BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

SECTION G23.110
Issue 1, February, 1933
Standard

GUYING

SIZES OF GUYS

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1. GENERAL

1.01 In general, use the Guy Rule to determine the size of the guy, except as noted in the following paragraph.

1.02 Head Guys for exchange cables shall be of the same size as the suspension strand, provided the $\frac{\text{"Lead"}}{\text{"Height"}}$ of the guy is 3/4 or greater. (See Section G23.105 for definition of Lead and Height.) If the $\frac{\text{"Lead"}}{\text{"Height"}}$ is less than 3/4, use the Guy Rule to de-

termine size of guy required except for 2 or 3 spans with a $\frac{\text{"Lead"}}{\text{"Height"}}$ = about 1/2, use the strand of the next larger size than the suspension strand for the guy.

2. GENERAL FEATURES OF THE GUY RULE

2.01 In using the Guy Rule it will be noticed that diminishing the "Lead" of the guy increases the size of the guy required and increasing the "Lead" decreases the size of the guy required. The decrease in the stress on the guy by increasing the "Lead" above 1-1/4 times the "Height" is slight and insufficient to justify the added length and the increased exposure of the guy to mechanical injury. Anchor guys shall be placed preferably with a "Lead" not less than the "Height" but not more than 1-1/4 times the "Height."

2.02 The letter "M" on the Guy Rule indicates "Thousand"; for example, "6M" means "6,000" and "10M" means "10,000."

2.03 Where a 26M guy is indicated, place a 25M guy or a combination of two guys consisting of a 16M and a 10M guy.

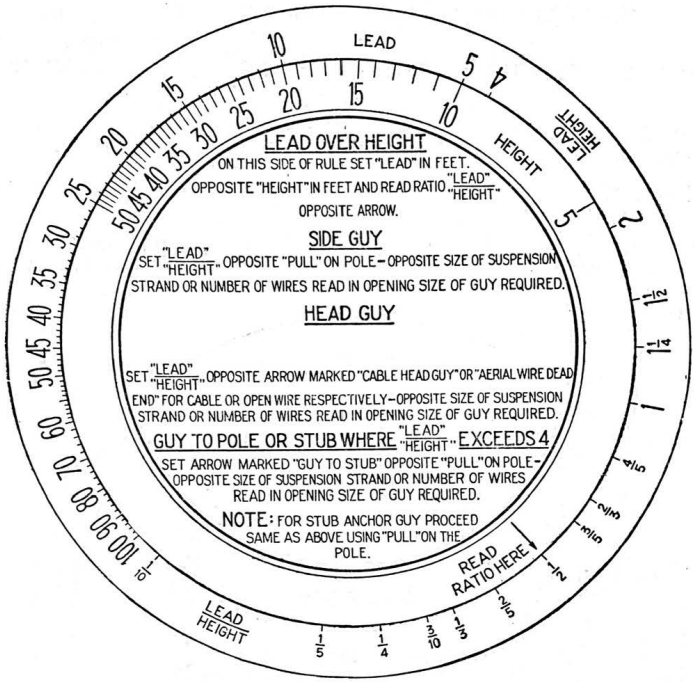
3. DETERMINING SIZE OF STRAND FOR SIDE GUY—CABLE ONLY

3.01 Proceed as follows:

(1) Measure "Lead" and "Height" of guy in feet as indicated in Section G23.105.

(2) Write "Lead" over "Height" in form of a fraction as $\frac{\text{"Lead"}}{\text{"Height"}}$ 20/22 = about 1, meaning that "Lead" of guy in feet is equal to or about equal to the "Height" of same guy in feet.

