

DROP WIRE CLEARANCES

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1. GENERAL

- 1.01 This section contains the recommended clearances for drop wires.
- 1.02 This section is reissued to include pole attachment clearances on jointly used poles. Revision arrows are used to emphasize significant changes.
- 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.

1.06 The clearance values specified in this section are in accord with the requirements of the 1981 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 1981 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.

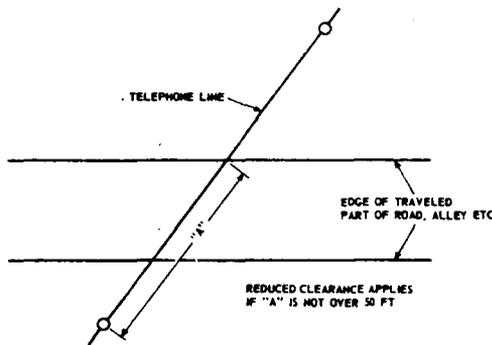


Fig. 1—Wire Crossing Public Road—Pole at Road Edge

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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 or 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.

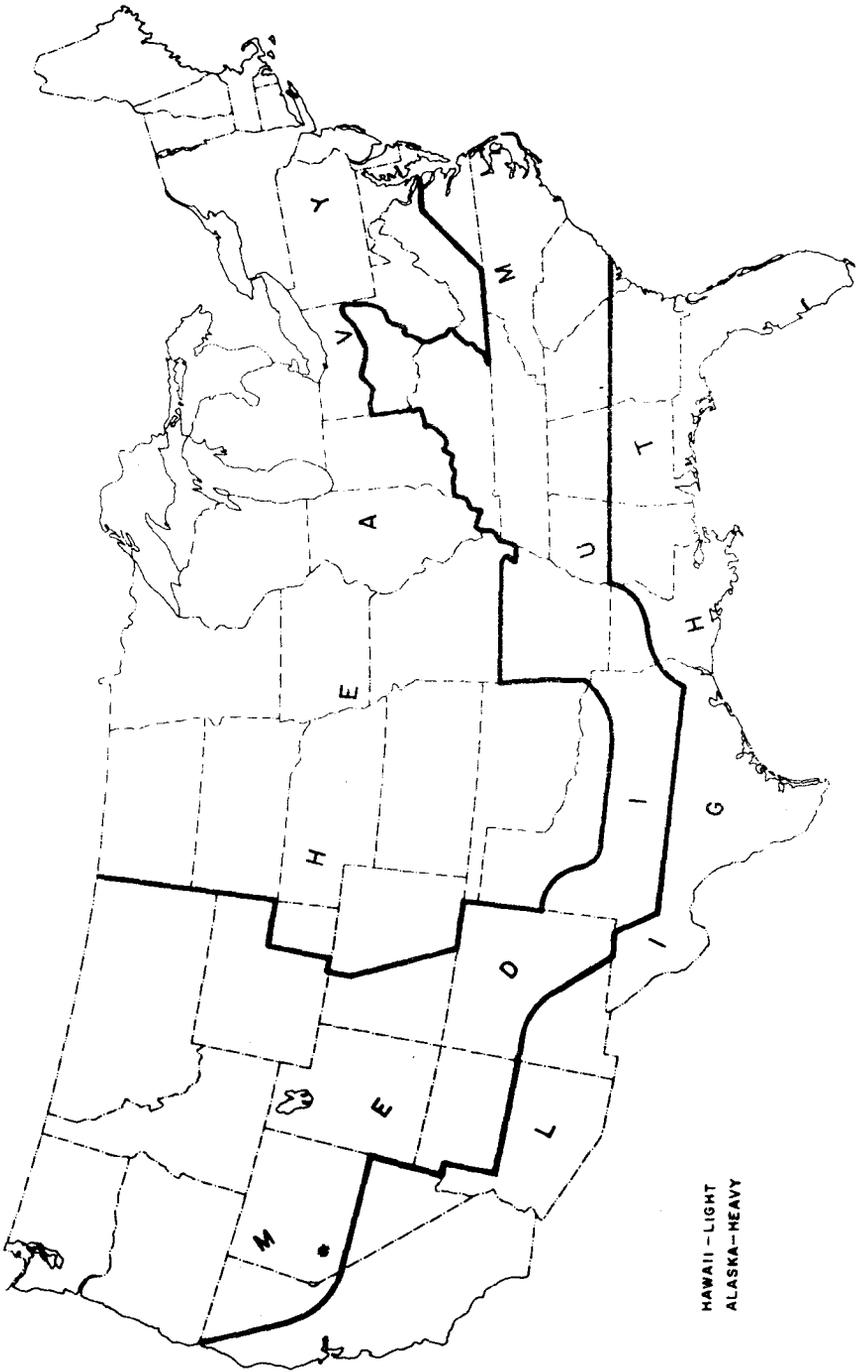


Fig. 2 — Storm Loading Areas

(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).

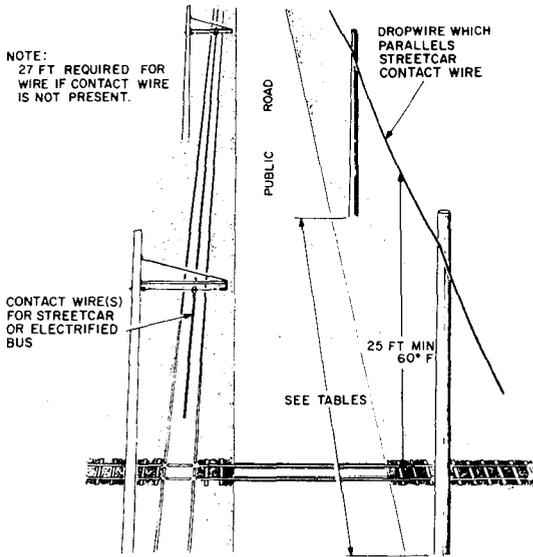


Fig. 3—Wire Crossing Railroad Tracks—Special Case

(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).

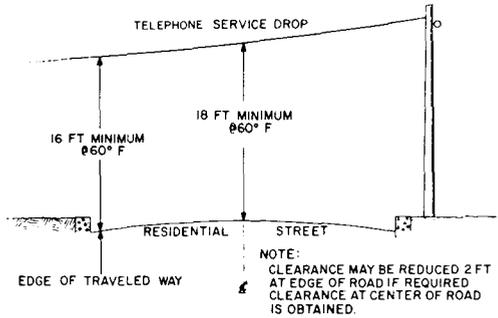


Fig. 4—Service Drop Over Residential Street

- (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).
- (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).

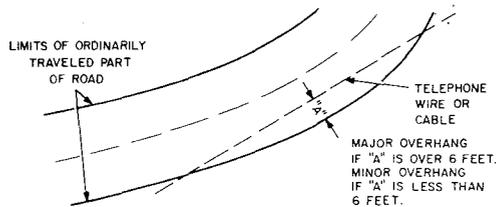


Fig. 5—Wire Running Along Public Roads

(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).

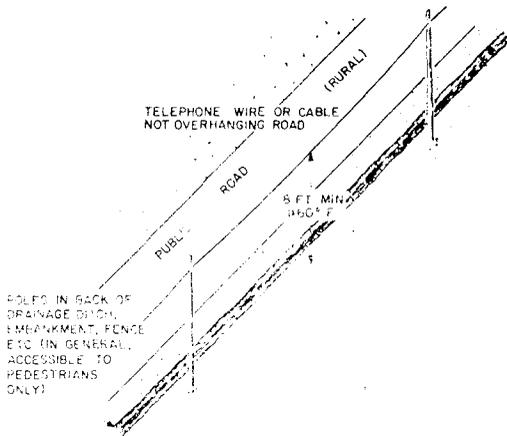


Fig. 6—Wire Running Along Public Roads (Back of Obstruction)

(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.

