

CLEARANCES ON JOINTLY USED POLES

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1. GENERAL

1.01 This section deals with clearances on jointly used poles. It has been reissued primarily to add clearance requirements for traffic lights and their associated wiring. Several minor changes have been made elsewhere and are indicated in the usual manner. Requirements are largely based upon the Sixth Edition of the National Electrical Safety Code. Some, however, are based upon the E.E.I.-Bell System Joint Pole Practices, although a few are purely Bell System requirements. Clearances which are not based on the Code are appropriately identified. All values shown in this section apply to all three loading areas and should be used unless the detail plans indicate otherwise.

1.02 In the particular case of wire and cross-arm spacings, it should be noted that the values shown may have to be increased in some cases to meet the midspan clearance requirements shown in Section 620-216-012. In general, the

recommended spacings at the pole are adequate to meet midspan requirements for span lengths up to 150 feet and, in many cases, longer spans.

1.03 It will be noted that clearances from streetlights show one value for grounded fixtures and a larger value for nongrounded fixtures. Streetlight fixtures bonded to cable suspension strand or power multigrounded neutral conductors are considered to be sufficiently well grounded to use the smaller clearance. Fixtures which are merely grounded to a ground rod are *not* considered sufficiently well grounded to use the smaller clearance.

1.04 It will also be noted that clearances from grounded transformers, capacitors, etc., are smaller than for nongrounded transformers, etc. *Local instructions will designate areas where transformer and/or capacitor cases are grounded, since it is not generally possible to determine whether power equipment is grounded or not by looking at it.*

2. STREETLIGHT FIXTURES AND THEIR ASSOCIATED WIRING

2.01 Telephone attachments *should not*, in general, be placed *above* streetlight fixtures unless the fixtures are grounded.

2.02 Telephone cable or multiple line wire and terminals shall have at least 20 inches clearance from streetlight fixtures or span wires carrying streetlights which *are not grounded*, and at least 4 inches from fixtures and span wires which *are grounded*. (See Figs. 2, 3, 4, 6, and 7.)

2.03 Telephone crossarm through bolts shall be 20 inches from streetlight fixtures which are above them, or 24 inches if fixtures are below, regardless of whether the fixture is grounded or not. (See Figs. 1 and 5.)

2.04 Where streetlight fixtures are fed by means of drip loops entering the fixture from the surface of the pole, telephone cable or multiple line wire shall be at least 12 inches below the lowest part of the loop. (See Fig. 2.)

2.05 Drivehooks, bridewire rings and brackets shall have a clearance of at least 16 inches from streetlight fixtures or span wires which **are not grounded**, and at least 4 inches from fixtures and span wires which **are grounded** (See Fig. 3).

If carrying C rural wire, drivehooks which are **above** grounded fixtures or span wires shall have a clearance of 6 inches.

2.06 Obtain the following clearances from vertical feed wires of streetlight fixtures:

KIND OF VERTICAL RUN	ITEM OF TELEPHONE PLANT	HORIZONTAL CLEARANCE (INCHES)
(a) On surface of pole (Fig. 5)	Through bolts	2 min.—1/8 pole circumference in general
	Pole steps	3
(b) Streetlight feed run on pins and insulators (Fig. 6)	Pole steps	5
	Cable ¹ , Wire ¹ , Guys ²	6
		3
(c) Streetlight feed from cross-arm run direct to fixture 40" from pole (Fig. 7)	Crossarms	12
	Cable	20
	Drop Wire, Guys ¹	6

