

## CLEARANCES FOR TELEPHONE POLES AND STUBS

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**1. GENERAL**

1.01 This section covers the clearance requirements to be observed when locating telephone poles and stubs in the vicinity of foreign wires, poles, railroad tracks, and other installations.

1.02 This section is reissued:

- (1) To make certain clearance requirements for poles are applicable to crossarms and cable extension arms.
- (2) To add clearance requirements for foreign owned CATV facilities.
- (3) To add clearance requirements for poles placed near swimming pools.

(4) To make all clearance tables direct reading.

(5) To add information on clearances which are at an angle between horizontal and vertical.

Since this is a general revision, arrows used to show changes have been omitted.

**1.03** This section is provided for the use of both engineering and field forces who have occasion to locate poles. Pole locations and sizes are generally selected by engineering forces and the clearances obtained as a result of engineering plans should comply with the values shown herein. If a staked location and/or specified pole location will not provide at least the clearances specified in this section, field forces should contact their immediate supervisor or the responsible engineer.

**1.04** The clearances shown in this section are *minimum* values. Greater clearances, especially those involving power wires, should be provided whenever this can be done without added expense or inconvenience. Greater clearances shall be provided where necessary to conform to local codes, municipal ordinances, state rules, etc.

**1.05** Pole clearances for span lengths, sags, voltages, and other conditions not covered in this section are engineering responsibilities and will be indicated on the work plans.

**2. CLEARANCES BETWEEN POWER WIRES, CABLES AND POLES**

**2.01** In order to obtain the minimum clearance required between telephone poles or stubs and electric power wires or cables which are not to be attached to them, the following must be known:

- (a) Voltage carried by the power wires
- (b) Power wire sag between supports
- (c) Distance between telephone poles and power wire supports.

2.02 Hereafter the clearance between power wires and telephone poles is identified as "C", distance between telephone poles and power wire supports as "D", power wire sag between supports as "sag." (See Fig. 1.)

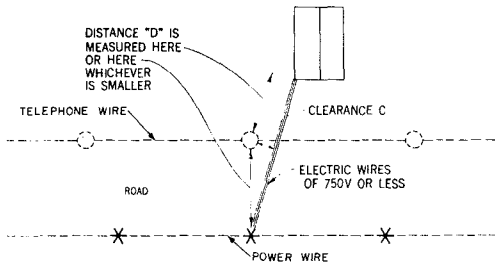


Fig. 1—"D" Distance Between Telephone and Power Wire Supports

2.03 Crossarms, cable arms, and rake of the pole are considered as part of the pole. Clearance "C" must be maintained in *all* directions. No part of a telephone pole shall be closer to power wires in any direction than the computed "C". (See Fig. 2.)

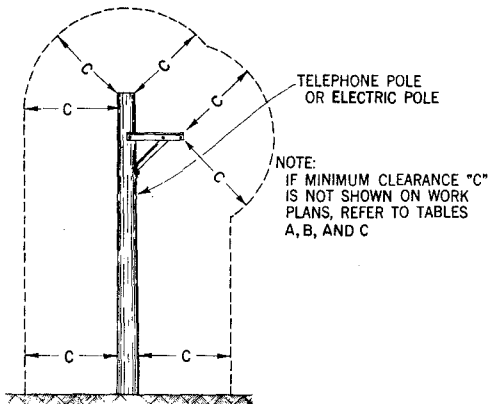


Fig. 2—"C" Distance From Pole

2.04 As shown in Fig. 2, clearance "C" may be vertical, horizontal, or may be inclined at an angle. Clearance "C" will be inclined at an angle only when the power wire or cable is higher than the top of the proposed pole. If the *horizontal* or *vertical* distance between the pole location and the power wire meets the requirement for clearance "C", the diagonal distance need not be considered further.



*Do not guess the height of the power wire; this must be known. Either obtain the necessary information from the electric utility or use approved means to measure it. (See Section 620-210-011.)*

2.05 Where clearance "C" must be taken at an angle, proceed as follows:

(a) Level ground:

- (1) Subtract the aboveground length of the proposed pole from the height of the power wire.
- (2) Measure the horizontal distance from the power wire to the pole location. [Measure to the end of crossarms, extension arms, etc. if any of these will be nearer to the power wire than the pole itself (2.03).]
- (3) Refer to Fig. 3 and locate the difference in height (obtained in (1)) on the scale marked "Height of Power Wire Minus Height of Telephone Pole".
- (4) Locate the horizontal distance obtained in (2) on the scale marked "Horizontal Distance to Power Wire".
- (5) Find the point where these two values intersect; read the value of "C" on the curved line nearest this point.

