

AERIAL CABLE

LONG SPAN CONSTRUCTION

SPANS OF 150 TO 250 FEET IN LENGTH

Contents	Page
STANDARD NAMES OF SUPPLIES.....	1
GENERAL	1
DEFINITION OF LONG SPANS.....	1
GENERAL ARRANGEMENT	2
SETTING POLES	3
GUYING	4
PLACING SUSPENSION GUY.....	4
PLACING CABLE SUSPENSION STRAND.....	6
PLACING RINGS AND PULLING CABLE.....	8
CONSTRUCTING SPANS WHERE GUYS CANNOT BE INSTALLED	8

1. STANDARD NAMES OF SUPPLIES

1.01 No materials other than those listed in the Outside Plant Construction and Maintenance Practices covering Aerial Cable, Open Wire and Guying are required for use under these instructions.

2. GENERAL

2.01 These practices cover standard methods and materials for use in connection with the construction of long spans not in excess of 250 feet in length in cable lines. For convenience the illustrations in this practice show the wrap method for dead ending the suspension guy and attaching the pole end of the head and side guys. The eyebolt method may be employed instead, if desired, except where 25,000 pound strand is used.

3. DEFINITION OF LONG SPANS

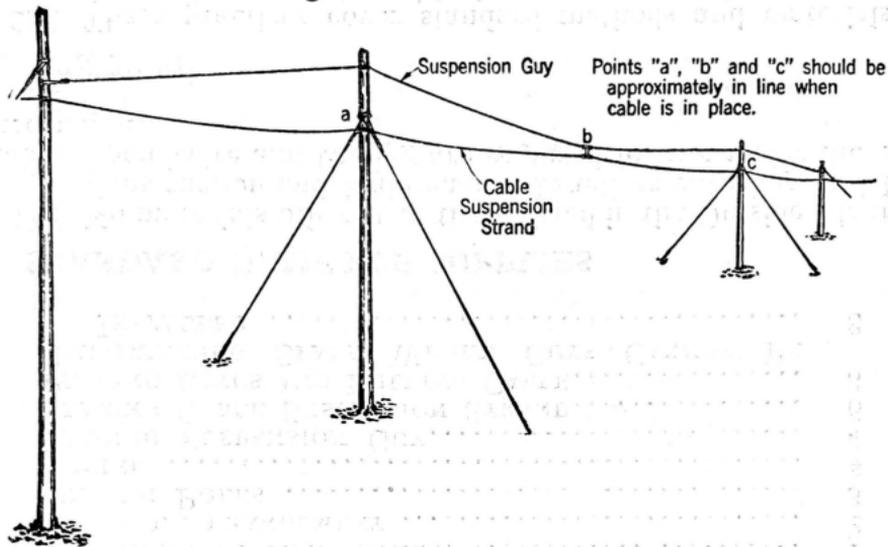
3.01 A long span is defined for the purpose of these instructions as an occasional span of more than 150 feet in

LONG SPAN CONST.—SPANS OF 150 TO 250 FEET

length except that in the case of 25,000-pound strand or where 16,000-pound strand is placed with an initial tension of 3600 pounds occasional spans not exceeding 200 feet in length do not require special construction.

4. GENERAL ARRANGEMENT

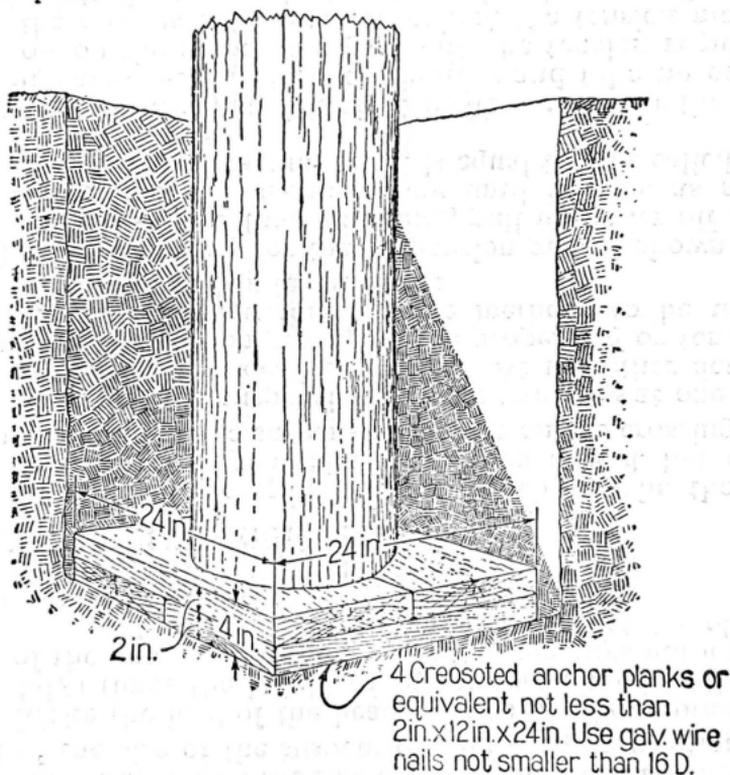
4.01 The general arrangement of long spans not more than 250 feet in length is as indicated below.