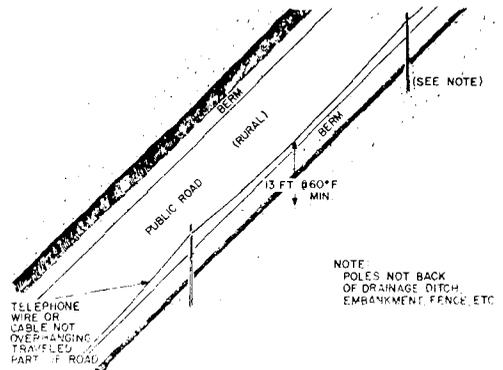


Fig. 7—Wire Running Along, But Not Overhanging, Public Roads (Not Back of Obstruction)

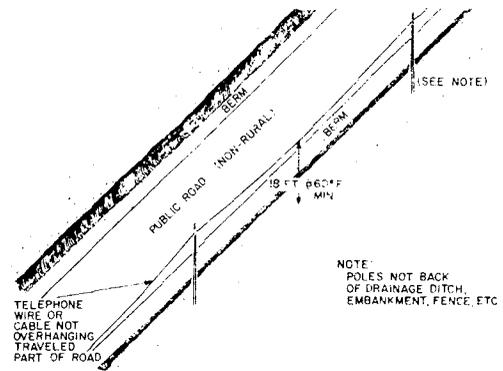


Fig. 8—Wire Running Along, But Not Overhanging, Nonrural Public Roads (Not Back of Obstruction)

3. DROP WIRE CLEARANCES

3.01 The following factors must be considered when determining proper drop 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.

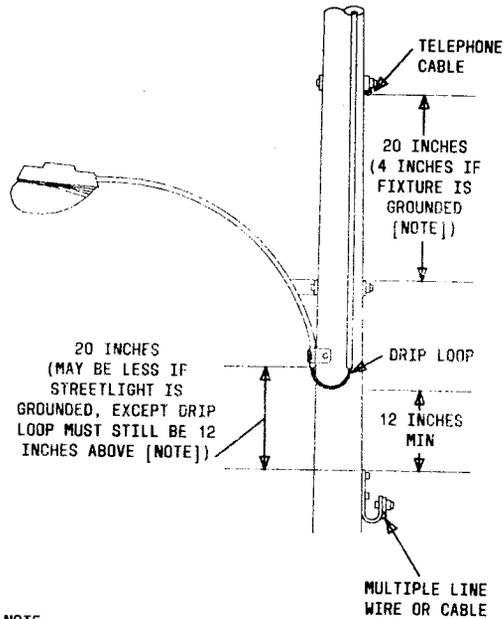
3.02 Drop wire clearances are referenced to graph tables and figures as follows:

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

TABLE A

DROP WIRE CLEARANCES ON JOINTLY USED POLES

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

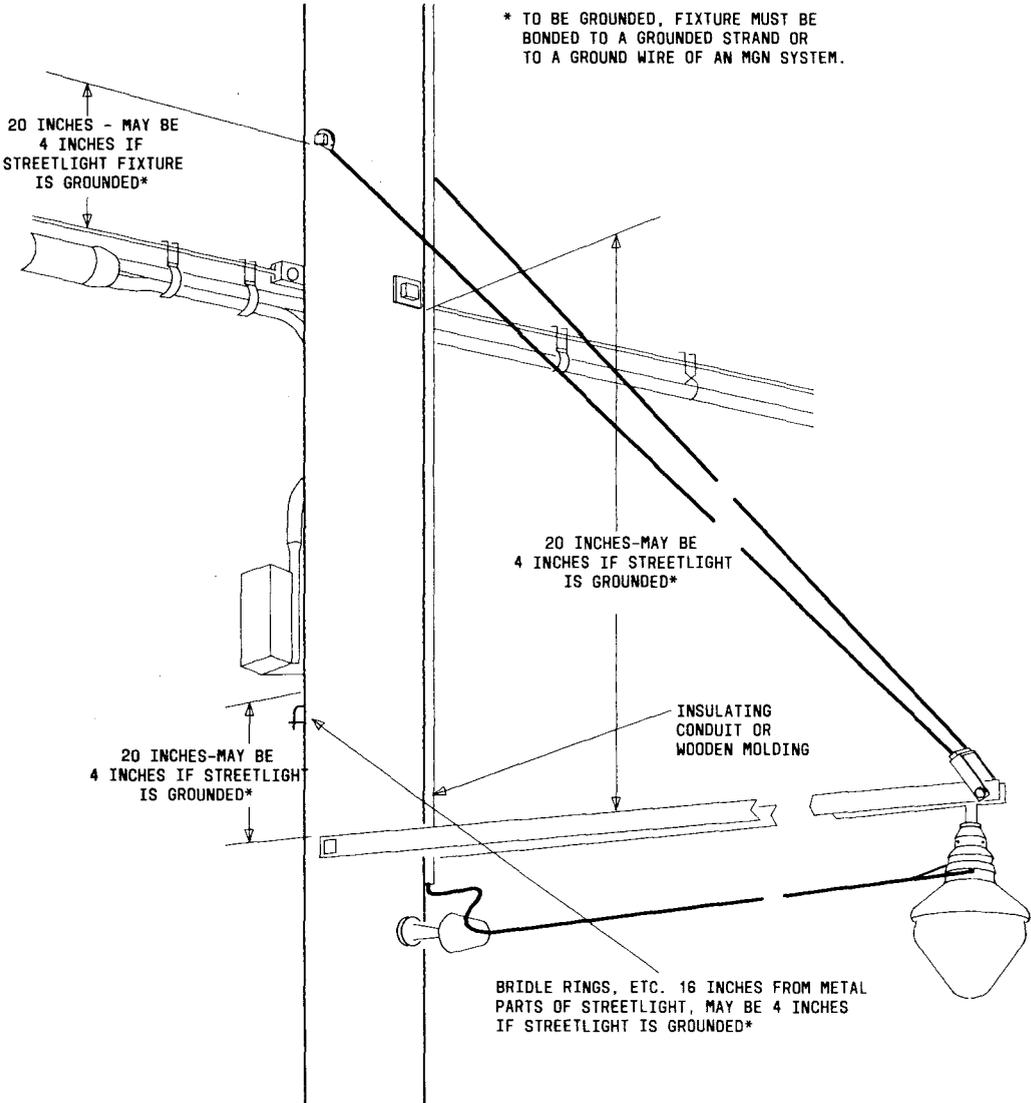
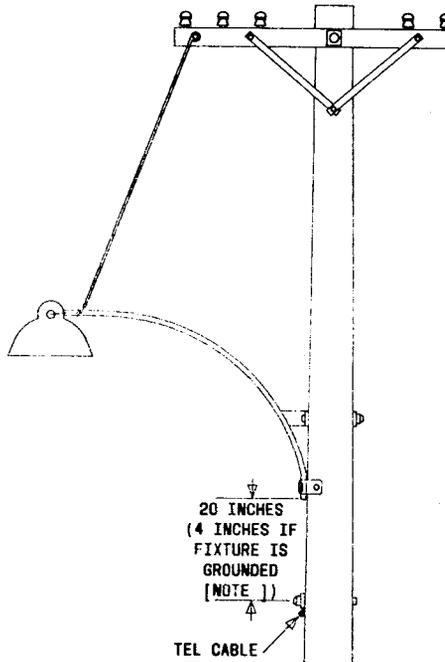