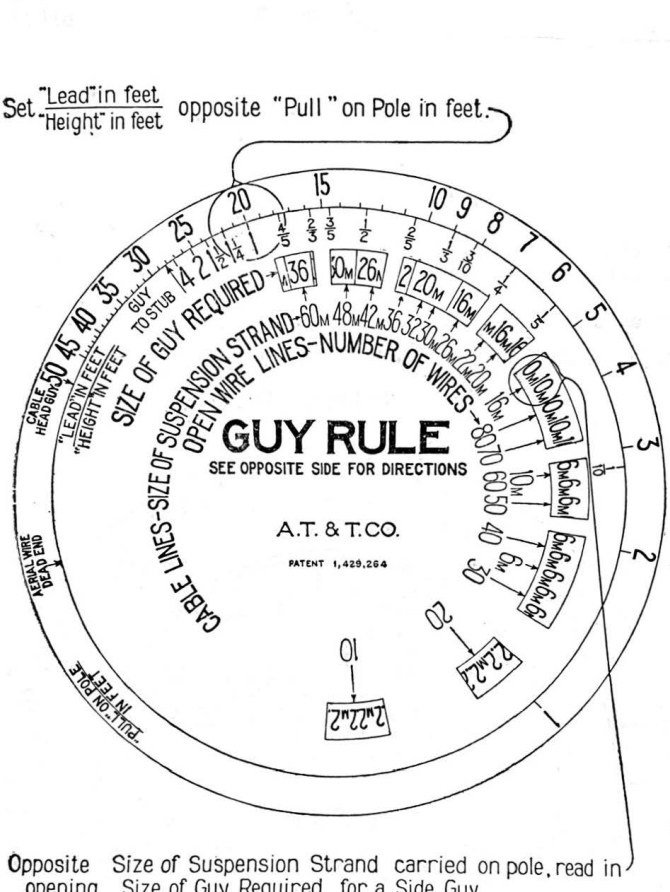
(3) The $\frac{\text{"Lead"}}{\text{"Height"}}$ can be determined on the back of the rule by setting "Lead" in feet opposite "Height" in feet and read Ratio $\frac{\text{"Lead"}}{\text{"Height"}}$ opposite arrow marked "Read Ratio Here."



(4) Measure "Pull" on pole in feet.

(5) Set $\frac{\text{"Lead"}}{\text{"Height"}}$ of guy shown on outer scale of smaller disk opposite "Pull" on pole in feet shown on outer scale of larger disk.

(6) Opposite the size of suspension strand carried on pole shown on the inner scale of the small disk, read in opening, size of guy required.



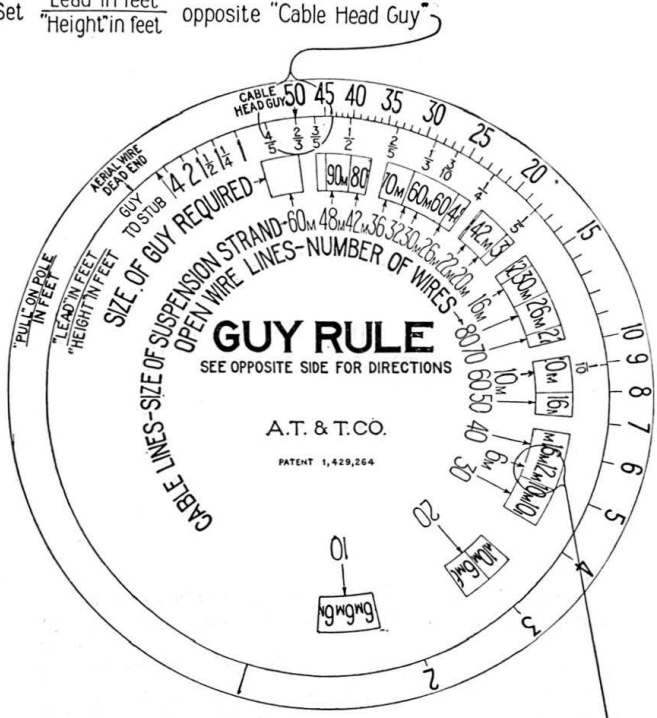
Note: In the figure it is assumed that the $\frac{\text{"Lead"}}{\text{"Height"}}$ is 1 and the "Pull" on the pole is 20 feet. If a 16,000-pound suspension strand is carried on the pole, a 10,000-pound guy is required.

4. DETERMINING SIZE OF STRAND FOR HEAD GUY—CABLE ONLY

4.01 Proceed as described under Paragraph 3.01 (1) to (4).

(1) Set $\frac{\text{"Lead"}}{\text{"Height"}}$ shown on outer scale of small disk, opposite arrow marked "Cable Head Guy" shown on outer scale of large disk.

