DROP WIRE CLEARANCES

CONTENTS PAGE

1. GENERAL

1.01 This section contains the recommended clearances for drop wires.

1.02 This section is reissued to increase the clearance required for a telephone drop from an effectively grounded neutral as described in Table A and Figure 14.

1.03 Drop wire tends to elongate as the temperature rises and contracts as the temperature falls. Wire placed during cold weather will have a greater sag in warm weather, even if no permanent stretch is involved.

1.04 To have adequate clearances at 60°F, it is necessary to provide extra clearances for drop wires placed at temperatures below 32°F. This additional clearance is specified in the sag requirements for cold weather conditions (Section 462-400-200). No additional clearance is required when placing a drop wire if the temperature is above 32°F.

1.05 To avoid having the middle of a span over a road, alley, or driveway when drop wire sags exceed 2 or 3 feet, poles should be placed within 50 feet of the edge of a road, alley, or driveway. A pole located within 50 feet of the edge of the road, alley, or driveway (distance A, Fig. 1) will permit the overhead clearance to conform to requirements related to Fig. 1.

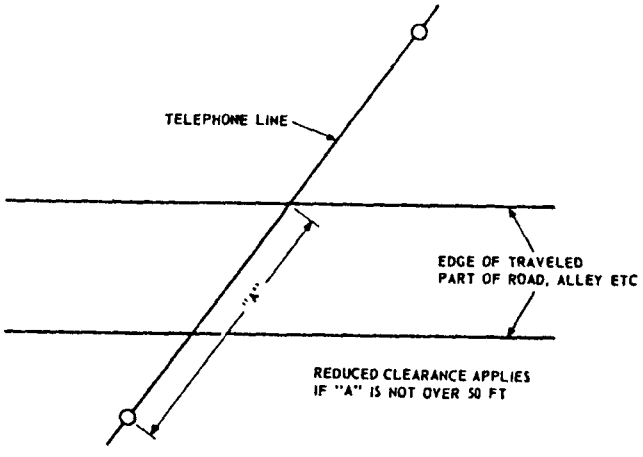


Fig. 1-Wire Crossing Public Road-Pole at Road Edge

1.06 The clearance values specified in this section are in accord with the requirements of the 1984 edition of the National Electrical Safety Code. These clearances should be used unless the work order or local requirements call for other values. This may occur when engineering forces recognize factors not allowed for in this section or because of local requirements, etc. Clearances for span lengths, voltages, and conditions not covered in this section are an engineering responsibility and will be shown on the work order or detailed plans.

1.07 Clearances over public and private swimming pools are covered by the 1984 edition of the National Electrical Safety Code, rule 234E1. For reasons of safety, sanitation, and appearance, aerial drop wire crossings over swimming pools should be avoided.

2. TERMINOLOGY

2.01 The following is a brief description of conditions applicable to drop wire clearance requirements:

(a) Storm Loading Areas: Figure 2 identifies the three storm loading areas based upon studies made from records of wire using companies and data from the United States Weather Bureau. The frequency, severity, and effects of ice and windstorms in various sections of the country were the elements considered in establishing the loading area zones. As a result of the weather differences, allowances must be made for the stretching of conductors in their respective loading zones when placing a drop wire.

(b) Drop Wire Sag: The sag in a drop wire is measured by comparing the line of sight established by the drop wire attachments and the lowest point in the span. Stringing sags for drop wire is shown in Section 462-400-200.

(1) Normal Drop Wire Sag: Drop wires are to be strung with normal sags when adequate clearances can be attained. Technicians on poles can obtain these sags with normal hand pulling.

(2) Minimum Drop Wire Sag: A minimum sag in a drop wire can be strung where clearance is limited and normal sags cannot be attained. These smaller sags result in higher stringing tensions in the wire; therefore, pulling tools are required to enable the technician to pull the wire up to tension.

(c) Placing Clearances: Placing value of clearance is the height the drop wire is to clear when placed or replaced.

(d) Placing Clearances on Jointly Used Poles: Placing clearances on jointly used poles are the clearances required between drop wires and drop wire attachments and foreign equipment and foreign equipment attachment apparatus.

(e) Maintenance Clearances: Maintenance clearance is the clearance that should exist after the wire has been exposed to one or more cycles of storm loading and the temperature returns to 60°F.

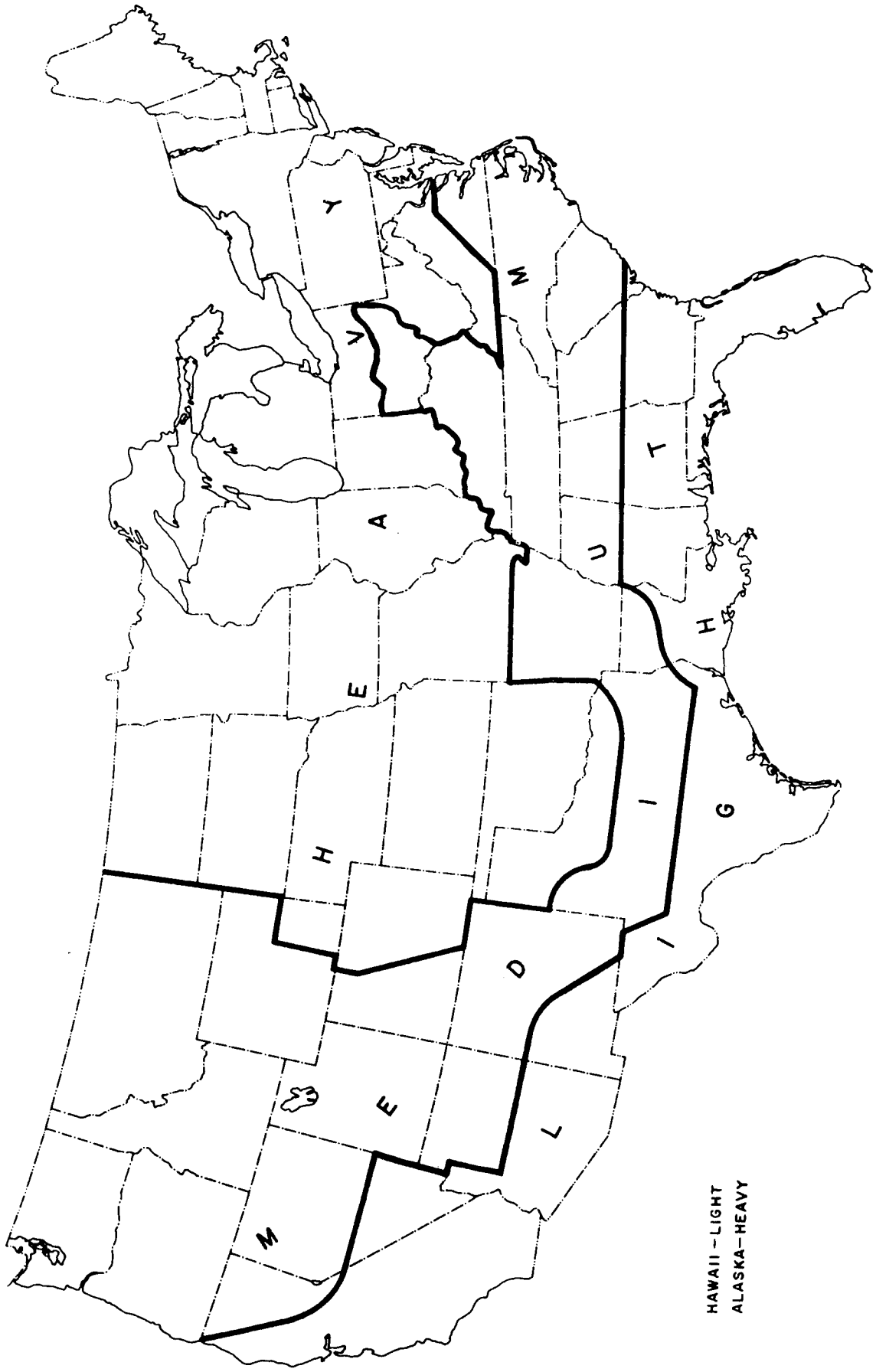


FIG. 2 - Storm Loading Areas

(f) Drop Wire Crossing Above Railroad Tracks:

(1) Generally: This is the clearance required when the drop wire does not parallel a contact wire for a streetcar or electrified bus.

(2) Special Case: This is the clearance required when the drop wire parallels a contact wire used by a streetcar or electrified bus (Fig. 3).

(g) Drop Wire Crossing Above Public Roads, Public Alleys, or Residential Drives:

(1) Generally: This is the clearance required when the drop wire is attached to a pole further than 50 feet from the far edge of the traveled roadway (Fig. 4).