1. EEI-Bell System requirement.

2. Bell System requirement.

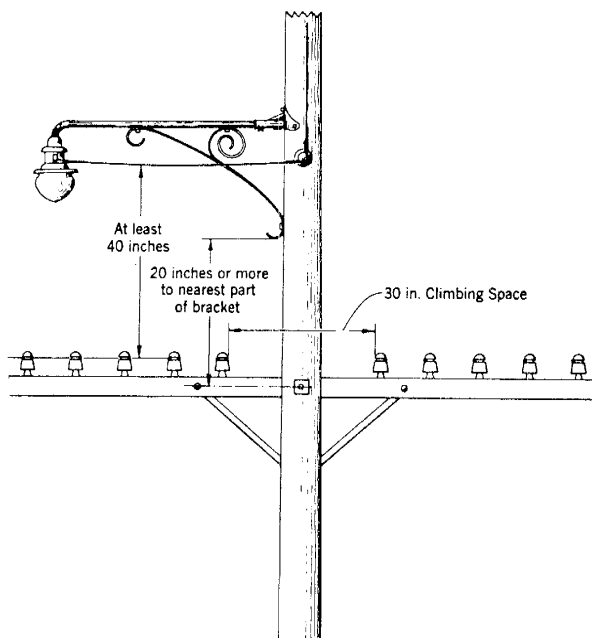


Fig. 1

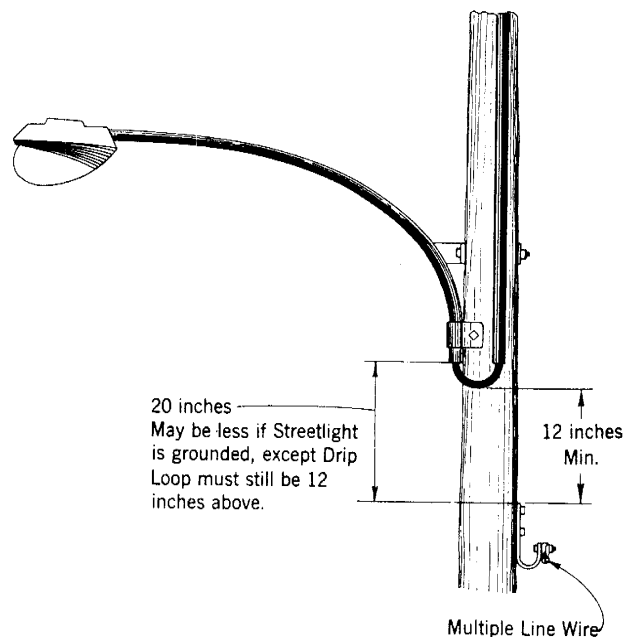


Fig. 2

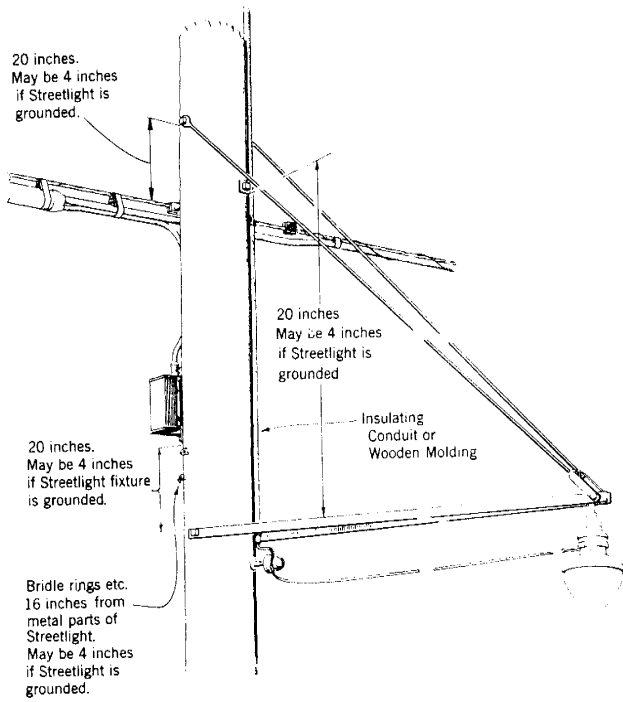


Fig. 3

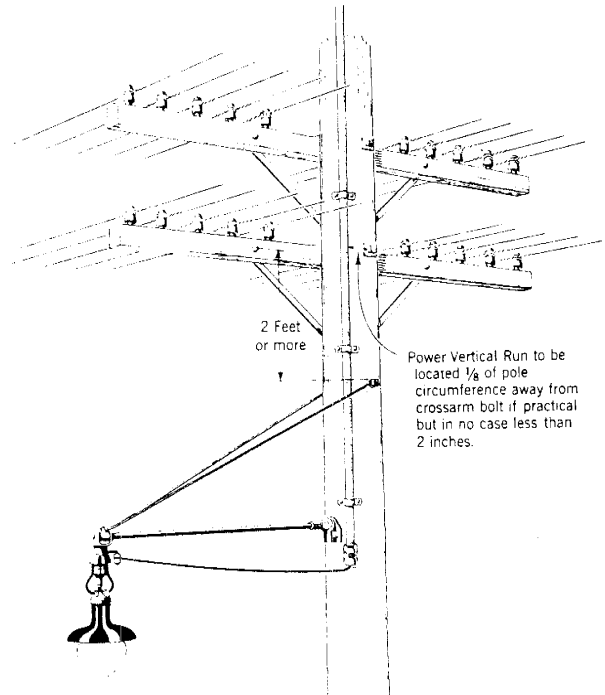


Fig. 5

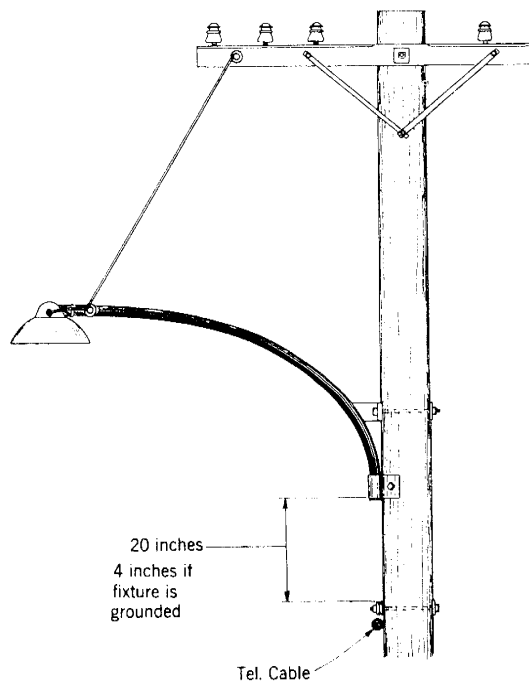


Fig. 4

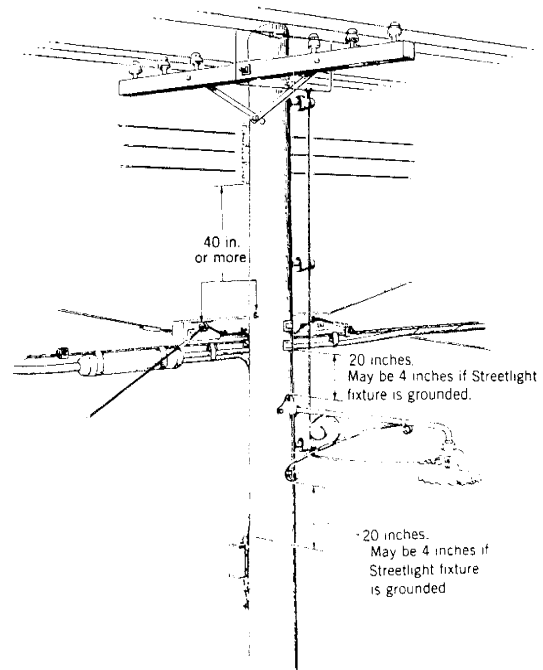


Fig. 6

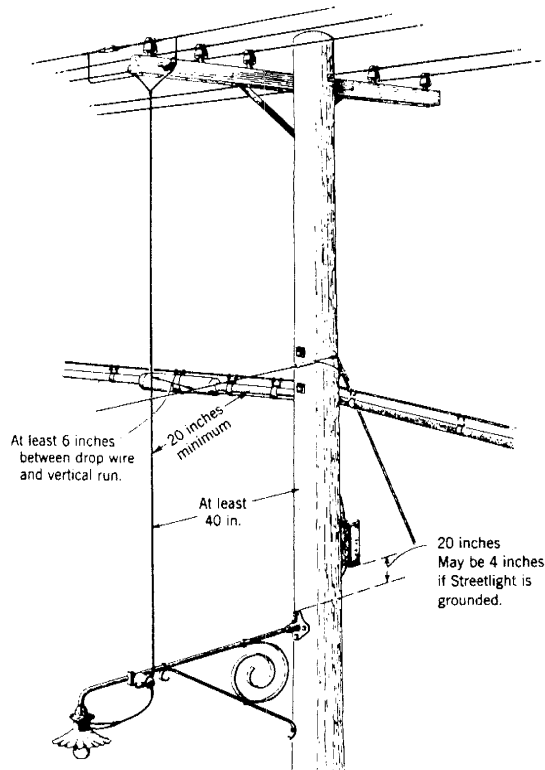


Fig. 7

3. TRAFFIC LIGHTS AND THEIR ASSOCIATED WIRING

3.01 Telephone cable, multiple line wire and their terminals shall have the following clearances from traffic light fixtures or their supporting span wires.