5. SETTING POLES

5.01 Set the two long span crossing poles and the two poles on which the suspension guy is to be dead ended to the standard depth for the length of poles involved.

5.02 In jobs where 16,000 or 25,000 pound cable suspension strand and suspension guy are used, the earth under the butts of the crossing poles and the poles on which the suspension guy is dead ended should be firm. If it is soft or becomes so at certain seasons, or consists of practically pure clay, place a creosoted plank footing in the bottom of the hole before setting the pole.



5.03 Where the bottom of the hole is rocky throw a few inches of sand or fine dirt in the hole before setting the pole so that an even footing will be provided for the butt of the pole.

6. GUYING

- 6.01 Install the necessary head and side guys before placing either the suspension guy or cable suspension strand.
- 6.02 Place a 6000 pound side guy in both directions on each of the crossing poles.
- 6.03 Head guy away from the crossing both of the poles on which the suspension guy is to be dead ended. For the head guys use strand of the size called for by the guy rule where strand of the size of the suspension guy is to be dead ended.
- 6.04 Make the lead of the head guys as nearly as practicable 1-1/4 times the height of the guy and not less than the height of the guy. Make the lead of the side guys not less than the height of the guys. If these leads cannot be obtained consult your supervisor.

7. PLACING SUSPENSION GUY

- 7.01 Run out the suspension guy, which will be the same size strand as the cable suspension strand, but do not tighten the bolts of the suspension clamps on the crossing poles.
- 7.02 Dead end the suspension guy permanently at one of the suspension guy dead end poles. At the other dead end pole pull the suspension guy up to the proper sag or tension as shown in the following tables. The methods to be used to obtain the proper sag or tension are:
 - (a) Where the sag for the suspension guy as shown in the tables is more than 12 inches, pull up or let off on the suspension guy as necessary until its sag, as sighted between the crossing poles, is equal to that called for in the table.
 - (b) When the required sag is 12 inches or less use the strand dynamometer instead of sighting and take up or slack off on the suspension guy until the tension required in the table is obtained. In making the tension measurements the dynamometer should be placed on the strand at one of the crossing poles but on the side toward the long span.
- 7.03 After obtaining the desired sag and tension in the suspension guy, dead end it on the other suspension guy dead end pole. If the crossing poles have been pulled ahead or back on the line in pulling up the suspension guy straighten them and tighten the bolts in the cable suspension clamps holding the suspension guy.

