CLEARANCES FOR MULTIPLE LINE WIRE IN THE LIGHT LOADING AREA

CONTENTS PAGE

1. GENERAL

1.01 This section contains the recommended clearances for multiple line wires installed in the light loading area. The values specified meet the requirements of the National Electrical Safety Code (Sixth Edition). They apply under conditions of 60°F, with no wind or ice.

1.02 "Construction clearances" for span lengths over 300 feet generally contain some allowance for extra sag which will be introduced as a result of permanent stretching of the wire under storm loaded conditions. It should not be necessary to resag multiple line wire unless extremely severe storm loading is experienced. "Maintenance clearances" should exist after the wire has been exposed to one or more cycles of storm loading and the temperature returns to 60°F. Wire should be resagged, however, if clearances fall below maintenance values. Note, however, that sags increase as the temperature rises and clearances will, therefore, be less at say 90° than at 60°. The amounts by which clearances should be adjusted for temperature may be determined by comparing the sags shown for 60° with the sags shown for the actual temperature.

1.03 Note that clearances shown for wire overhanging the traveled part of roads are considerably larger than the clearances specified where no such overhang is involved. Also, clearances for wires crossing roads, alleys and driveways show one set of values for general use and another set of smaller values for use when one pole is within 50 feet of the far edge (as shown in Fig. 1). Pole height at road crossings, etc can often be reduced without unduly shortening span lengths by locating poles so as to stay within the 50 foot limit.

1.04 Where poles can be located so as to be within 50 feet of the far edge of a road, alley or driveway (as per Fig. 1), the low point of the span (generally the middle) will frequently fall beyond the edge of the road, etc. Thus, in determining the height of attachment it will not always be necessary to use 100 per cent of the midspan sag. The per cent of midspan sag to be used in this situation is shown in the table below.

SPAN LENGTH (ft.)	PER CENT OF MIDSPAN SAG
180-200	80
201-225	75
226-250	70
251-275	65
276-305	60
306-340	55
341-385	50
386-440	45
441-515	40
516-610	35
611-650	30

Example: A 415 foot span having a midspan sag of 78 inches crosses a residential driveway. The

nearest pole is within 50 feet of the far edge of the driveway and is on ground 2 feet lower than the driveway. The sag at 50 feet from the pole will be 45 per cent of midspan or about 35 inches. To obtain the required clearance of 10 feet 2 inches, the minimum height of pole attachment must be 10 feet 2 inches plus 2 feet plus 35 inches or 15 feet 1 inch.

1.05 Clearances shown in this section shall be used unless the detail plans specify other values. Clearances shown on the work print may be less than those shown in this section where engineering forces have recognized factors not allowed for in the tables. Clearances for span lengths and voltages not shown in this section are an engineering responsibility.

