

CLEARANCES FOR DROP WIRE IN THE MEDIUM LOADING AREA

CONTENTS	PAGE
1. GENERAL	1
2. CLEARANCES ABOVE GROUND OR RAILS	2
(A) USING NORMAL SAGS	3
(B) USING MINIMUM SAGS	7
3. CLEARANCES CROSSING BELOW POWER WIRES AND CABLES	8
4. MISCELLANEOUS CLEARANCES	9

1. GENERAL

1.01 This section contains the recommended clearances for drop wire installed in the medium loading area. The values specified meet (and in some cases exceed) the requirements of the National Electrical Safety Code (Sixth Edition). They apply under conditions of 60° F with no wind or ice loading.

1.02 Drop wire strung to *minimum* sags in the medium loading area will generally experience some permanent stretch as a result of ice loading. "Construction" values of clearances therefore generally contain an allowance for the amount of extra sag which will be introduced by permanent stretch. Maintenance values of clearances should exist after wire has been through one or more cycles of storm loading and the temperature returns to 60° F. Drop wire strung to *normal* sags will not undergo any permanent stretching, however, unless the storm loading is quite severe. "Construction" and maintenance values of ground clearances are the same when normal stringing sags are used. Drop wire sags are shown in Section 462-400-200.

1.03 Drop wire tends to elongate as the temperature rises and contracts as the temperature falls. Wire placed during cold weather will, therefore, always have a greater sag during warm weather. In order to avoid having inade-

quate ground clearances at standard 60° F conditions, it is necessary to provide extra clearance when wire is placed during cold weather (freezing or below). The amount of increase required is the difference between the 60° F stringing sag and the cold weather stringing sag. No increase is required for temperatures above 32° F, however.

1.04 When drop wire sags exceed about two or three feet, it will generally be quite advantageous to locate poles or other points of support so as to avoid having the middle of the span occur above the traveled part of the road, alley, or driveway. This will frequently be the case when the pole is within 50 or even 75 feet of the far edge of the road, alley, or driveway (distance "A" in Fig. 1.)

1.05 When the 50-foot criterion applies (distance A in Fig. 1), this may also permit a reduced clearance. (See Part 2B of this section.) Also, it will usually be possible to base the height of attachment on something less than 100% of mid-span sag. This is also true when the distance from the pole is 75 feet from the pole, but the saving in height of attachment is considerably less. The following table shows the approximate percentage of mid-span sag occurring at distances of 50 and 75 feet from the pole for span lengths up to 300 feet.

POLE 50 FEET FROM FAR EDGE		POLE 75 FEET FROM FAR EDGE	
SPAN LENGTH (FEET)	PER CENT OF MID-SPAN SAG	SPAN LENGTH (FEET)	PER CENT OF MID-SPAN SAG
130-145	95	195-220	95
146-160	90	221-245	90
161-180	85	246-270	85
181-200	80	271-300	80
201-225	75		
226-250	70		
251-275	65		
276-300	60		

Note: Table may be used with normal or minimum sags.

