

GUYING AERIAL CABLE LINES

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1. GENERAL

1.01 This section illustrates and outlines the guying requirements of pole lines supporting aerial cable.

1.02 This section is reissued to include information relating to the 6.6M strand.

1.03 In general, use the guy rule as outlined in Section 621-400-013 to determine the size of side and head guys for supporting aerial cable.

1.04 Where practical, when guying lines that are to support more than one cable suspension strand, except where two strands are supported on the same suspension bolt, it is preferable to guy each strand separately, especially at deadends.

1.05 Where it is not practical to guy each suspension strand separately, exceptions may be made as follows:

- (a) A single guy may be used when the separation between suspension strands is 2 feet or less.

(b) At corners with a pull of 6 feet or less, a single guy may be used for three 16M or smaller suspension strands.

(c) At corners with a pull in excess of 6 feet and three 16M or smaller suspension strands, a single guy may be used for the two upper suspension strands but the third suspension strand should be guyed separately.

(d) For four 16M or smaller suspension strands, single guys may be used for each pair.

1.06 Where a 25M guy is required, one 16M and one 10M guy may be used.

1.07 When guying lines that are to support more than one suspension strand, guy for the first strand initially but install an anchor and guy rod of sufficient size to accommodate any additional guying required. Guy for additional suspension strands when they are placed. If, however, a single guy is planned, place a guy of sufficient size initially to accommodate the additional suspension strand.

1.08 For clarity, the cable has been omitted and only the cable suspension strand is illustrated in the figures in this section. Also, each figure illustrates only one of the three methods (B strand grip, strandwise, or 3-bolt clamp) that may be used for terminating strand.

2. CORNER POLES

2.01 All corner poles supporting aerial cable shall be guyed where the pull is greater than indicated below:

Size of Suspension Strand (Pounds)	Pull (Feet)
6M or	3 or more
◆6.6M◆	
10M	2 or more
16M or more	Any pull that can be detected

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2.02 Where the pull on the corner pole is 50 feet or less, place a side guy bisecting corner angle. See Fig. 1.

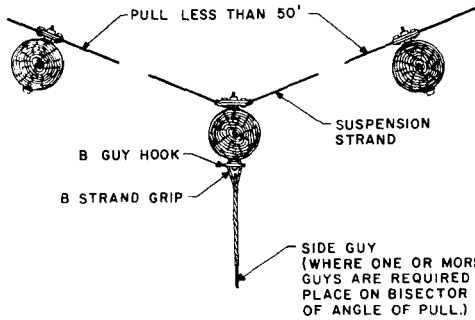


Fig. 1—Corner Pole With Guy on Bisector of Angle of Pull

2.03 Where the pull on the corner pole exceeds 50 feet, but is less than a right angle, place two head guys as shown in Fig. 2.

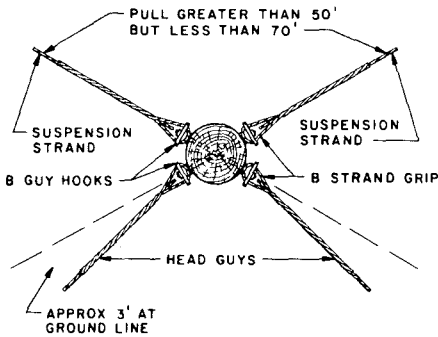


Fig. 2—Corner Pole With Two Head Guys

2.04 At right-angle corners (70-foot pull) made on one pole, two head guys shall be placed as shown in Fig. 3. Each guy shall be in line with the suspension strand that it supports.

2.05 At right-angle corners made on two poles, place guys on each pole as described in (a), (b), or (c).

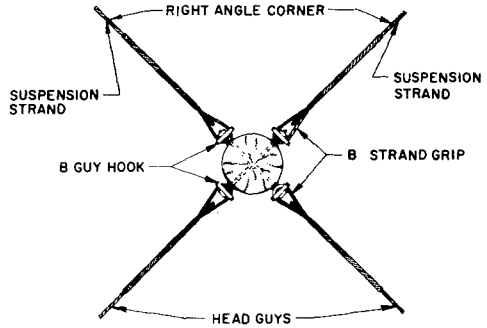


Fig. 3—Right-Angle Corner Made on One Pole

Note: Right-of-way conditions permitting, the method described in (a) is preferable.

(a) Side guy each corner pole with a guy as shown in Fig. 4.