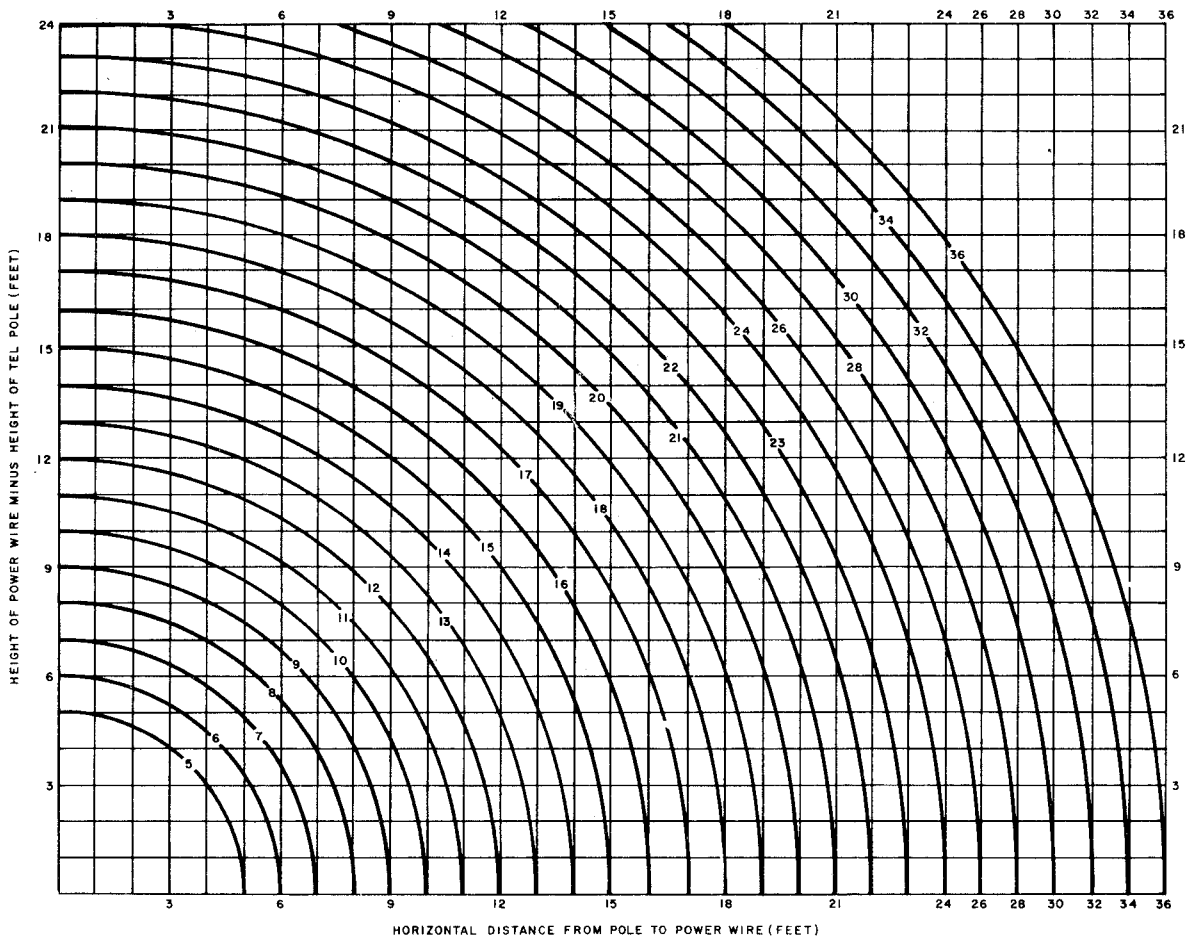


Fig. 3—Chart for Determining "C" When "D" is Known

(b) Uneven ground—Refer to Fig. 4 and compute "C" as follows:

- (1) Use the ground level at the base of the proposed pole as a reference. When the ground level under the power wire is higher than true horizontal, add the difference to the height of the power wire and subtract the height of the pole (Fig. 4).

Example:  $(29' + 1') - 20' = 10$  ft.

**Note:** Subtract when ground level is lower.

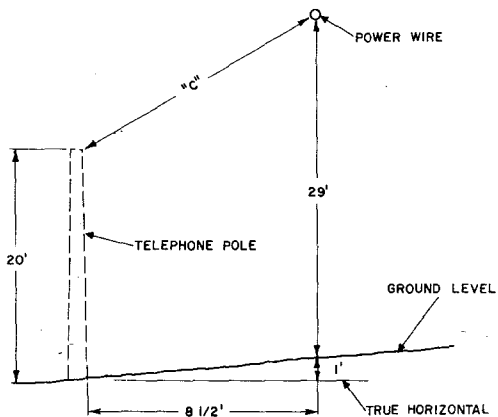


Fig. 4—"C" Distance Between Telephone Poles and Power Wires

- (2) The horizontal distance between power wire and pole location is 8 1/2 feet (Fig. 4).
- (3) Locate 10- and 8-1/2 on their respective scales in Fig. 3. They intersect slightly past the curved line marked 13. This means clearance "C" will be a few inches more than 13 feet. Refer to Tables A, B, or C to find minimum distance in each individual case.

