BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

SECTION G23.145
Issue 1, February, 1933
Standard

GUYING

INSTALLING GUYS
WRAP METHOD

Contents **Page**

1. NUMBER OF GUY CLAMPS AND METHOD OF INSTALLING

1.01 Use the following number of guy clamps in attaching guys to poles, stubs and guy rods:

Size of Strand (in pounds)	At Pole and Stub End of Guy	At Guy Rod End of Guy
2,200	1—1 Bolt Clamp	1—1 Bolt Clamp
6,000	1—Guy Clamp	1—Guy Clamp
10,000	1—Guy Clamp	1—Guy Clamp
16,000	1—Guy Clamp	2—Guy Clamps
25,000	2—Guy Clamps	3—Guy Clamps

1.02 The method of installing guy clamps is as follows:

(1) Bend the main part of the guy and the tail so that the portions to be placed in the grooves of the clamp will be parallel with each other.

(2) Place the clamp on the strand. Where more than one clamp is required, butt the clamps together.

(3) Tighten each nut until it bears firmly on the clamp side. The chamfered sides of the nuts should be against the clamp.

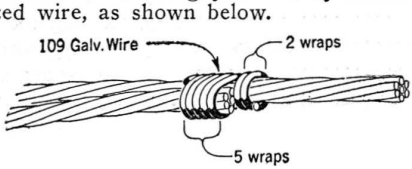
(4) After this preliminary tightening of all bolts turn each nut down as far as practicable.

(5) Where it is convenient and practicable, tighten the bolts of the clamps again after the guys are under tension.

Note: Where strain insulators are to be placed in the guy, the tightening of the bolts will be facilitated if the clamp is held in a vise, or the eye of the strand is hung over a pole step during the tightening operation.

2. SERVING ENDS OF GUYS

2.01 Secure end of tail of guy strand by means of 109 galvanized wire, as shown below.

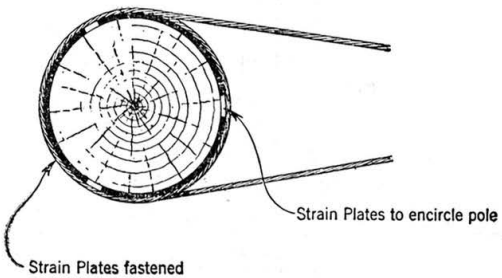


Note: If desired, the tails of 2200 and 6000-pound guys can be served by one wire of the strand.

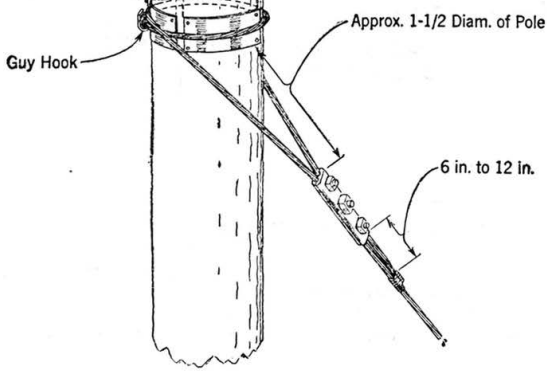
3. ATTACHING GUYS TO POLES AND STUBS

3.01 Use strain plates on all poles with all sizes of strand, except for storm guys, 2200-pound strand and galvanized wire guys. The strain plates should encircle the pole but should not overlap.

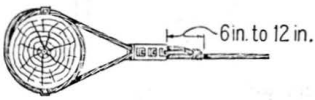
METHOD OF PLACING STRAIN PLATES

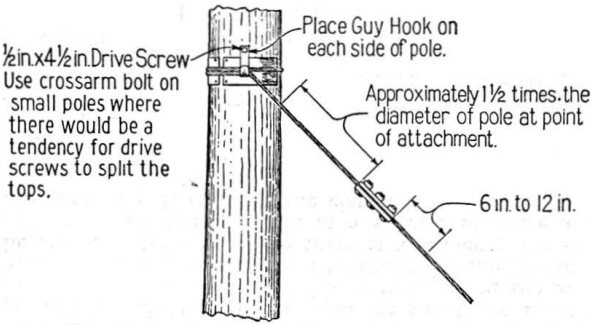


3.02 Wrap the guy around the pole twice. Place the first guy clamp at a distance from the surface of the pole approximately equal to 1-1/2 times the diameter of the pole, except that for 25-M guys this distance should be twice the diameter of the pole. Measure this distance along the guy as indicated below. Where there is a tendency for the guy to slip off the strain plates and where there is a tendency for storm guys to slip down the pole due to a short lead, place a guy hook on side of pole opposite the clamp.

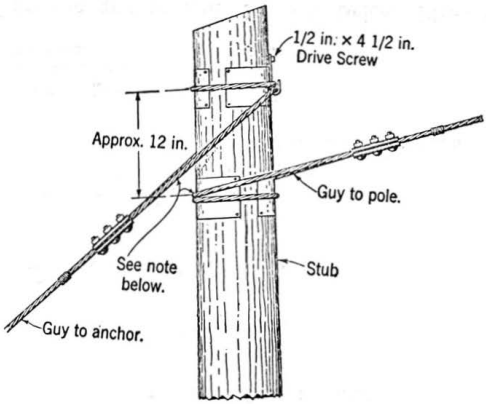


3.03 Place two guy hooks on poles where it is necessary to raise the guy to clear suspension strand, cable or wires and where there would otherwise be a tendency for the neck of the guy to cut the poles.