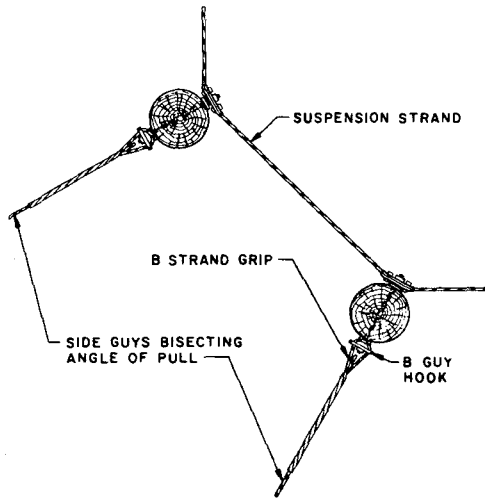


Fig. 4—Right-Angle Corner Made on Two Poles, Guys Bisecting Angle of Pull

(b) Place false deadends in each direction, reduce the tension in the span between the two corner poles, and place head guys as shown in Fig. 5.

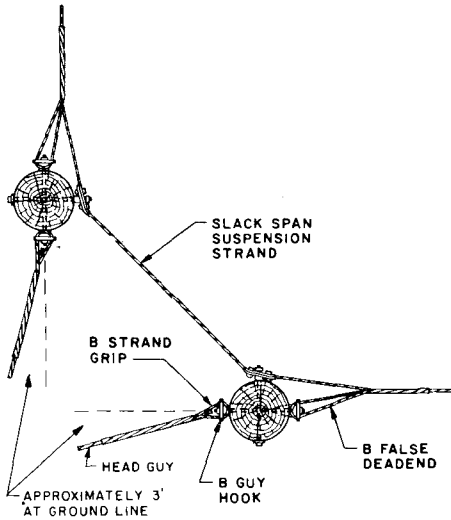
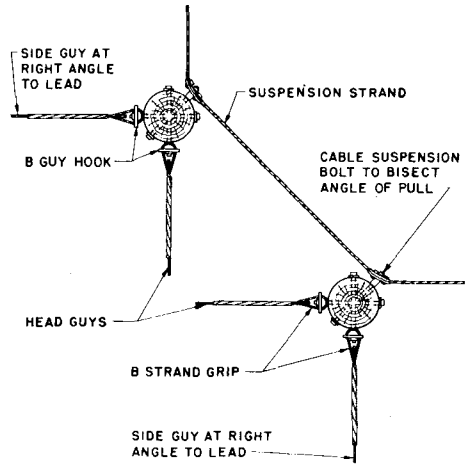


Fig. 5—Right-Angle Corner Made on Two Poles, Head Guys, and Stack Span

(c) If the span exceeds the length permitted for a slack span or if for some other reason this method cannot be used, use head and side guys as shown in Fig. 6. The head guys shall be in line with the suspension strand and the side guys at right angles to it. To determine

the size of side guy, use the guy rule considering the guy as bisecting the corner angle. The size of the head guy shall be selected in accordance with Table A and the Lead/Height shall be about 1, if practical.



NOTE: ATTACH GUYS APPROX. 6 IN. ABOVE CABLE SUSPENSION BOLT.

Fig. 6—Right-Angle Corner Made on Two Poles, Side, and Head Guys

TABLE A

SIZE OF HEAD GUY REQUIRED ON HEAD AND SIDE-GUYED CORNER POLES	
SIZE OF SIDE GUY	SIZE OF HEAD GUY
1 — 2.2M, 1 — 6M, or 1 — 6.6M	1 — Same size as suspension strand
1 — 10M, 1 — 16M or 1 — 25M	1 — Next size smaller than suspension strand
2 — Any size strand	*1 — Same size as suspension strand
3 or 4 — Any size strand	*2 — Same size as suspension strand

* If two or more strands of different size are used in the side guy, use the larger size strands for the head guy.

2.06 Reverse corners such as at road crossings shall be guyed as separate corners in the line. (See Fig. 7.) Where a guy bisecting the angle of pull cannot be used, the guying shall be as described in 2.05(c).

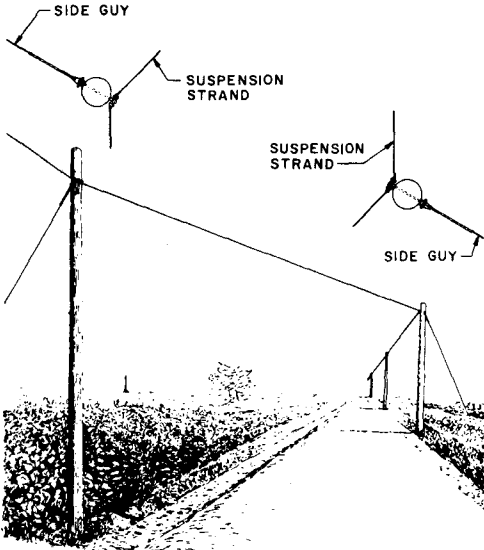


Fig. 7—Reverse Corner in Line

2.07 For details of construction at corner poles, refer to Section 627-220-200.

3. DEADEND POLES

3.01 Poles at suspension strand deadends shall be guyed as follows:

(a) Where a single guy is used for one suspension strand, attach guy as shown in Fig. 8.

