OPEN WIRE
NON-CATENARY LONG SPAN CONSTRUCTION

Contents

1. STANDARD NAMES OF SUPPLIES

1.01 Standard names of supplies required for use under these instructions are given below in alphabetical order. These items are listed for the convenience of the field forces in ordering and checking supply of materials required for the work covered by these instructions. Only those materials not covered elsewhere in the Practices are listed below.

Clamp: **DEAD-ENDING CLAMP.** (For Long Span Use.)

Crossarms: **SPECIAL STEEL CROSSARMS.** (Dimensions shown in Part 8.)

Eyebolt: **EYEBOLT FOR LONG SPAN USE.** (A 5/8 in. x 18 in. eyebolt for use in attaching long span suspension insulators to the crossarms on dead end and suspension fixtures.)

Hanger: **WIRE HANGER.** (For carrying long span wires at suspension fixtures.)

Insulator: **SUSPENSION INSULATOR.**

Wire: **165 GALVANIZED STEEL RIVER CROSSING WIRE.**

2. GENERAL

2.01 These practices cover standard methods and materials for use in connection with the construction of long spans of the non-catenary type* in open wire toll and exchange lines excepting rural lines.

*Note: It is sometimes necessary to locate transpositions in a long span in which case a crossarm structure is located in the long span and is supported by cable suspension strand. This is known as catenary open wire construction. Where the line wires are given no intermediate support between the crossing fixtures, which is the type of construction covered in these practices, the long span is designated as the non-catenary type.

3. DEFINITION OF LONG SPANS

3.01 A long span is defined for the purpose of these instructions as an occasional span whose length exceeds the average length of the five adjacent spans in each direction by 50 per cent. or more with a minimum length of:

Loading Area	Minimum Length for Long Span Construction
Heavy	225 feet
Medium	250 "
Light	325 "

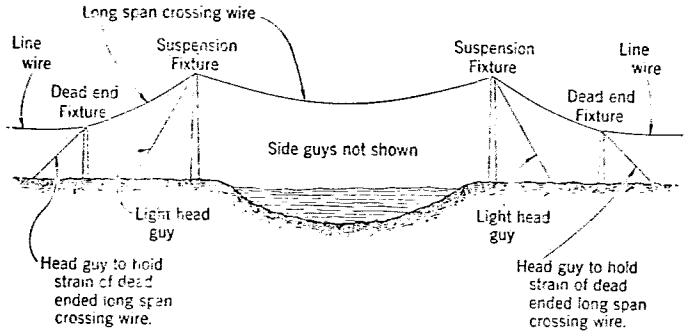
4. TYPES OF LONG SPAN FIXTURES

4.01 All long span fixtures covered by these practices are of the H type except in the case of spans of 325 to 500 feet in length employing 104 copper wire where for dead end fixtures single poles are used.

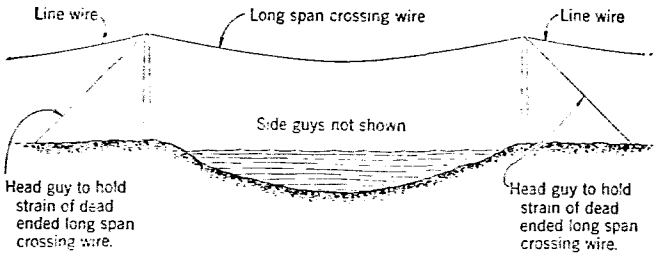
4.02 Dead end fixtures are the fixtures on which the long span wires are dead ended. The head guys to take the strain of the dead ended long span wires are located on the dead end fixtures.

4.03 Suspension fixtures are frequently used in conjunction with dead end fixtures in order to give the wires in the long span greater elevation.

4.04 The general arrangements of long spans constructed both with and without suspension fixtures are indicated below.



Long Span Crossing, Using Both Suspension and Dead End Fixtures.



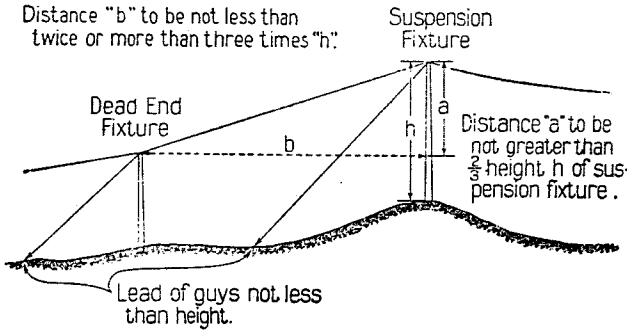
Long Span Crossing Without Suspension Fixtures

4.05 By span length is meant the distance between dead end fixtures when dead end fixtures only are used and between suspension fixtures when they are employed with the dead end fixtures.

5. DIFFERENCE IN ELEVATION OF AND DISTANCE BETWEEN DEAD END FIXTURES AND SUSPENSION FIXTURES

5.01 Make the difference in elevation "a" between the top of the dead end fixture and the top of the suspension fixture not more than two-thirds of the height of the suspension fixture above ground.

5.02 Make the distance "b" between the suspension fixture and dead end fixture not less than twice or more than three times the height of the suspension fixture above ground.