Fig. 10—Clearances of Drivehooks, Bridlewire Rings, or Brackets From Streetlight Fixture



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**

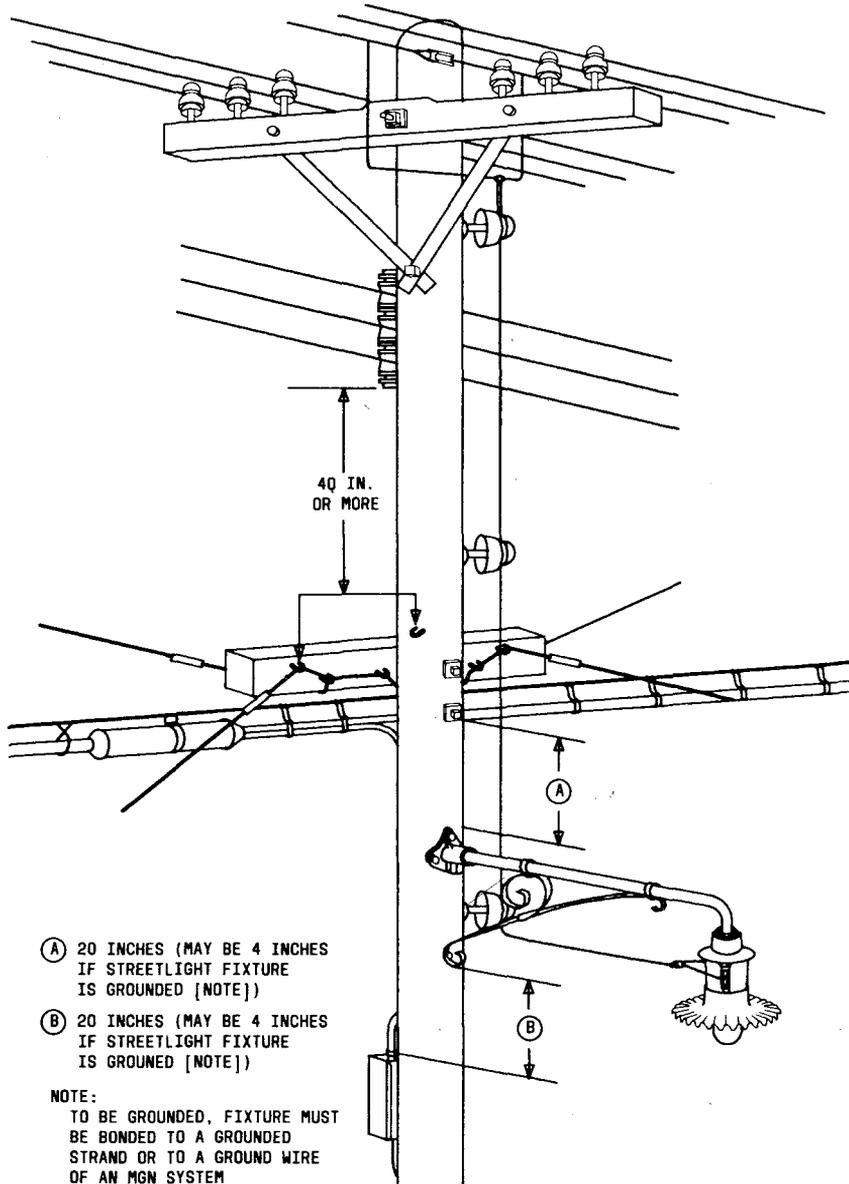
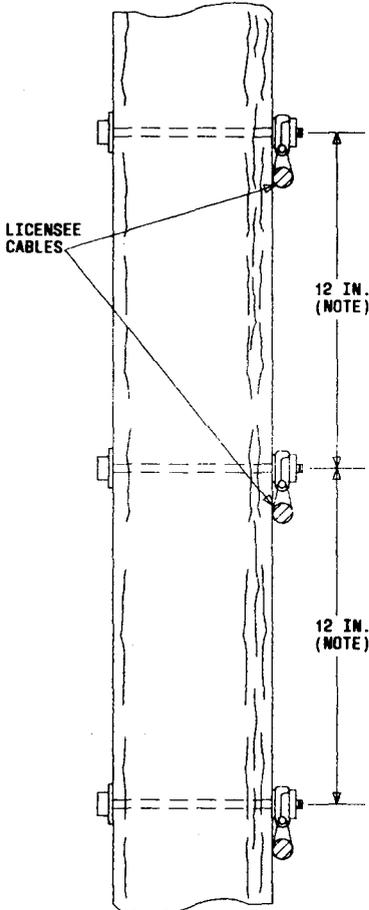


Fig. 12—Clearances of Cable and Pole-Mounted Terminal From Streetlight Fixture Mounted Below Cable



NOTE:
MAY BE REDUCED BY MUTUAL AGREEMENT

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

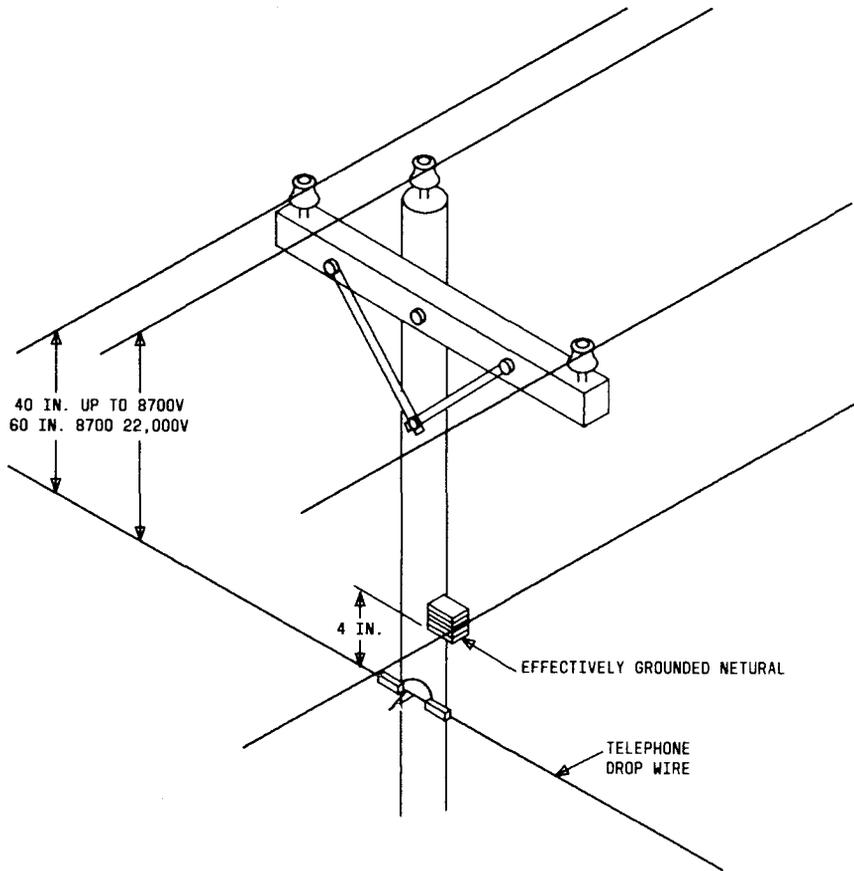


Fig. 14—Drop Wire Clearance on Common Crossing Pole

- Placing clearances above ground or rails (Table B)