(2) Opposite size of suspension strand shown on inner scale of small disk, read in opening, size of guy required.



Note: In the figure it is assumed that the $\frac{\text{"Lead"}}{\text{"Height"}}$ is 2/3 and that the pole is to carry one 6,000-pound suspension strand. Reading in opening, it is found that a 16,000 pound guy is required.

5. DETERMINING SIZE OF STRAND FOR GUY TO STUB OR TREE—CABLE ONLY

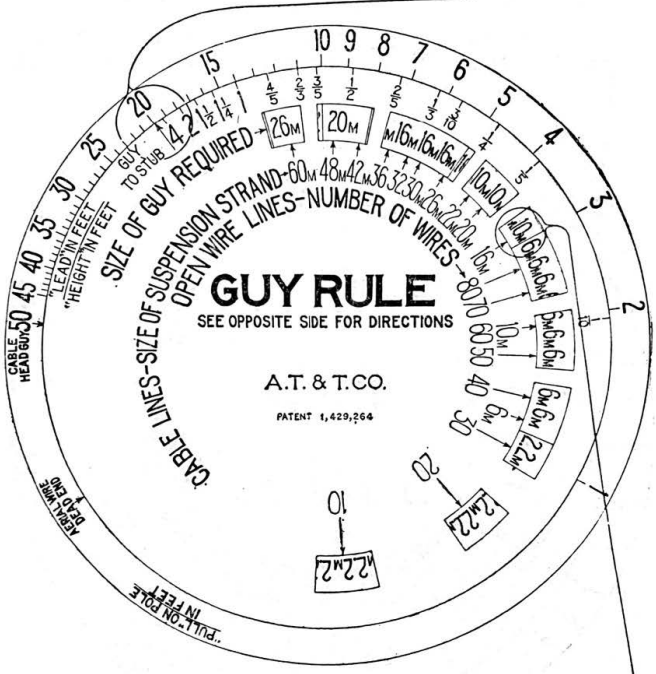
5.01 Where the guy is attached to a stub, tree or pole and is approximately horizontal with a $\frac{\text{"Lead"}}{\text{"Height"}}$ of more than 4, proceed as follows:

(1) Measure "Pull" on pole in feet.

(2) Set "Guy to Stub" shown on outer scale of small disk opposite "Pull" on pole or "Head Guy" shown on outer scale of large disk, depending upon whether guy is a side guy or head guy.

(3) Opposite size of suspension strand shown on inner scale of small disk, read in opening, size of guy required.

Set "Guy to Stub" opposite "Pull" on pole in feet.



Opposite Size of Suspension Strand carried on pole, read in opening Size of Guy Required for Guy to Stub, Tree or Pole.

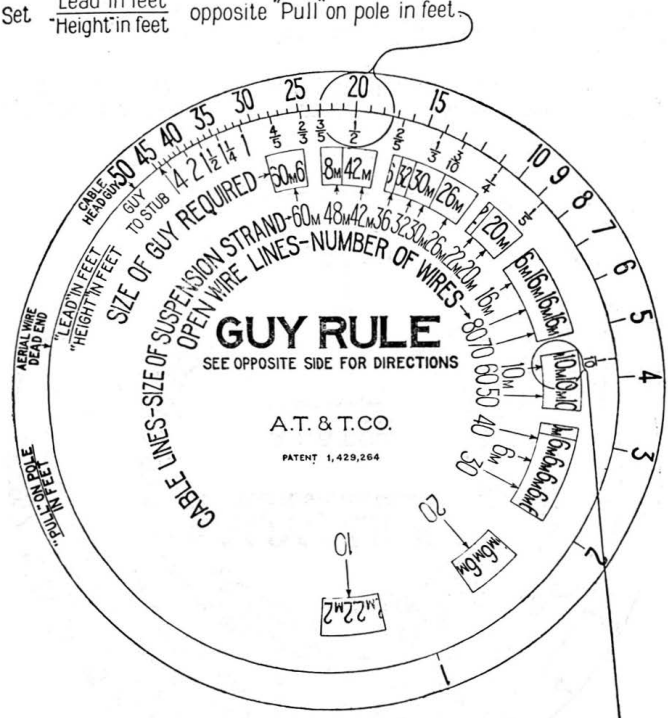
Note: In the figure it is assumed that there is a 20-foot "Pull" on pole to be guyed and that pole carries one 16,000-pound suspension strand. Reading in opening, it is found that a 10,000-pound guy is required.