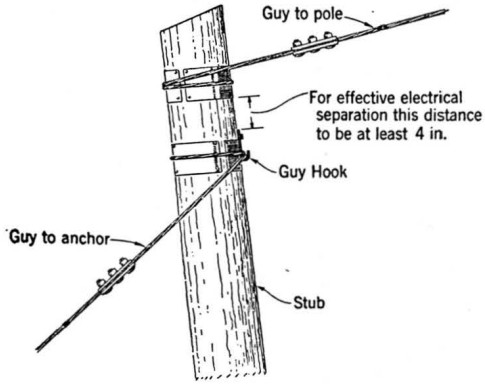


3.04 Attach guy to stub as shown below.



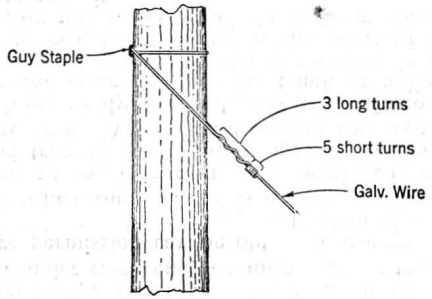
Note: See Section G23.140 for electrical separation requirements.

3.05 Where it is impracticable to place anchor guy above the guy to stub, place anchor guy below.



Note: See Section G23.140 for electrical separation requirements.

3.06 Wrap galvanized wire around the pole twice and wrap the loose end of the wire around the guy close to the pole with three long turns and five short turns.



4. ATTACHING GUY TO TREE

4.01 Use tree guys only where anchor guys cannot be placed and when the necessary permission has been obtained. Tree guys should not be used on important Toll Lines, except under emergency conditions or for temporary use.

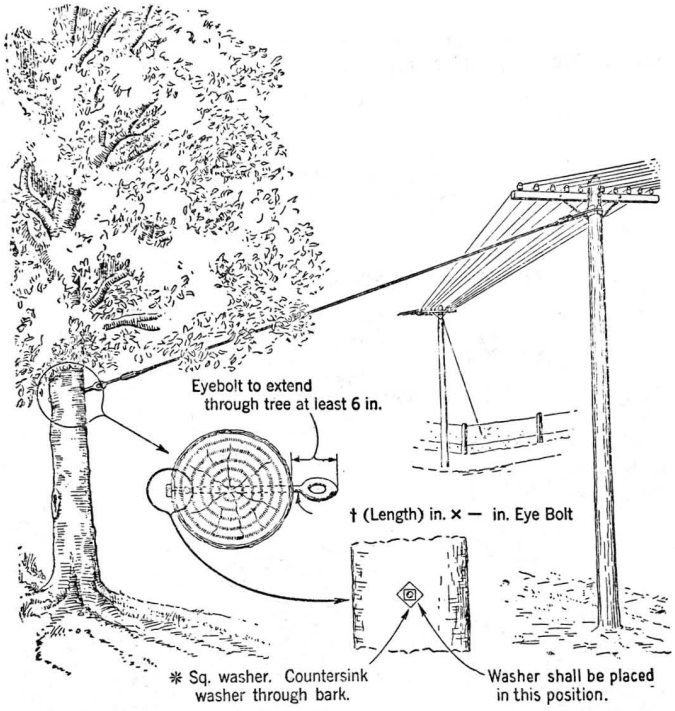
4.02 Where permission can be obtained, use an eye-bolt for making the attachment, as this method of attaching the guy does not injure the tree and is the most satisfactory.

4.03 Where an eye-bolt cannot be employed, wrap strand around tree trunk or limb, using tree blocks to prevent damaging the tree. Wrap strand around the tree only once.

4.04 Attach guys only to sound trees of satisfactory strength. Make the attachment to the trunk or a limb as close to the trunk as practicable. If the attachment is to be made to a forked or crotched tree, select the point of attachment, so that the guy will tend to pull the fork or crotch together rather than to split it.

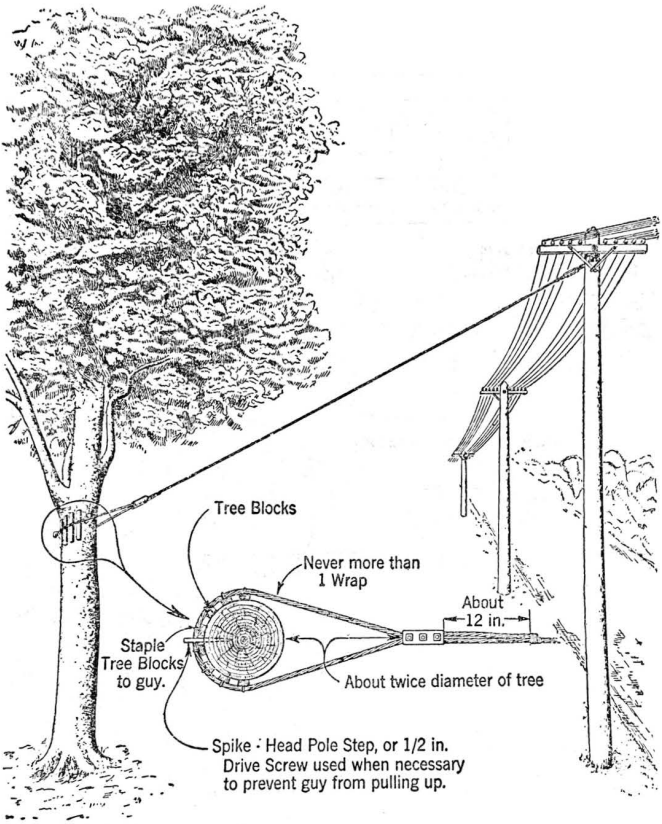
4.05 The methods to be followed are shown below.

