

Three-Phase Armless Angle Pole Top Assemblies

1. Scope

This standard covers the information necessary to construct the pole top assemblies for three-phase armless angle 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	4°–45°

For line angles less than the allowable line angles described above, refer to SCL 0104.01.

For line angles greater than the allowable line angles described above, refer to SCL 0104.05.

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 three-phase armless angle pole top assemblies on 26 kV distribution poles with #4 AWG copper, 397.5 kcmil ACSR, or 954 kcmil ACSR conductors.

3. General Requirements

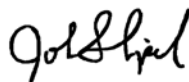
Armless poles shall be used only when absolutely required or upon request of SCL management. The typical use for an armless pole is for locations where a crossarm construction cannot be used because of clearance issues.

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

Three-phase armless angle poles shall be constructed as shown in Table 3.

Table 3. Three-Phase Armless Angle Pole Tops

Conductor Size	Allowable Line Angle	Figure
#4 AWG, 397.5 kcmil, or 954 kcmil	4°–20°	3a
#4 AWG, 397.5 kcmil, or 954 kcmil	21°–45°	3b



Armless angle 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 Armless Angle Pole (4°–20°), Side View

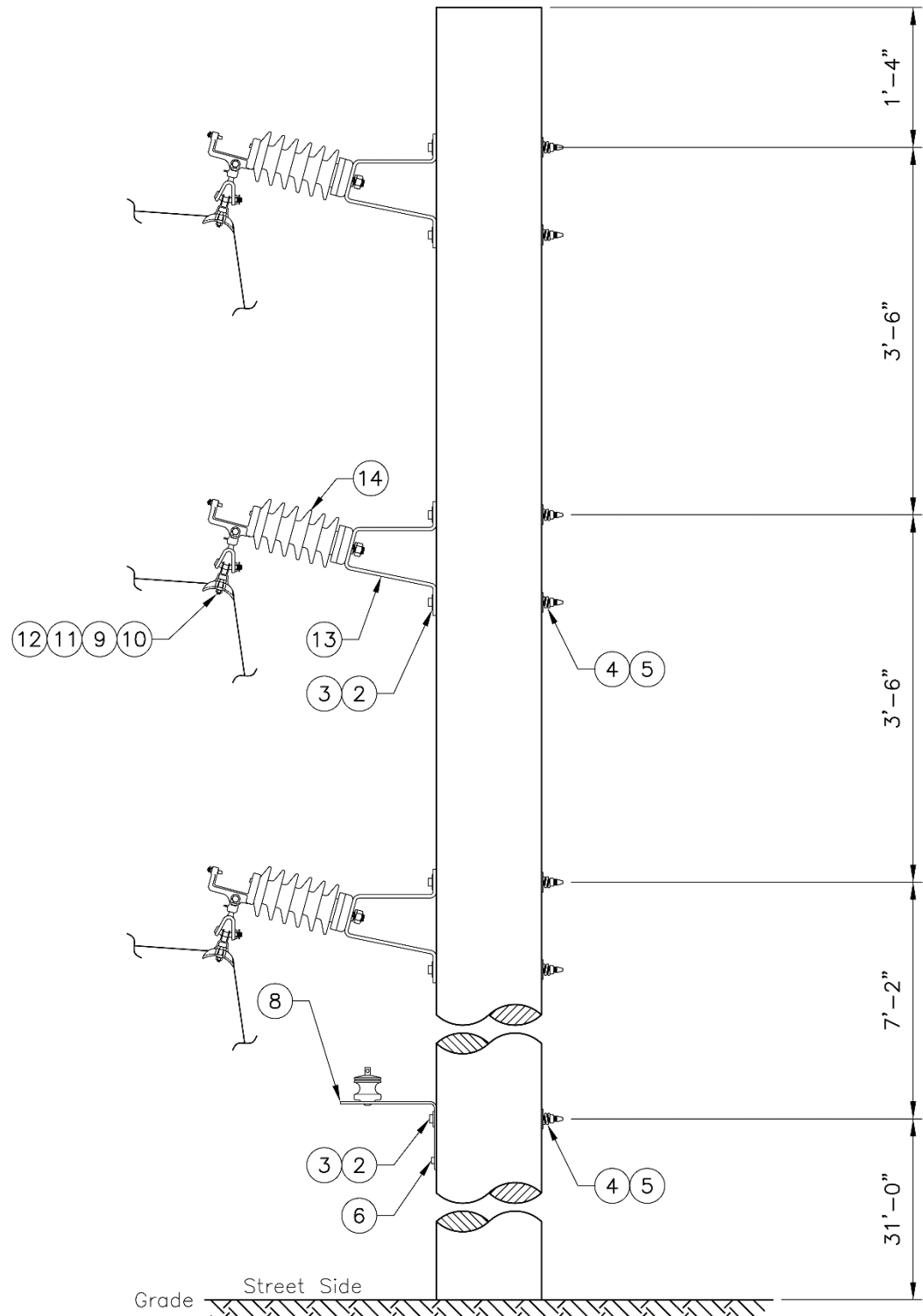
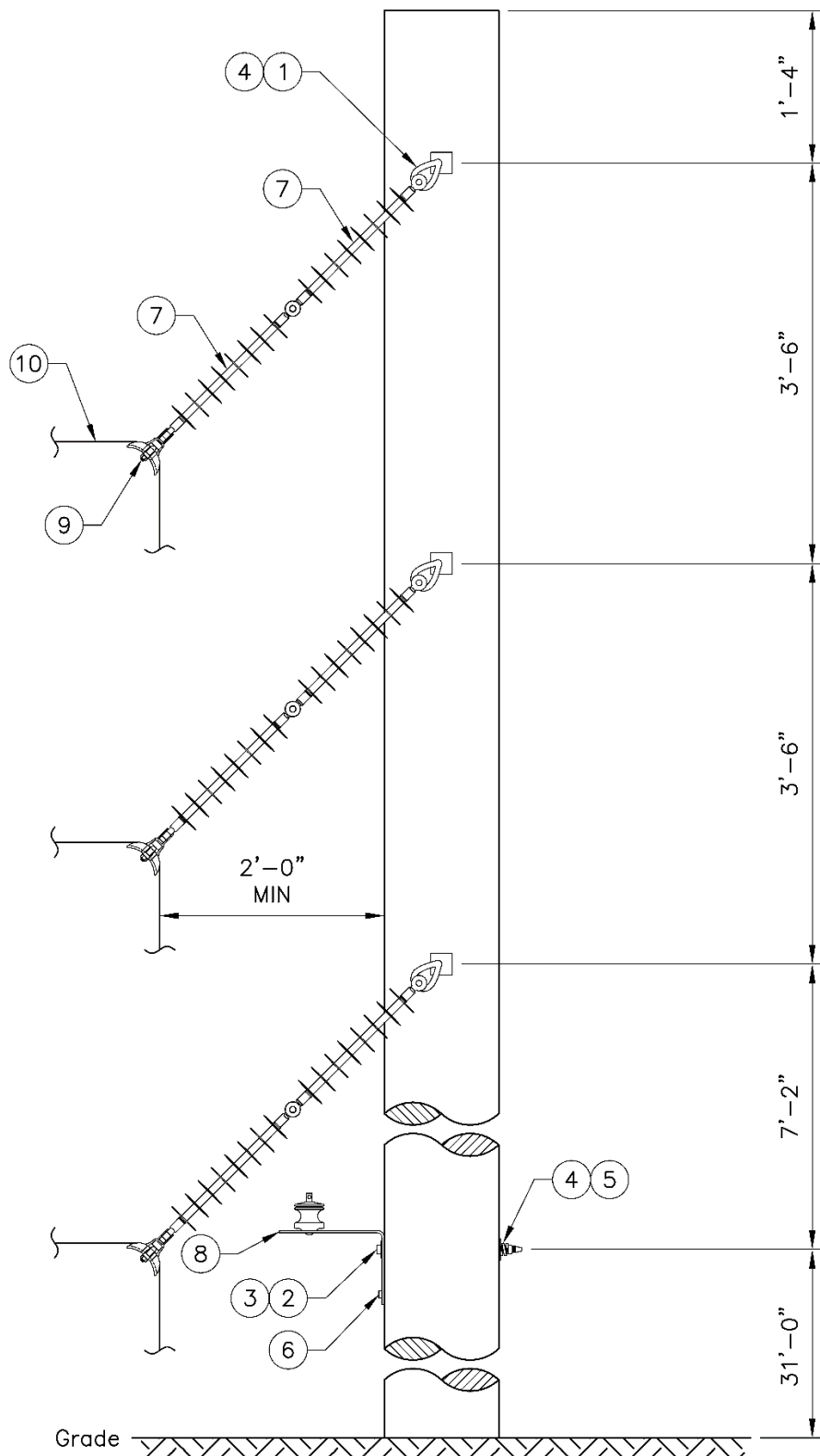