6. SIZE AND TYPE OF WIRE FOR LONG SPANS

6.01 When the size and type of wire is not shown in the detail plans use wire of the following types and sizes. Where two or more types or sizes are shown for the same span length either may be used as the clearance and economy considerations indicate to be desirable, bearing in mind that the wire having the least sag requires, in general, heaviest fixture construction but does not require as long poles to give the same clearance in the span.

SIZE AND TYPE OF WIRE FOR LONG SPANS

Length of Span (Feet)	Heavy Loading Area	Medium Loading Area	Light Loading Area
225	165 copper	.....	.....
250–300	165 copper	165 copper	.....
325–500	165 copper	165 copper	165 copper or 104 copper
550–800	165 R. C.	165 R. C.	165 R. C., 165 copper or 104 copper
850–1000	165 R. C.	165 R. C.	165 R. C., or 165 copper
1050–1600	165 R. C.	165 R. C.	165 R. C.

7. WIRE SAGS FOR LONG OPEN WIRE SPANS

7.01 Place wire in long span crossings constructed under these instructions with the following sags. In the case of additional wire installed in long spans not constructed in accordance with these instructions place the new wire with the same sag as existing wire of the same size and kind except where wire is strung on additional crossarms placed below all existing crossarms. Under these conditions the additional wire should be strung with the sags prescribed in these instructions provided these sags are not less than those in the existing wire. Wire must not be strung with different sags on the same crossarm.

(a) SAGS FOR PLACING 165 STEEL RIVER CROSSING WIRE

Heavy and Medium Loading Areas

Length of Span In Feet	Temperature In Degrees Fahr. 20	60	100
550	2′ 3″	2′ 5″	2′ 10″
600	2′ 8″	3′ 0″	3′ 6″
650	3′ 4″	3′ 9″	4′ 4″
700	3′ 11″	4′ 6″	5′ 2″
750	4′ 7″	5′ 3″	6′ 1″
800	5′ 6″	6′ 3″	7′ 3″
850	6′ 6″	7′ 6″	8′ 7″
900	7′ 10″	9′ 0″	10′ 4″
950	9′ 2″	10′ 6″	12′ 0″
1000	10′ 9″	12′ 0″	13′ 10″
1050	12′ 6″	14′ 0″	16′
1100	14′ 6″	16′ 3″	18′ 2″
1150	16′ 7″	18′ 6″	20′ 6″
1200	19′ 0″	21′ 3″	23′ 3″
1250	21′ 7″	24′ 0″	26′ 0″
1300	24′ 10″	27′ 0″	29′ 1″
1350	28′ 0″	30′ 3″	32′ 6″
1400	31′ 6″	33′ 9″	36′ 0″
1450	35′ 2″	37′ 6″	39′ 8″
1500	39′ 0″	41′ 6″	36′ 0″
1550	43′ 0″	45′ 6″	47′ 6″
1600	48′ 0″	50′ 0″	52′ 0″

(b) SAGS FOR PLACING 165 STEEL RIVER CROSSING WIRE

Light Loading Area

Length of Span In Feet	Temperature In Degrees Fahr. 20	60	100
550	2′ 3″	2′ 5″	2′ 10″
600	2′ 8″	3′ 0″	3′ 6″
650	3′ 4″	3′ 9″	4′ 4″
700	3′ 11″	4′ 6″	5′ 2″
750	4′ 7″	5′ 3″	6′ 1″
800	5′ 3″	6′ 0″	6′ 10″
850	6′ 0″	6′ 10″	7′ 8″
900	6′ 8″	7′ 6″	8′ 7″
950	7′ 5″	8′ 4″	9′ 5″
1000	8′ 2″	9′ 1″	10′ 4″
1050	8′ 11″	10′ 0″	11′ 2″
1100	9′ 8″	10′ 9″	12′ 1″
1150	10′ 6″	11′ 8″	13′ 1″
1200	11′ 4″	12′ 7″	14′ 0″
1250	12′ 1″	13′ 6″	15′ 0″
1300	13′ 0″	14′ 6″	16′ 0″
1350	13′ 9″	15′ 4″	17′ 0″
1400	14′ 8″	16′ 4″	18′ 0″
1450	15′ 6″	17′ 3″	18′ 11″
1500	16′ 6″	18′ 2″	19′ 11″
1550	17′ 4″	19′ 0″	20′ 11″
1600	18′ 2″	20′ 0″	22′ 0″

(c) SAGS FOR PLACING 165 COPPER WIRE

Heavy and Medium Loading Areas

Length of Span In Feet	Temperature In Degrees Fahr. 20	60	100
225	1′ 7″	2′ 2″	3′ [illegible]
250	2′ 0″	2′ 8″	3′ [illegible]
275	2′ 6″	3′ 4″	4′ 1″
300	3′ 1″	3′ 11″	4′ 10″
325	3′ 8″	4′ 7″	5′ 6″
350	4′ 4″	5′ 5″	6′ 4″
375	5′ 0″	6′ 2″	7′ 2″
400	5′ 11″	7′ 0″	8′ 2″
425	6′ 8″	8′ 0″	9′ 1″
450	7′ 7″	8′ 10″	10′ 1″
475	8′ 7″	9′ 10″	11′ 1″
500	9′ 7″	10′ 11″	12′ 2″