armless Deadend Pole Top Assemblies

1. Scope

This standard covers the information necessary to construct the pole top assemblies for two- and three-phase armless deadend poles supporting #4 AWG copper, 397.5 kcmil ACSR, or 954 kcmil ACSR primary conductors on the 26 kV primary distribution system. Installation instructions for connecting the primary conductor to the pole are included, along with requirements for vertical spacing and hardware.

Criteria for pole top assemblies covered under this standard include the following:

Grade of construction	B and C
Pole class	1 or stronger
Pole length	50 ft and 55 ft
Soil condition	Average
Allowable line angle	0°–150°

If a deadend is not required, refer to SCL 0104.01 and SCL 0104.03.

Composite, steel, laminated, and other non-wood poles are outside the scope of this standard.

2. Application

This standard provides direction to SCL engineers, crews, and contractors for the installation of two- and three-phase armless deadend pole top assemblies on 26 kV distribution poles with #4 AWG copper, 397.5 kcmil ACSR, or 954 kcmil ACSR conductors.

3. General Requirements

Armless poles shall be used only when absolutely required or upon request of SCL management. The typical use for an armless pole is for locations where a crossarm construction cannot be used because of clearance issues.

Two-phase armless deadend poles shall be constructed as three-phase armless deadend poles without the bottom phase.

The three-phase armless deadend poles shall be constructed as shown in Table 3.

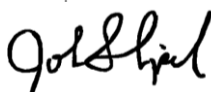




Table 3. Three-Phase Armless Deadend Pole Tops

Conductor Size	Allowable Line Angle	Figure
#4 AWG, 397.5 kcmil, or 954 kcmil	–	3a
#4 AWG, 397.5 kcmil, or 954 kcmil	0°–60°	3b, 3c
#4 AWG, 397.5 kcmil, or 954 kcmil	0°–80°	3d, 3e
#4 AWG, 397.5 kcmil, or 954 kcmil	80°–150°	3f, 3g

Deadend poles shall be guyed according to the requirements of SCL 0199.01.

The highest communication attachment shall be located at a minimum of 40 in below the secondary and neutral and a minimum of 10 ft below the top of the transformer.

Figure 3a. Three-Phase #4 AWG Copper, 397.5, and 954 kcmil ACSR Armless Deadend Pole, Side View