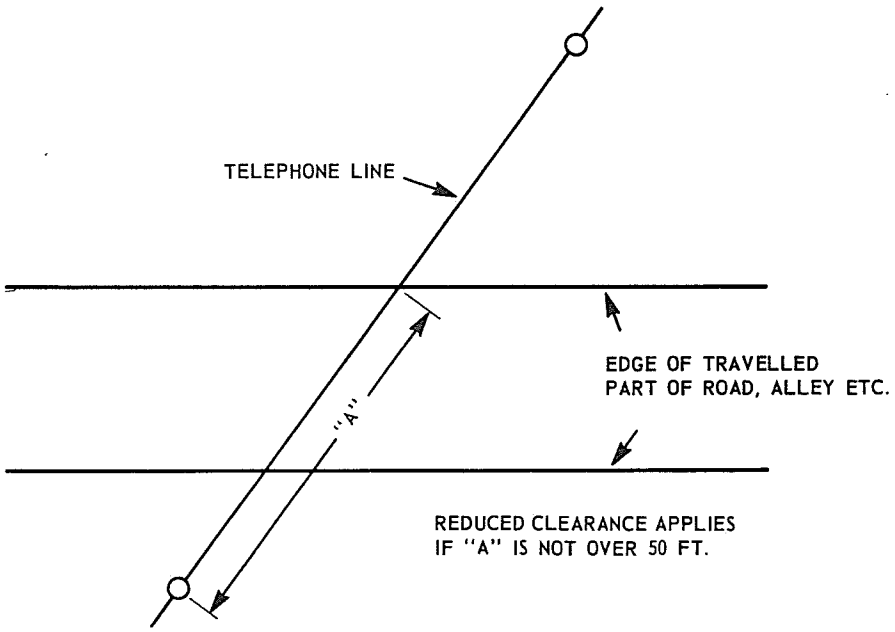

Fig. 1

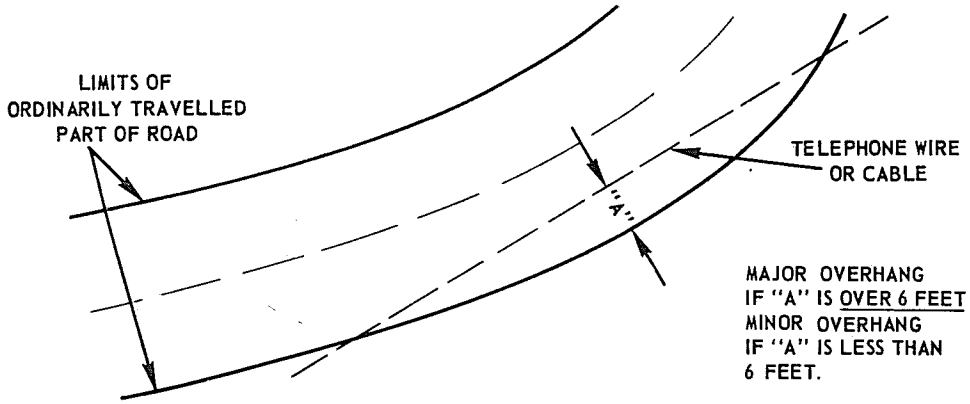

Fig. 2

2. CLEARANCES ABOVE GROUND OR RAILS

SPAN LENGTHS OF 450 FEET OR LESS

SITUATION	REF.	300-LESS		301-350		351-400		401-450	
		CONST ft. in.	(MTCE) ft. in.	CONST ft. in.	(MTCE) ft. in.	CONST ft. in.	(MTCE) ft. in.	CONST ft. in.	(MTCE) ft. in.
Crossing Above: Railroad Tracks Generally	—	25-0	(25-0)	{ Must be supported on 6M strand for spans up to 150 feet; spans over 150 feet require 10M.					
Public Roads Generally	—	18-0	(18-0)	18-1	(18-0)	18-8	(18-6)	19-6	(19-0)
Pole not over 50 ft. from far edge	Fig. 1	18-0	(18-0)	18-0	(18-0)	18-1	(18-0)	18-2	(18-0)
Public Alleys Generally	—	15-0	(15-0)	15-1	(15-0)	15-8	(15-6)	16-6	(16-0)
Pole not over 50 ft. from far edge	Fig. 1	15-0	(15-0)	15-0	(15-0)	15-1	(15-0)	15-2	(15-0)
Resid. Driveways Generally	—	10-0	(10-0)	10-1	(10-0)	10-8	(10-6)	11-6	(11-0)
Pole not over 50 ft. from far edge	Fig. 1	10-0	(10-0)	10-0	(10-0)	10-1	(10-0)	10-2	(10-0)
Flat Roof Bldgs.	—	8-0	(8-0)	8-1	(8-0)	8-2	(8-0)	8-6	(8-0)
Peak Roof Bldgs. Billboards	—	2-0	(2-0)	2-1	(2-0)	2-2	(2-0)	2-6	(2-0)
Neon Signs	—	4-0	(4-0)	4-1	(4-0)	4-2	(4-0)	4-6	(4-0)
Waterways	Must be shown on detail plans.								
Running Along: Public Roads Major Overhang	Fig. 2	18-0	(18-0)	18-1	(18-0)	18-8	(18-6)	19-6	(19-0)
Minor Overhang	Fig. 2								
Urban	—	18-0	(18-0)	18-1	(18-0)	18-8	(18-6)	19-6	(19-0)
Rural (Lt. Traffic)	—	14-0	(14-0)	14-1	(14-0)	14-8	(14-6)	15-6	(15-0)
No Overhang									
Back of Obst.	Fig. 3	8-0	(8-0)	8-1	(8-0)	8-2	(8-0)	8-6	(8-0)
Not back of Obst.	Fig. 4	13-0	(13-0)	13-1	(13-0)	13-2	(13-0)	13-6	(13-0)
Public Alleys	—	15-0	(15-0)	15-1	(15-0)	15-8	(15-6)	16-6	(16-0)