Eye-Bolt Method



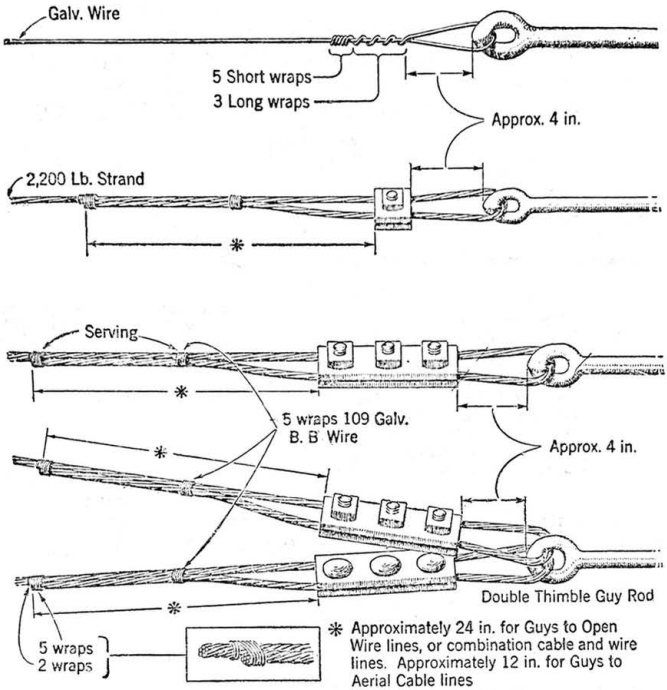
Size of Strand (Pounds)	† Thimble Eye Bolt (Inches)	* Sq. Washer (Inches)
6,000	5/8	3/4 × 3
10,000	3/4	7/8 × 3 1/2
16,000	1	1-1/8 × 4
25,000	1	1-1/8 × 4

Wrap Method



5. ATTACHING GUY TO GUY ROD

5.01 Attach guy to rod as shown. Place the first guy clamp approximately 4 inches from the guy rod.



Note: Place serving wire at the end and midpoint of the tail. If desired, the tails of 2200 and 6000-pound guys can be served by one wire of the strand.

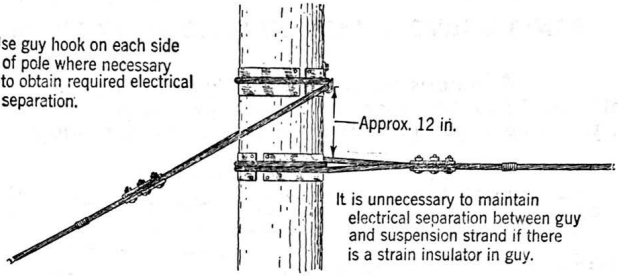
6. POSITION OF GUYS IN AERIAL CABLE LINES

6.01 Electrical separation of at least 4 inches between guy strand or strain plate and suspension strand or cable shall be provided where there are no strain insulators in the guy. (See Section G23.140.) Where strain insulators are placed in the guys, it is unnecessary to provide separation between the suspension strand and guy. The dead ending of the suspension strand and the guy on separate strain plates, however, reduces the tendency for the wraps of strand to crush the pole

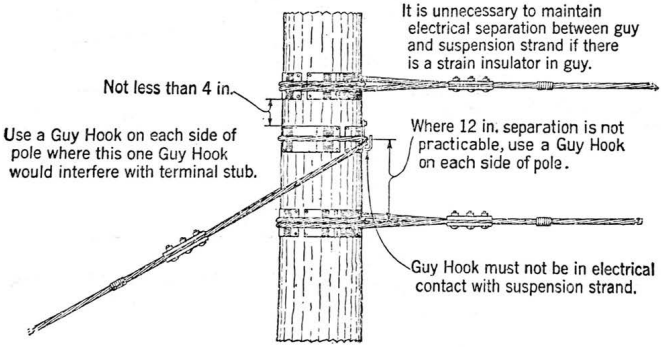
timber and also facilitates the transfer of construction in maintenance work. In general, the guys should be placed in accordance with the following:

6.02 In order to obtain four-inch separation, attach guys to dead end poles, as illustrated below.

(a) Attach guy about 12 inches above suspension strand, where there is one suspension strand and one guy.

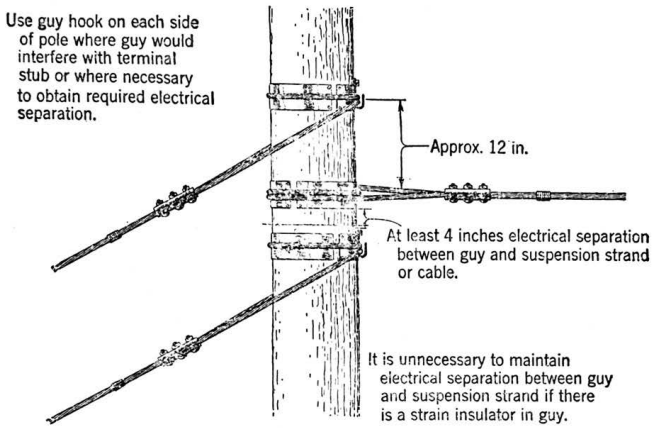


(b) Attach guy as shown below where there is one guy and two suspension strands with a separation of less than 4 feet.