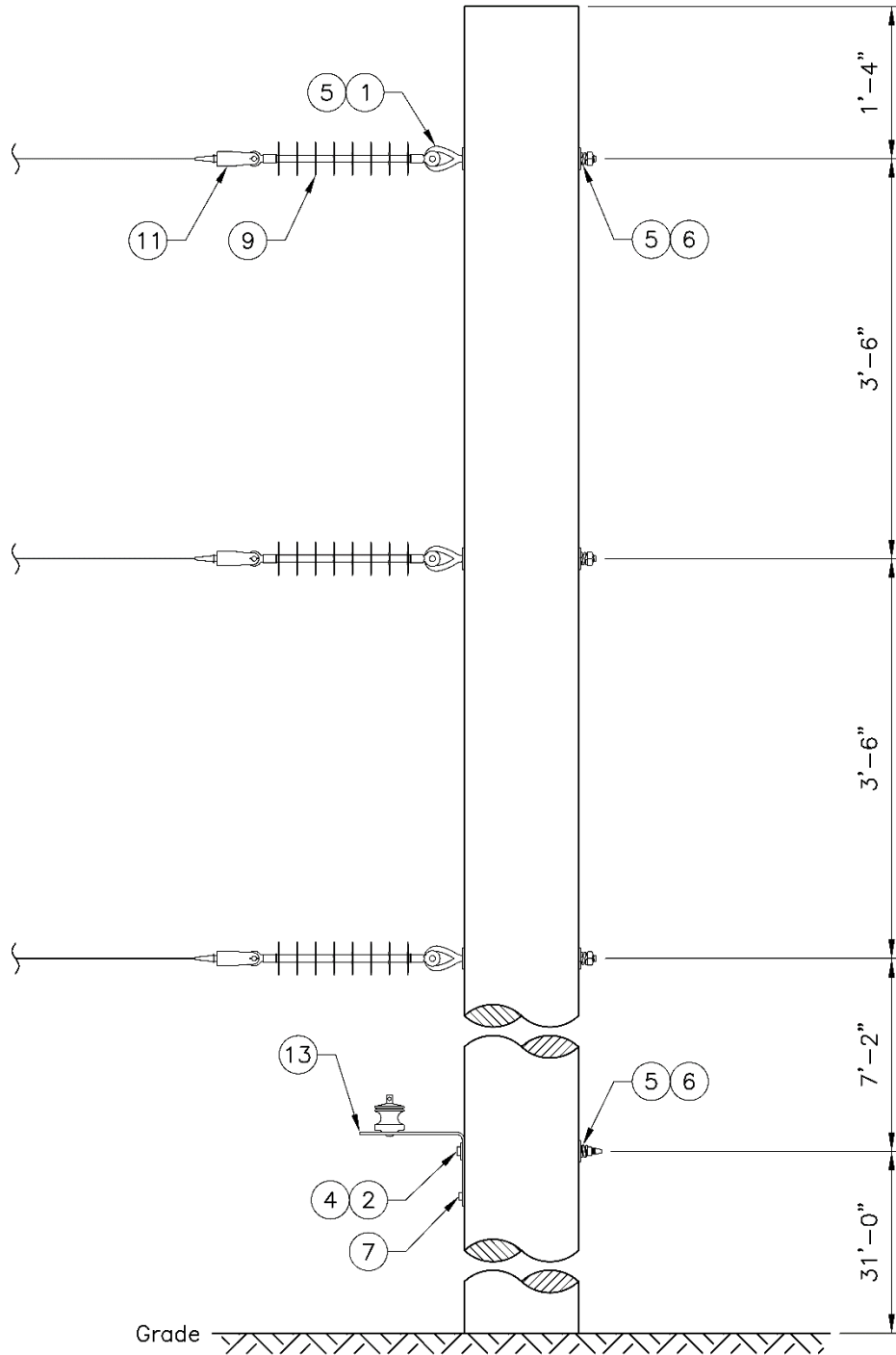


Figure 3b. Allowable Line Angle Range of 0°–60°, #4 AWG Copper, 397.5, and 954 kcmil ACSR Armless Double Deadend Pole

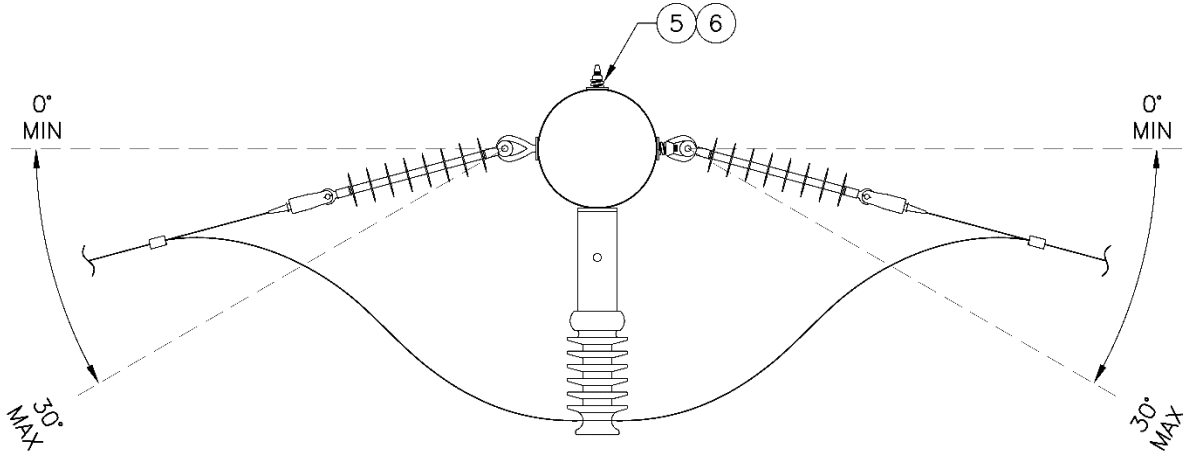


Figure 3c. Three-Phase #4 AWG Copper, 397.5, and 954 kcmil ACSR Armless Double Deadend Pole (0°-60°)