**2.06** In order to use the clearance tables, it is also necessary to *know* the voltage of the power wires. **This is always the voltage between wires, not the voltage to ground.** It is not necessary to know the voltage of *power cables* except spacer type cable.

**2.07** In order to use the tables that follow, it will also be necessary to know the distance between the telephone pole or stub in question and the *nearest* support of the power wires. This may be a pole, tower, or the corner of a building, etc. (Distance "D" in Fig. 1)

**2.08** To obtain the clearance between power wires and telephone poles when the voltage is 750V or less:

- (a) Measure the shortest distance between telephone pole and power wire support (Fig. 1).
- (b) Select clearance required for this value of "D" from the table. Examples: If "D" is 75 feet, minimum clearance "C" is 5 feet. If "D" is 160 feet, clearance "C" is 8 feet.

**Note:** If the pole is to carry crossarm or cable extension arm, clearance "C" also applies to the crossarm or extension arm.

**2.09** Clearance between telephone poles, stubs, or crossarms and power wires of 750 to 15,000 volts is shown in Table B.

TABLE A

MINIMUM CLEARANCE FROM ELECTRIC CONDUCTORS OF 750 VOLTS OR LESS

DISTANCE BETWEEN TELEPHONE POLE AND NEAREST POLE OR POINT OF ATTACHMENT ON BUILDING	CLEARANCE BETWEEN TELEPHONE POLE OR STUB AND NEAREST ELECTRIC WIRE
DISTANCE "D" IN FEET	CLEARANCE "C" IN FEET
96 or less	5*
97-120	6
121-144	7
145-168	8
over 168	8 plus 1 foot for each additional 24 feet of "D"

\* Bell System minimum. (The National Electrical Safety Code permits somewhat smaller clearances for smaller values of "D".) If this cannot be obtained, arrangements should be made to have the electric wires attached to the pole.

TABLE B

MINIMUM CLEARANCE FROM POWER WIRES  
OF 750 TO 15,000 VOLTS

FOR POWER WIRES HAVING A SAG OF:					
IF DISTANCE "D" IN FEET IS:	6 feet or less	6 to 10 feet	10 to 16 feet	16 to 23 feet	23 to 33 feet
REQUIRED CLEARANCE "C" IN FEET IS:					
150 or less	9	10	11	12	13
151 thru 174	10	11	12	13	14
175 thru 198	11	12	13	14	15
199 thru 222	12	13	14	15	16
223 thru 246	13	14	15	16	17
247 thru 270	14	15	16	17	18
271 thru 294	15	16	17	18	19
295 thru 318	16	17	18	19	20
319 thru 342	17	18	19	20	21
343 thru 366	18	19	20	21	22
367 thru 390	19	20	21	22	23
391 thru 414	20	21	22	23	24
415 thru 438	21	22	23	24	25
439 thru 462	22	23	24	25	26
463 thru 486	23	24	25	26	27
487 thru 510	24	25	26	27	28
511 thru 534	25	26	27	28	29
535 thru 558	26	27	28	29	30
559 thru 582	27	28	29	30	31
582 thru 606	28	29	30	31	32