ERECT SUSPENSION GUY WITH INITIAL SAG AND AT HEIGHT ABOVE
SUSPENSION STRAND AS FOLLOWS

Strand	Size of Cable (Pairs)		20°		60°		100°		Separation Suspension Strand and Suspension Guy at Poles Feet	
	22 Ga.	19 Ga.	Initial Sag Inches	Initial Tension Pounds	Initial Sag Inches	Initial Tension Pounds	Initial Sag Inches	Initial Tension Pounds		
Span 175 Feet										
6,000	26		8	1250	10	1000	14	700	3	
	51	26	11	900	15	650	21	—	4	
	76		16	600	22	—	28	—	5	
10,000	101	51	20	500	27	—	33	—	5	
	152	76	30	—	35	—	40	—	6	
	202	101	3	4050	4	3000	4	3000	3	
16,000	303	152	5	2450	5	2450	7	1750	4	
	404	202	5	2450	6	2000	8	1500	5	
	606	303	4	4650	5	3700	6	3100	5	
6,000	909	455	6	3100	6	3100	8	2350	5	
	Span 200 Feet									
	26		18	700	23	550	29	—	5	
10,000	51	26	28	—	33	—	40	—	5	
	76		37	—	43	—	49	—	6	
	101	51	45	—	50	—	54	—	6	
16,000	152	76	55	—	60	—	65	—	7	
	202	101	5	3220	6	2700	7	2300	5	
	303	152	10	1600	11	1450	15	1100	6	
25,000	404	202	13	1250	16	1000	20	800	7	
	606	303	8	3050	10	2450	13	1850	7	
	909	455	10	2450	12	2000	15	1600	7	
6,000	3-1/8 Inch		3	9900	4	9050	4	8250	6	
	Span 225 Feet									
	26		34	500	41	—	47	—	6	
10,000	51	26	49	—	55	—	60	—	7	
	76		60	—	65	—	70	—	8	
	101	51	70	—	74	—	77	—	8-1/2	
16,000	152	76	80	—	84	—	87	—	9	
	202	101	17	1200	24	850	30	675	7	
	303	152	21	950	27	750	35	575	8	
25,000	404	202	30	675	37	550	44	—	8	
	606	303	19	1600	23	1350	32	950	8	
	909	455	23	1350	30	1000	38	800	8	
6,000	3-1/8 Inch		4	9100	5	8200	5	7450	8	
	Span 250 Feet									
	26		56	—	63	—	69	—	8	
10,000	51	26	71	—	77	—	82	—	9	
	76		84	—	89	—	94	—	10	
	101	51	94	—	99	—	105	—	10	
16,000	152	76	105	—	109	—	112	—	11	
	202	101	20	1250	25	1000	29	850	7	
	303	152	47	530	55	—	61	—	9	
25,000	404	202	58	—	66	—	71	—	10	
	606	303	42	900	49	780	56	680	10	
	909	455	50	760	57	670	64	600	10	
6,000	3-1/8 Inch		7	7450	7	6850	8	6050	9	

7.04 The values given above for 19-gauge cable are for CNB cable. Where types of cable other than these are to be installed, determine the equivalent size in terms of 22-gauge in accordance with the conversion tables shown in the Practices covering aerial cable construction.

LONG SPAN CONST.—SPANS OF 150 TO 250 FEET

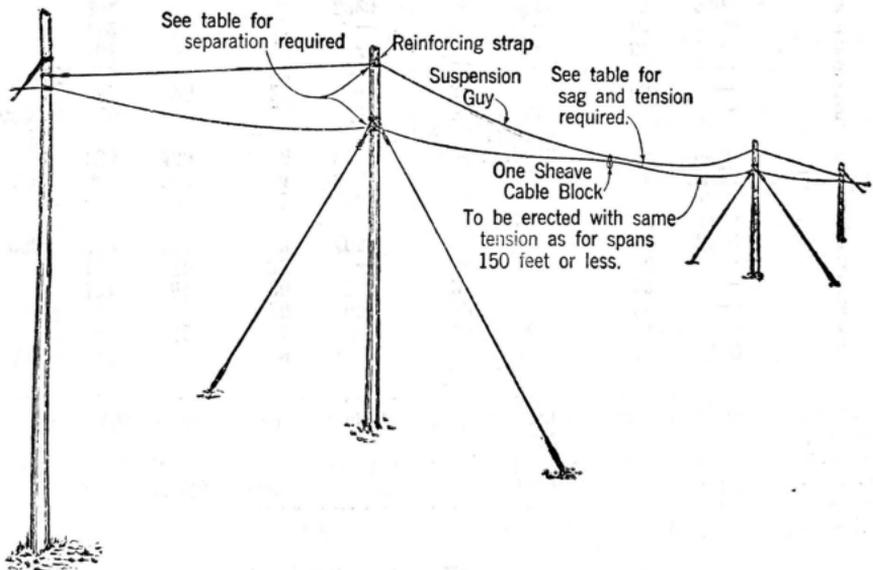
7.05 Where the length of the long span is other than that for which actual data are given in the above tables, use the information given for the next longer span length than the one being constructed.