TABLE B
DROP WIRE
PLACING CLEARANCES (AT 60° F)
ABOVE GROUND OR RAILS

STORM LOADING AREA		LIGHT	MEDIUM			HEAVY			
SPAN LENGTH (FT)		300 OR LESS	250 OR LESS	170 OR LESS	OVER 170	75 OR LESS	OVER 75	75 OR LESS	OVER 75
DROP WIRE SAG		NORMAL OR MINIMUM	NORMAL	MINIMUM	MINIMUM	NORMAL	NORMAL	MINIMUM	MINIMUM
Crossing Above:	REF	FT./IN.	FT./IN.	FT./IN.	FIG.	FT./IN.	FIG.	FT./IN.	FIG.
Railroad Tracks		†	†	‡		§		§	
Generally		27 - 0	27 - 0	27 - 0		27 - 0		27 - 3	
Special Case	Fig. 3	25 - 0	25 - 0	25 - 0		25 - 0		25 - 3	
Public Roads									
Generally*		18 - 0	18 - 0	18 - 0		18 - 0		18 - 3	
Pole at Road Edge*	Fig. 1	--	--	18 - 0		18 - 0		18 - 3	
Public Alleys									
Generally		15 - 0	15 - 0	15 - 0		15 - 0		15 - 3	
Pole at Road Edge	Fig. 1	--	--	15 - 0	Fig. 20	15 - 0	Fig. 21	15 - 2	Fig. 22
Residential Driveways									
Generally		10 - 0	10 - 0	10 - 0		10 - 0		10 - 3	
Pole at Road Edge	Fig. 1	--	--	10 - 0		10 - 0		10 - 3	
Flat Roof Bldgs		8 - 0	8 - 0	8 - 0		8 - 0		8 - 3	
Peak Roof Bldgs or Billboards		2 - 0	2 - 0	2 - 0		2 - 0		2 - 2	
Neon Signs		4 - 0	4 - 0	4 - 0		4 - 0		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 - 0		18 - 3	
Minor Overhang	Fig. 5								
Urban		18 - 0	18 - 0	18 - 0		18 - 0		18 - 3	
Rural (Lt. Traffic)		14 - 0	14 - 0	14 - 0	Fig. 20	14 - 0	Fig. 21	14 - 3	Fig. 22
No Overhang									
Back of Obstr--									
Rural	Fig. 6	8 - 0	8 - 0	8 - 0		8 - 0		8 - 3	
Not Back of Obstr--									
Rural	Fig. 7	13 - 0	13 - 0	13 - 0		13 - 0		13 - 3	
Nonrural	Fig. 8	18 - 0	18 - 0	18 - 0		18 - 0		18 - 0	
Public Alleys		15 - 0	15 - 0	15 - 0		15 - 0		15 - 3	

* Clearance height over residential street may be reduced 2 feet at the edge of the road if the required clearance at the center of the road is obtained (Fig. 4).

† Must be supported on 6M strand for spans over 150 ft.

‡ Must be supported on 6M strand for spans over 125 ft.

§ Must be supported on 6M strand for spans over 100 ft.

- Maintenance clearances above ground or rails (Table C).

TABLE C
DROP WIRE
MAINTENANCE CLEARANCES (AT 60° F)
ABOVE GROUND OR RAILS

STORM LOADING AREA		LIGHT			MEDIUM		HEAVY					
SPAN LENGTH (FT)		300 OR LESS	250 OR LESS	170 OR LESS	OVER 170	75 OR LESS	OVER 75	75 OR LESS	OVER 75			
DROP WIRE SAG		NORMAL OR MINIMUM	NORMAL	MINIMUM	MINIMUM	NORMAL	NORMAL	MINIMUM	MINIMUM			
Crossing Above:	REF	FT/IN.	FT/IN.	FT/IN.	FIG.	FT/IN.	FIG.	FT/IN.	FIG.			
Railroad Tracks Generally Special Case	Fig. 3	† 27 - 0 25 - 0	‡ 27 - 0 25 - 0	‡ 27 - 0 25 - 0	Fig. 23	§ 27 - 0 25 - 0	Fig. 24	§ 27 - 0 25 - 0	Fig. 25			
Public Roads Generally* Pole at Road Edge*	Fig. 1	18 - 0 —	18 - 0 —	18 - 0 18 - 0		18 - 0 18 - 0		18 - 0 18 - 0				
Public Alleys Generally Pole at Road Edge	Fig. 1	15 - 0 —	15 - 0 —	15 - 0 15 - 0		15 - 0 15 - 0		15 - 0 15 - 0				
Residential Driveways Generally 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				
Peak Roof Bldgs or Billboards		2 - 0	2 - 0	2 - 0		2 - 0		2 - 0				
Neon Signs		4 - 0	4 - 0	4 - 0		4 - 0		4 - 0				
Waterways		Must Be Shown On Detail Plans										
Running Along:												
Public Roads With: Major Overhang	Fig. 5	18 - 0	18 - 0	18 - 0	Fig. 23	18 - 0	Fig. 24	18 - 0	Fig. 25			
Minor Overhang Urban Rural (Lt Traffic)	Fig. 5	18 - 0 14 - 0	18 - 0 14 - 0	18 - 0 14 - 0		18 - 0 14 - 0		18 - 0 14 - 0				
No Overhang Back of Obstr— Rural Not Back of Obstr— Rural Nonrural	Fig. 6 Fig. 7 Fig. 8	8 - 0 13 - 0 18 - 0	8 - 0 13 - 0 18 - 0	8 - 0 13 - 0 18 - 0		8 - 0 13 - 0 18 - 0		8 - 0 13 - 0 18 - 0				
Public Alleys		15 - 0	15 - 0	15 - 0		15 - 0		15 - 0				

* Clearance height over residential street may be reduced 2 feet at the edge of the road if the required clearance at the center of the road is obtained (Fig. 4).

† Must be supported on 6M strand for spans over 150 ft.

‡ Must be supported on 6M strand for spans over 125 ft.

§ Must be supported on 6M strand for spans over 100 ft.

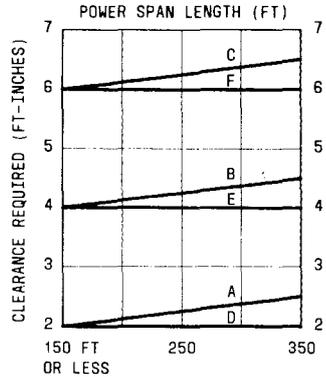
3.03 Clearances for various job conditions and span lengths not included in Tables A, B, and C may be determined by Fig. 15 through 25 as follows:

- (1) In the tabular part of the figure, identify the reference letter associated with the job condition.
- (2) On the graph part of the figure, locate the horizontal line associated with the letter reference.
- (3) Locate the vertical line associated with the span length encountered.
- (4) The intersection of the horizontal and vertical lines identifies the clearance (ft - inches) required.