If not grounded.....20 inches
If grounded..... 4 inches

3.02 Telephone crossarms shall have the following clearances from traffic light fixtures or their supporting span wires regardless of whether the fixture is grounded or not. (Measured from crossarm bolt.)

If above telephone crossarms...20 inches
If below telephone crossarms...24 inches

3.03 Telephone bridle rings, drive hooks and brackets shall have the following clearances from traffic light fixtures or their supporting span wires.

If not grounded.....16 inches
If grounded 4 inches

3.04 Telephone cable shall preferably be 24 inches below traffic light control cables. This may be reduced to 12 inches where necessary.

3.05 Vertical runs associated with traffic light fixtures and controls shall be given the same clearances as power vertical runs. See Part 8 of this section.

4. OPEN POWER WIRES, CROSSARMS, RACKS, ETC

4.01 Except in the case of trolley feeders, telephone attachments shall be placed *below* open power wires, crossarms, and racks. The clearances shown in 4.03 and 4.04 are *minimums* and may have to be increased for span lengths in excess of 150 feet. (See Section 620-216-012.) Greater clearances are desirable where they can be readily obtained.

4.02 *In order to determine the clearances required, it is necessary to know the voltage of the power wires and also whether they are, or are not, part of a grounded system. Clearances for grounded power systems are based upon their voltage to ground; for other systems, clearances depend upon the voltage between wires.* Most grounded power systems include a grounded conductor which has many connections to ground. Such conductors are called multigrounded neutrals and these are generally considered to be effectively grounded.

4.03 Telephone cables, wires, guys, loading coil cases, drivehooks, etc, shall have the following minimum vertical separations from *open* power wires:

(a) Phase wires.

FOR GROUNDED POWER CIRCUITS		
VOLTAGE ¹ TO GROUND	VOLTAGE BETWEEN WIRES	CLEARANCE ³ (INCHES)
8700 V - less	15,000 V - less	40 ²
8701 V - 50,000 V	15,001 V - 86,500 V	60
FOR OTHER POWER CIRCUITS ¹		
—	8700 V - less	40 ²
—	8701 V - 50,000 V	60

See footnotes on page 5.

(b) Multigrounded neutral wires.

SYSTEM VOLTAGE TO GROUND	SYSTEM VOLTAGE BETWEEN WIRES	CLEARANCE (INCHES)
22,000 — less	38,000 — less	40 ⁵
22,001 — 50,000	38,001 — 86,500	60

4.04 Telephone cables, wire terminals, load coil cases, drivehooks, etc shall have the following clearances from power crossarm braces, steel pins, and racks:

(a) Metal crossarm braces which are:

(1) Attached to metal crossarms.

(2) Within 1 inch of non-grounded transformer cases, capacitor cases or their supports.

(3) Attached to wood crossarms at points *less than 1 inch* below the top of the arm.

(4) Attached to wood crossarms at points *1 inch or more* below the top of the arm and more than 1 inch from non-grounded transformers, etc.

See
Table A

See
Table B

(b) Secondary racks (See Figs. 10, 11)

.....40 inches generally.

(c) Steel pins (A on Fig. 10, B on Fig. 11)
..... See Table A

TABLE A

FOR GROUNDED POWER CIRCUITS		
VOLTAGE TO GROUND	VOLTAGE BETWEEN WIRES	CLEARANCE (INCHES)
8700 V - less	15,000 V - less	40
8701 V - 50,000 V	15,001 V - 86,500 V	60
FOR OTHER POWER CIRCUITS		
—	8700 V - less	40
—	8701 V - 50,000 V	60

TABLE B

FOR GROUNDED POWER CIRCUITS		
VOLTAGE TO GROUND	VOLTAGE BETWEEN WIRES	CLEARANCE (INCHES)
8700 V - less	15,000 V - less	12 ⁶
8701 V - 50,000 V	15,001 V - 86,500 V	30 ⁷
FOR OTHER POWER CIRCUITS		
—	8700 V - less	12 ⁶
—	8701 V - 50,000 V	30 ⁷

1. Voltage to ground will always be 58% of voltage between phase wires for three-phase power lines.
2. For open secondary service wires crossing over a telephone line on a pole top extension fixture or attached to the top of a pole carrying no other power attachments, the 40-inch requirement may be reduced to 24 inches above the *outer wires* of open wire on crossarms, provided 40 inches *clearance is maintained at the pole*. (See Fig. 8.) (EEI-Bell System requirement.)
3. See Par. 4.01.

4. These requirements also apply to neutrals *other* than multigrounded neutrals.
5. Telephone drop wires may be attached within less than 40 inches on common crossing poles (but not less than 4 inches), provided the requirements of (a) above are met. No reduction in clearance is permitted for longitudinal joint use, nor for common crossing poles where cable, open wire, or multiple line wire is involved. (See Fig. 9.)
6. EEI-Bell System requirement.
7. Bell System requirement.