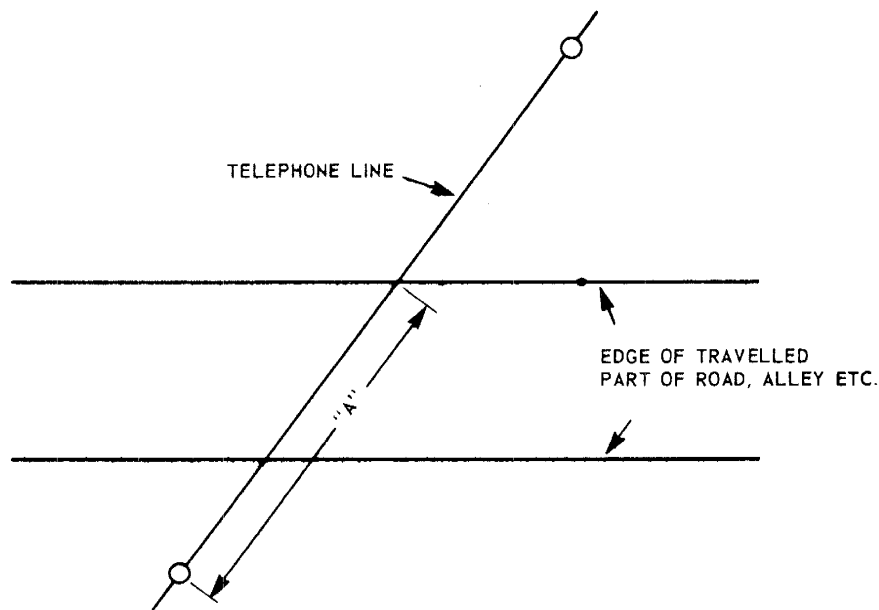


Fig. 1

Example: A 200-foot span crosses a driveway. One of the crossing poles will be within 50 feet of the far edge of the driveway and on ground which is two feet higher mid-span sag with normal stringing tension is 7 feet. At 50 feet from the pole, the sag will be 80 per cent of mid-span sag or about 5 feet 7 inches. In order to obtain a clearance of 10 feet over the driveway, the height of attachment must be 10 feet minus two feet, plus 5 feet 7 inches or 13 feet 7 inches. Height of attachment may be determined by the B Drop Wire rule when minimum sags are used.

1.06 Clearance requirements for drop wire overhanging the traveled part of roads vary somewhat with the degree of overhang involved. (See tables in Part 2 and Fig. 4.) Eliminating or reducing road overhang will frequently permit smaller ground clearances.

1.07 Clearances shown in this section should be used unless the work order or local requirements call for other values. The former may occur when engineering forces recognize factors not allowed for in this section or because of local

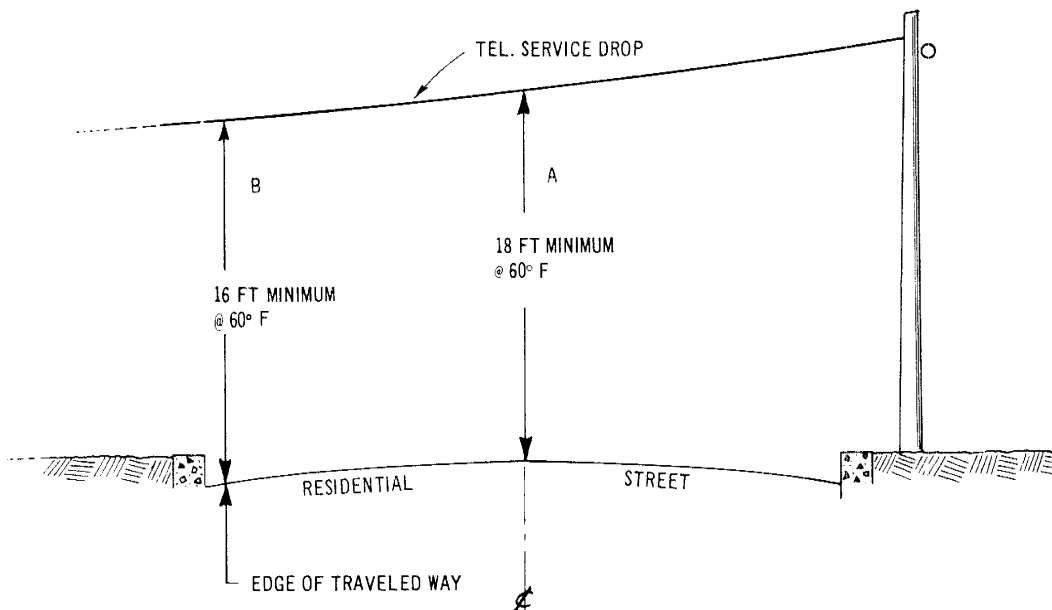
regulations, ordinances, etc. Clearances for span lengths, voltages and conditions not covered in this section are an engineering responsibility and will be shown on the work order or detail plans.