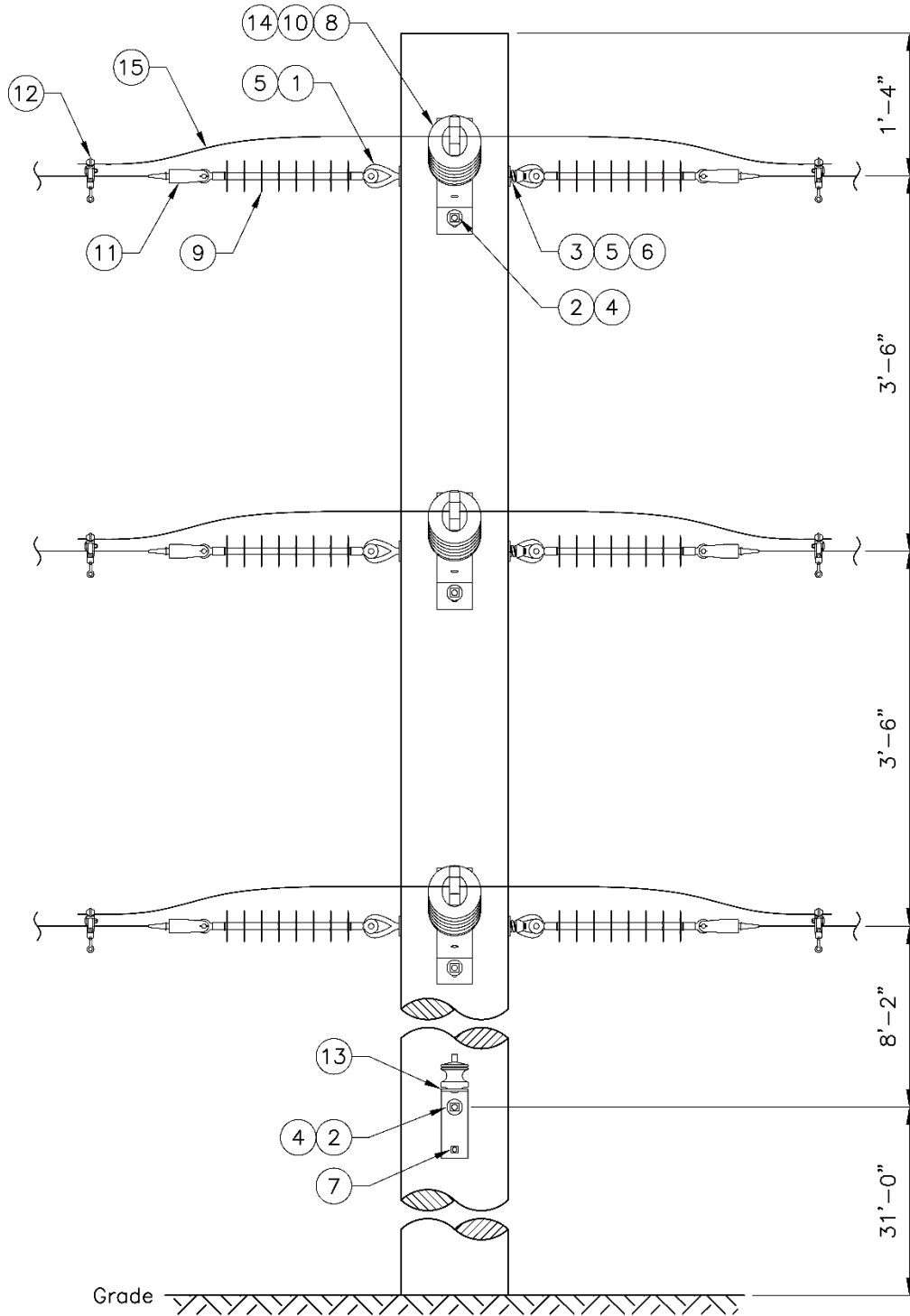


Figure 3d. Allowable Line Angle Range of 0°–80°, #4 AWG Copper, 397.5, and 954 kcmil ACSR Armless Double Deadend Pole