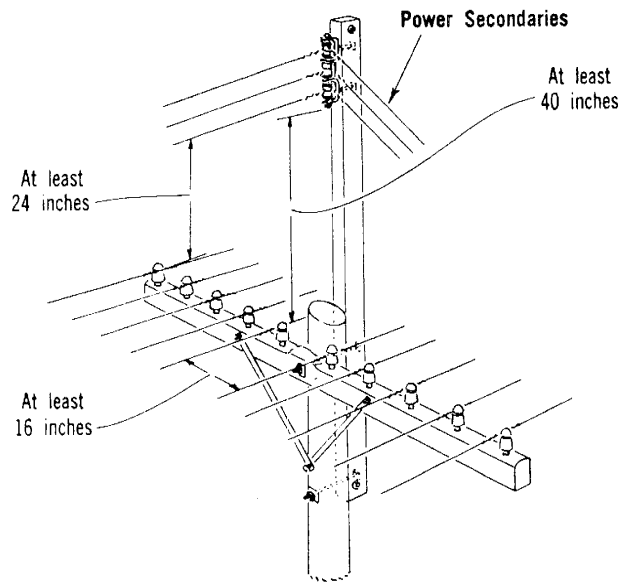


Fig. 8

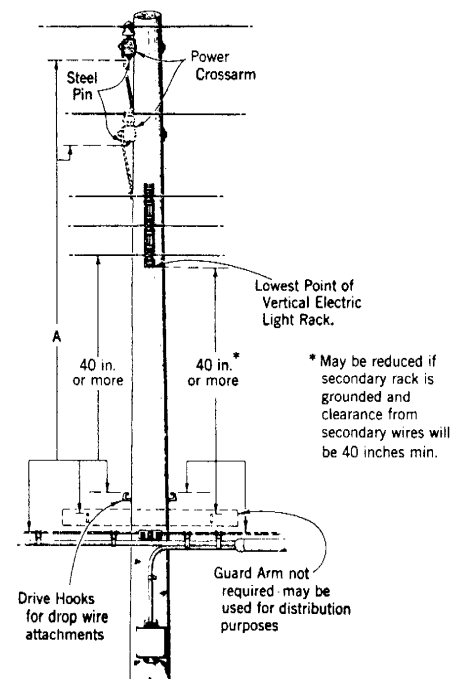


Fig. 10

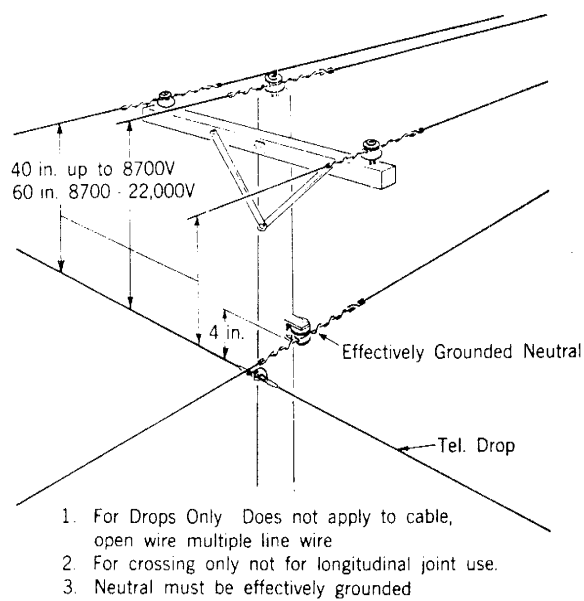


Fig. 9

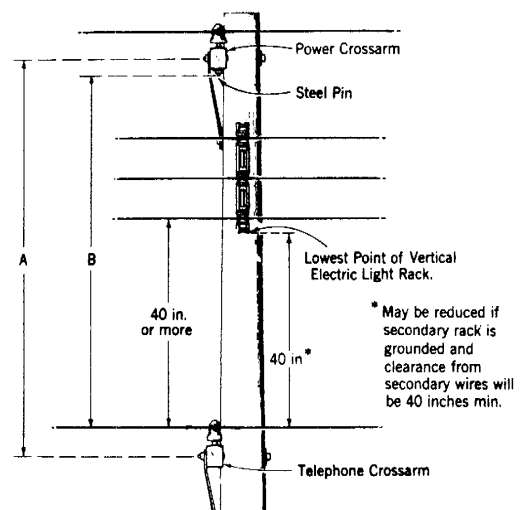


Fig. 11

4.05 Minimum vertical spacings between power and telephone crossarms shall be as follows: (Measured between crossarm centers.) ("A" on Fig. 11.)

FOR GROUNDED POWER CIRCUITS		
VOLTAGE TO GROUND	VOLTAGE BETWEEN WIRES	CLEARANCE* (INCHES)
8700 V - less	15,000 V - less	48
8701 V - 50,000 V	15,001 V - 86,500 V	72
FOR OTHER POWER CIRCUITS		
—	8700 V - less	48
—	8701 V - 50,000 V	72

* See Par. 4.01.

5. POWER TRANSFORMERS, CAPACITORS, VOLTAGE REGULATORS, ETC

5.01 The minimum vertical clearance between power transformers, capacitors, or voltage regulators and telephone cables, wires, guys, terminals, loading coil cases, drivehooks, etc shall be as follows: ("A" on Figs. 12 and 13.)

FOR GROUNDED POWER CIRCUITS		
VOLTAGE TO GROUND	VOLTAGE BETWEEN WIRES	CLEARANCE (INCHES)
8700 V - less	15,000 V - less	40**
8701 V - 50,000 V	15,001 V - 86,500 V	60**
FOR OTHER POWER CIRCUITS		
—	8700 V - less	40
—	8701 V - 50,000 V	60