2. CLEARANCES ABOVE GROUND OR RAILS

2.01 The designation "No Overhang — Back of Obst." in the tables that follow means that the pole line is located in back of a fence, ditch, embankment, etc, so that the ground beneath the line can ordinarily be traveled by pedestrians only. The designation "No Overhang — Not Back of Obst." means that the line is not back of such obstruction and does not overhang the normally traveled part of the road. This category is meant to include ground not ordinarily traveled but which can be reached by vehicles. If farm machinery is likely to pass under the line, provide sufficient clearance so that the wire will be two feet above the highest part of such machinery or the load it will carry. If minimum sags are used and the span length exceeds 170 feet, provide an extra 6 inches initial clearance.

TABLE 1 — CLEARANCES ABOVE GROUND OR RAILS (AT 60° F)**A. Span Lengths of 250 Feet or Less — Using Normal Sags**

	<u>CLEARANCE (CONSTRUCTION OR MAINTENANCE)</u>		
<u>SITUATION</u>	<u>FT.</u>	<u>IN.</u>	<u>REMARKS</u>
Crossing Above:			
Railroad Tracks			
Generally	27-0		Must be supported on 6M strand for spans over 125 feet.
Special Case (See Fig. 3)	25-0		
Public Roads			
Generally	18-0		See Fig. 2
At Edge	16-0		
Public Alley	15-0		
Resid. Driveways	10-0		
Flat Roof Bldgs.	8-0		
Peak Roof Bldgs.,			
Billboards	2-0		
Neon Signs	4-0		
Waterways			Must be shown on detail plans.
Running Along:			
Public Roads with			
Major Overhang	18-0		See Fig. 4
Minor Overhang			See Fig. 4
Urban	18-0		
Rural (Lt. Traffic)	14-0		
No Overhang			
Back of Obst.	8-0		See Fig. 5, Par. 2.01
Not Back of Obst.	13-0		See Fig. 6, Par. 2.01
Public Alleys	15-0		