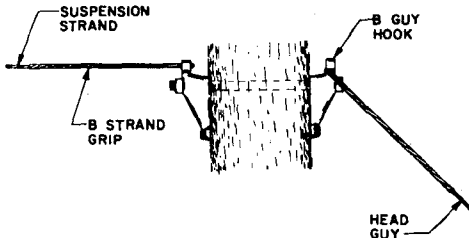


Fig. 8—One Head Guy for One Suspension Strand

(b) Where a single guy is used for two suspension strands with a separation of 2 feet or less, place guy as shown in Fig. 9.

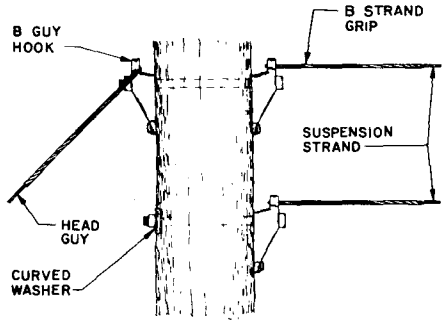


Fig. 9—One Head Guy for Two Suspension Strands

(c) Where there is one suspension strand and two guys are required, place guys as shown in Fig. 10.

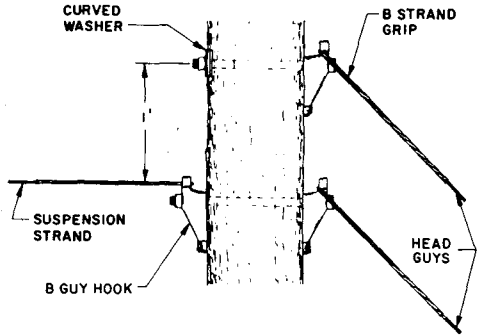


Fig. 10—Two Head Guys for One Suspension Strand

(d) Where three guys are required with two suspension strands, place guys as shown in Fig. 11.

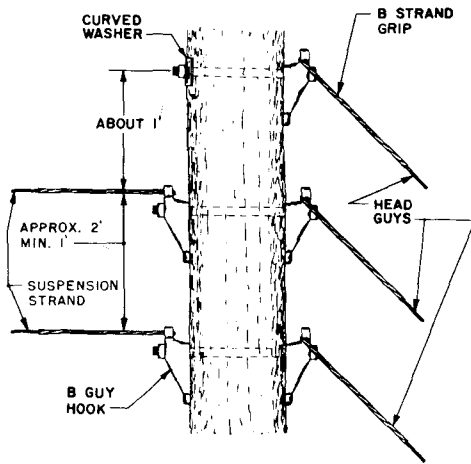


Fig. 11—Three Head Guys for Two Suspension Strands

4. STRAND DIMINISHING POINTS

4.01 Place a head guy away from the heavier strand at strand diminishing points. Determine the strength of the guy on the basis of the difference in size of the suspension strands. For example, if a 16M strand diminishes to 10M, the last pole supporting the heavier strand shall be head guyed away from the larger strand as though a 6M or 6.6M strand were terminated at the pole. See Section 627-240-213 for details of construction at strand diminishing points.

5. POLE-TO-POLE GUYS

5.01 Pole-to-pole guys should be used only where necessary due to right-of-way or other conditions. Determine the size of pole-to-pole guys in the manner described for guy-to-stub guys. Where two or more pole-to-pole guys are placed in adjacent spans, the separation between the lower end of the first guy and the upper end of the second guy should not exceed 8 feet. The lowest attachment should be about 8 feet from the ground. A pole-to-pole guy is illustrated in Fig. 12.