**May be 30 inches if case is effectively grounded as a uniform procedure over a well defined area. (See 1.04.)

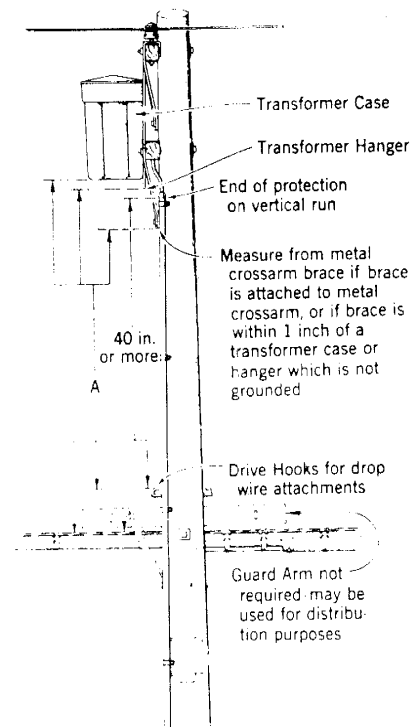


Fig. 12

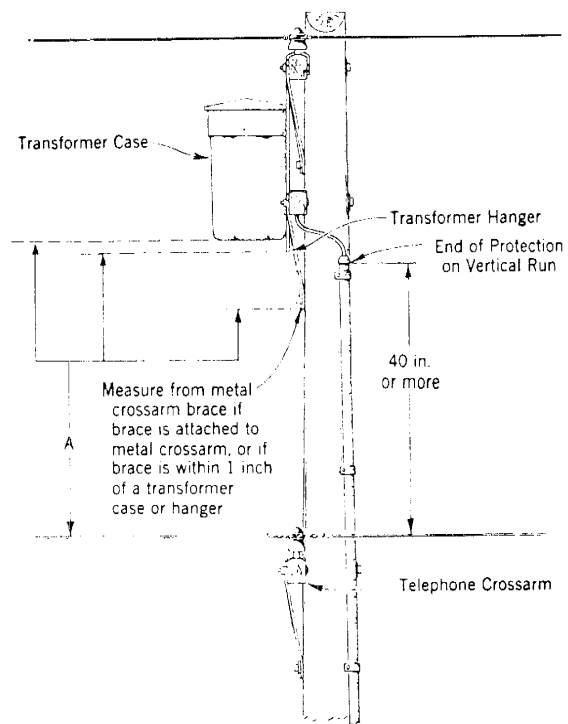
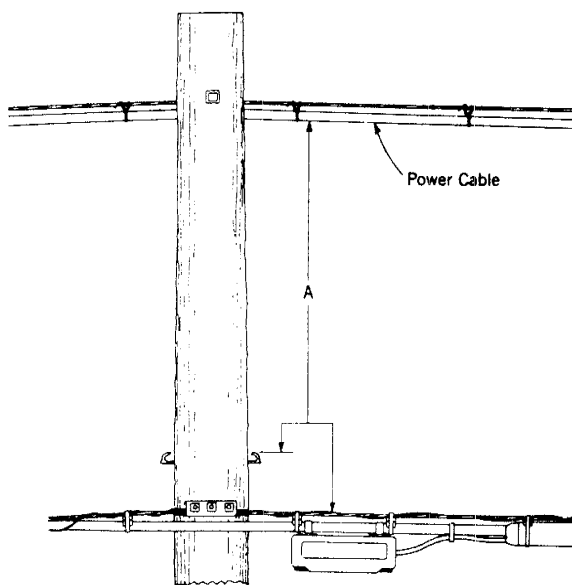
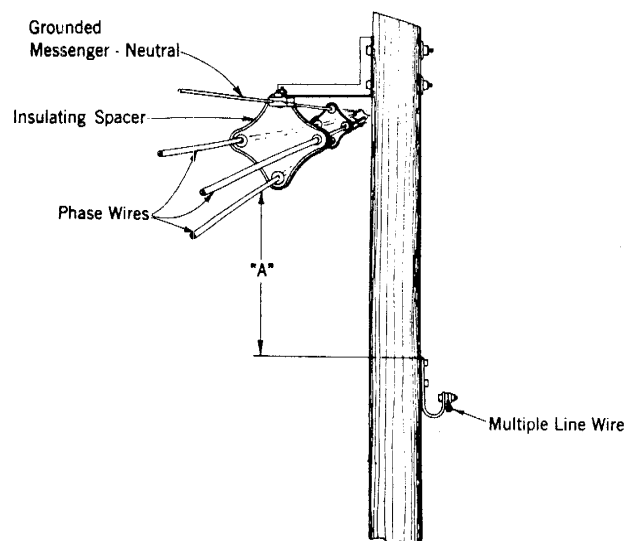


Fig. 13

6. POWER CABLES

6.01 Telephone cables, wires, terminals, guys, loading coil cases, drivehooks, etc, shall have the following minimum vertical clearances from power cables:

- | | | |
|--|--------|---------------------|
| (a) Grounded metallic sheath cables | 40 in. | } "A" on
Fig. 14 |
| (b) Any cable lashed to a grounded messenger | 40 in. | |
| (c) Insulated conductors lashed to or spiraled around a grounded messenger | 40 in. | |
| (d) Other power cables | | |
| 8700 V or less | 40 in. | |
| 8701 V to 50,000 V | 60 in. | |
| (e) Spacer type power cables (with grounded messenger) | | |
| 8700 V or less to ground | 40 in. | } "A" on
Fig. 15 |
| 8701 V to 50,000 to ground | 60 in. | |

**Fig. 14****Fig. 15****7. TROLLEY SPAN WIRES AND BRACKETS**

7.01 Minimum vertical spacings between span wires or brackets supporting trolley conductors and telephone crossarms shall be as follows: (Measured from center of crossarm to nearest edge of bracket, etc)

- Located **above** telephone crossarms20 in.
- Located below telephone crossarms24 in.

7.02 Minimum vertical spacings between span wires or brackets and telephone cables, multiple line wire, and terminals are as follows:

- If grounded 4 in.
- If not grounded12 in.*

7.03 Minimum vertical spacings between span wires or brackets and telephone drivehooks, bridle wire rings, and wire brackets are as follows:

- Grounded or not 4 in.

7.04 General arrangements involving trolley construction are shown in Figs. 16 to 20.

*For cable terminals, this may be reduced where 12 inches cannot be obtained, but should be kept as large as possible.