**Fig. 2**

WIRE CROSSING RAILROAD TRACKS - SPECIAL CASE

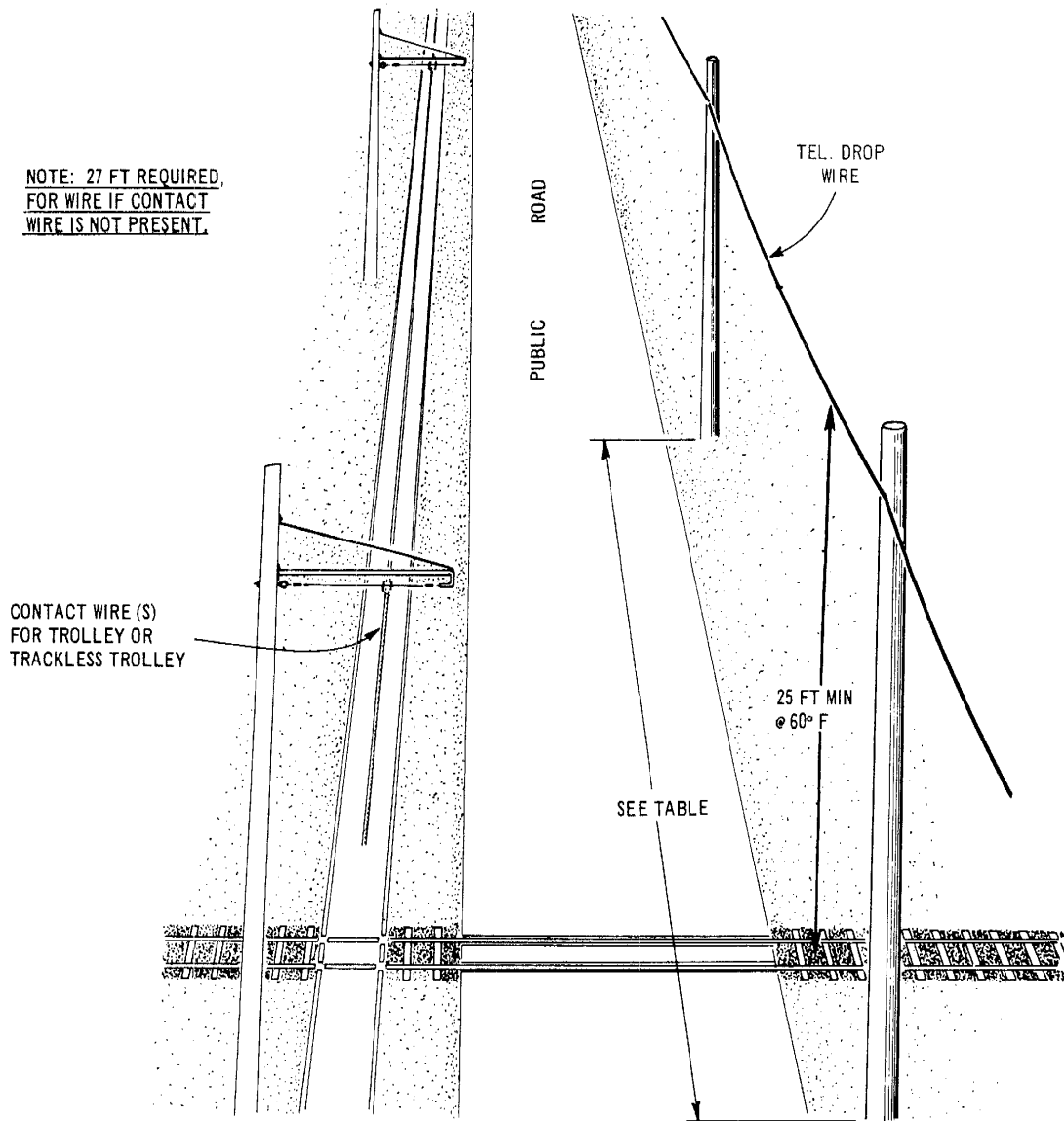


Fig. 3

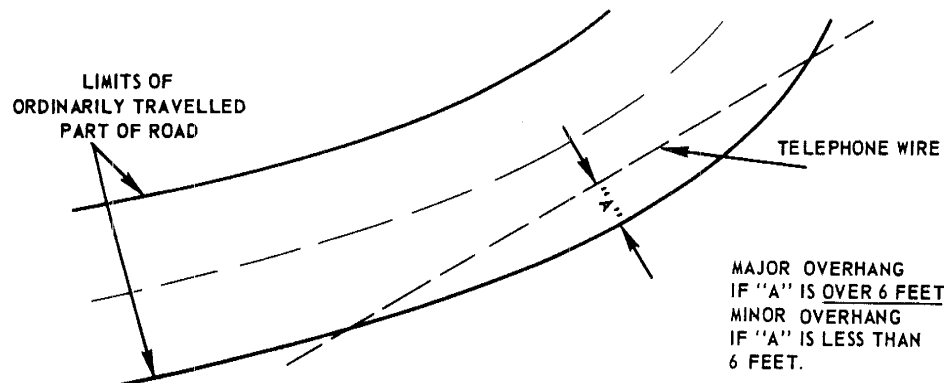


Fig. 4

RUNNING ALONG PUBLIC ROADS - BACK OF DITCHES ETC.