(2) Pole at Road Edge: This is the clearance required when the drop wire is attached to a pole located within 50 feet of the far edge of a traveled roadway (distance A, Fig. 1).

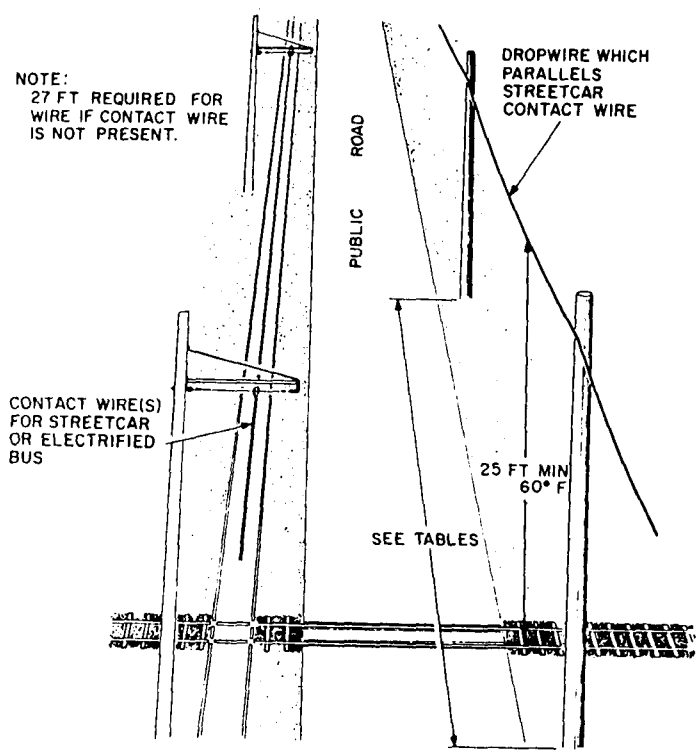


Fig. 3-Wire Crossing Railroad Tracks-Special Case

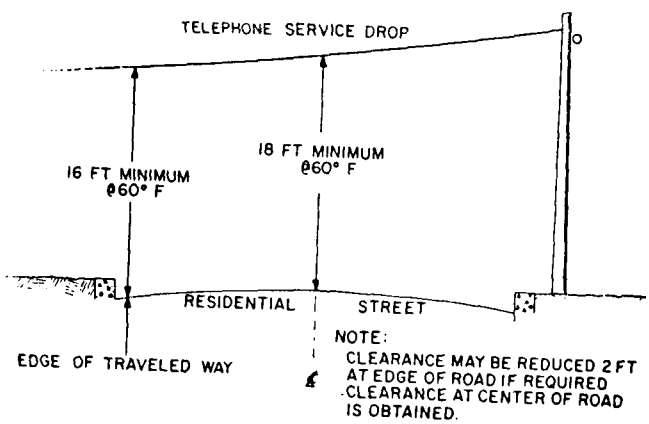


Fig. 4-Service Drop Over Residential St.

(h) Major Overhang: A drop wire which passes over 6 feet or more of the ordinarily traveled part of a roadway is a major overhang (Fig. 5).

(i) Minor Overhang: A drop wire which passes over less than 6 feet of the ordinarily traveled part of a roadway is a minor overhang (Fig. 5).

(j) No Overhang-Back of Obstruction: A pole line located in back of a fence, ditch, embankment, etc., so that the ground beneath the line can ordinarily be traveled by pedestrians only, is not considered to be an overhang (Fig. 6).

(k) No Overhang-Not Back of Obstruction: This category is a pole line not back of a fence, ditch, embankment, etc., and does not overhang the normal traveled road. This category is meant to include ground not ordinarily traveled in both rural (Fig. 7) and nonrural (Fig. 8) areas that can be reached by vehicles. If farm machinery is likely to pass under the line, sufficient clearance must be provided so that the drop wire will be 2 feet above the highest part of such machinery or the loads it will carry.

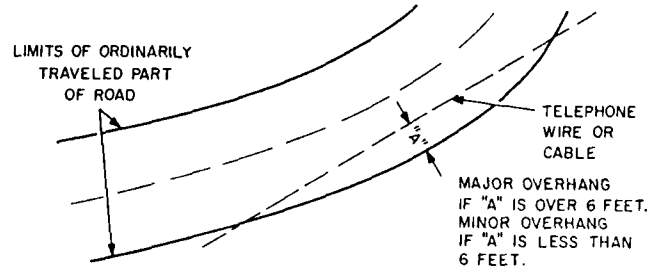


Fig. 5-Wire Running Along Public Roads

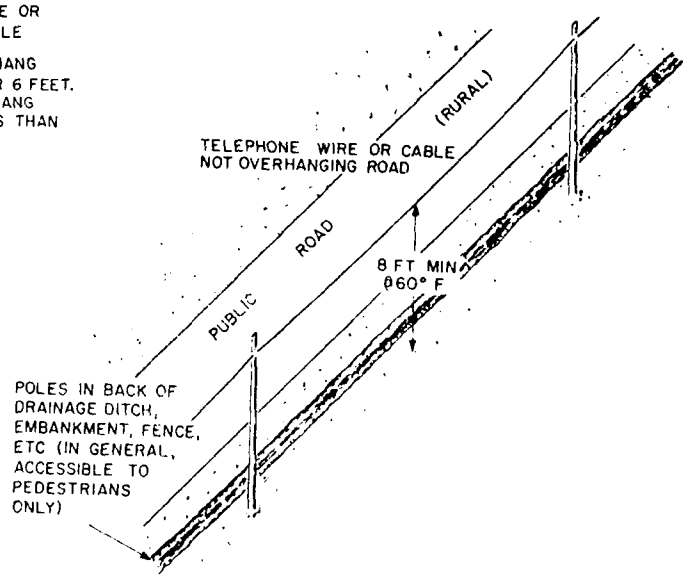


Fig. 6-Wire Running Along Public Roads (Back of Obstruction)

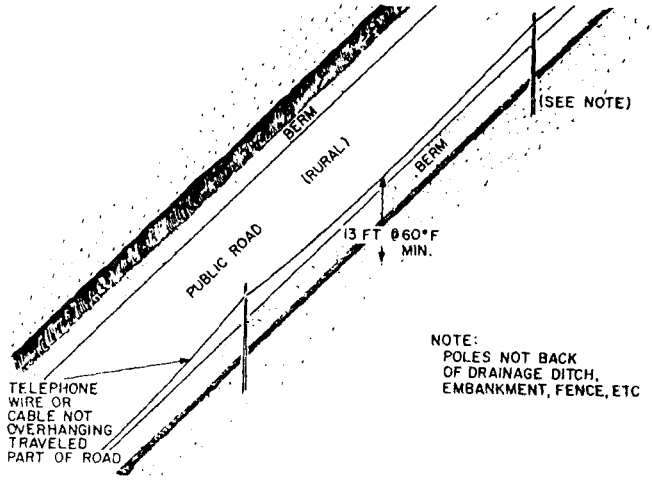


Fig. 7-Wire Running Along, But Not Overhanging Public Roads (Not Back of Obstruction))

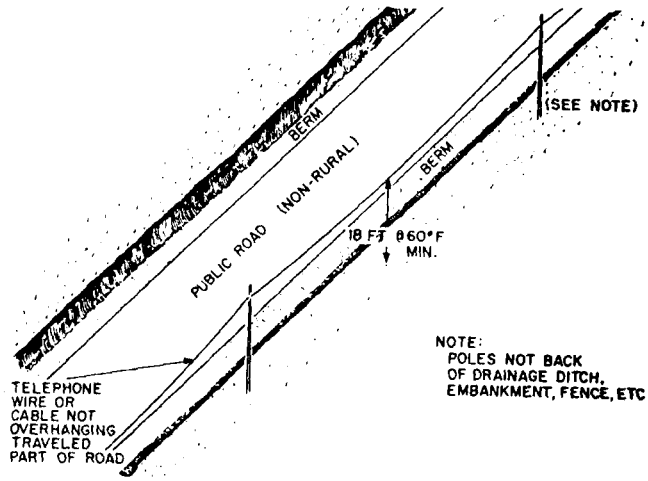


Fig. 8-Wire Running Along, But Not Overhanging, Nonrural Public Roads (Not Back of Obstruction)

3. DROP WIRE CLEARANCES

3.01 The following factors must be considered when determining proper wire clearances:

(a) Placing or Maintenance Clearances: The clearances for drop wires to be placed or replaced are identified as placing clearances. The clearances for existing drop wires, in place, are identified as maintenance clearances.