8. PLACING CABLE SUSPENSION STRAND

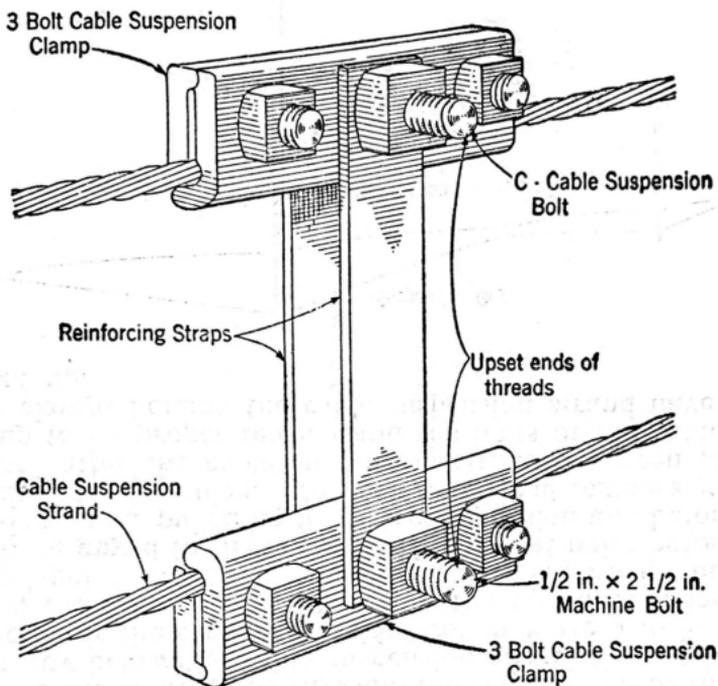
8.01 In connection with placing the cable suspension strand it will be necessary to ride the suspension guy. Before starting to ride the suspension guy a line of a suitable length should be made fast to the cable car to serve as an aid in pulling the car back to the crossing pole, if desired.

8.02 Place the cable suspension strand as follows:

- (1) Measure off on the line attached to the cable car a length equal to half the span length and mark this point with a wrapping of friction tape. As the cable car is ridden out into the span, pay out the line at the crossing pole until the piece of tape is reached. The cable car will then be at about the middle of the span and at this point attach a one sheave cable block to the suspension guy, using the bottom groove in the clamp.
- (2) Run a drag line across the long span, threading it through the cable block at the center, and pull the cable suspension strand across the long span by means of the drag line.



- (3) Pull up the strand so that the tension in it when measured in the long span or one of the adjoining spans is as specified in the Aerial Cable Construction Practices.
- (4) Ride the suspension guy (not the cable suspension strand) to the middle of the span and while the weight of the cable suspension strand is supported by the one sheave block permanently attach the cable suspension strand to the suspension guy.



8.03 Remove the cable block and tighten up the bolts of the suspension clamps supporting the cable suspension strand at the crossing and suspension guy dead end poles.

8.04 At this stage the point where the cable suspension strand is attached to the suspension guy at the middle of the span may be appreciably above the level of the cable suspension clamps at the poles but will come down to about a level when the cable is pulled in.

9. PLACING RINGS AND PULLING CABLE

9.01 In placing cable rings and pulling cable use the same methods as provided for in the practices covering Aerial Cable Construction. In pulling in the cable, however, avoid locating splices in the long span unless conditions are such that the cable, at the point where it is to be spliced, can be readily reached by a ladder from the ground.

10. CONSTRUCTING SPANS WHERE GUYS CANNOT BE INSTALLED

10.01 Where it is impracticable to place head and side guys, as shown in paragraph 4.01, construct spans longer than 150 feet but not more than 175 feet in length as indicated below. Except for the omission of guys and the dead ending of the suspension guy below the cable suspension strand the method of construction is the same as provided for in Parts 5 to 8. Since, however, there are no head guys on the two suspension guy dead end poles these two poles must be temporarily but securely head guyed to the butts of the adjacent poles before the suspension guy is pulled up to its proper tension and before the suspension guy is ridden. Do not remove the temporary head guys until after the cable suspension strand has been placed, pulled up to its proper tension and the bolts of the cable suspension clamps holding the cable suspension strand have been tightened up.