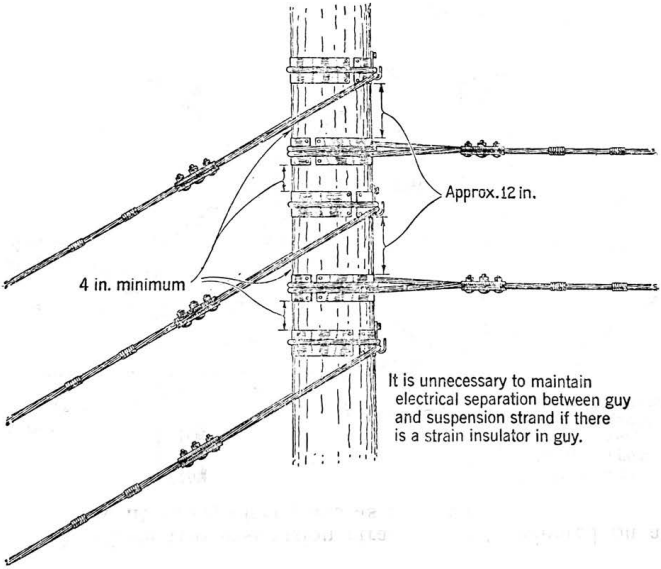


(c) Where the separation between two strands on the same pole is 4 feet or more, guy each separately.

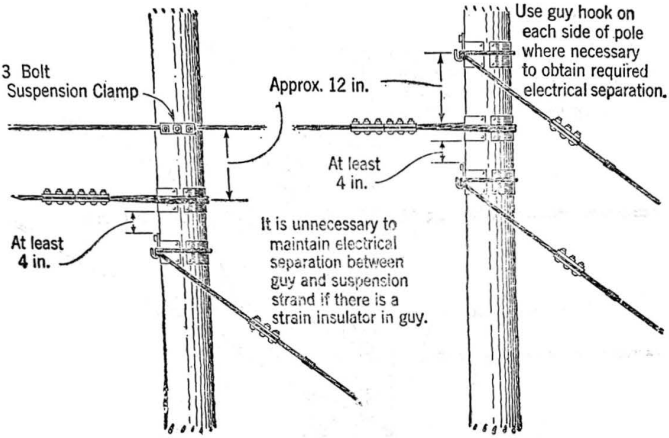
(d) Where two head guys are required with one suspension strand, place one guy above and the other below the suspension strand.



(e) Place guys as shown where three guys are required with two suspension strands.

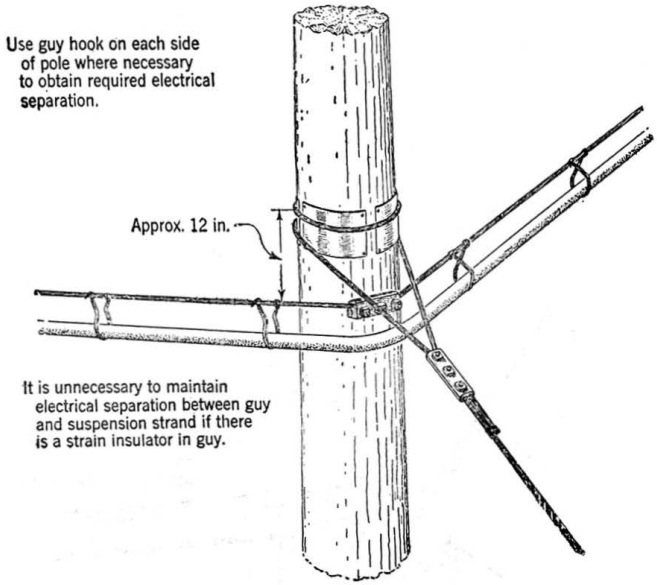


(f) Where two suspension strands are terminated on adjacent poles, place guys as shown below.

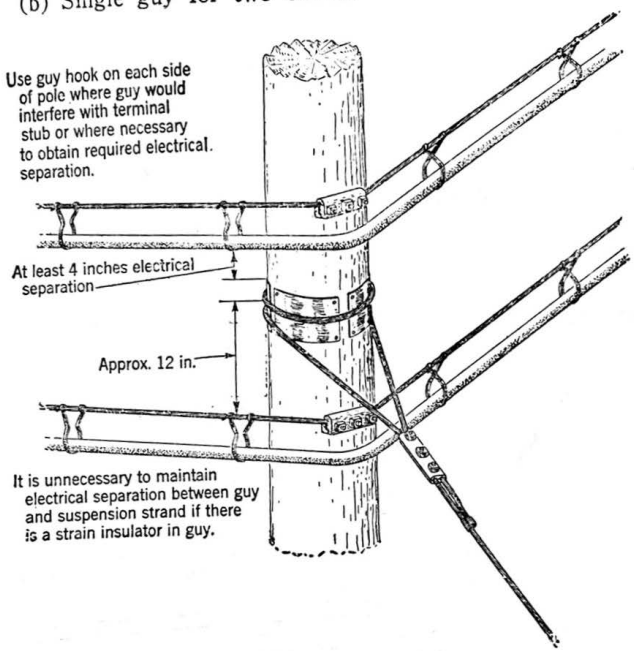


6.03 Attach guys to corner poles as follows:

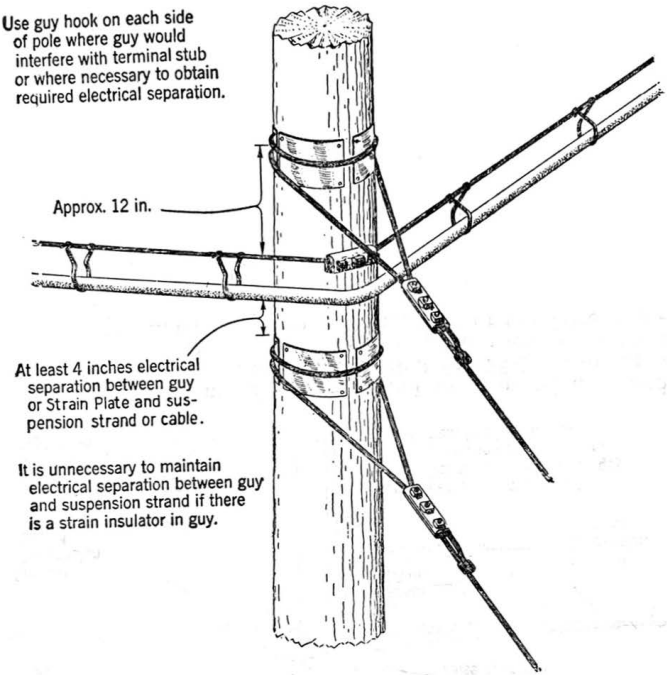
(a) Single guy for cable.