(b) The Storm Loading Area: Determine the storm loading area applicable to the locality where the drop wire exists or is to be placed. Storm loading areas are defined in Fig. 2.

(c) Drop Wire Sag: Drop wires are placed or in-service with a normal or minimum sag.

(d) Specific Condition Encountered: The specific condition encountered, such as placing the drop wire above or along roadways, rails, and buildings, or above or below power facilities, foreign equipment, and neon signs, will determine the drop wire clearances.

(e) Clearances on Jointly Used Poles: These are clearances to be maintained between telephone company facilities and power company or licensee attachments.

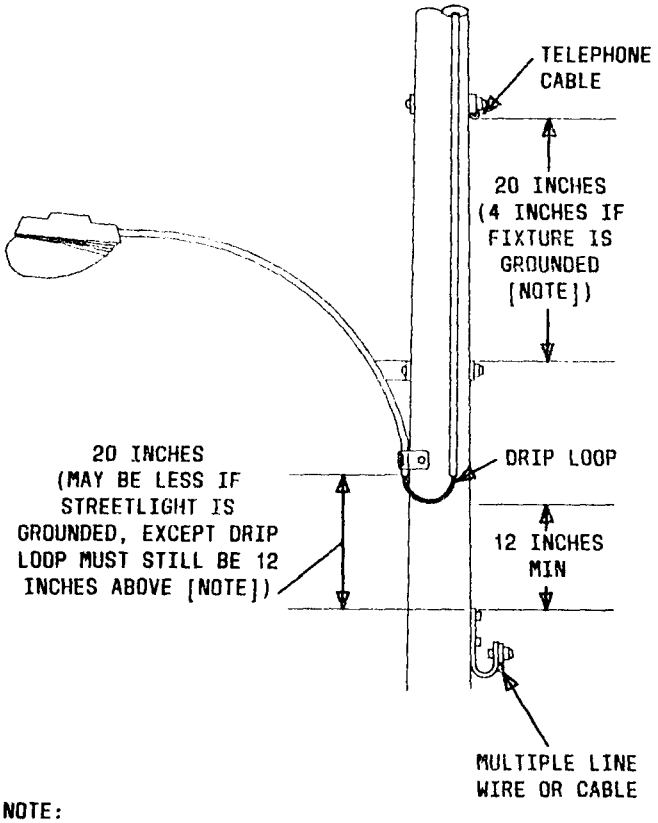
3.02 Drop wire clearances are referenced to graph tables and figures as follows:

- Clearances on jointly used poles (Table A and Fig. 9 through 14)

TABLE A

DROP WIRE CLEARANCES ON JOINTLY USED POLES

MINIMUM CLEARANCE TO	GROUNDED	NOT GROUNDED
Streetlight fixtures, span wires (Fig. 9, 10, 11, & 12)	4 inches	20 inches
Streetlight drip loops (Fig. 9)	12 inches	
Drive hooks, bridlewire rings, brackets, etc. (Fig. 10)	4 inches	16 inches
Telephone Company guys	3 inches	
Licensee attachments (Fig. 13)	12 inches	
Grounded neutrual on common crossing poles (Fig. 14)	40 inches	



NOTE:
TO BE GROUNDED, FIXTURE MUST BE BONDED TO A GROUNDED STRAND OR TO A GROUND WIRE OF AN MGN SYSTEM.

Fig. 9-Clearance From Streetlight Fixture Drip Loop Above Cable or Multiple Line Wire

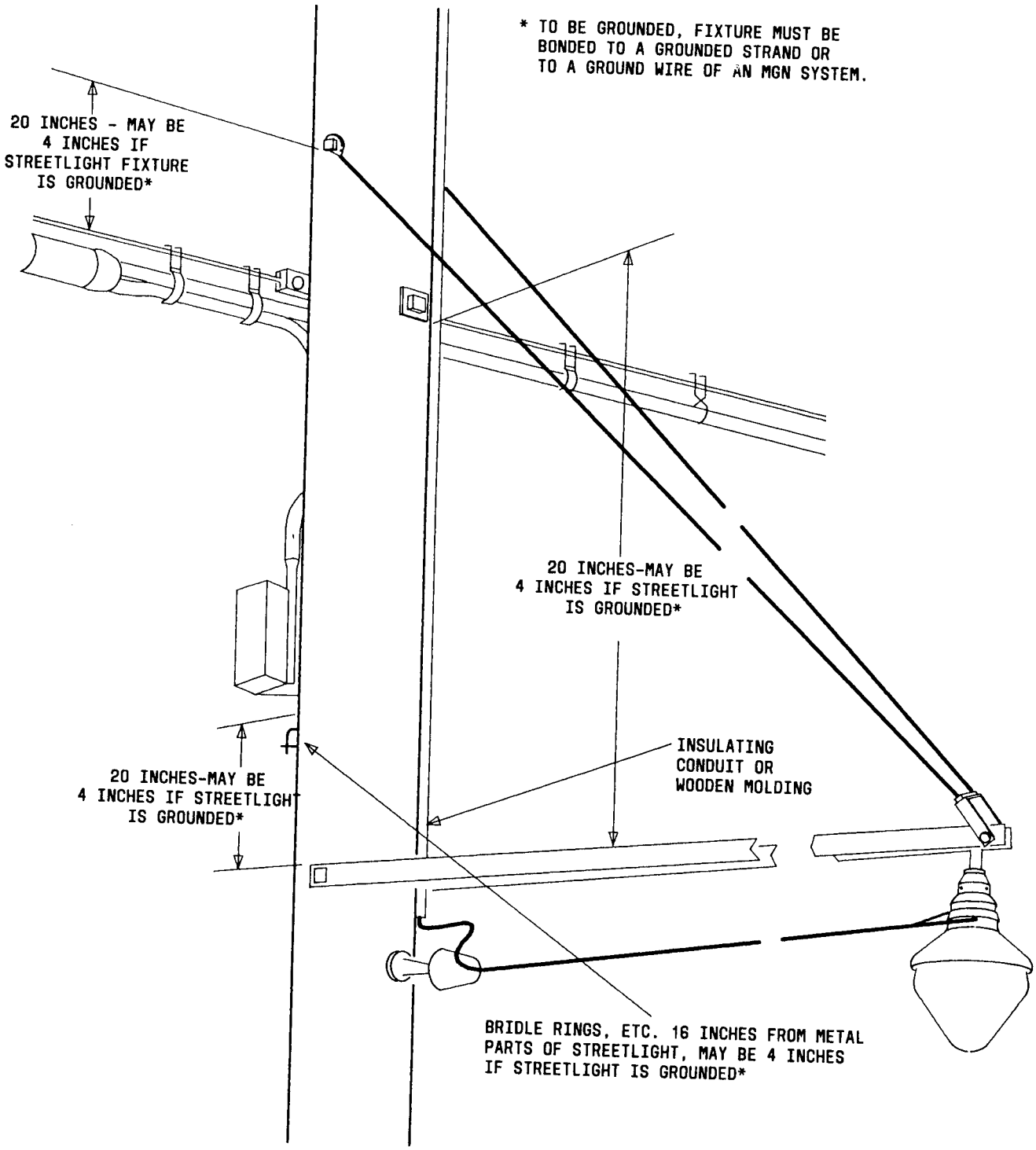
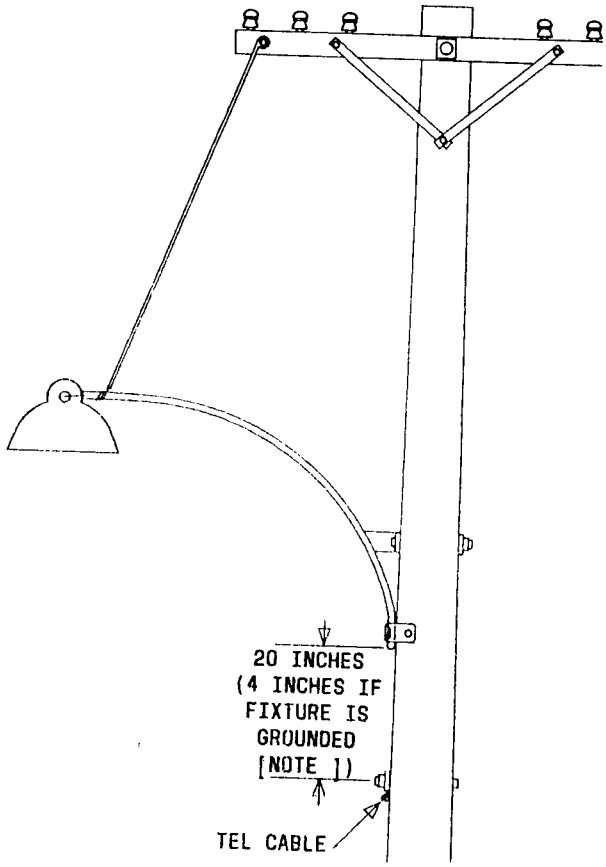


Fig. 10-Clearances of Drivehooks, Bridlewire Rings, or Brackets From Streetlight Fixtures



NOTE:
TO BE GROUNDED, FIXTURE MUST BE BONDED TO A GROUNDED STRAND OR TO A GROUND WIRE OF AN MGN SYSTEM.