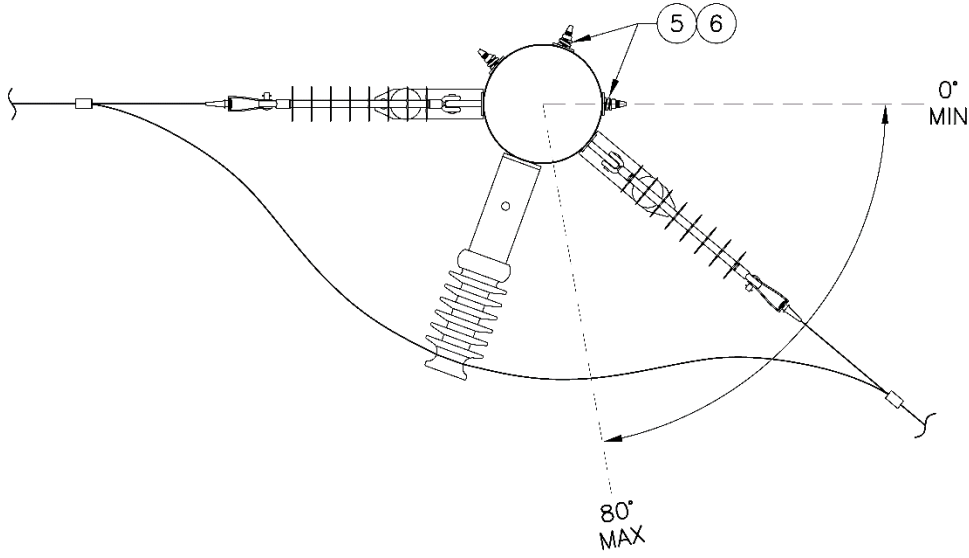


Figure 3e. Three-Phase #4 AWG Copper, 397.5, and 954 kcmil ACSR Armless Double Deadend Pole (0°-80°)