DROP WIRE BELOW	REF
300 VOLTS* OR LESS SERVICE WIRES OR CABLES LINE WIRES--GENERALLY IF WITHIN 6 FT OF TELEPHONE POLE†	A B
301-750 VOLTS* PHASE WIRES	B
751-8700 VOLTS* PHASE WIRES--GENERALLY IF WITHIN 6 FT OF TELEPHONE POLE†	B C
8701-50,000 VOLTS* PHASE WIRES--GENERALLY IF NEAR TELEPHONE POLE†	C
GROUND NEUTRALS--SYSTEM OF: UP TO 22,000 VOLTS TO GROUND	A
OVER 22,000 VOLTS TO GROUND‡	
OTHER NEUTRALS‡	
GROUND METAL SHEATH CABLES OR ANY CABLE LASHED TO GROUND STRAND--ANY VOLTAGE	D
SPACER CABLES (ILLUSTRATED IN SECTION 620-216-013)	
300 VOLTS* OR LESS--GENERALLY IF WITHIN 6 FT OF TELEPHONE POLE†	D E
301-750 VOLTS*	E
751-8700 VOLTS*--GENERALLY IF WITHIN 6 FT OF TELEPHONE POLE†	E F
8701-50,000 VOLTS* IF NEAR TELEPHONE POLE†	F

NOTE:
 MAINTENANCE CLEARANCES FOR SPAN LENGTHS UP TO 350 FEET
 ARE THE SAME AS THAT SPECIFIED IN PLACING THE DROP
 WIRE FOR SPAN LENGTHS OF 150 FEET OR LESS.

- * VOLTAGE TO GROUND, IF POWER CIRCUIT IS EFFECTIVELY GROUND; VOLTAGE BETWEEN WIRES IF NOT GROUND.
- † EVERY EFFORT SHALL BE MADE TO AVOID THESE SITUATIONS AND ESTABLISH A COMMON POLE CROSSING INSTEAD.
- ‡ SAME AS ASSOCIATED PHASE WIRES.



DROP WIRE ABOVE

POWER SERVICE DROPS OR POWER LINE WIRES 300 VOLTS OR LESS	2 - 0	300
STREETCAR CONTACT WIRES 750 VOLTS OR LESS (PLACE WIRE GUARD AT POINT OF CROSSING)	4 - 0	250

DROP WIRE	
PLACING OR MAINTENANCE CLEARANCE	MAX SPAN LENGTH (WITH NORMAL OR MIN DROP WIRE SAG)
FT - IN	FT
2 - 0	300
4 - 0	250

DROP WIRE BELOW

FOREIGN GUYS, COMMUNICATION CABLES	2 - 0	300
NEON SIGN	4 - 0	300

DROP WIRE ALONGSIDE

NEON SIGN	2 - 0	300
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Fig. 15—Drop Wire Placing Clearances—Light Loading Area—With Normal or Minimum Sag

DROP WIRE BELOW	REF
300 VOLTS* OR LESS SERVICE WIRES OR CABLES LINE WIRES--GENERALLY IF WITHIN 6 FT OF TELEPHONE POLE†	A B
301-750 VOLTS* PHASE WIRES	B
751-8700 VOLTS* PHASE WIRES--GENERALLY IF WITHIN 6 FT OF TELEPHONE POLE†	B C
8701-50,000 VOLTS* PHASE WIRES--GENERALLY IF NEAR TELEPHONE POLE†	C
GROUNDED NEUTRALS--SYSTEM OF: UP TO 22,000 VOLTS TO GROUND	A
OVER 22,000 VOLTS TO GROUND‡	
OTHER NEUTRALS‡	
GROUNDING METAL SHEATH CABLES OR ANY CABLE LASHED TO GROUNDING STRAND--ANY VOLTAGE	D
SPACER CABLES (ILLUSTRATED IN SECTION 620-216-013) 300 VOLTS* OR LESS--GENERALLY IF WITHIN 6 FT OF TELEPHONE POLE†	D E
301-750 VOLTS*	E
751-8700 VOLTS*--GENERALLY IF WITHIN 6 FT OF TELEPHONE POLE†	E F
8701-50,000 VOLTS* IF NEAR TELEPHONE POLE†	F

NOTE:

MAINTENANCE CLEARANCES FOR SPAN LENGTHS UP TO 250 FEET ARE THE SAME AS THAT SPECIFIED IN PLACING THE DROP WIRE FOR SPAN LENGTHS OF 150 FEET OR LESS.

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

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

‡ SAME AS ASSOCIATED PHASE WIRES.

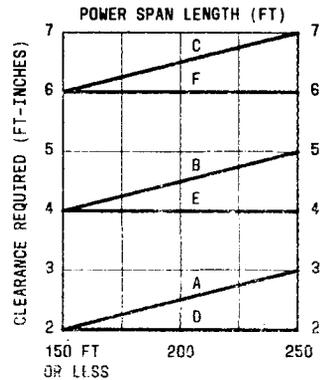
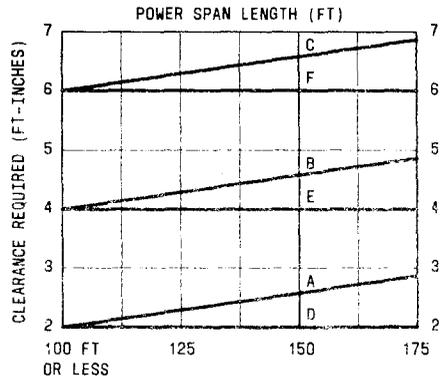


Fig. 16—Drop Wire Placing Clearances—Medium Loading Area—Below Power Facilities—With Normal or Minimum Sag

DROP WIRE BELOW	REF
300 VOLTS* OR LESS SERVICE WIRES OR CABLES	A
LINE WIRES--GENERALLY	A
IF WITHIN 6 FT OF TELEPHONE POLE†	B
301-750 VOLTS* PHASE WIRES	B
751-8700 VOLTS* PHASE WIRES--GENERALLY	B
IF WITHIN 6 FT OF TELEPHONE POLE†	C
8701-50,000 VOLTS* PHASE WIRES--GENERALLY	C
IF NEAR TELEPHONE POLE†	
GROUND NEUTRALS--SYSTEM OF: UP TO 22,000 VOLTS TO GROUND	A
OVER 22,000 VOLTS TO GROUND‡	
OTHER NEUTRALS‡	
GROUND METAL SHEATH CABLES OR ANY CABLE LASHED TO GROUND STRAND--ANY VOLTAGE	D
SPACER CABLES (ILLUSTRATED IN SECTION 620-216-013) 300 VOLTS* OR LESS--GENERALLY	D
IF WITHIN 6 FT OF TELEPHONE POLE†	E
301-750 VOLTS*	E
751-8700 VOLTS*--GENERALLY	E
IF WITHIN 6 FT OF TELEPHONE POLE†	F
8701-50,000 VOLTS* IF NEAR TELEPHONE POLE†	F



NOTE:

MAINTENANCE CLEARANCES FOR SPAN LENGTHS OF 101 TO 175 FEET ARE THE SAME AS THAT SPECIFIED IN PLACING THE DROP WIRE FOR SPAN LENGTHS OF 100 FEET OR LESS.

* 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.

Fig. 17—Drop Wire Placing Clearances—Heavy Loading Area—Below Power Facilities—With Normal or Minimum Sag

DROP WIRE ABOVE	PLACING WIRE		MAINTAINING WIRE	
	NORMAL SAG	MINIMUM SAG	NORMAL SAG	MINIMUM SAG
POWER SERVICE DROPS OR POWER LINE WIRES 300 VOLTS OR LESS	A	B	A	A
STREETCAR CONTACT WIRES 750 VOLTS OR LESS *	C	D	C	C
DROP WIRE BELOW				
FOREIGN GUYS, COMMUNICATION CABLES †	A	A	A	A
NEON SIGN	C	C	C	C
DROP WIRE ALONGSIDE				
NEON SIGN	A	A	A	A

* PLACE WIRE GUARD AT POINT OF CROSSING.
 † SPAN LENGTH OF FOREIGN CABLE NOT OVER 250 FEET.