Fig. 11-Clearance of Cable From Streetlight Fixture Mounted Above Cable

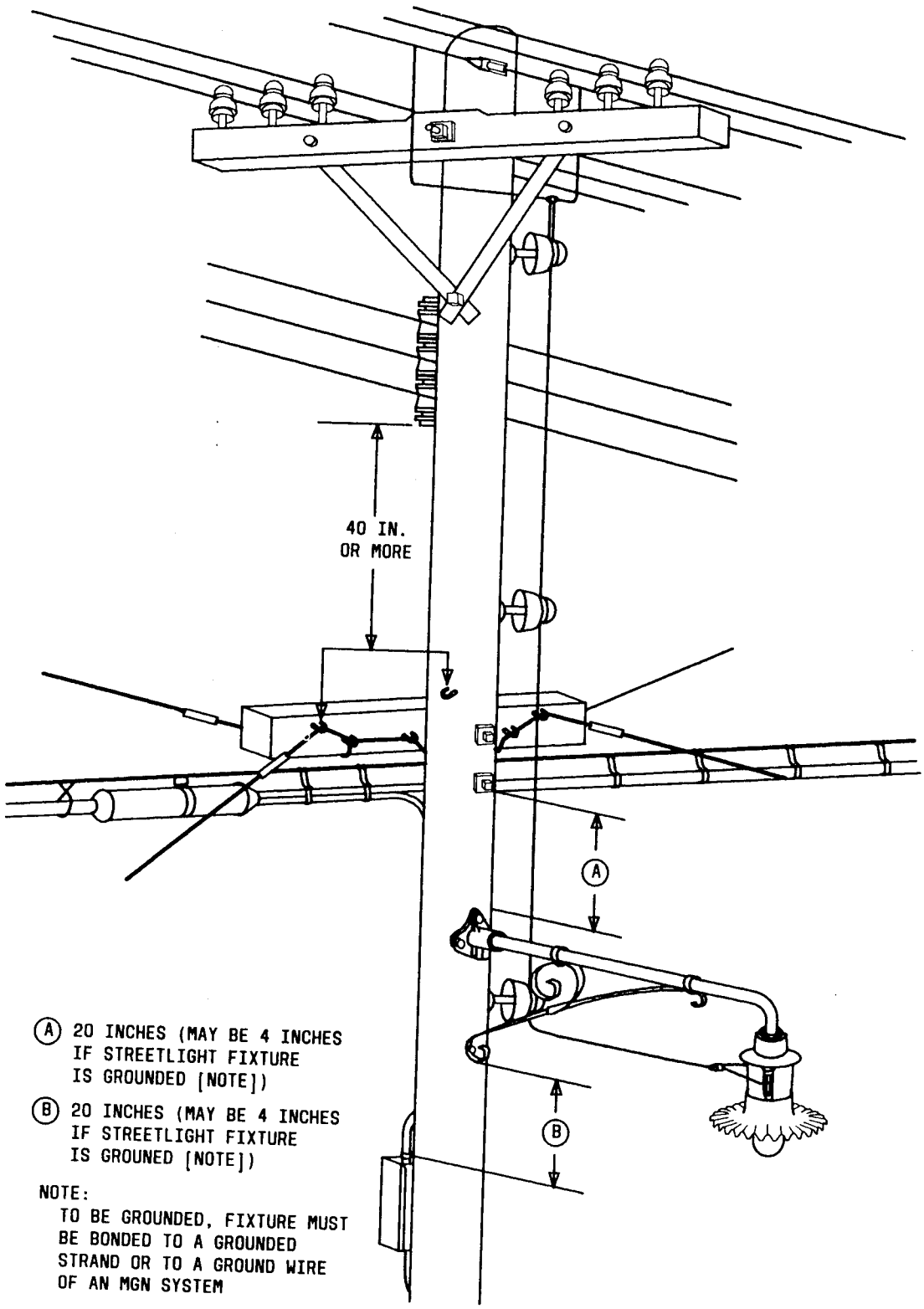


Fig. 12-Clearances of Cable and Pole-Mounted Terminal From Streetlight Fixture Mounted Below Cable