6. STORM GUYING

6.01 The storm guying of pole lines supporting only exchange aerial cable is generally not recommended.

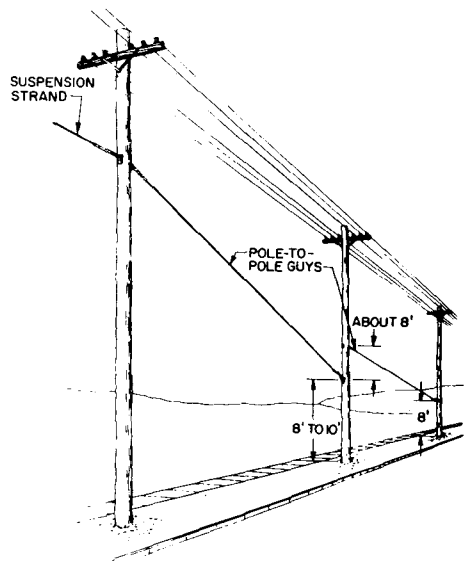


Fig. 12—Pole-to-Pole Guy

6.02 Pole lines supporting toll aerial cable should be side storm guyed at H fixtures and single pole loading points in straight sections of line if the line crosses over swampy ground. A side-guyed H fixture is shown in Fig. 13.

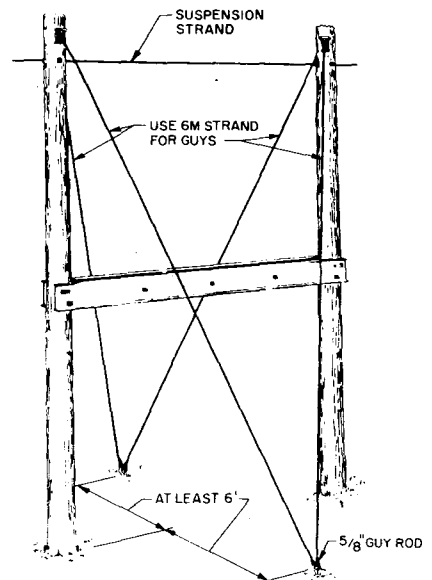


Fig. 13—Side Guyed H Fixture

6.03 In exposed sections where a toll cable crosses flat areas and the ground is soft to a depth of several feet at certain times in the year, place a side-guyed point at the center of straight sections of 30 spans, provided there are no guyed H fixtures in accordance with 6.02. If there are more than approximately 30 spans, side-guyed points should be located about every 15 poles. Where the ground is extremely soft, install side ground braces of plank on the intermediate poles between side-guyed points. The detail plans should cover any additional storm guying and bracing that may be required.

6.04 Where cable is placed on a lead supporting open wire, locate the storm-guyed points for the open wire at the cable loading H fixtures, provided that the normal location for the storm guying would be within four spans of the H fixture.

7. GUYING TOLL CABLE LINES ON GRADES

7.01 Where there are more than three spans of cable on a steep grade (about 20 per cent, 20-foot rise in 100 feet or greater), side guy the pole at the top of the grade with 6M or $\#6.6M$ strand.

7.02 Where it is necessary to side guy an H fixture on a grade, place guys as shown in 6.02, except where the I-beam between the two poles of the fixture is less than 5 feet above the ground at the point of attachment to the pole on the uphill end of the fixture. Under such conditions, side guy only the pole on the downhill side of the fixture.

8. CABLE AND WIRE ON SAME POLE

8.01 Where cable and open wire are supported on the same pole, guy separately for each, except as follows:

- (a) Where there is only one cable supported by a suspension strand not exceeding 10M and the separation between the cable and lowest arm of wire does not exceed 4 feet, a single

guy strand having sufficient strength for both open wire and cable may be used. (See Fig. 14.)

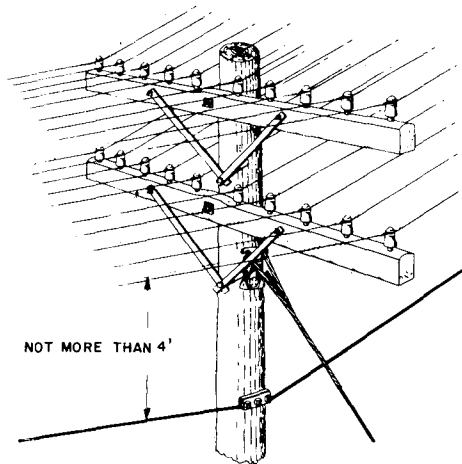


Fig. 14—Corner Pole Supporting Cable and Wire

- (b) Where the pull is 20 feet or less, a pole supporting one or more cables on 16M strand or larger and one crossarm not more than 4 feet above or below the nearest cable may be guyed as though it supported the cable only, disregarding the open wire.

8.02 Poles on which open wire and cable terminate from opposite directions shall be guyed separately for the cable and wire, except that a guy for the wire is not required where the number of equivalent wires is ten or less and the separation between the cable and arm does not exceed 2 feet. See Section 621-410-212 for wire equivalents.

9. SPECIAL GUYING

9.01 Long spans should be guyed as outlined in Sections 627-370-200 and 627-370-205.