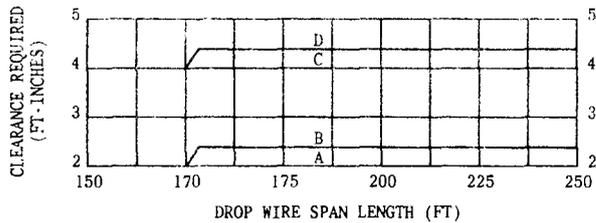


Fig. 18—Placing Clearances—Medium Loading Area—Above, Below, or Alongside Electrical Facilities—With Normal and Minimum Sag

DROP WIRE ABOVE	PLACING WIRE		MAINTAINING WIRE	
	NORMAL SAG	MINIMUM SAG	NORMAL SAG	MINIMUM SAG
POWER SERVICE DROPS OR POWER LINE WIRES 300 VOLTS OR LESS	A	B	C	C
STREETCAR CONTACT WIRES 750 VOLTS OR LESS *	D	E	F	F
DROP WIRE BELOW				
FOREIGN GUYS, COMMUNICATION CABLES †	C	C	C	C
NEON SIGN	F	F	F	F
DROP WIRE ALONGSIDE				
NEON SIGN	C	C	C	C

* PLACE WIRE GUARD AT POINT OF CROSSING.

† SPAN LENGTH OF FOREIGN CABLE NOT OVER 175 FEET.

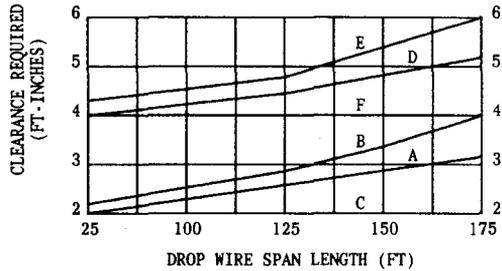


Fig. 19—Placing Clearances—Heavy Loading Area—Above, Below, or Alongside Electrical Facilities—With Normal and Minimum Sag

DROP WIRE CROSSING ABOVE	REF
RAILROAD TRACKS--GENERALLY	A
SPECIAL CASE (FIG. 3)	B
PUBLIC ROAD--GENERALLY*	C
POLE AT ROADS EDGE (WITHIN 50 FT OF FAR EDGE [FIG. 1])*	D
PUBLIC ALLEYS--GENERALLY	E
POLE AT ROADS EDGE (WITHIN 50 FT OF FAR EDGE [FIG. 1])	F
RESIDENTIAL DRIVEWAYS--GENERALLY	G
POLE AT ROADS EDGE (WITHIN 50 FT OF FAR EDGE [FIG. 1])	H
FLAT ROOF BUILDING	I
PEAK ROOF BUILDING OR BILLBOARD	J
NEON SIGN	K

DROP WIRE RUNNING ALONG	
PUBLIC ROAD	L
MAJOR OVERHANG (FIG. 5)	M
MINOR OVERHANG (FIG. 5)	N
URBAN	O
RURAL (LIGHT TRAFFIC)	P
NO OVERHANG	Q
BACK OF OBSTRUCTION (FIG. 6) RURAL	R
NOT BACK OF OBSTRUCTION (FIG. 7) RURAL	S
NOT BACK OF OBSTRUCTION (FIG. 8) NONRURAL	T
PUBLIC ALLEY	U

NOTE: MUST BE SUPPORTED ON 6M STRAND FOR SPANS OVER 125 FT. NOT RECOMMENDED FOR SPAN LENGTHS OVER 250 FT.

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

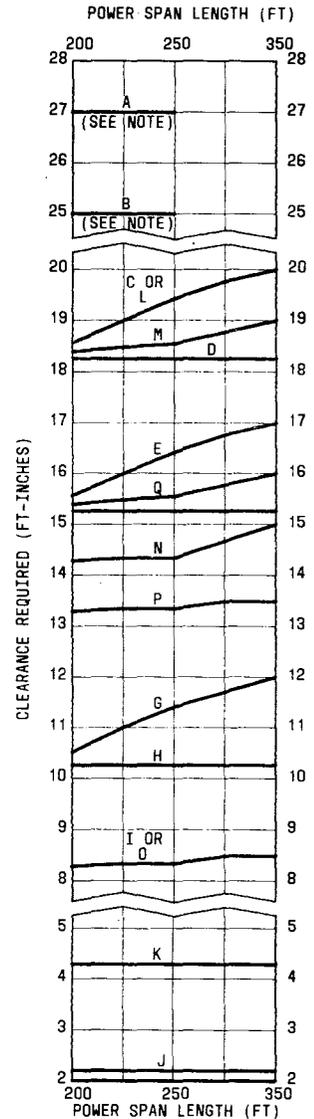


Fig. 20—Placing Clearances—Medium Loading Area—Above or Alongside Thoroughfares or Obstructions—With Minimum Sag

DROP WIRE CROSSING ABOVE	REF
RAILROAD TRACKS--GENERALLY	A
SPECIAL CASE (FIG. 3)	B
PUBLIC ROAD--GENERALLY*	C
POLE AT ROADS EDGE (WITHIN 50 FT OF FAR EDGE [FIG. 1])*	D
PUBLIC ALLEYS--GENERALLY	E
POLE AT ROADS EDGE (WITHIN 50 FT OF FAR EDGE [FIG. 1])	F
RESIDENTIAL DRIVEWAYS--GENERALLY	G
POLE AT ROADS EDGE (WITHIN 50 FT OF FAR EDGE [FIG. 1])	H
FLAT ROOF BUILDING	I
PEAK ROOF BUILDING OR BILLBOARD	J
NEON SIGN	K

DROP WIRE RUNNING ALONG	
PUBLIC ROAD	L
MAJOR OVERHANG (FIG. 5)	M
MINOR OVERHANG (FIG. 5)	N
URBAN	O
RURAL (LIGHT TRAFFIC)	P
NO OVERHANG	Q
BACK OF OBSTRUCTION (FIG. 6) RURAL	D
NOT BACK OF OBSTRUCTION (FIG. 7) RURAL	
NOT BACK OF OBSTRUCTION (FIG. 8) NONRURAL	
PUBLIC ALLEY	

NOTE: MUST BE SUPPORTED ON 6M STRAND FOR SPANS OVER 100 FT. NOT RECOMMENDED FOR SPAN LENGTHS OVER 175 FT.