6. DETERMINING SIZE OF STRAND FOR ANCHOR GUY TO STUB—CABLE ONLY

6.01 Proceed as described in Paragraph 3.01 (1) to (4).

(1) Set $\frac{\text{"Lead"}}{\text{"Height"}}$ of guy shown on outer scale of small disk opposite "Pull" on pole shown on outer scale of large disk.

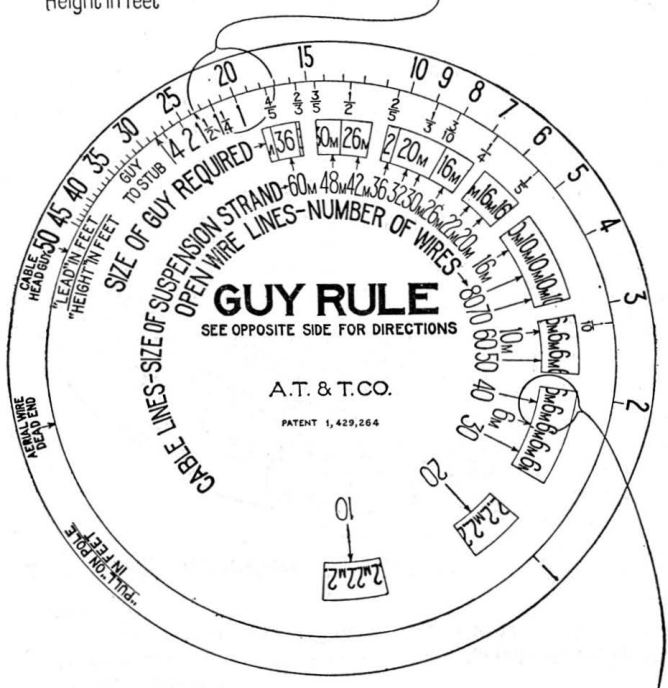
(2) Opposite size of suspension strand on the pole shown on inner scale of small disk, read in opening, size of guy required for anchor guy to stub.



Note: In the figure it is assumed that the $\frac{\text{"Lead"}}{\text{"Height"}} = 1/2$ and the "Pull" on pole is 20 feet. If the line pole carries a 10,000-pound suspension strand, a 10,000-pound guy is required for the anchor guy.

7. DETERMINING SIZE OF STRAND FOR SIDE GUY—WIRE ONLY

7.01 Proceed as described in Paragraph 3.01 (1) to (4). Opposite the number of wires carried on the pole shown on the inner scale of the small disk, read in opening, size of guy required.



Opposite Number of Wires carried on pole read in opening Size of Guy Required for Side Guy.

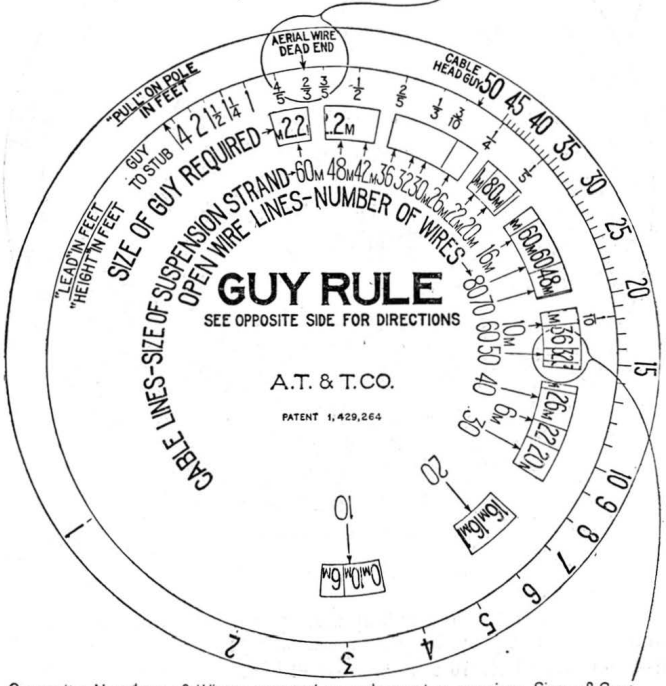
Note: In the figure it is assumed that the "Pull" on pole is 20 feet and the $\frac{\text{"Lead"}}{\text{"Height"}}$ is 1. If 40 wires are carried on the pole, a 6,000-pound guy is required.