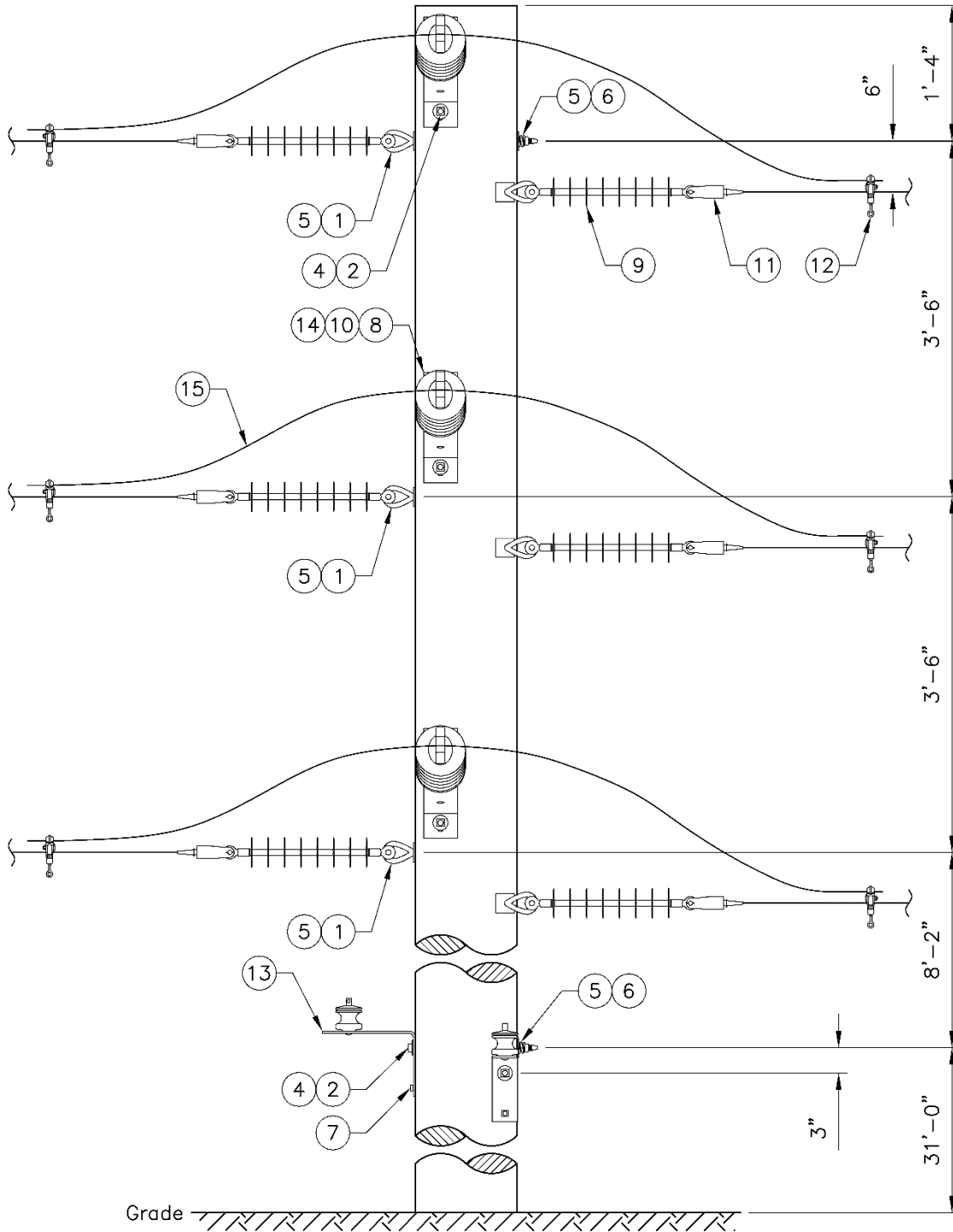


Figure 3f. Allowable Line Angle Range 80°–150° #4 AWG Copper, 397.5, and 954 kcmil ACSR Armless Double Deadend Pole