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

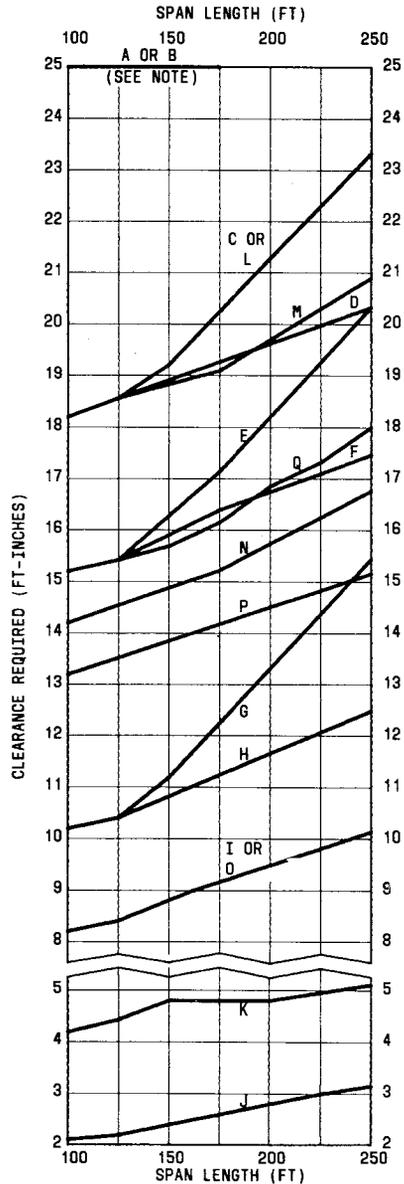


Fig. 21—Placing Clearances—Heavy Loading Area—Above or Alongside Throughfares or Obstructions—With Normal Sag

DROP WIRE CROSSING ABOVE	REF
RAILROAD TRACKS --GENERALLY	A
SPECIAL CASE (FIG. 3)	B
PUBLIC ROAD --GENERALLY*	C
POLE AT ROADS EDGE (WITHIN 50 FT OF FAR EDGE [FIG. 1])*	D
PUBLIC ALLEYS --GENERALLY	E
POLE AT ROADS EDGE (WITHIN 50 FT OF FAR EDGE [FIG. 1])	F
RESIDENTIAL DRIVEWAYS --GENERALLY	G
POLE AT ROADS EDGE (WITHIN 50 FT OF FAR EDGE [FIG. 1])	H
FLAT ROOF BUILDING	I
PEAK ROOF BUILDING OR BILLBOARD	J
NEON SIGN	K

DROP WIRE RUNNING ALONG	
PUBLIC ROAD	L
MAJOR OVERHANG (FIG. 5)	
MINOR OVERHANG (FIG. 5)	M
URBAN	
RURAL (LIGHT TRAFFIC)	
NO OVERHANG	N
BACK OF OBSTRUCTION (FIG. 6) RURAL	
NOT BACK OF OBSTRUCTION (FIG. 7) RURAL	O
NOT BACK OF OBSTRUCTION (FIG. 8) NONRURAL	
PUBLIC ALLEY	Q

NOTE: MUST BE SUPPORTED ON 6M STRAND FOR SPANS OVER 100 FT. NOT RECOMMENDED FOR SPAN LENGTHS OVER 150 FT.

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

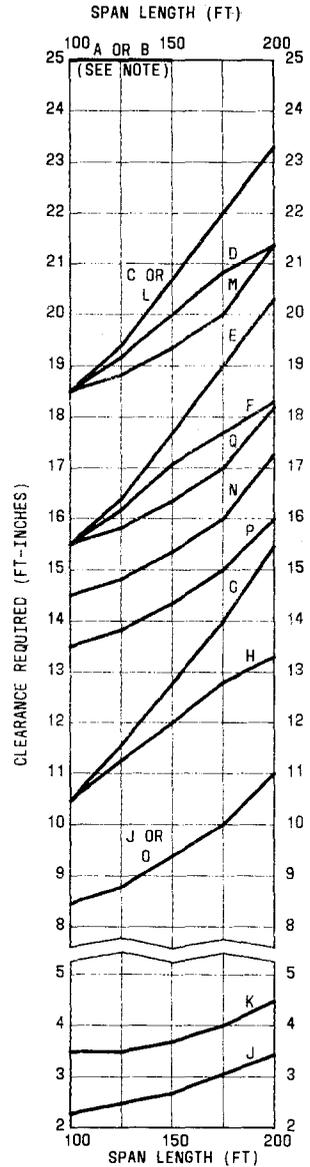


Fig. 22—Placing Clearances—Heavy Loading Area—Above or Alongside Throughfares or Obstructions—With Minimum Sag

DROP WIRE CROSSING ABOVE	REF
RAILROAD TRACKS--GENERALLY	A
SPECIAL CASE (FIG. 3)	B
PUBLIC ROAD--GENERALLY*	C
POLE AT ROADS EDGE (WITHIN 50 FT OF FAR EDGE [FIG. 1])*	D
PUBLIC ALLEYS--GENERALLY	E
POLE AT ROADS EDGE (WITHIN 50 FT OF FAR EDGE [FIG. 1])	F
RESIDENTIAL DRIVEWAYS--GENERALLY	G
POLE AT ROADS EDGE (WITHIN 50 FT OF FAR EDGE [FIG. 1])	H
FLAT ROOF BUILDING	I
PEAK ROOF BUILDING OR BILLBOARD	J
NEON SIGN	K

DROP WIRE RUNNING ALONG	
PUBLIC ROAD	L
MAJOR OVERHANG (FIG. 5)	
MINOR OVERHANG (FIG. 5)	M
URBAN	
RURAL (LIGHT TRAFFIC)	N
NO OVERHANG	O
BACK OF OBSTRUCTION (FIG. 6) RURAL	
NOT BACK OF OBSTRUCTION (FIG. 7) RURAL	
NOT BACK OF OBSTRUCTION (FIG. 8) NONRURAL	
PUBLIC ALLEY	Q

NOTE: MUST BE SUPPORTED ON 6M STRAND FOR SPANS OVER 125 FT. NOT RECOMMENDED FOR SPAN LENGTHS OVER 250 FT.

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

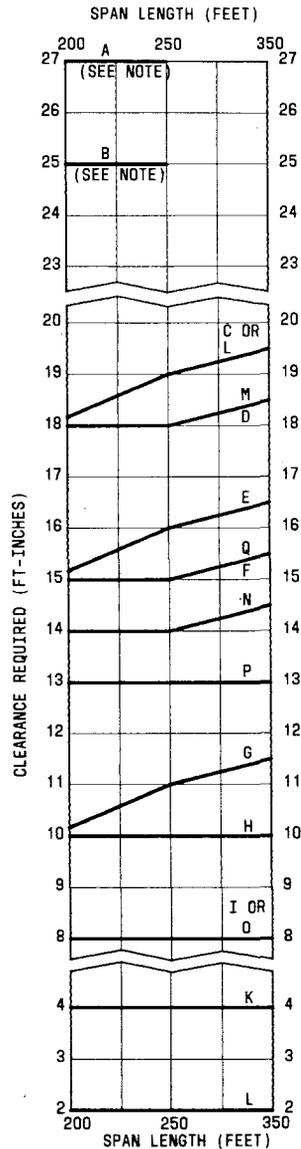


Fig. 23—Maintenance Clearances—Medium Loading Area—Above or Alongside Thoroughfares or Obstructions—With Minimum Sag

(FEET-INCHES) HEIGHT REQUIRED.

DROP WIRE CROSSING ABOVE	REF
RAILROAD TRACKS--GENERALLY	A
SPECIAL CASE (FIG. 3)	B
PUBLIC ROAD--GENERALLY*	C
POLE AT ROADS EDGE (WITHIN 50 FT OF FAR EDGE [FIG. 1])*	D
PUBLIC ALLEYS--GENERALLY	E
POLE AT ROADS EDGE (WITHIN 50 FT OF FAR EDGE [FIG. 1])	F
RESIDENTIAL DRIVEWAYS--GENERALLY	G
POLE AT ROADS EDGE (WITHIN 50 FT OF FAR EDGE [FIG. 1])	H
FLAT ROOF BUILDING	I
PEAK ROOF BUILDING OR BILLBOARD	J
NEON SIGN	K

DROP WIRE RUNNING ALONG

PUBLIC ROAD	L
MAJOR OVERHANG (FIG. 5)	
MINOR OVERHANG (FIG. 5)	M
URBAN	
RURAL (LIGHT TRAFFIC)	N
NO OVERHANG	O
BACK OF OBSTRUCTION (FIG. 6) RURAL	
NOT BACK OF OBSTRUCTION (FIG. 7) RURAL	P
NOT BACK OF OBSTRUCTION (FIG. 8) NONRURAL	D
PUBLIC ALLEY	Q

NOTE: MUST BE SUPPORTED ON 6M STRAND FOR SPANS OVER 100 FT. NOT RECOMMENDED FOR SPAN LENGTHS OVER 175 FT.