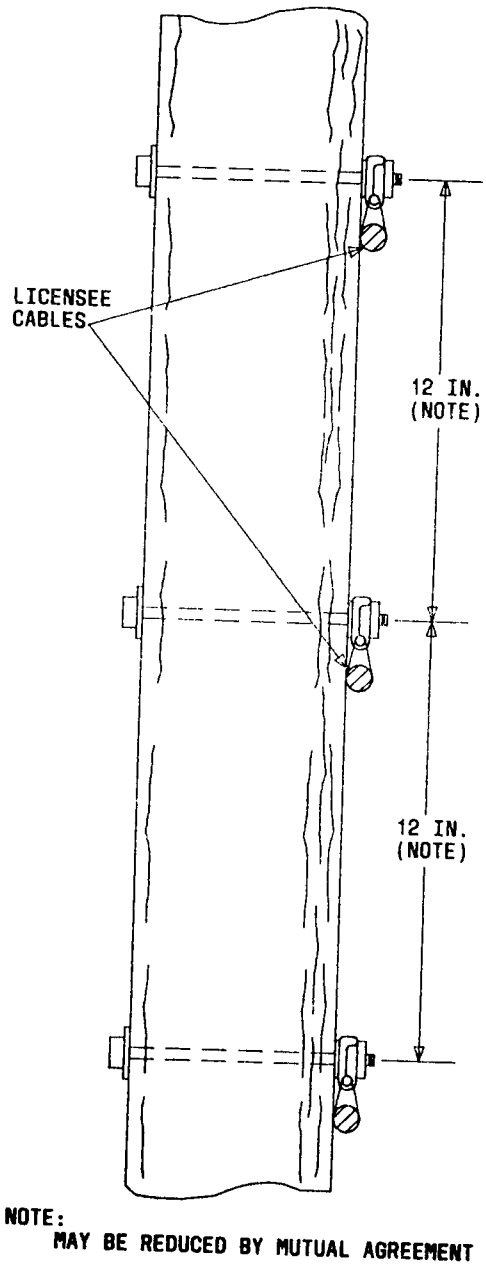


Fig. 13-Vertical Clearance Between Telephone Company and Licensee Cables

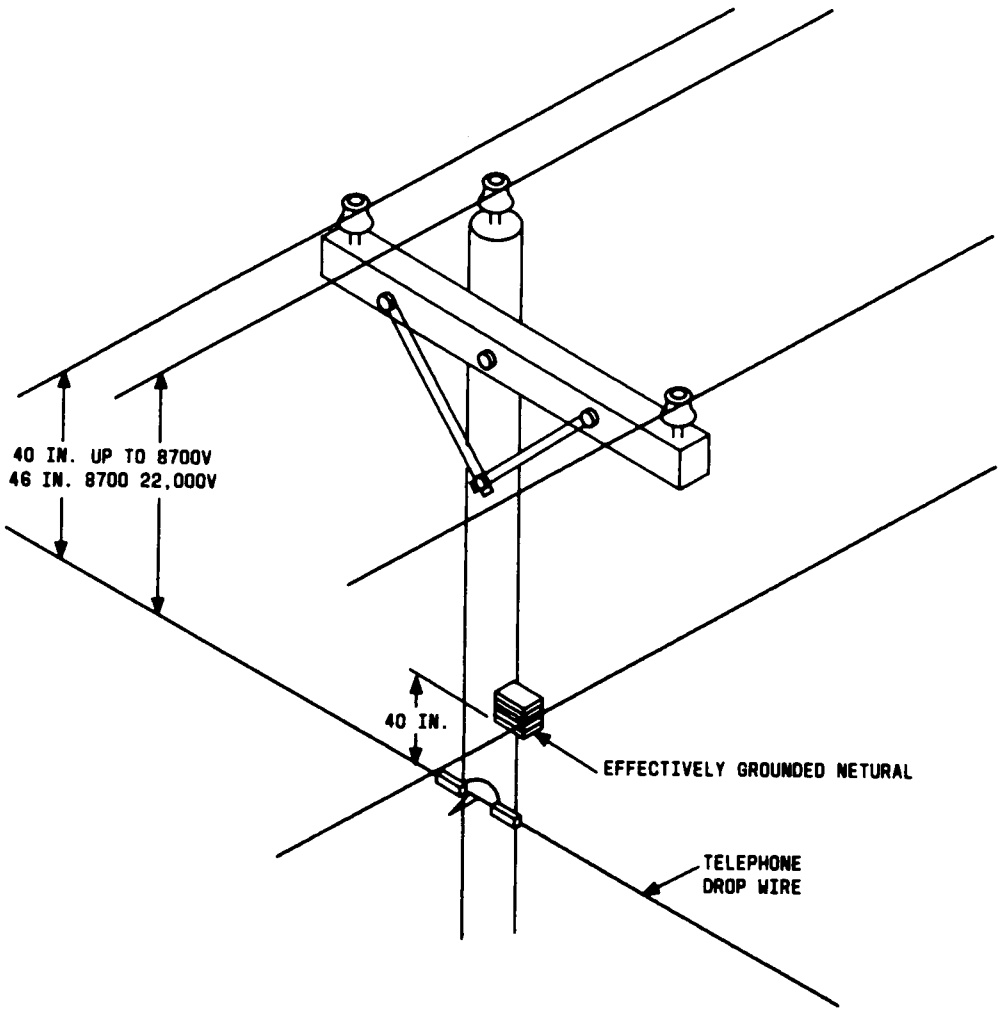


Fig. 14-Drop Wire Clearance on Common Crossing Pole

Placing clearances above ground or rails

TABLE B

Drop Wire Placing Clearances (At 60°F)
Above Ground or Rails - Light and Medium Storm Loading Areas

STORM LOADING AREA	LIGHT	MEDIUM						
SPAN LENGTHS (FT)	300 or Less	250 or Less	170 or Less	200 or Less	225 or Less	250 or Less	300 or Less	350 or Less
DROP WIRE SAG	NORMAL OR MINIMUM	NORMAL	MINIMUM	MINIMUM	MINIMUM	MINIMUM	MINIMUM	MINIMUM
Crossing Above: REF	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.
Railroad Tracks	+	&	&	&	&	&		
Generally	27 - 0	27 - 0	27 - 0	27 - 0	27 - 0	27 - 0	++	++
Special Case Fig.3	25 - 0	25 - 0	25 - 0	25 - 0	25 - 0	25 - 0	++	++
Public Roads								
Generally#	18 - 0	18 - 0	18 - 0	18 - 8	19 - 0	19 - 6	19 - 10	20 - 0
Pole at Road Edge# Fig.1	18 - 0	18 - 0	18 - 0	18 - 3	18 - 3	18 - 3	18 - 3	18 - 3
Public Alleys								
Generally	15 - 0	15 - 0	15 - 0	15 - 6	16 - 0	16 - 5	16 - 8	17 - 0
Pole at Road Edge Fig.1	15 - 0	15 - 0	15 - 0	15 - 3	15 - 3	15 - 3	15 - 3	15 - 3
Residential Driveways								
Generally	10 - 0	10 - 0	10 - 0	10 - 5	11 - 0	11 - 4	11 - 8	12 - 0
Pole at Road Edge Fig.1	10 - 0	10 - 0	10 - 0	10 - 3	10 - 3	10 - 3	10 - 3	10 - 3
Flat Roof Bldgs	8 - 0	8 - 0	8 - 0	8 - 3	8 - 4	8 - 4	8 - 5	8 - 5
Peak Roof Bldgs or Billboards	2 - 0	2 - 0	2 - 0	2 - 2	2 - 2	2 - 2	2 - 2	2 - 2
Neon Signs	4 - 0	4 - 0	4 - 0	4 - 3	4 - 3	4 - 3	4 - 3	4 - 3
Waterways	MUST BE SHOWN ON DETAIL PLANS							
Running Along:								
Public Roads with:								
Major Overhang Fig.5	18 - 0	18 - 0	18 - 0	18 - 8	19 - 0	19 - 6	19 - 10	20 - 0
Minor Overhang Fig.5								
Urban	18 - 0	18 - 0	18 - 0	18 - 4	18 - 5	18 - 6	18 - 8	19 - 0
Rural (Lt Traffic)	14 - 0	14 - 0	14 - 0	14 - 3	14 - 4	14 - 4	14 - 8	15 - 0
No Overhang								
Back of Obstr..								
Rural Fig.6	8 - 0	8 - 0	8 - 0	8 - 3	8 - 4	8 - 4	8 - 5	8 - 5
Not Back of Obstr..								
Rural Fig.7	13 - 0	13 - 0	13 - 0	13 - 3	13 - 4	13 - 4	13 - 5	13 - 5
Nonrural Fig.8	18 - 0	18 - 0	18 - 0	18 - 3	18 - 4	18 - 3	18 - 3	18 - 3
Public Alleys	15 - 0	15 - 0	15 - 0	15 - 4	15 - 6	15 - 6	15 - 8	16 - 0

\+ MUST BE SUPPORTED BY 6M STRAND FOR SPANS OVER 150 FT.

& MUST BE SUPPORTED BY 6M STRAND FOR SPANS OVER 125 FT.

++ NOT RECOMMENDED FOR SPAN LENGTHS OVER 250 FT.

\# THE CLEARENCE OVER RESIDENTIAL STREETS MAY BE REDUCED 2 FEET AT THE EDGE OF THE ROAD IF REQUIRED CLEARENCE IS OBTAINED AT THE CENTER OF THE ROAD (FIG. 4)

Placing clearances above ground or rails

TABLE C

Drop Wire Placing Clearances (At 60°F)
Above Ground or Rails - Heavy Storm Loading Areas

STORM LOADING AREA	HEAVY								HEAVY					
SPAN LENGTHS (FT)	75 or Less	100 or Less	125 or Less	150 or Less	175 or Less	200 or Less	225 or Less	250 or Less	75 or Less	100 or Less	125 or Less	150 or Less	175 or Less	200 or Less
DROP WIRE SAG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	MINIMUM	MINIMUM	MINIMUM	MINIMUM	MINIMUM	MINIMUM
Crossing Above: REF	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.
Railroad Tracks		+	+	+	+					+	+	+		
Generally	27 - 0	27 - 0	27 - 0	27 - 0	27 - 0	++	++	++	27 - 3	27 - 3	27 - 3	27 - 3	&&	&&
Special Case Fig.3	25 - 0	25 - 0	25 - 0	25 - 0	25 - 0	++	++	++	25 - 3	25 - 3	25 - 3	25 - 3	&&	&&
Public Roads														
Generally*	18 - 0	18 - 3	18 - 6	19 - 2	20 - 2	21 - 3	22 - 3	23 - 4	18 - 3	18 - 6	19 - 4	20 - 7	22 - 0	23 - 3
Pole at Road Edge* Fig.1	18 - 0	18 - 3	18 - 6	18 - 10	19 - 3	19 - 6	20 - 0	20 - 4	18 - 3	18 - 6	19 - 2	20 - 0	20 - 10	21 - 4
Public Alleys														
Generally	15 - 0	15 - 3	15 - 4	16 - 2	17 - 1	18 - 2	19 - 2	20 - 4	15 - 3	15 - 6	16 - 5	17 - 8	19 - 0	20 - 3
Pole at Road Edge Fig.1	15 - 0	15 - 3	15 - 4	15 - 7	16 - 4	16 - 8	17 - 1	17 - 6	15 - 3	15 - 6	16 - 2	17 - 1	17 - 8	18 - 3
Residential Driveways														
Generally	10 - 0	10 - 2	10 - 5	11 - 2	12 - 2	13 - 3	14 - 4	15 - 5	10 - 3	10 - 6	11 - 6	12 - 10	14 - 0	15 - 5
Pole at Road Edge Fig.1	10 - 0	10 - 2	10 - 5	10 - 10	11 - 3	11 - 7	12 - 0	12 - 6	10 - 3	10 - 6	11 - 3	12 - 0	12 - 8	13 - 3
Flat Roof Bldgs	8 - 0	8 - 3	8 - 4	8 - 9	9 - 2	9 - 5	9 - 9	10 - 2	8 - 3	8 - 6	8 - 10	9 - 4	10 - 0	11 - 0
Peak Roof Bldgs or Billboards	2 - 0	2 - 1	2 - 2	2 - 4	2 - 6	2 - 8	3 - 0	3 - 2	2 - 2	2 - 3	2 - 5	2 - 7	3 - 0	3 - 5
Neon Signs	4 - 0	4 - 2	4 - 5	4 - 10	4 - 10	4 - 10	5 - 0	5 - 2	4 - 3	4 - 6	4 - 6	4 - 8	5 - 0	5 - 5
Waterways	MUST BE SHOWN ON DETAIL PLANS								MUST BE SHOWN ON DETAIL PLANS					
Running Along:														
Public Roads with:														
Major Overhang Fig.5	18 - 0	18 - 3	18 - 6	19 - 2	20 - 2	21 - 3	22 - 3	23 - 4	18 - 3	18 - 6	19 - 4	20 - 7	22 - 0	23 - 3
Minor Overhang Fig.5														
Urban	18 - 0	18 - 2	18 - 6	18 - 10	19 - 1	19 - 7	20 - 3	20 - 10	18 - 3	18 - 6	18 - 10	19 - 4	20 - 0	21 - 3
Rural (Lt Traffic)	14 - 0	14 - 3	14 - 6	14 - 10	15 - 3	15 - 8	16 - 3	16 - 8	14 - 3	14 - 6	14 - 10	15 - 4	16 - 0	17 - 3
No Overhang														
Back of Obstr..														
Rural Fig.6	8 - 0	8 - 3	8 - 4	8 - 9	9 - 2	9 - 5	9 - 9	10 - 2	8 - 3	8 - 6	8 - 10	9 - 4	10 - 0	11 - 0
Not Back of Obstr..														
Rural Fig.7	13 - 0	13 - 2	13 - 6	13 - 10	14 - 2	14 - 6	14 - 10	15 - 2	13 - 3	13 - 6	13 - 10	14 - 3	15 - 0	16 - 0
Nonrural Fig.8	18 - 0	18 - 3	18 - 6	18 - 10	19 - 3	19 - 6	20 - 0	20 - 4	18 - 3	18 - 6	19 - 2	20 - 0	20 - 10	21 - 4
Public Alleys	15 - 0	15 - 2	15 - 5	15 - 7	16 - 4	16 - 10	17 - 4	18 - 0	15 - 3	15 - 6	15 - 10	16 - 4	17 - 0	18 - 2