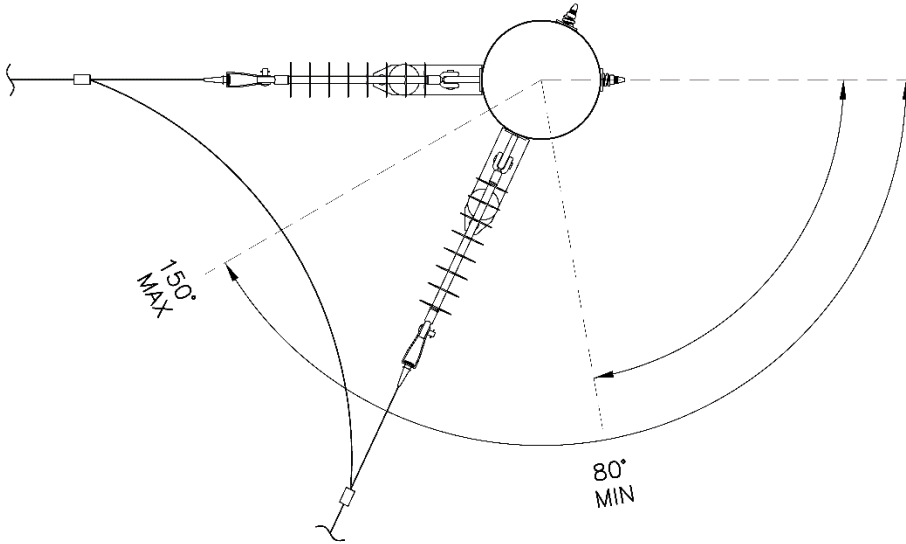
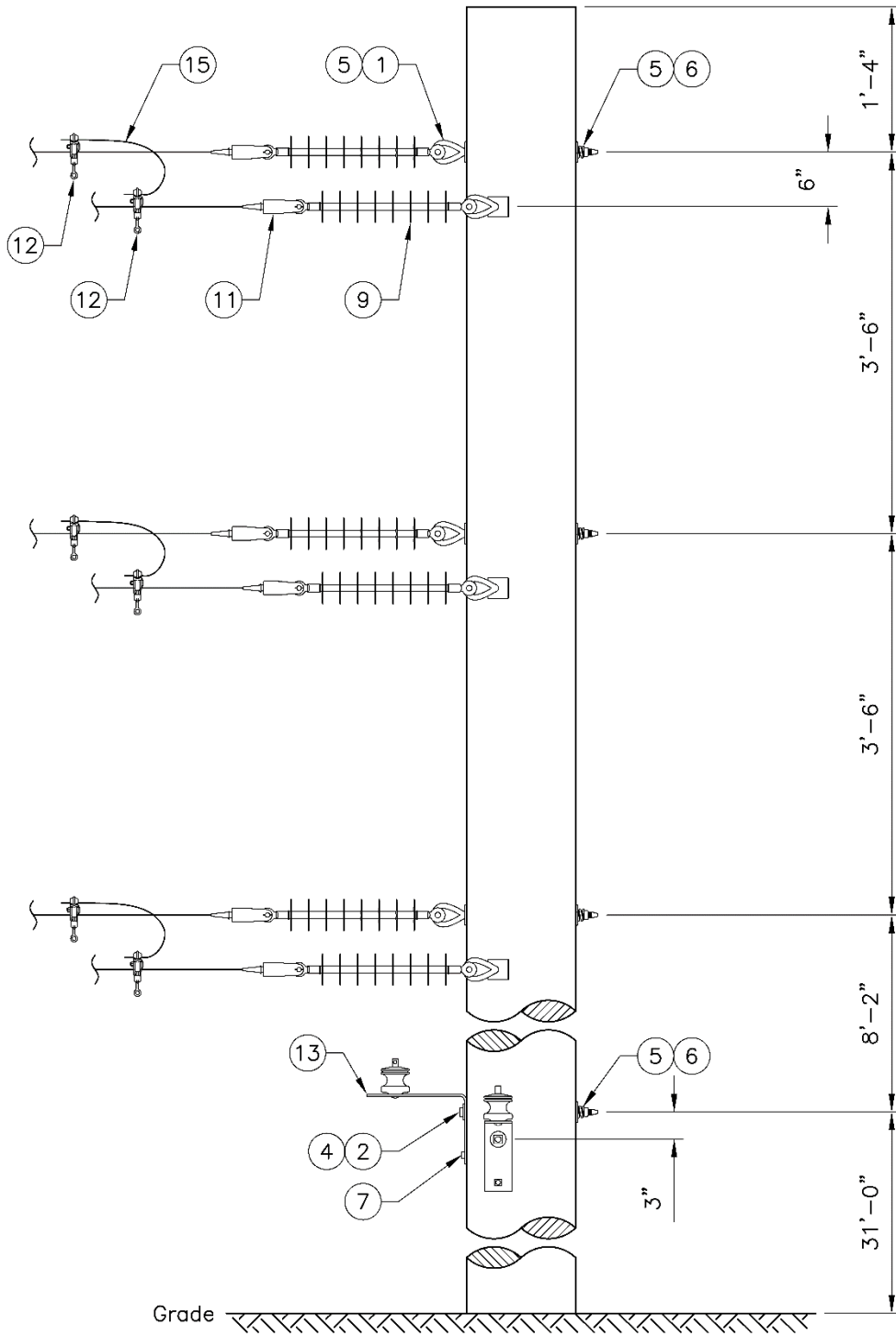


Figure 3g. Three-Phase #4 AWG Copper, 397.5, and 954 kcmil ACSR Armless Double Deadend Pole (80°–150°)



4. Construction Notes

If two neutrals are required, mount the second neutral on the street side 1 ft below the top bolt hole of the original neutral (typically at 30 ft).