(b) Single guy for two cables.



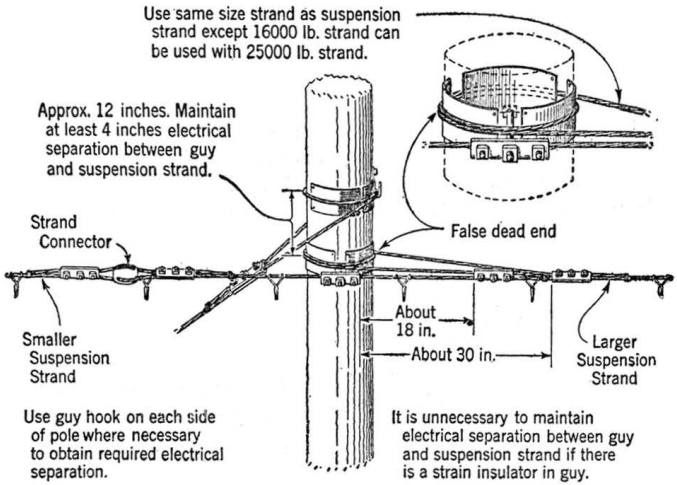
(c) Two guys for single cable or two cables on same through bolt.



Note: Where the two guy strands are of different sizes place the larger guy strand in the upper position.

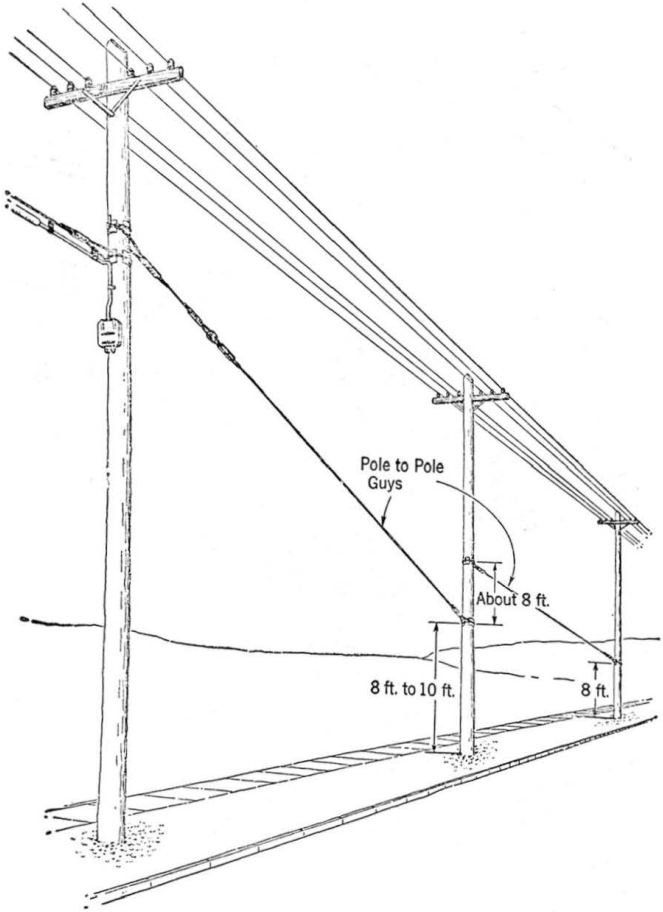
(d) Where the separation between two suspension strands on the same pole is 4 feet or more, guy each strand separately.

6.04 Where there is a false dead-end, place guy as shown below.



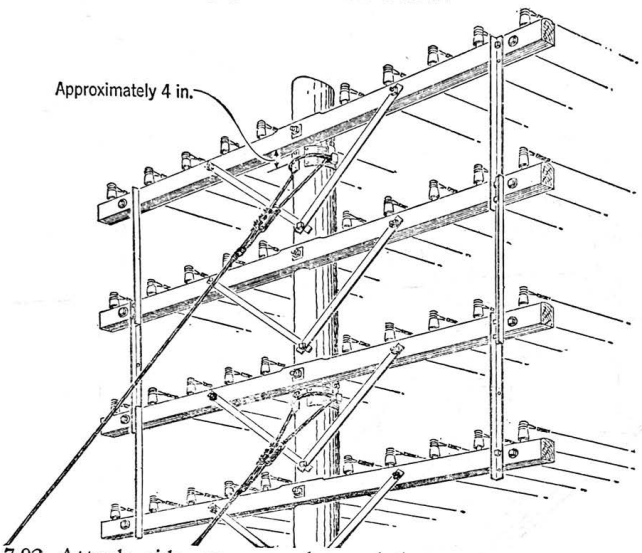
Note: Use same size guy strand as suspension strand with one guy clamp except that for 25-M suspension strand, 16,000-pound strand can be used, employing 2 guy clamps for securing each end of the false dead-end.