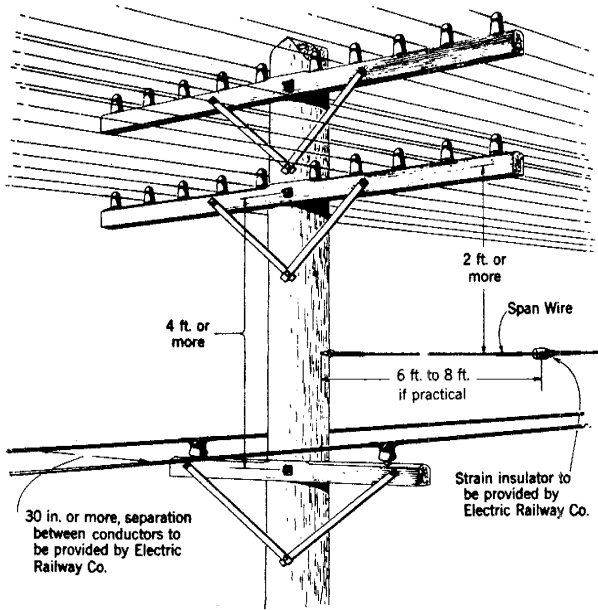


Fig. 16

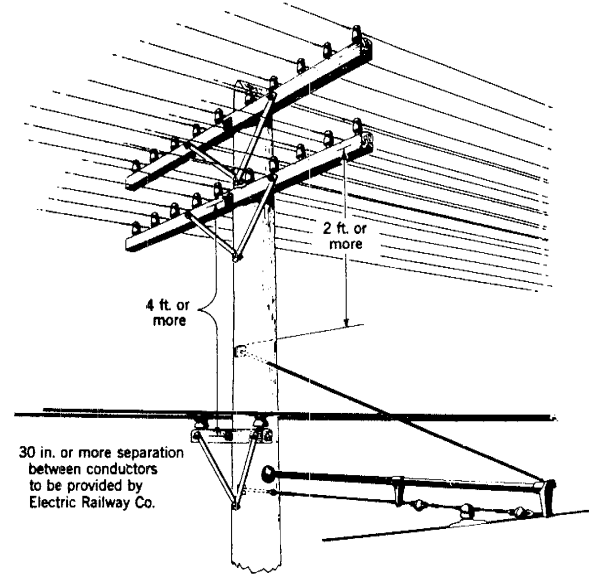


Fig. 18

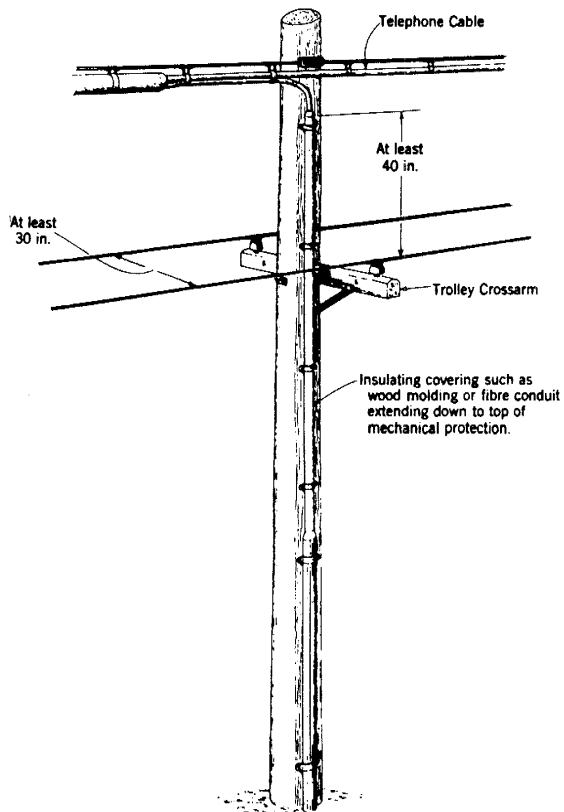


Fig. 17

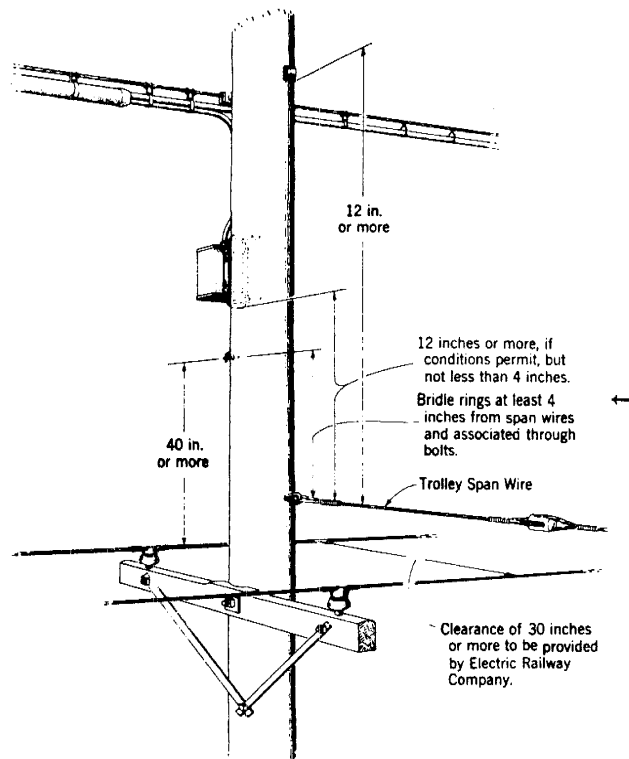


Fig. 19

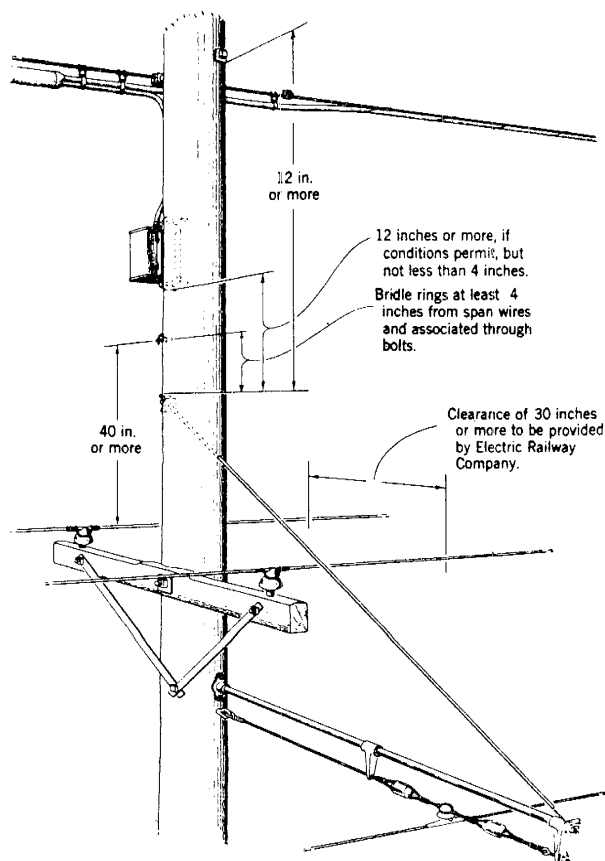


Fig. 20

8. POWER VERTICAL RUNS

8.01 Telephone through bolts, lag screws, and pole steps shall in general be located $1/8$ pole circumference away from power vertical runs made on the surface of the pole. Through bolts and lag screws shall generally be 2 inches from such vertical runs. Bare vertical grounding conductors may be 1 inch from through bolts or lag screws, however. (See Fig. 21.)