If poor soil is found in the field, contact the SCL Design Engineer.

If there are avian and wildlife concerns, contact the SCL Design Engineer.

If there are salt spray concerns, contact the SCL Design Engineer.

5. Material List

Table 5a. Materials for Three-Phase #4 AWG Copper Armless Deadend Pole Top Assemblies

Fig	Compatible Unit	ID	Quantity			
3a	Three-phase #4 AWG copper armless deadend	PLT#4-3VERTDE				
3c	Three-phase #4 AWG copper armless double deadend 0°–60°	PLT#4-3VERTDDE1				
3e	Three-phase #4 AWG copper armless double deadend 0°–80°	PLT#4-3VERTDDE2				
3g	Three-phase #4 AWG copper armless double deadend 80°–150°	PLT#4-3VERTDDE3				
#	Material Description	ID				
1	Bolt, oval eye, galvanized, 5/8" x 14"	561114	6	6	3	3
2	Bolt, machine, galvanized, 5/8" x 14"	780846	2	8	7	1
3	Nut, eye, 5/8"	565252	–	–	3	–
4	Washer, round, flat, 5/8"	585030	2	8	7	1
5	Washer, square, flat, 2-1/4" x 2-1/4"	585135	14	20	13	7
6	Washer, coil, spring, 5/8"	584261	8	14	10	4
7	Screw, lag, 1/2" x 4"	785259	2	2	1	1
8	Insulator, post top 34.5 kV tie-top	690157	–	3	3	–
9	Insulator, deadend, polymer, 20"	690233	6	6	6	3
10	Bracket, insulator pin	580510	–	3	3	–
11	Deadend, automatic, Cu #4	581332	6	6	6	3
12	Clamp, hot line tap, 2/0, #8	580725	6	6	6	–
13	LR bracket	690404	2	2	1	1
14	Wire, tie, insulator, #6 AWG SD, Cu (ft)	610210	–	9	9	–
15	Wire, solid bare copper, jumper, #4 AWG (ft)	610208	30	36	45	–

Table 5b. Materials for Two-Phase #4 AWG Copper Armless Deadend Pole Top Assemblies

Fig	Compatible Unit	ID	Quantity			
3a	Two-phase #4 AWG copper armless deadend	PLT#4-2VERTDE				
3c	Two-phase #4 AWG copper armless double deadend 0°-60°	PLT#4-2VERTDDE1				
3e	Two-phase #4 AWG copper armless double deadend 0°-80°	PLT#4-2VERTDDE2				
3g	Two-phase #4 AWG copper armless double deadend 80°-150°	PLT#4-2VERTDDE3				
#	Material Description	ID				
1	Bolt, oval eye, galvanized, 5/8" x 14"	561114	4	4	2	2
2	Bolt, machine, galvanized, 5/8" x 14"	780846	2	6	5	1
3	Nut, eye, 5/8"	565252	-	-	2	-
4	Washer, round, flat, 5/8"	585030	2	6	5	1
5	Washer, square, flat, 2-1/4" x 2-1/4"	585135	10	14	9	5
6	Washer, coil, spring, 5/8"	584261	6	10	7	3
7	Screw, lag, 1/2" x 4"	785259	2	2	1	1
8	Insulator, post top 34.5 kV tie-top	690157	-	2	2	-
9	Insulator, deadend, polymer, 20"	690233	4	4	4	2
10	Bracket, insulator pin	580510	-	2	2	-
11	Deadend, automatic, Cu #4 AWG	581332	4	4	4	2
12	Clamp, hot line tap, 2/0, #8 AWG	580725	4	4	4	-
13	LR bracket	690404	2	2	1	1
14	Wire, tie, insulator, #6 AWG, SD, copper (ft)	610210	-	6	6	-
15	Wire, solid bare copper, jumper, #4 AWG (ft)	610208	20	24	30	-

Table 5c. Materials for Three-Phase 397.5 kcmil ACSR Armless Deadend Pole Top Assemblies