6.05 Place pole to pole guys as shown below.

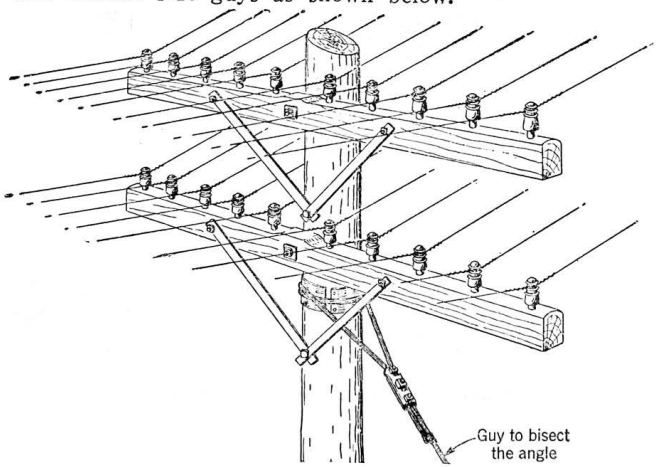


7. ATTACHING GUYS TO POLES IN OPEN WIRE LINES

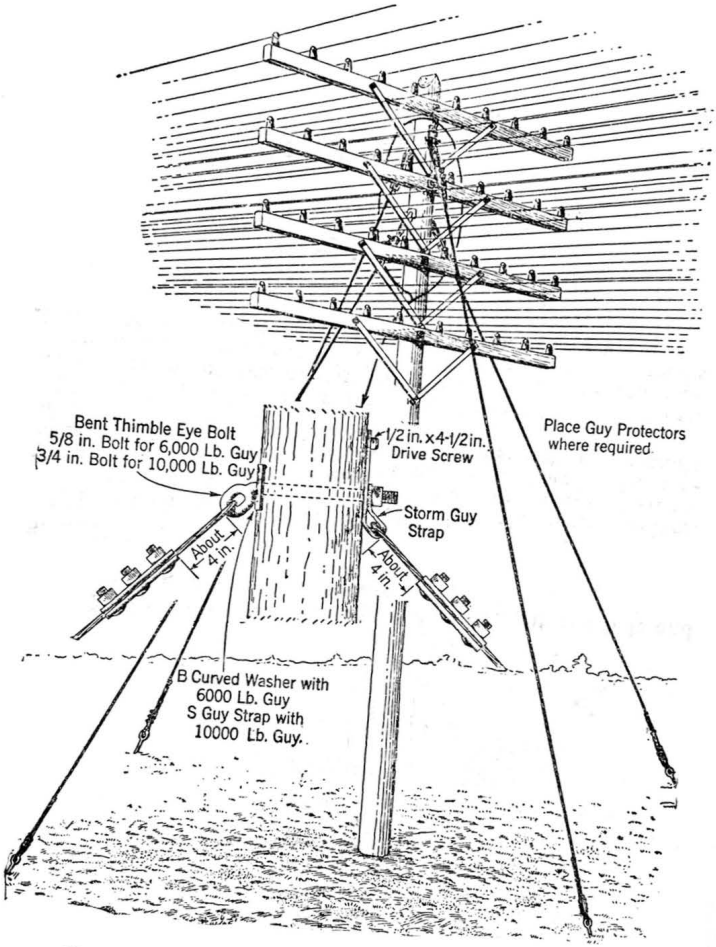
7.01 Attach head guys as shown below.



7.02 Attach side guys as shown below.

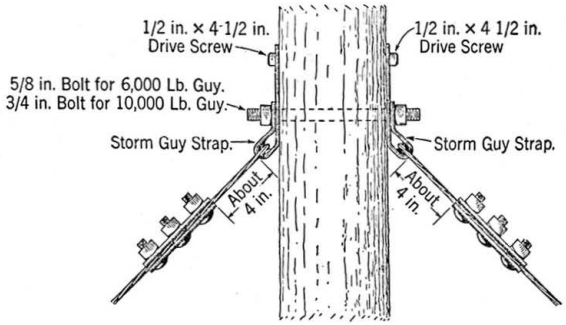


7.03 Attach storm guys as follows.



Note: Guys can be wrapped around the pole in the positions shown above, if desired.

Alternative Method

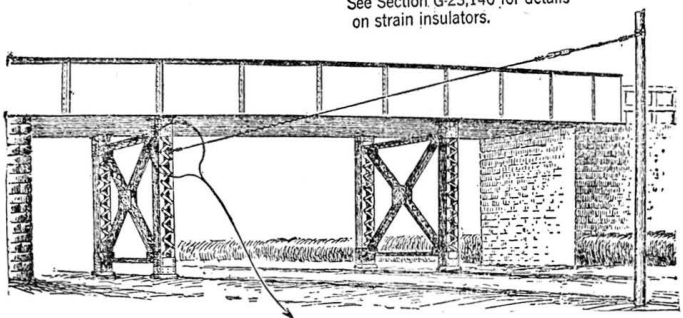


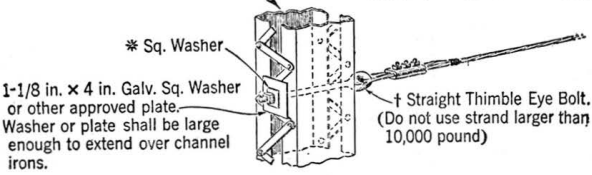
Note: If a stub guy is placed, a straight eye bolt and one guy strap can be used.