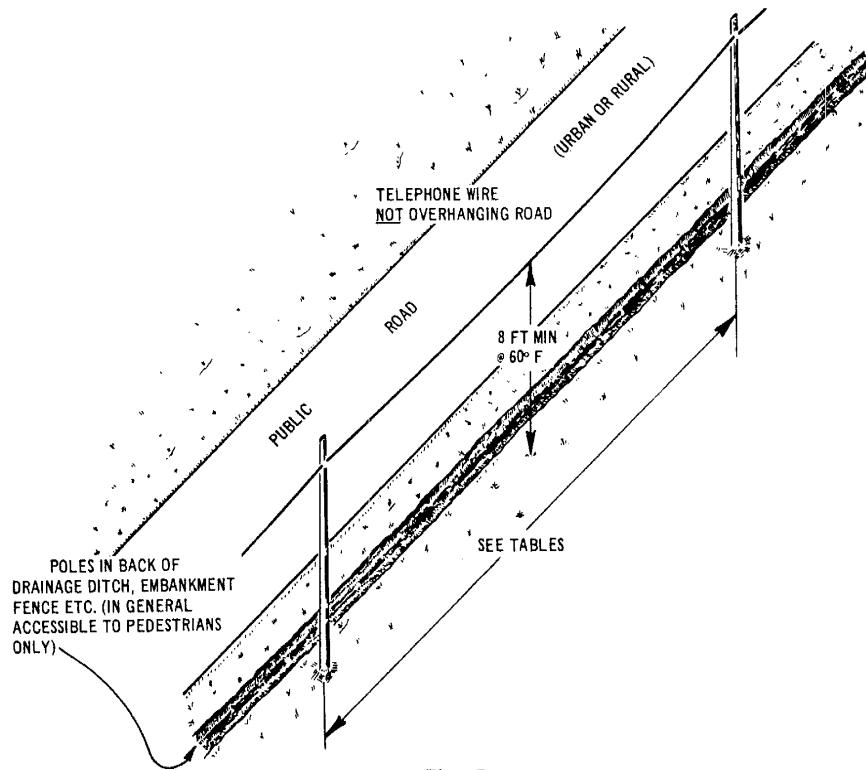


Fig. 5

RUNNING ALONG, BUT NOT OVERHANGING PUBLIC ROADS

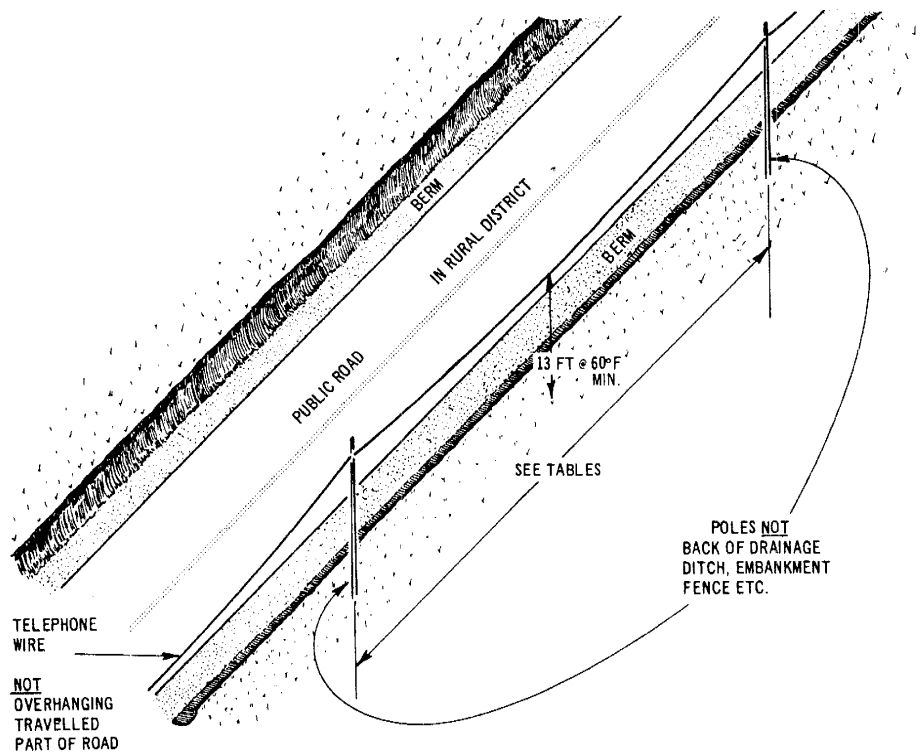


Fig. 6

2. CLEARANCES ABOVE GROUND OR RAILS (AT 60° F)

B. Span Lengths of 250 Feet or Less Using Minimum Sags

SITUATION	REF.	CONSTRUCTION				MAINTENANCE			
		170-LESS ft. in.	171-200 ft. in.	201-225 ft. in.	226-250 ft. in.	170-LESS ft. in.	171-200 ft. in.	201-225 ft. in.	226-250 ft. in.
Crossing Above: Railroad Tracks Generally Special Case	— Fig. 3	27-0 25-0	Must be supp. on 6M strand for spans over 125 feet.			(27-0) (25-0)	Must be supp. on 6M strand for spans over 125 feet.		
Public Roads Generally# Pole not over 50 ft. from far edge#	— Fig. 1	18-0 18-0	18-6 18-3	19-0 18-3	19-5 18-3	(18-0) (18-0)	(18-2) (18-0)	(18-7) (18-0)	(19-0) (18-0)
Public Alleys Generally Pole not over 50 ft. from far edge	— Fig. 1	15-0 15-0	15-6 15-3	16-0 15-3	16-5 15-3	(15-0) (15-0)	(15-2) (15-0)	(15-7) (15-0)	(16-0) (15-0)
Resid. Driveways Generally Pole not over 50 ft. from far edge	— Fig. 1	10-0 10-0	10-6 10-3	11-0 10-3	11-5 10-3	(10-0) (10-0)	(10-2) (10-0)	(10-7) (10-0)	(11-0) (10-0)
Flat Roof Bldgs.	—	8-0	8-4	8-5	8-5	(8-0)	(8-0)	(8-0)	(8-0)
Peak Roof Bldgs., Billboards	—	2-0	2-2	2-3	2-3	(2-0)	(2-0)	(2-0)	(2-0)
Neon Signs	—	4-0	4-4	4-5	4-5	(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 Major Overhang	Fig. 4	18-0	18-6	19-0	19-5	(18-0)	(18-2)	(18-7)	(19-0)
Minor Overhang Urban Rural (Lt. Traffic)	Fig. 4 — —	18-0 14-0	18-4 14-4	18-5 14-5	18-5 14-5	(18-0) (14-0)	(18-0) (14-0)	(18-0) (14-0)	(18-0) (14-0)