Fig	Compatible Unit	ID	Quantity			
3a	Three-phase 397.5 kcmil ACSR armless deadend	PLT397-VERTDE				
3c	Three-phase 397.5 kcmil ACSR armless double deadend 0°–60°	PLT397-VERTDDE1				
3e	Three-phase 397.5 kcmil ACSR armless double deadend 0°–80°	PLT397-VERTDDE2				
3g	Three-phase 397.5 kcmil ACSR armless double deadend 80°–150°	PLT397-VERTDDE3				
#	Material Description	ID				
1	Bolt, oval eye, galvanized, 5/8" x 14"	561114	6	6	3	3
2	Bolt, machine, galvanized, 5/8" x 14"	780846	2	8	7	1
3	Nut, eye, 5/8"	565252	–	–	3	–
4	Washer, round, flat, 5/8"	585030	2	8	7	1
5	Washer, square, flat, 2-1/4" x 2-1/4"	585135	14	20	13	7
6	Washer, coil, spring, 5/8"	584261	8	14	10	4
7	Screw, lag, 1/2" x 4"	785259	2	2	1	1
8	Insulator, post top 34.5 kV tie-top	690157	–	3	3	–
9	Insulator, deadend, polymer, 20"	690233	6	6	6	3
10	Bracket, insulator pin	580510	–	3	3	–
11	Clamp, deadend, straight line, #3/0-477	694292	6	6	6	3
12	Connector, Ampact, 397-397	651101	6	6	6	–
13	LR bracket	690404	2	2	1	1
14	Tie, insulator, 0.756"–0.855"	658979	–	3	3	–
15	Wire, bare, AAC, jumper, 397.5, Canna (ft)	600113	30	36	45	–

Table 5d. Materials for Three-Phase 954 kcmil ACSR Armless Deadend Pole Top Assemblies

Fig	Compatible Unit	ID	Quantity			
3a	Three-phase 954 kcmil ACSR armless deadend	PLT954-VERTDE				
3c	Three-phase 954 kcmil ACSR armless double deadend 0°–60°	PLT954-VERTDDE1				
3e	Three-phase 954 kcmil ACSR armless double deadend 0°–80°	PLT954-VERTDDE2				
3g	Three-phase 954 kcmil ACSR armless double deadend 80°–150°	PLT954-VERTDDE3				
#	Material Description	ID				
1	Bolt, oval eye, galvanized, 5/8" x 14"	561114	6	6	3	3
2	Bolt, machine, galvanized, 5/8" x 14"	780846	2	8	7	1
3	Nut, eye, 5/8"	565252	–	–	3	–
4	Washer, round, flat, 5/8"	585030	2	8	7	1
5	Washer, square, flat, 2-1/4" x 2-1/4"	585135	14	20	13	7
6	Washer, coil, spring, 5/8"	584261	8	14	10	4
7	Screw, lag, 1/2" x 4"	785259	2	2	1	1
8	Insulator, post top 34.5 kV clamp-top	690159	–	3	3	–
9	Insulator, deadend, polymer, 20"	690233	6	6	6	3
10	Bracket, insulator pin	580510	–	3	3	–
11	Clamp, deadend, straight line, 397–954	694294	6	6	6	3
12	Connector, Al, 954–954	013624	6	6	6	–
13	LR bracket	690404	2	2	1	1
14	Clamp, trunnion, line post, for ACSR and AAC	695196	–	3	3	–
15	Wire, bare, AAC, jumper, 954, Goldenrod (ft)	600126	30	36	45	–

6. References

SCL Construction Standard 0104.01, “Three-Phase Armless Tangent Pole Top Assemblies”

SCL Construction Standard 0104.03, “Three-Phase Armless Angle Pole Top Assemblies”

SCL Construction Standard 0199.01, “Requirements for Guying and Anchoring”

7. Sources

National Electrical Safety Code (NESC), C2-2012 Edition; Institute of Electrical and Electronics Engineers (IEEE) Inc., New York, NY, 2011

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