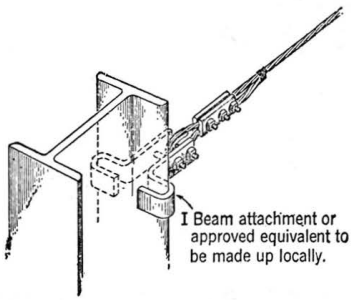
8. SPECIAL GUYS

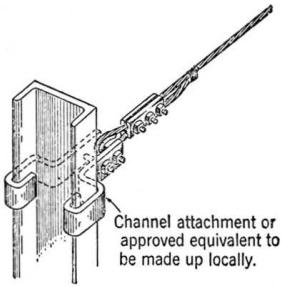
8.01 Attach guys to masonry walls, piers, abutments, bridges, etc., or to the ironwork of bridges and elevated structures where no other method of guying is practicable, provided permission has been obtained and the structure is capable of sustaining the load.

The method to be used in attaching the guy to the structure depends upon the size of guy strand and the nature and condition of the structure to which the attachment is to be made. A few methods of attaching these guys are shown below.









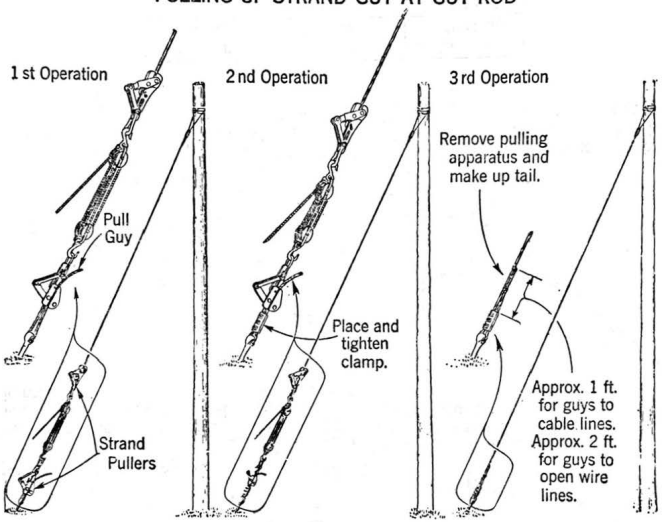
Size of Strand (Pounds)	† Thimble Eye Bolt (Inches)	* Sq. Washer (Inches)
6,000	5/8	3/4 × 3
10,000	3/4	7/8 × 3 1/2

9. PULL UP ANCHOR GUYS AS SHOWN

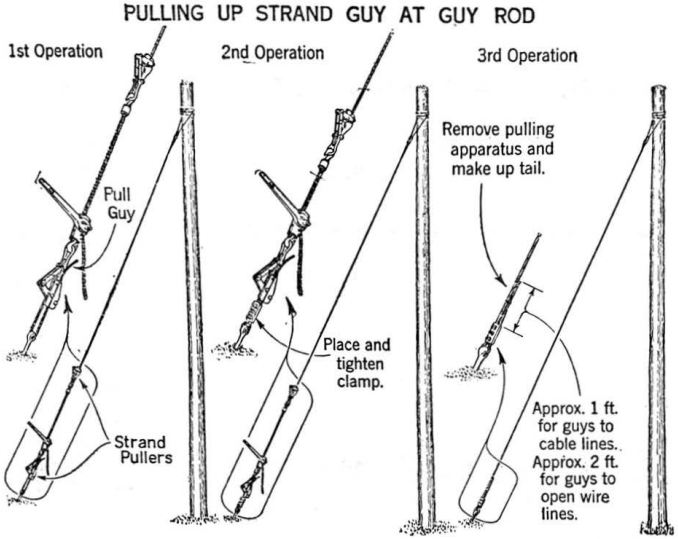
9.01 Use L Strand Puller for 6,000 pound guys. Use H Strand Puller for 10,000, 16,000 and 25,000 pound guys.

9.02 Blocks and tackle.

PULLING UP STRAND GUY AT GUY ROD



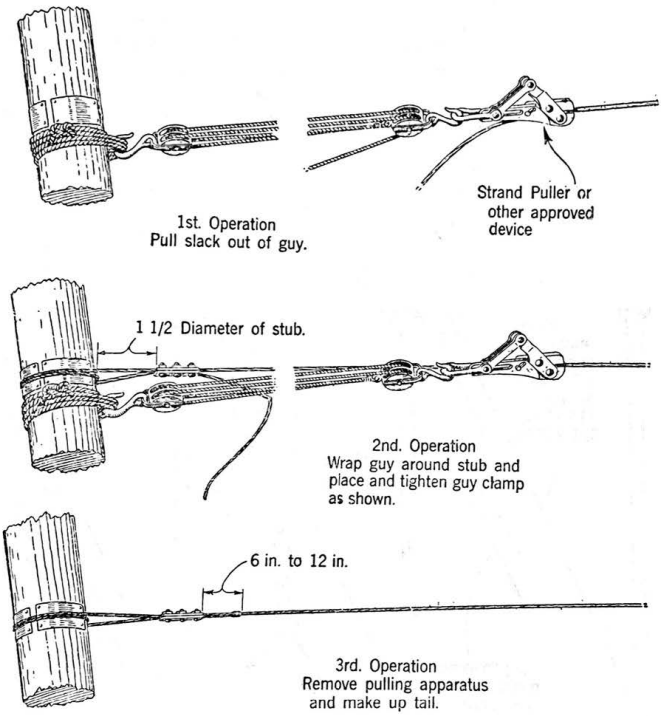
9.03 Chain hoist.