8. DETERMINING SIZE OF STRAND FOR HEAD GUY—WIRE ONLY

8.01 Proceed as in Paragraph 3.01 (1) to (3).

(1) Set $\frac{\text{"Lead"}}{\text{"Height"}}$ shown on outer scale of small disk opposite arrow marked "Aerial Wire Dead End" shown on outer scale of large disk.

(2) Opposite number of wires carried on the pole shown on the inner scale of the small disk, read in opening, size of guy required.



Opposite Number of Wires carried on pole read in opening Size of Guy Required for Head Guy.

Note: In the figure it is assumed that the $\frac{\text{"Lead"}}{\text{"Height"}}$ is 2/3 and that the pole carries 50 wires. Reading in the opening, it is found that a 32,000-pound guy is required.

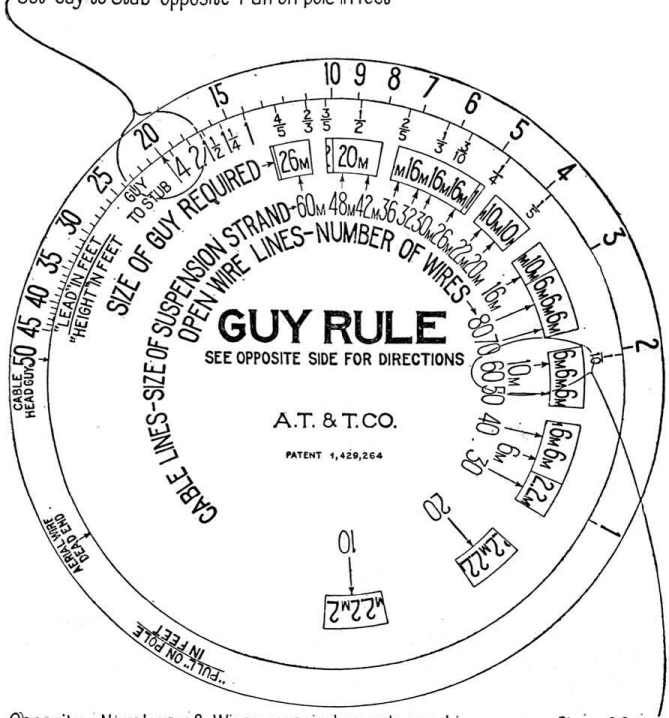
9. DETERMINING SIZE OF STRAND FOR GUY TO STUB OR TREE—WIRE ONLY

9.01 Where the guy is attached to a stub, tree or pole and is approximately parallel to the ground, with a $\frac{\text{"Lead"}}{\text{"Height"}}$ of more than 4, proceed as follows:

(1) Measure "Pull" on pole in feet.

(2) Set "Guy to Stub" shown on outer scale of small disk opposite "Pull" on pole shown on outer scale of large disk.

(3) Opposite number of wires carried on pole shown on the inner scale of the small disk, read in opening size of guy required.



Opposite Number of Wires carried on pole read in opening Size of Guy Required for Guy to Stub, Pole or Tree.