No Overhang Back of Obst. Not Back of Obst.	Fig. 5 Fig. 6	8-0 13-0	8-4 13-4	8-5 13-5	8-5 13-5	(8-0) (13-0)	(8-0) (13-0)	(8-0) (13-0)	(8-0) (13-0)
Public Alleys	—	15-0	15-4	15-5	15-5	(15-0)	(15-0)	(15-0)	(15-0)

For service drops over residential streets, these clearances may be reduced 2 feet at the edge of the road if required clearance is obtained at the center of the road (see Fig. 2).

2. CLEARANCES ABOVE GROUND OR RAILS (Continued)**B. Span Lengths of 251-300 Feet Using Minimum Sags**

SITUATION	REF.	CONSTRUCTION		MAINTENANCE	
		251-275 ft. in.	276-300 ft. in.	251-275 ft. in.	276-300 ft. in.
Crossing Above: Railroad Tracks Generally Special Case	— Fig. 3	Not recommended for these span lengths			
Public Roads Generally#	—	19-9	20-0	(19-3)	(19-6)
Pole not over 50 feet from far edge#	Fig. 1	18-3	18-3	(18-0)	(18-0)
Public Alleys Generally	—	16-9	17-0	(16-3)	(16-6)
Pole not over 50 feet from far edge	Fig. 1	15-3	15-3	(15-0)	(15-0)
Resid. Driveways Generally	—	11-9	12-0	(11-3)	(11-6)
Pole not over 50 feet from far edge	Fig. 1	10-3	10-3	(10-0)	(10-0)
Flat Roof Bldgs.	—	8-6	8-6	(8-0)	(8-0)
Peak Roof Bldgs., Billboards	—	2-3	2-3	(2-0)	(2-0)
Neon Signs	—	4-5	4-5	(4-0)	(4-0)
Waterways	—	To be shown on detail plans.			
Running Along: Public Roads Major Overhang	Fig. 4	19-9	20-0	(19-3)	(19-6)
Minor Overhang	Fig. 4				
Urban	—	18-9	19-0	(18-3)	(18-6)
Rural (Lt. Traffic)	—	14-9	15-0	(14-3)	(15-6)
No Overhang					
Back of Obst.	Fig. 5	8-6	8-6	(8-0)	(8-0)
Not Back of Obst.	Fig. 6	13-6	13-6	(13-0)	(13-0)
Public Alleys	—	15-9	16-0	(15-3)	(15-6)