TABLE C

## MINIMUM CLEARANCES FROM POWER WIRES OF 15,000 TO 135,000 VOLTS

IF DISTANCE "D" IN FEET IS:	15,000 VOLTS TO 55,000 VOLTS			55,000 VOLTS TO 95,000 VOLTS			95,000 VOLTS TO 135,000 VOLTS		
	IF SAG OF POWER WIRES IS:			IF SAG OF POWER WIRES IS:			IF SAG OF POWER WIRES IS:		
	12 feet or less	12 to 25 feet	25 to 42 feet	12 feet or less	12 to 25 feet	25 to 42 feet	12 feet or less	12 to 25 feet	25 to 42 feet
	REQ'D CLEARANCE "C" IN FEET IS:			REQ'D CLEARANCE "C" IN FEET IS:			REQ'D CLEARANCE "C" IN FEET IS:		
150 or less	10	11	12	11	12	13	12	13	14
151 thru 174	11	12	13	12	13	14	13	14	15
175 thru 198	12	13	14	13	14	15	14	15	16
199 thru 222	13	14	15	14	15	16	15	16	17
223 thru 246	14	15	16	15	16	17	16	17	18
247 thru 270	15	16	17	16	17	18	17	18	19
271 thru 294	16	17	18	17	18	19	18	19	20
295 thru 318	17	18	19	18	19	20	19	20	21
319 thru 342	18	19	20	19	20	21	20	21	22
343 thru 366	19	20	21	20	21	22	21	22	23
367 thru 390	20	21	22	21	22	23	22	23	24
391 thru 414	21	22	23	22	23	24	23	24	25
415 thru 438	22	23	24	23	24	25	24	25	26
439 thru 462	23	24	25	24	25	26	25	26	27
463 thru 486	24	25	26	25	26	27	26	27	28
487 thru 510	25	26	27	26	27	28	27	28	29
511 thru 534	26	27	28	27	28	29	28	29	30
535 thru 558	27	28	29	28	29	30	29	30	31
559 thru 582	28	29	30	29	30	31	30	31	32
583 thru 606	29	30	31	30	31	32	31	32	33

(a) Obtain the sag of the power wire from the electric utility or estimate it. (It is not necessary to know the exact value of sag for this purpose.)

(b) *Measure* distance "D" between the proposed pole location and the *nearest* point of support for the power wire. [Pole, tower, H fixture, etc (Fig. 1)]

(c) Select the value of "C" from Table B of the power wire for the particular value of sag and value of "D". Example: The power voltage is 13,000 volts. The wire has a sag of 12 to 13 feet. Distance "D" is 207 feet. Table B indicates Clearance "C" is 14 feet (2.03).

**2.10** Clearances between telephone poles, stubs, or crossarms and power wires of over 15,000 volts but not over 135,000 volts are shown in Table C. Table C is used in exactly the same manner as Table B.

### 3. HORIZONTAL CLEARANCE BETWEEN RAILROAD TRACKS AND POLES

**3.01** Where overhead telephone lines cross or run along railroad tracks, provide clearance of at least:

(a) 12 feet between the telephone poles or stubs and the nearest rail of the railroad track.

(b) 8 feet between any crossarm, guy, or other attachment and the nearest rail of the railroad track.

**3.02** If it is impractical to provide these clearances, the approval of the railroad concerned must be obtained before reducing these clearances.

**3.03** Where necessary to provide safe operating conditions which require an uninterrupted view of signals, signs, etc, along tracks, greater clearance may be required in which case this information will be shown on the detail work plans by the plant engineering forces.

### 4. CLEARANCE BETWEEN AIRPORTS, LANDING AREAS, ETC, AND POLES

**4.01** No pole plant shall be constructed or altered within one mile of the nearest boundary of an aircraft landing area (such as airports, landing fields, or *navigable* water suitable for the take-off or landing of aircraft) until after specific approval, indicating compliance with Department of Commerce regulations, has been obtained from the Plant Engineer.

### 5. CLEARANCE BETWEEN FIRE HYDRANTS, SIGNAL AND CALL BOX PEDESTALS AND POLES

**5.01** Poles, stubs, and their guys and braces shall have clearance from fire hydrants, traffic signal pedestals, and fire and police call box pedestals of not less than 3 feet. Where conditions permit, a clearance of not less than 4 feet is recommended. Clearance shall be measured between the nearest parts of the objects concerned.

**5.02** Locate poles and stubs so that traffic signals will not be obstructed from view of oncoming traffic.

### 6. CLEARANCE BETWEEN CURB LINES AND POLES

**6.01** Poles, stubs, and their guys and braces shall have a horizontal clearance from curb lines of not less than 6 inches measured to the street side of the curb.

### 7. CLEARANCE BETWEEN NEON SIGNS AND POLES

**7.01** The National Electric Safety Code does not provide for clearances from neon signs. However, it is recommended that poles be located so that the following clearances will be obtained wherever it is practical to do so:

	<u>NEON SIGN</u>	<u>TELEPHONE WIRE</u>	<u>TELEPHONE CABLE</u>
Above or Below		4 ft.	4 ft.
At one Side		2 ft.	4 ft.

**8. CLEARANCE BETWEEN SWIMMING POOLS AND POLES**

**8.01** The National Electric Safety Code does not provide for clearance between swimming pools and telephone poles. However, it is recommended that poles never be located so telephone wires or cables cross directly over a swimming pool.

**8.02** It is recommended that the distance between the pools and poles be kept to 10 feet minimum.

**9. CLEARANCE BETWEEN CATV AND OTHER FOREIGN COMMUNICATION CABLES AND POLES**

**9.01** Locate poles so CATV or other foreign communication cables, which are not to be attached to the pole, will have a clearance of at least 4 feet from any telephone cable which will be attached to the pole.