\+ MUST BE SUPPORTED BY 6M STRAND FOR SPANS OVER 100 FT.

++ NOT RECOMMENDED FOR SPAN LENGTHS OVER 175 FT.

&& NOT RECOMMENDED FOR SPAN LENGTHS OVER 150 FT.

* THE CLEARENCE OVER RESIDENTIAL STREETS MAY BE REDUCED BY 2 FEET AT THE EDGE OF THE ROAD IF REQUIRED CLEARENCE IS OBTAINED AT THE CENTER OF THE ROAD (FIG. 4)

Maintenance clearances above ground or rails

TABLE D

Drop Wire Maintenance Clearances (At 60°F)
Above Ground or Rails - Light and Medium Storm Loading Areas

STORM LOADING AREA	LIGHT	MEDIUM						
SPAN LENGTHS (FT)	300 or Less	250 or Less	170 or Less	200 or Less	225 or Less	250 or Less	300 or Less	350 or Less
DROP WIRE SAG	NORMAL OR MINIMUM	NORMAL	MINIMUM	MINIMUM	MINIMUM	MINIMUM	MINIMUM	MINIMUM
Crossing Above: REF	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.
Railroad Tracks	+	&	&	&	&	&		
Generally	27 - 0	27 - 0	27 - 0	27 - 0	27 - 0	27 - 0	++	++
Special Case Fig.3	25 - 0	25 - 0	25 - 0	25 - 0	25 - 0	25 - 0	++	++
Public Roads								
Generally*	18 - 0	18 - 0	18 - 0	18 - 2	18 - 6	19 - 0	19 - 3	19 - 6
Pole at Road Edge* Fig.1	18 - 0	18 - 0	18 - 0	18 - 0	18 - 0	18 - 0	18 - 3	18 - 6
Public Alleys								
Generally	15 - 0	15 - 0	15 - 0	15 - 2	15 - 6	16 - 0	16 - 3	16 - 6
Pole at Road Edge Fig.1	15 - 0	15 - 0	15 - 0	15 - 0	15 - 0	15 - 0	15 - 4	15 - 6
Residential Driveways								
Generally	10 - 0	10 - 0	10 - 0	10 - 2	10 - 6	11 - 0	11 - 3	11 - 6
Pole at Road Edge Fig.1	10 - 0	10 - 0	10 - 0	10 - 0	10 - 0	10 - 0	10 - 0	10 - 0
Flat Roof Bldgs	8 - 0	8 - 0	8 - 0	8 - 0	8 - 0	8 - 0	8 - 0	8 - 0
Peak Roof Bldgs or Billboards	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0
Neon Signs	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0
Waterways	MUST BE SHOWN SHOWN ON DETAIL PLANS							
Running Along:								
Public Roads with:								
Major Overhang Fig.5	18 - 0	18 - 0	18 - 0	18 - 2	18 - 6	19 - 0	19 - 3	19 - 6
Minor Overhang Fig.5								
Urban	18 - 0	18 - 0	18 - 0	18 - 0	18 - 0	18 - 0	18 - 3	18 - 6
Rural (Lt Traffic)	14 - 0	14 - 0	14 - 0	14 - 0	14 - 0	14 - 0	14 - 3	14 - 6
No Overhang								
Back of Obstr..								
Rural Fig.6	8 - 0	8 - 0	8 - 0	8 - 0	8 - 0	8 - 0	8 - 0	8 - 0
Not Back of Obstr..								
Rural Fig.7	13 - 0	13 - 0	13 - 0	13 - 0	13 - 0	13 - 0	13 - 0	13 - 0
Nonrural Fig.8	18 - 0	18 - 0	18 - 0	18 - 0	18 - 0	18 - 0	18 - 3	18 - 6
Public Alleys	15 - 0	15 - 0	15 - 0	15 - 0	15 - 0	15 - 0	15 - 3	15 - 6

\+ MUST BE SUPPORTED BY 6M STRAND FOR SPANS OVER 150 FT.

& MUST BE SUPPORTED BY 6M STRAND FOR SPANS OVER 125 FT.

++ NOT RECOMMENDED FOR SPAN LENGTHS OVER 250 FT.

* THE CLEARENCE OVER RESIDENTIALS STREETS MAY BE REDUCED 2 FEET AT THE EDGE OF THE ROAD IF REQUIRED CLEARENCE IS OBTAINED AT THE CENTER OF THE ROAD (FIG. 4)

Maintenance clearances above ground or rails

TABLE E

Drop Wire Maintenance Clearances (60°F)
Above Ground or Rails - Heavy Storm Loading Areas