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

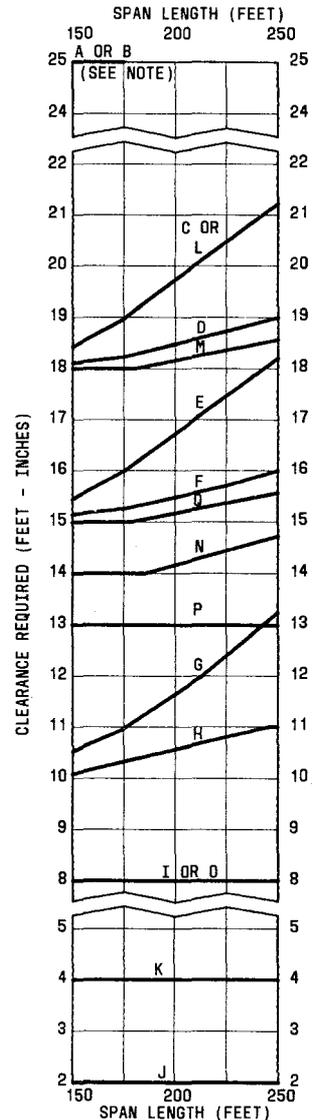


Fig. 24—Maintenance Clearances—Heavy Loading Area—Above or Alongside Thoroughfares or Obstructions—With Normal Sag

DROP WIRE CROSSING ABOVE	REF
RAILROAD TRACKS--GENERALLY	A
SPECIAL CASE (FIG. 3)	B
PUBLIC ROAD--GENERALLY*	C
POLE AT ROADS EDGE (WITHIN 50 FT OF FAR EDGE [FIG. 1])*	D
PUBLIC ALLEYS--GENERALLY	E
POLE AT ROADS EDGE (WITHIN 50 FT OF FAR EDGE [FIG. 1])	F
RESIDENTIAL DRIVEWAYS--GENERALLY	G
POLE AT ROADS EDGE (WITHIN 50 FT OF FAR EDGE [FIG. 1])	H
FLAT ROOF BUILDING	I
PEAK ROOF BUILDING OR BILLBOARD	J
NEON SIGN	K

DROP WIRE RUNNING ALONG	
PUBLIC ROAD	
MAJOR OVERHANG (FIG. 5)	L
MINOR OVERHANG (FIG. 5)	
URBAN	M
RURAL (LIGHT TRAFFIC)	N
NO OVERHANG	
BACK OF OBSTRUCTION (FIG. 6) RURAL	O
NOT BACK OF OBSTRUCTION (FIG. 7) RURAL	P
NOT BACK OF OBSTRUCTION (FIG. 8) NONRURAL	D
PUBLIC ALLEY	Q

NOTE: MUST BE SUPPORTED ON 6M STRAND FOR SPANS OVER 100 FT. NOT RECOMMENDED FOR SPAN LENGTHS OVER 150 FT.

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

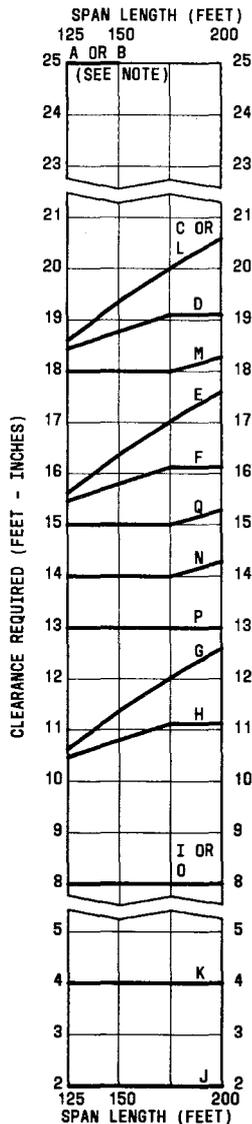


Fig. 25—Maintenance Clearances — Heavy Loading Area—Above or Alongside Thoroughfares or Obstructions—With Minimum Sag

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.

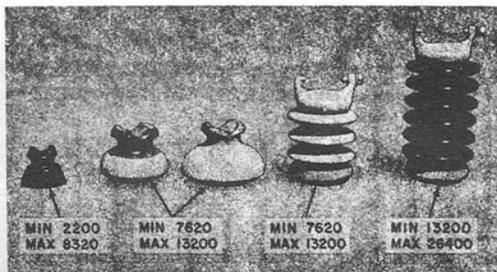


Fig. 26—Typical Power Supply Insulators

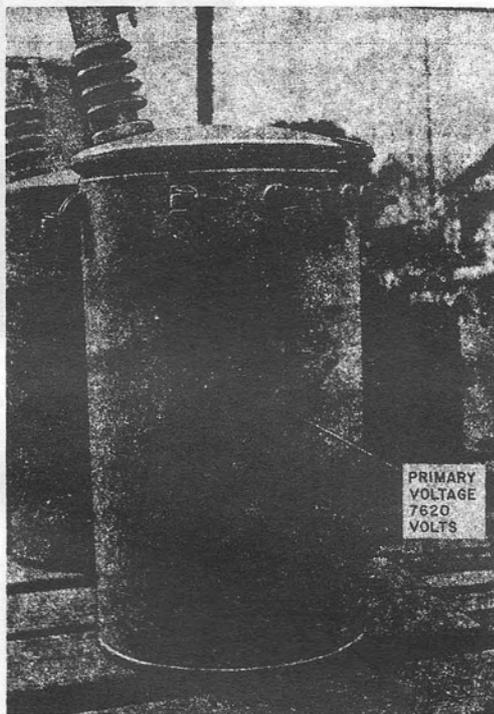


Fig. 27—Voltage Marking on Transformer

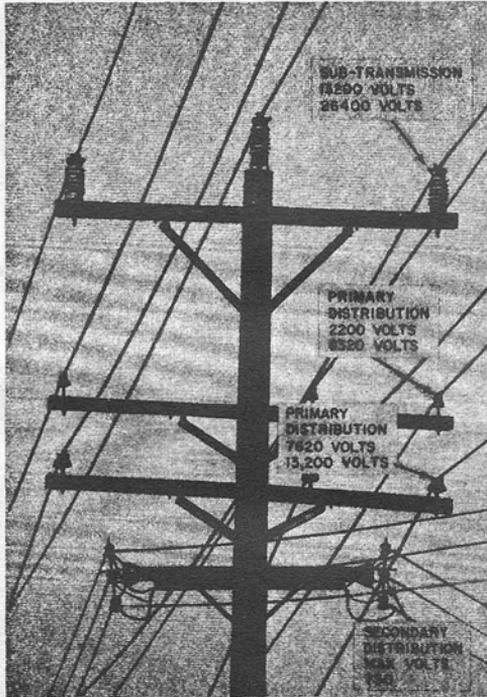


Fig. 28—Position of Supply Conductors