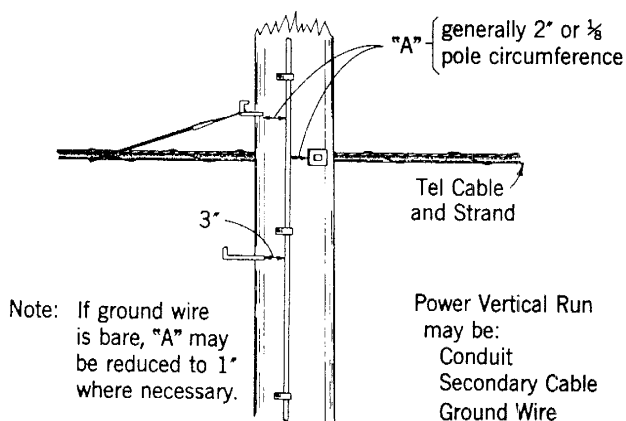


Fig. 21

8.02 Telephone facilities shall have the following clearances from power vertical runs not on the surface of the pole.

KIND OF POWER VERTICAL RUN	ITEM OF TELEPHONE PLANT	HORIZONTAL CLEARANCE (INCHES)
Power service under 750 V run on pins and insulators	Pole steps	5
	Cable ¹ , Wire ¹ , Guys ²	3
Streetlight feed wires	See Part 2—this section	

9. POWER GUYS

9.01 If power side guys *are attached above primary conductors*, telephone wires or cables shall have at least 40 inches clearance from any part of such guys which lie between the nearest guy insulator and the pole.¹ (See Fig. 22.)

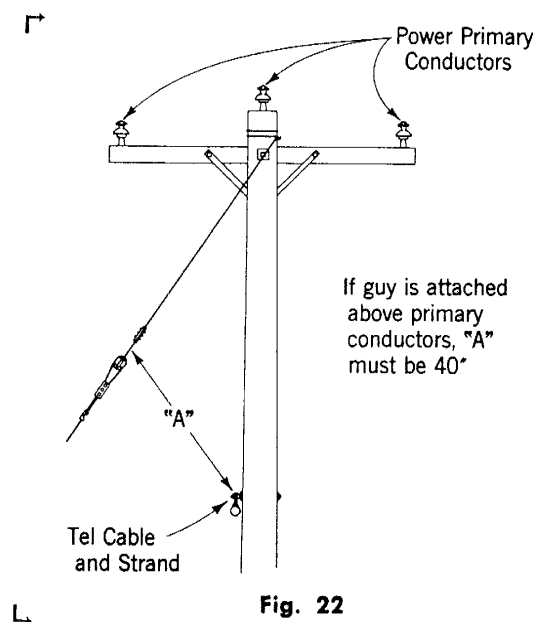


Fig. 22

9.02 If longitudinal (pole-to-pole) power guys *are attached above primary conductors*, telephone wires or cables shall have at least 30 inches clearance between any part of the upper end of the guy which lies between the pole and the guy insulator.¹

1. EEI-Bell System requirement.
2. Bell System requirement.

9.03 Telephone cables, wires, terminals, etc., shall have 2 feet clearance from power guys which are also attached to transmission line poles (15,000 V to ground and higher).¹ Obtain greater clearance where practical.

9.04 Pole-to-pole power guys not attached above primaries but which pass within 12 inches of *bare* secondary conductors and also pass within 12 inches of telephone cable should either: be effectively grounded, covered with suitable insulation where they pass the power conductors, or contain an insulator located below the lowest power conductor and above the highest telephone cable. Provide at least 3 inches clearance between such guys and telephone wire or cable. If none of these conditions have been met, notify your supervisor before continuing work operations.

10. TELEPHONE GUYS

10.01 Telephone guys shall clear telephone wires or cables by 6 inches where practical, but not less than 3 inches. This does not prohibit attaching guys and suspension strands to the same bolts or strain plates, however. (See 2.05 and 4.03 for clearance from power conductors on the same pole.)

11. CLEARANCE OF OPEN WIRE FROM SURFACE OF POLES

11.01 Where practical, telephone open wire shall have a clearance of 5 inches from the surface of jointly used poles.

12. AIRPORT MARKER LIGHTS

12.01 Clearances to be observed when airport marker lights are involved are shown in Fig. 23.

13. TELEVISION DISTRIBUTION SYSTEMS

13.01 Television distribution systems which are not owned by the Telephone Company require the same clearances from power facilities as telephone facilities. Such TV facilities should preferably have 24 inches clearance² from telephone cables but not less than 12 inches clearance.² Figs. 24 through 28 illustrate the general requirements for foreign-owned television distribution systems.

13.02 Telephone Company-owned television cables shall have the same clearances as other telephone cables. When so specified on the work order, they may be lashed to the same messenger.

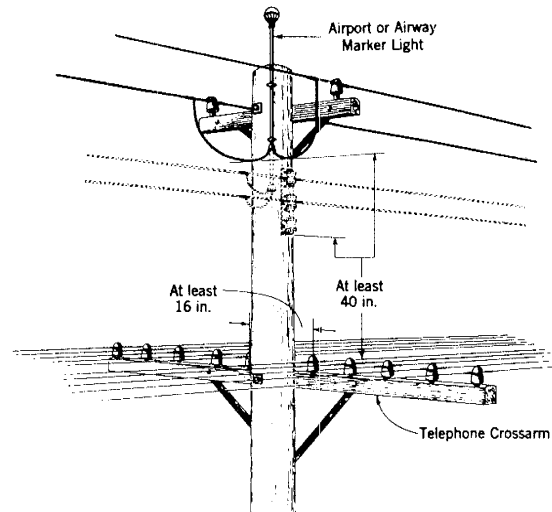


Fig. 23

ATTACHMENTS OF TV DISTRIBUTION SYSTEM TO POLES

TV Cable Mounted on Pole
TV Amplifier Mounted on Crossarm
Electric Light Bracket on Pole

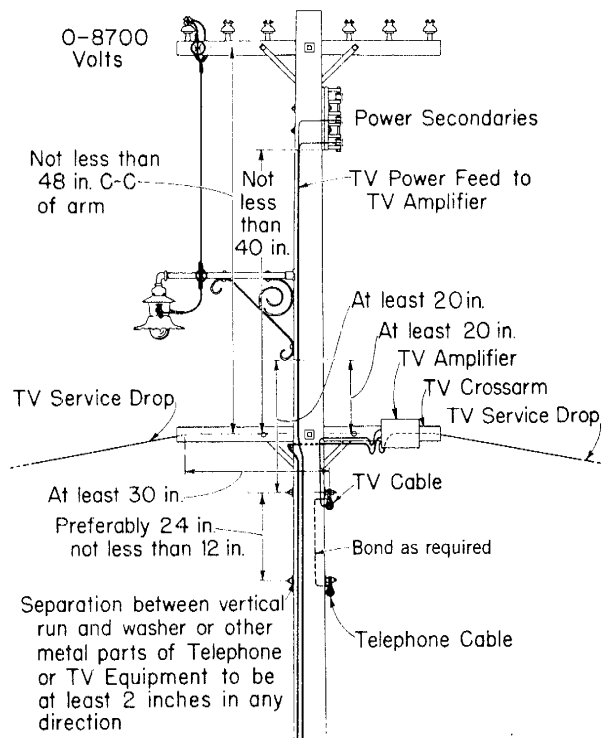


Fig. 24

1. EEI-Bell System requirement.

2. Bell System requirement.

ATTACHMENTS OF TV DISTRIBUTION SYSTEM TO POLES
TV Cable, Amplifier and Meter Mounted on Pole