STORM LOADING AREA	HEAVY						HEAVY				
SPAN LENGTHS (FT)	75 or Less	150 or Less	175 or Less	200 or Less	225 or Less	250 or Less	75 or Less	125 or Less	150 or Less	175 or Less	200 or Less
DROP WIRE SAG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	MINIMUM	MINIMUM	MINIMUM	MINIMUM	MINIMUM
Crossing Above: REF	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.	FT/IN.
Railroad Tracks		+	+					+	+		
Generally	27 - 0	27 - 0	27 - 0	++	++	++	27 - 0	27 - 0	27 - 3	&&	&&
Special Case Fig.3	25 - 0	25 - 0	25 - 0	++	++	++	25 - 0	25 - 0	25 - 3	&&	&&
Public Roads											
Generally#	18 - 0	18 - 5	19 - 0	19 - 10	20 - 5	21 - 2	18 - 0	18 - 8	19 - 4	20 - 0	20 - 6
Pole at Road Edge# Fig.1	18 - 0	18 - 2	18 - 3	18 - 5	18 - 8	19 - 0	18 - 0	18 - 5	18 - 10	19 - 1	19 - 1
Public Alleys											
Generally	15 - 0	15 - 5	16 - 0	16 - 10	17 - 6	18 - 2	15 - 0	15 - 10	16 - 5	17 - 0	17 - 6
Pole at Road Edge Fig.1	15 - 0	15 - 2	15 - 3	15 - 5	15 - 8	16 - 0	15 - 0	15 - 8	15 - 10	16 - 1	16 - 1
Residential Driveways											
Generally	10 - 0	10 - 6	11 - 0	11 - 10	12 - 4	13 - 2	10 - 0	10 - 8	11 - 4	12 - 0	12 - 8
Pole at Road Edge Fig.1	10 - 0	10 - 2	10 - 5	10 - 8	10 - 10	11 - 0	10 - 0	10 - 6	10 - 10	11 - 2	11 - 2
Flat Roof Bldgs	8 - 0	8 - 0	8 - 0	8 - 0	8 - 0	8 - 0	8 - 0	8 - 0	8 - 0	8 - 0	8 - 0
Peak Roof Bldgs or Billboards	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0
Neon Signs	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0
Waterways	MUST BE SHOWN ON DETAIL PLANS						MUST BE SHOWN ON DETAIL PLANS				
Running Along:											
Public Roads with:											
Major Overhang Fig.5	18 - 0	18 - 5	19 - 0	19 - 10	20 - 5	21 - 2	18 - 0	18 - 8	19 - 4	20 - 0	20 - 6
Minor Overhang Fig.5											
Urban	18 - 0	18 - 0	18 - 0	18 - 2	18 - 4	18 - 6	18 - 0	18 - 0	18 - 0	18 - 0	18 - 3
Rural (Lt Traffic)	14 - 0	14 - 0	14 - 0	14 - 2	14 - 6	14 - 8	14 - 0	14 - 0	14 - 0	14 - 0	14 - 3
No Overhang											
Back of Obstr..											
Rural Fig.6	8 - 0	8 - 0	8 - 0	8 - 0	8 - 0	8 - 0	8 - 0	8 - 0	8 - 0	8 - 0	8 - 0
Not Back of Obstr..											
Rural Fig.7	13 - 0	13 - 0	13 - 0	13 - 0	13 - 0	13 - 0	13 - 0	13 - 0	13 - 0	13 - 0	13 - 0
Nonrural Fig.8	18 - 0	18 - 2	18 - 3	18+- 5	18 - 8	19 - 0	18 - 0	18 - 5	18 - 10	19 - 1	19 - 1
Public Alleys	15 - 0	15 - 0	15 - 0	15 - 2	15 - 4	15 - 6	15 - 0	15 - 0	15 - 0	15 - 0	15 - 3

\+ MUST BE SUPPORTED BY 6M STRAND FOR SPANS OVER 100 FT.

++ NOT RECOMMENDED FOR SPAN LENGTHS OVER 175 FT.

&& NOT RECOMMENDED FOR SPAN LENGTHS OVER 150 FT.

\# THE CLEARENCE OVER RESIDENTIAL STREETS MAY BE REDUCED BY 2 FEET AT THE EDGE OF THE ROAD IF REQUIRED CLEARENCE IS OBTAINED AT THE CENTER OF THE ROAD (FIG. 4)

TABLE F

Drop Wire Placing Clearances
With Normal or Minimum Sag

STORM LOADING AREA	LIGHT					MEDIUM					HEAVY						
SPAN LENGTHS UP TO AND INCL. (FT)	150	200	250	300	350	150	175	200	225	250	100	113	125	138	150	163	175
DROP WIRE BELOW	FT/IN	FT/IN	FT/IN	FT/IN	FT/IN	FT/IN	FT/IN	FT/IN	FT/IN	FT/IN	FT/IN	FT/IN	FT/IN	FT/IN	FT/IN	FT/IN	FT/IN
300 VOLTS* OR LESS SERVICE WIRES OR CABLES LINE WIRES .. GENERALLY IF WITHIN 6 FT OF TELEPHONE POLE+	2 - 0 4 - 0	2 - 2 4 - 2	2 - 3 4 - 3	2 - 4 4 - 4	2 - 6 4 - 6	2 - 0 4 - 0	2 - 4 4 - 4	2 - 6 4 - 6	2 - 10 4 - 10	3 - 0 5 - 0	2 - 0 4 - 0	2 - 3 4 - 3	2 - 4 4 - 4	2 - 5 4 - 5	2 - 7 4 - 7	2 - 8 4 - 8	2 - 10 4 - 10
301 - 750 VOLTS* PHASE WIRES	4 - 0	4 - 2	4 - 3	4 - 4	4 - 6	4 - 0	4 - 4	4 - 6	4 - 10	5 - 0	4 - 0	4 - 3	4 - 4	4 - 5	4 - 7	4 - 8	4 - 10
751 - 8700 VOLTS* PHASE WIRES .. GENERALLY IF WITHIN 6 FT OF TELEPHONE POLE+	4 - 0 6 - 0	4 - 2 6 - 2	4 - 3 6 - 3	4 - 4 6 - 4	4 - 6 6 - 6	4 - 0 6 - 0	4 - 4 6 - 4	4 - 6 6 - 6	4 - 10 6 - 10	5 - 0 7 - 0	4 - 0 6 - 0	4 - 3 6 - 3	4 - 4 6 - 4	4 - 5 6 - 5	4 - 7 6 - 7	4 - 8 6 - 8	4 - 10 6 - 10
8701 - 50,000 VOLTS* PHASE WIRES .. GENERALLY IF NEAR TELEPHONE POLE+	6 - 0	6 - 2	6 - 3	6 - 4	6 - 6	6 - 0	6 - 4	6 - 6	6 - 10	7 - 0	6 - 0	6 - 3	6 - 4	6 - 5	6 - 7	6 - 8	6 - 10
GROUNDED NEUTRALS .. SYSTEM OF : UP TO 22,000 VOLTS TO GROUND	2 - 0	2 - 2	2 - 3	2 - 4	2 - 6	2 - 0	2 - 4	2 - 6	2 - 10	3 - 0	2 - 0	2 - 3	2 - 4	2 - 5	2 - 7	2 - 8	2 - 10
OVER 22,000 VOLTS TO GROUND++																	
OTHER NEUTRALS++																	
GROUNDED METAL SHEATH CABLES OR ANY CABLE LASHED TO GROUNDED STRAND .. ANY VOLTAGE	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0	2 - 0
SPACER CABLES 300 VOLTS* OR LESS .. GENERALLY IF WITHIN 6 FT OF TELEPHONE POLE+	2 - 0 4 - 0	2 - 0 4 - 0	2 - 0 4 - 0	2 - 0 4 - 0	2 - 0 4 - 0	2 - 0 4 - 0	2 - 0 4 - 0	2 - 0 4 - 0	2 - 0 4 - 0	2 - 0 4 - 0	2 - 0 4 - 0	2 - 0 4 - 0	2 - 0 4 - 0	2 - 0 4 - 0	2 - 0 4 - 0	2 - 0 4 - 0	2 - 0 4 - 0
301 - 750 VOLTS*	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0	4 - 0
751 - 8700 VOLTS* .. GENERALLY IF WITHIN 6 FT OF TELEPHONE POLE+	4 - 0 6 - 0	4 - 0 6 - 0	4 - 0 6 - 0	4 - 0 6 - 0	4 - 0 6 - 0	4 - 0 6 - 0	4 - 0 6 - 0	4 - 0 6 - 0	4 - 0 6 - 0	4 - 0 6 - 0	4 - 0 6 - 0	4 - 0 6 - 0	4 - 0 6 - 0	4 - 0 6 - 0	4 - 0 6 - 0	4 - 0 6 - 0	4 - 0 6 - 0
8701 - 50,000 VOLTS* IF NEAR TELEPHONE POLE+	6 - 0	6 - 0	6 - 0	6 - 0	6 - 0	6 - 0	6 - 0	6 - 0	6 - 0	6 - 0	6 - 0	6 - 0	6 - 0	6 - 0	6 - 0	6 - 0	6 - 0

NOTE :
MAINTENANCE CLEARENCES FOR ALL SPAN LENGTHS IN ALL STORM LOADING AREAS WITH NORMAL OR MINIMUM SAG ARE THE SAME AS SPECIFIED IN COLUMN 1 FOR THE PLACING CLEARENCES.

* VOLTAGE TO GROUND, IF POWER CIRCUIT IS EFFECTIVELY GROUNDED; VOLTAGE BETWEEN WIRES IF NOT GROUNDED.

\+ EVERY EFFORT SHALL BE MADE TO AVOID THESE SITUATIONS AND ESTABLISH A COMMON POLE CROSSING INSTEAD.

++ SAME AS ASSOCIATED PHASE WIRES.