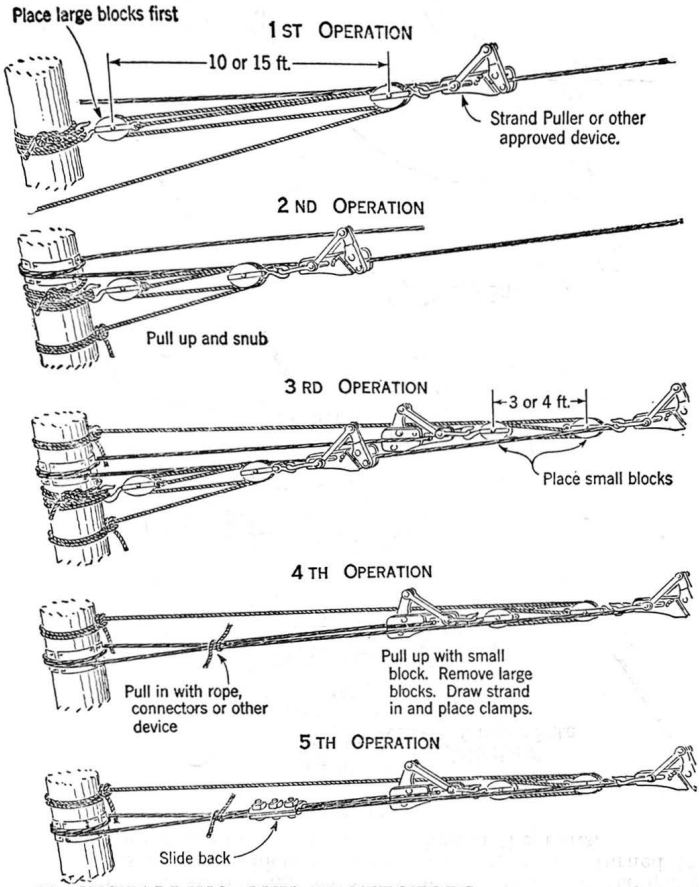
10. PULL UP GUYS TO STUBS AS SHOWN BELOW

10.01 Where there is no load on the guy and where 6000 or 10,000-pound guys are placed under load conditions.

PULLING UP GUY TO STUB



10.02 Where 16,000 and 25,000-pound guys are placed under load conditions.



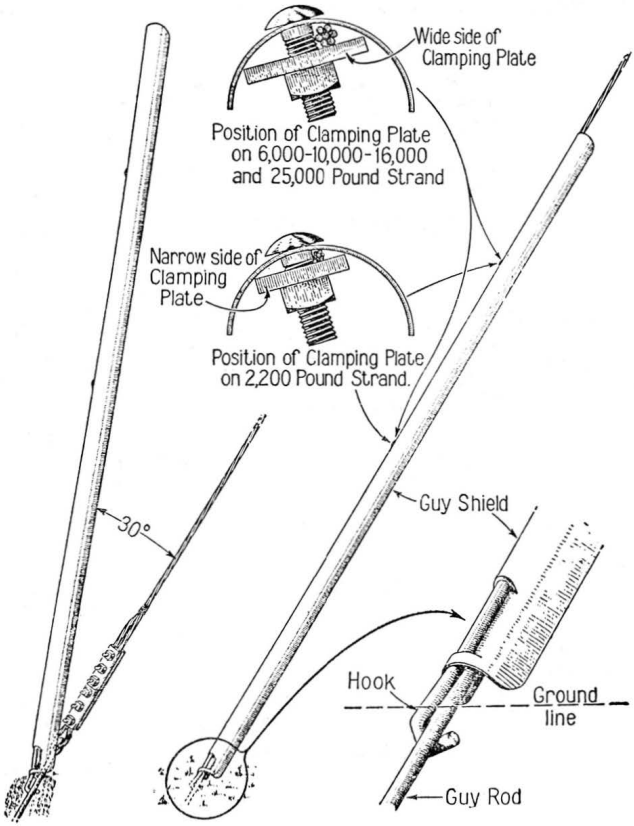
11. INSTALLING GUY PROTECTORS

11.01 Place guy protectors only where an anchor guy is so located that persons or animals are liable to run into it. In general, do not place protectors on guys that are close to buildings or fences, except where it is thought that the use of protectors would tend to keep trucks and other vehicles away from the guys.

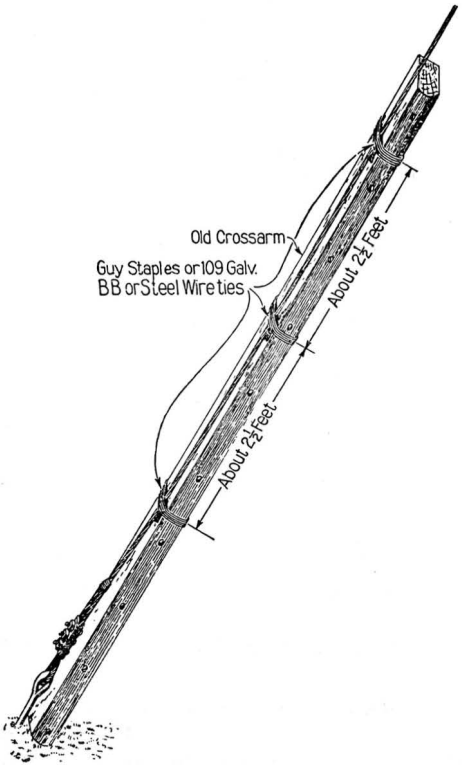
11.02 Equip the guy with a guy shield, wooden molding, old crossarm or piece of timber.

(a) When installing the guy shield, place the hook at the lower end of the guy shield around the guy rod just below the ground line, with the shield at an angle of about 30° with the strand. Press the shield down to the strand, place the strand against the bolts between the clamping plates and the shield with the clamping plates turned to the position shown below, then tighten the bolts.

GUY SHIELD



(b) Use wooden molding or an old crossarm where appearance will permit.



(c) Where two or more guys are attached to the same pole one above the other, and are separated at the ground line by not more than 12 inches, place guy protector on the upper guy only.