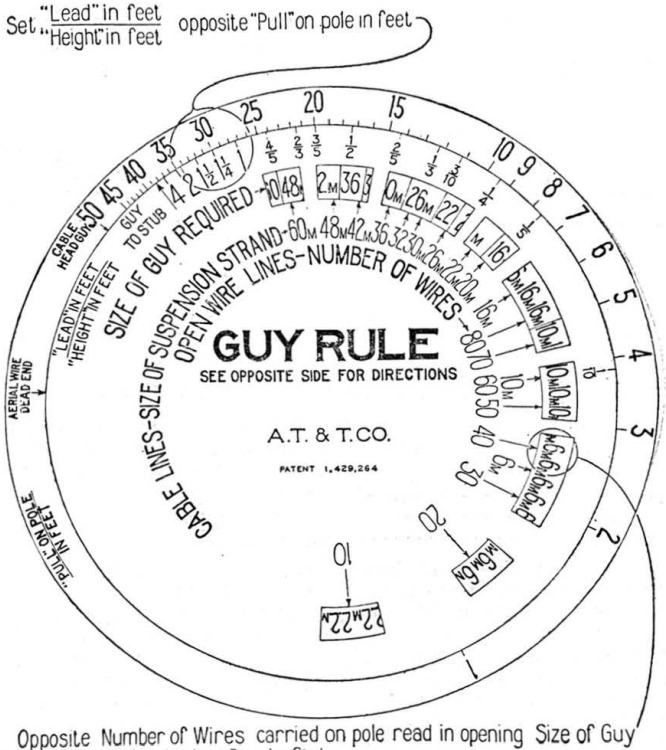
Note: In the figure it is assumed that there is a 20-foot "Pull" on the pole to be guyed, and that the pole carries 60 wires. Reading in the opening, it is found that a 6,000-pound guy is required.

10. DETERMINING SIZE OF STRAND FOR ANCHOR GUY TO STUB—WIRE ONLY

10.01 Proceed as described in Paragraph 3.01 (1) to (4).

(1) Set $\frac{\text{"Lead"}}{\text{"Height"}}$ shown on outer scale of small disk opposite "Pull" on pole in feet shown on outer scale of large disk.

(2) Opposite number of wires carried on the pole shown on inner scale of small disk, read in opening, size of guy required for anchor guy to stub.



Note: In the figure it is assumed that the pole has a "Pull" of 30 feet and that the $\frac{\text{"Lead"}}{\text{"Height"}}$ is 1-1/4. If the line pole carries 40 wires, a 6,000-pound anchor guy is required.

11. STRENGTH OF STRAND FOR GUYS ON POLES SUPPORTING BOTH WIRE AND CABLE

11.01 In general, separate guys shall be provided for open wire and cable on the same pole line. The strength of the guys shall be determined for each separately by the methods described in the preceding paragraphs.

11.02 Where one guy is placed for both aerial wire and cable or where it is desired to determine whether an existing guy is of sufficient strength to support both the aerial wire and cable, the size of guy required shall be determined by use of the Guy Rule. To do this, add to the strength of the cable suspension strand 2,000 pounds for each arm of open wire on the pole and substitute the total for "Size of Suspension Strand" on the Guy Rule.

Example: To find the equivalent size of suspension strand for a line carrying two crossarms of open wire and a cable supported on a 6,000-pound suspension strand.

Size of suspension strand..... 6,000 pounds
2 Crossarms (2 x 2,000 pounds)..... 4,000 pounds
Equivalent size of Suspension Strand..... 10,000 pounds

11.03 Determine the size of guy required by substituting the equivalent for the size of suspension strand. If the exact equivalent is not shown in the Guy Rule, use the next larger size.

12. SIZE OF GUYS WHERE THE LOAD EXCEEDS MAXIMUM SHOWN ON THE GUY RULE

12.01 Install twice the amount of guying which would be required for half the load. For example, if the load is 64,000 pounds determine the guying for a 32,000-pound load and place twice the amount of guying required for the 32,000-pound load.

13. SIZES OF HEAD GUYS AS DETERMINED BY GUY RULE

13.01 The following table indicates the sizes of head guys as determined by reference to the Guy Rule.

HEAD GUY

Size of Suspension Strand	Lead Height											
	1/5	1/4	3/10	1/3	2/5	1/2	3/5	2/3	4/5	1	1 1/4	1 1/2
	Size of Guy Required (In Pounds)											
6000	32000	25000	22000	20000	20000	16000	16000	12000	10000	10000	10000	10000
10000	60000	42000	36000	32000	30000	25000	20000	20000	16000	16000	16000	16000
16000	90000	70000	60000	60000	48000	36000	32000	30000	25000	25000	22000	20000