Figure 3b. Three-Phase Armless Angle Pole (21°–45°), Side View



Minimum allowable conductor to pole face distance = 24"

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 Armless Angle Pole Top Assemblies

Fig	Compatible Unit	ID	Quantity					
3a	Three-phase #4 AWG Cu armless angle (4°–20°)	PLT#4-3VERTSANG						
3a	Three-phase 397.5 kcmil ACSR armless angle (4°–20°)	PLT397-VERTSANG						
3a	Three-phase 954 kcmil ACSR armless angle (4°–20°)	PLT954-VERTSANG						
3b	Three-phase #4 AWG Cu armless angle (21°–45°)	PLT#4-3VERTLANG						
3b	Three-phase 397.5 kcmil ACSR armless angle (21°–45°)	PLT397-VERTLANG						
3b	Three-phase 954 kcmil ACSR armless angle (21°–45°)	PLT954-VERTLANG						
#	Material Description	ID						
1	Bolt, oval eye, galvanized, 5/8" x 14"	561114	3	3	3	—	—	—
2	Bolt, machine, galvanized, 5/8" x 14"	780846	1	1	1	7	7	7
3	Washer, round, flat, 5/8"	585030	1	1	1	7	7	7
4	Washer, square, flat, 2-1/4" x 2-1/4"	585135	7	7	7	7	7	7
5	Washer, coil, spring, 5/8"	584261	4	4	4	7	7	7
6	Screw, lag, 1/2" x 4"	785259	1	1	1	1	1	1
7	Insulator, deadend, polymer, 20"	690233	6	6	6	—	—	—
8	LR bracket	690404	1	1	1	1	1	1
9	Clamp, suspension, steel, #4 Cu	695016	—	—	3	—	—	3
9	Clamp, suspension, aluminum, 397.5 ACSR	695137	—	3	—	—	3	—
9	Clamp, suspension, aluminum, 954 ACSR	695155	3	—	—	3	—	—
10	Lineguards, formed aluminum, 397.5 ACSR	658935	—	3	—	—	3	—
10	Lineguards, formed aluminum, 954 ACSR	658946	3	—	—	3	—	—
11	Fitting, Y-clevis ball	695525	—	—	—	3	3	3
12	Fitting, socket eye	696020	—	—	—	3	3	3
13	Bracket, insulator pin	580510	—	—	—	3	3	3
14	Insulator, horizontal post 34.5 kV clamp-top	690173	—	—	—	3	3	3

6. References

SCL Construction Standard 0104.01; "Three-Phase Armless Tangent Pole Top Assemblies"

SCL Construction Standard 0104.05; "Three-Phase Armless Dead End 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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