TABLE G

Drop Wire Placing Clearances
With Normal or Minimum Sag

STORM LOADING AREA	LIGHT	MEDIUM				HEAVY									
SPAN LENGTHS UP TO AND INCL. (FT)	300	170	250	170	250	25	100	125	150	175	25	100	125	150	175
DROP WIRE SAG	NORMAL /MIN.	NORMAL	NORMAL	MINIMUM	MINIMUM	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	MINIMUM	MINIMUM	MINIMUM	MINIMUM	MINIMUM
DROP WIRE ABOVE	FT/IN.	FT/IN.	FT/IN	FT/IN	FT/IN	FT/IN	FT/IN	FT/IN	FT/IN	FT/IN	FT/IN	FT/IN	FT/IN	FT/IN	FT/IN
POWER SERVICE DROPS OR POWER LINE WIRES 300 VOLTS OR LESS	2-0	2-0	2-0	2-0	2-5	2-0	2-4	2-5	2-10	3-2	2-2	2-6	2-10	3-5	4-0
STREETCAR CONTACT WIRES 750 VOLTS OR LESS (PLACE WIRE GUARD AT POINT OF CROSSING)	# 4-0	4-0	4-0	4-0	4-5	4-0	4-4	4-5	4-10	5-2	4-4	4-8	4-10	5-5	6-0
DROP BELOW															
FOREIGN GUYS, COMMUNICATION CABLES	2-0	+ 2-0	+ 2-0	+ 2-0	+ 2-0	‖ 2-0	‖ 2-0	‖ 2-0	‖ 2-0	‖ 2-0	‖ 2-0	‖ 2-0	‖ 2-0	‖ 2-0	‖ 2-0
NEON SIGN	4-0	4-0	4-0	4-0	4-0	4-0	4-0	4-0	4-0	4-0	4-0	4-0	4-0	4-0	4-0
DROP WIRE ALONGSIDE															
NEON SIGN	2-0	2-0	2-0	2-0	2-0	2-0	2-0	2-0	2-0	2-0	2-0	2-0	2-0	2-0	2-0

NOTE :
MAINTENANCE CLEARENCES FOR ALL SPAN LENGTHS IN ALL STORM LOADING AREAS WITH NORMAL OR MINIMUM SAG ARE THE SAME AS SPECIFIED IN COLUMN 1 FOR THE PLACING CLEARENCES.

\# MAXIMUM SPAN LENGTH 250 FT.

\+ SPAN LENGTH OF FOREIGN CABLE NOT OVER 250 FT.

‖ SPAN LENGTH OF FOREIGN CABLE NOT OVER 175 FT.

4. POWER SUPPLY VOLTAGES

4.01 DANGER: To avoid the possibility of electrical shock, technicians placing drop wires that may contact power supply wires or cables shall wear insulating gloves. In joint construction, any one of the following supply voltages could be encountered:

Phase-to-Phase Voltage

- Secondary distribution - 750 volts or less
- Primary distribution - 2200 to 34,500 volts
- Subtransmission - 26,000 to 69,000 volts.

Phase-to-Ground Voltage

- Primary distribution - 1270 to 20,000 volts
- Subtransmission - 15,000 to 40,000 volts.

4.02 It is imperative that employees be able to identify supply voltages and take additional precautions when exposed to such voltages.

4.03 Power conductors immediately above telephone facilities, if attached to spool-type insulators on a metal bracket, can safely be assumed to be secondary service, with voltages less than 750 volts.

4.04 Crossarms are usually associated with primary voltages. It is quite common to have a primary distribution supply above the secondary distribution with a voltage range of 2200 to 34,500 volts.

4.05 Technicians can estimate the voltage of power by observing the size and type of insulator, voltage markings on transformer, position of supply conductors on a pole, etc. (See Fig. 26, 27, and 28.)

4.06 Technicians should make it a point to acquaint themselves with the power company facilities in localities where they work so they may be able to accurately estimate power facilities.

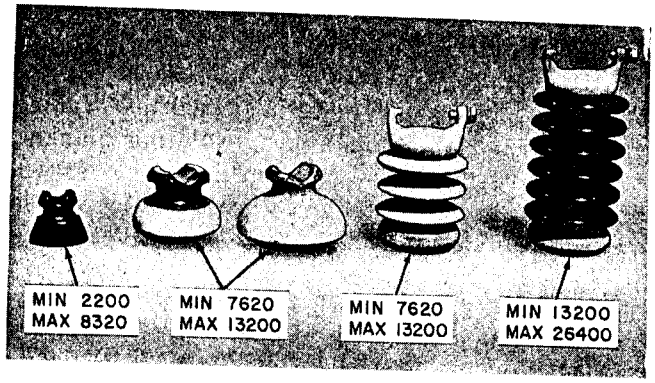


Fig. 26-Typical Power Supply Insulators

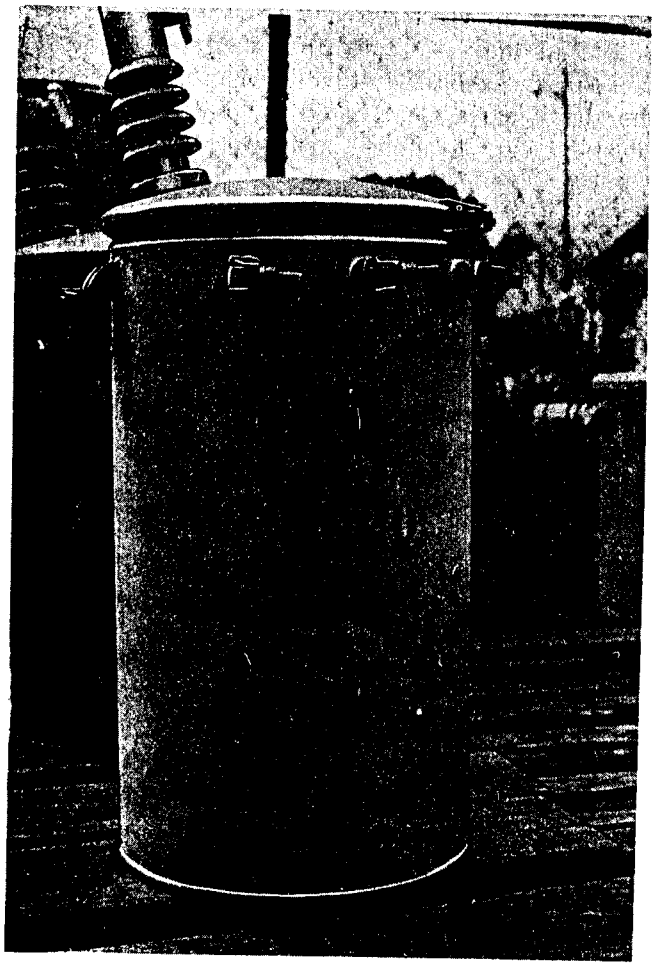


Fig. 27-Voltage Marking on Transformer

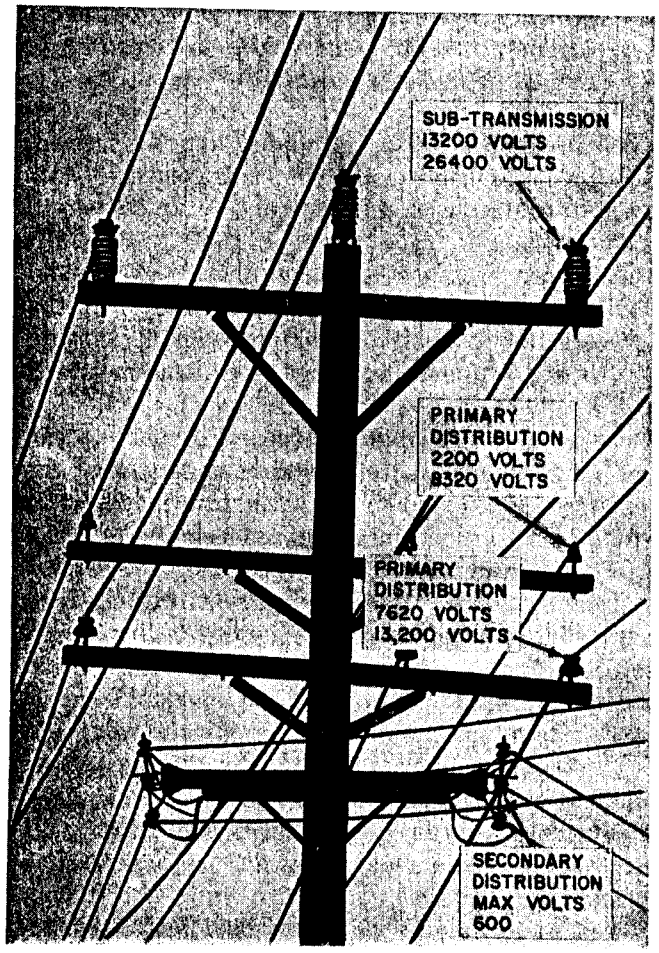


Fig. 28-Position of Supply Conductors