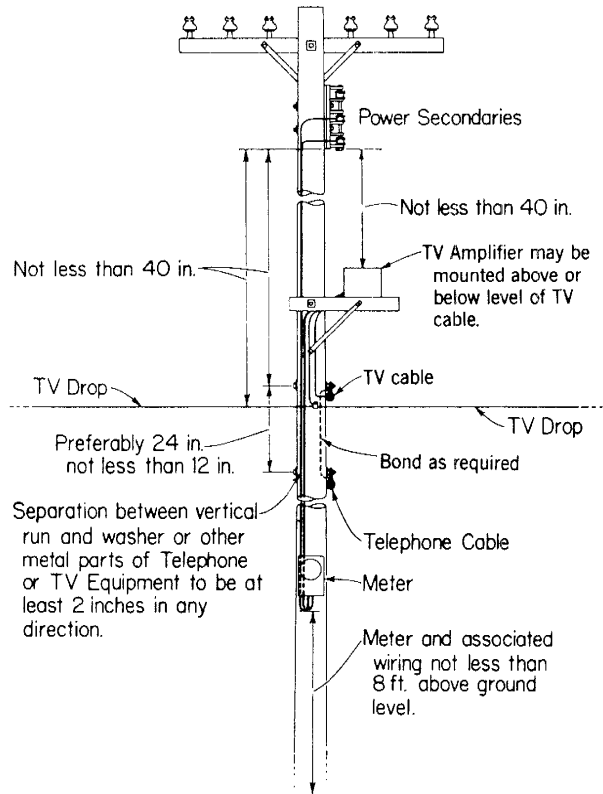


Fig. 25

ATTACHMENTS OF TV DISTRIBUTION SYSTEM TO POLES
No Amplifier-No Meter

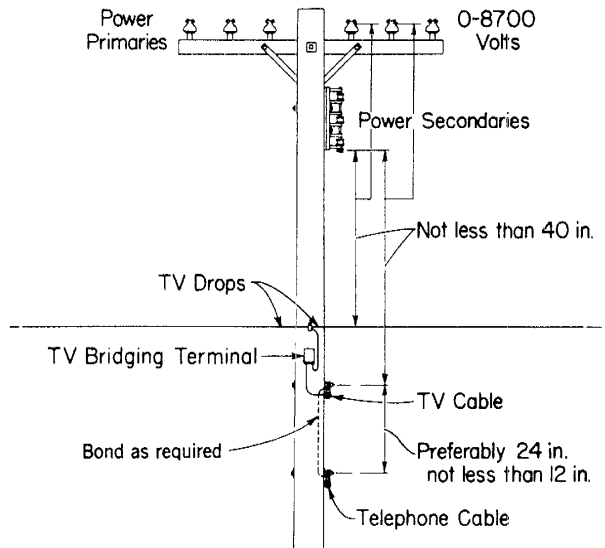


Fig. 26

ATTACHMENTS OF TV DISTRIBUTION SYSTEM TO POLES
Telephone Pole Carrying Open Wire or Cable or Both,
TV Cable, but no TV Amplifier

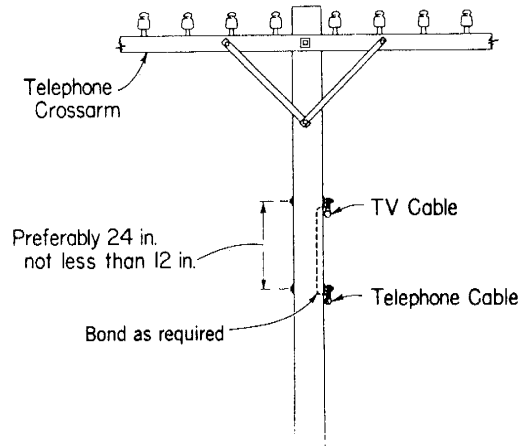


Fig. 27

ATTACHMENTS OF TV DISTRIBUTION SYSTEM TO POLES
Telephone Pole Carrying Open Wire or Cable or Both
TV Cable, Amplifier and Drop Wires with Power Lead for TV Amplifier

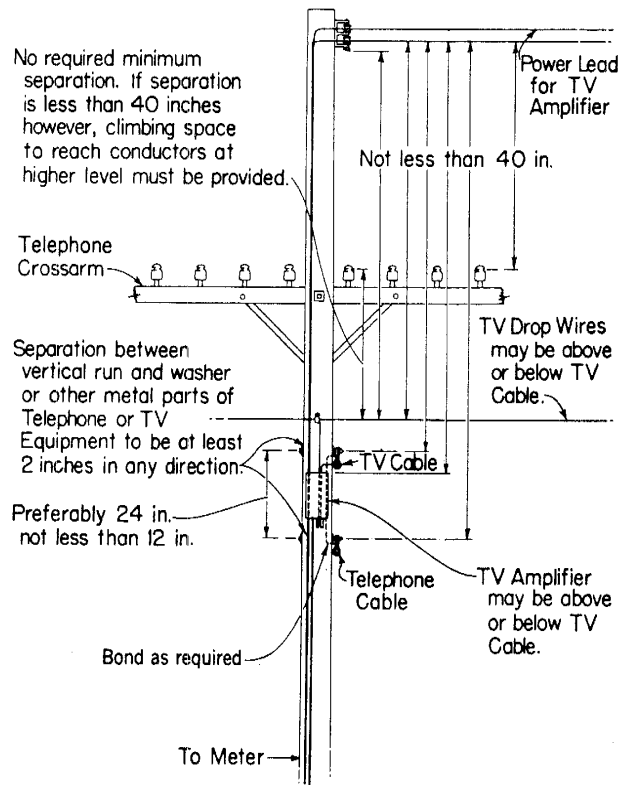


Fig. 28