For service drops over residential streets, these clearances may be reduced two feet at the edge of the road if required clearance is obtained at the center of the road (see Fig. 2).

3. CLEARANCES CROSSING BELOW POWER WIRES AND CABLES**Drop Wire Strung to Normal or Minimum Sags****CONSTRUCTION¹ CLEARANCES
FOR POWER SPAN LENGTHS OF:**

KIND OF POWER FACILITY	150-LESS ft. in.	151-200 ft. in.	201-250 ft. in.
300 Volts ² or Less			
Service Wires or Cables	2-0	2-6	3-0
Line Wires — Generally	2-0	2-6	3-0
If within 6 feet of telephone pole ³ (See Section 620-210-012)	4-0	4-6	5-0
301-750 Volts ² — Phase Wires	4-0	4-6	5-0
751-8700 Volts ²			
Phase Wires — Generally	4-0	4-6	5-0
If within 6 feet of telephone pole ³ (See Section 620-210-012)	6-0	6-6	7-0
8701-50,000 Volts ² — Phase Wires	6-0	6-6	7-0
If near telephone pole, see Section 620-210-012			
Grounded Neutrals — Systems of: Up to 22,000 Volts to Ground	2-0	2-6	3-0
Over 22,000 Volts to Ground	Same as Associated Phase Wires.		
Other Neutrals	Same as Associated Phase Wires.		
Grounded Metal Sheath Cables, Any Cables Lashed To Grounded Strand — Any Voltage	2-0	2-0	2-0
Spacer Cable ³			
300 Volts ² or Less — Generally	2-0	2-0	2-0
If within 6 feet of telephone pole ³	4-0	4-0	4-0
301-750 Volts ²	4-0	4-0	4-0
751-8700 Volts ² — Generally	4-0	4-0	4-0
If within 6 feet of telephone pole ³	6-0	6-0	6-0
8701-50,000 Volts ²	6-0	6-0	6-0

1. Maintenance clearances for all span lengths up to 250 feet are the same as construction clearances for span lengths of 150 feet and less.
2. Voltage to ground if power circuit is effectively grounded; voltage between wires if not.
3. Illustrated in Section 620-216-013.
4. *Every effort should be made to avoid these situations and establish a common crossing pole instead.*

4. MISCELLANEOUS CLEARANCES

Drop Wire Above:			
Power service drops or power line wires of 300 volts or less, foreign guys, foreign communications facilities, trolley span wires.			
SPAN LENGTH OF DROP WIRE (Ft.)	CLEARANCES IN FEET, INCHES		
	NORMAL SAGS	MINIMUM SAGS	
	CONST. and MTCE.	CONST.	MTCE.
170-less	2-0	2-0	(2-0)
171-200	2-0	2-4	(2-0)
201-250	2-0	2-5	(2-0)
Trolley Contact Wires of 750 Volts — Less			
170-less*	4-0	4-0	(4-0)
161-200*	4-0	4-4	(4-0)
201-250*	4-0	4-5	(4-0)
Drop Wire Below:			
Foreign Guys, Communications Cables† Any span length	2-0	2-0	(2-0)
Neon Signs Any span length	4-0	4-0	(4-0)
Drop Wire Alongside:			
Neon Signs Any span length	2-0	2-0	(2-0)

* Place wire guard at point of crossing.

† Span length of foreign cable not over 250 feet.