2. CLEARANCES ABOVE GROUND OR RAILS (Cont.)

SPAN LENGTHS 451-650 FEET

SITUATION	REF.	451-500 CONST ft. in.	451-500 (MTCE) ft. in.	501-550 CONST ft. in.	501-550 (MTCE) ft. in.	551-600 CONST ft. in.	551-600 (MTCE) ft. in.	601-650 CONST ft. in.	601-650 (MTCE) ft. in.
Crossing Above: Railroad Tracks Generally	—	Not recommended for these span lengths.							
Public Roads Generally	—	20-4	(19-6)	21-1	(20-0)	21-9	(20-6)	22-7	(21-0)
Pole not over 50 ft. from far edge	Fig. 1	18-3	(18-0)	18-3	(18-0)	18-4	(18-0)	18-8	(18-2)
Public Alleys Generally	—	17-4	(16-6)	18-1	(17-0)	18-9	(17-6)	19-7	(18-0)
Pole not over 50 ft. from far edge	Fig. 1	15-3	(15-0)	15-3	(15-0)	15-7	(15-3)	16-1	(15-7)
Resid. Driveways Generally	—	12-4	(11-6)	13-1	(12-0)	13-9	(12-6)	14-7	(13-0)
Pole not over 50 ft. from far edge	Fig. 1	10-4	(10-1)	10-9	(10-6)	11-3	(10-11)	11-9	(11-3)
Flat Roof Bldgs.	—	8-10	(8-0)	9-1	(8-0)	9-3	(8-0)	9-7	(8-0)
Peak Roof Bldgs. Billboards	—	2-10	(2-0)	3-1	(2-0)	3-3	(2-0)	3-7	(2-0)
Neon Signs	—	4-10	(2-0)	5-1	(4-0)	5-3	(4-0)	5-7	(4-0)
Waterways	Must be shown on detail plans.								
Running Along: Public Roads Major Overhang	Fig. 2	20-4	(19-6)	21-1	(20-0)	21-9	(20-6)	22-7	(21-0)
Minor Overhang	Fig. 2								
Urban	—	20-4	(19-6)	21-1	(20-0)	21-9	(20-6)	22-7	(21-0)
Rural (Lt. Traffic)	—	16-4	(15-6)	17-1	(16-0)	17-9	(16-6)	18-7	(17-0)
No Overhang									
Back of Obst.	Fig. 3	8-10	(8-0)	9-1	(8-0)	9-3	(8-0)	9-7	(8-0)
Not back of Obst.	Fig. 4	13-10	(13-0)	14-1	(13-0)	14-3	(13-0)	14-7	(13-0)
Public Alleys	—	17-4	(16-6)	18-1	(17-0)	18-9	(17-6)	19-7	(18-0)

RUNNING ALONG PUBLIC ROADS - BACK OF DITCHES ETC.
(NO OVERHANG)

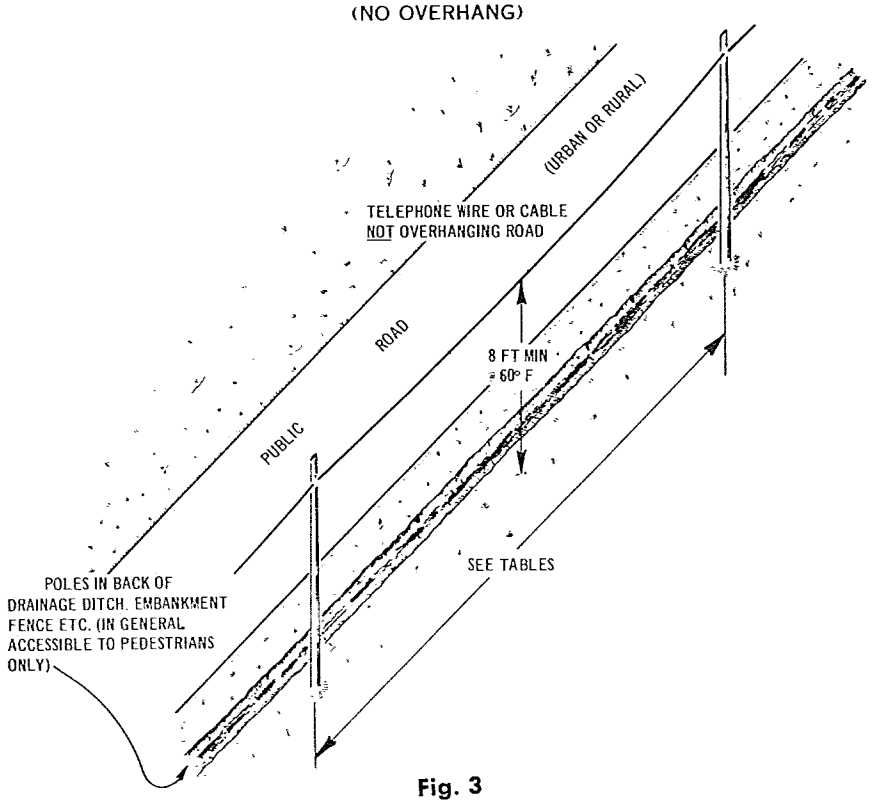

Fig. 3

RUNNING ALONG, BUT NOT OVERHANGING PUBLIC ROADS
(NOT BACK OF OBSTRUCTION)

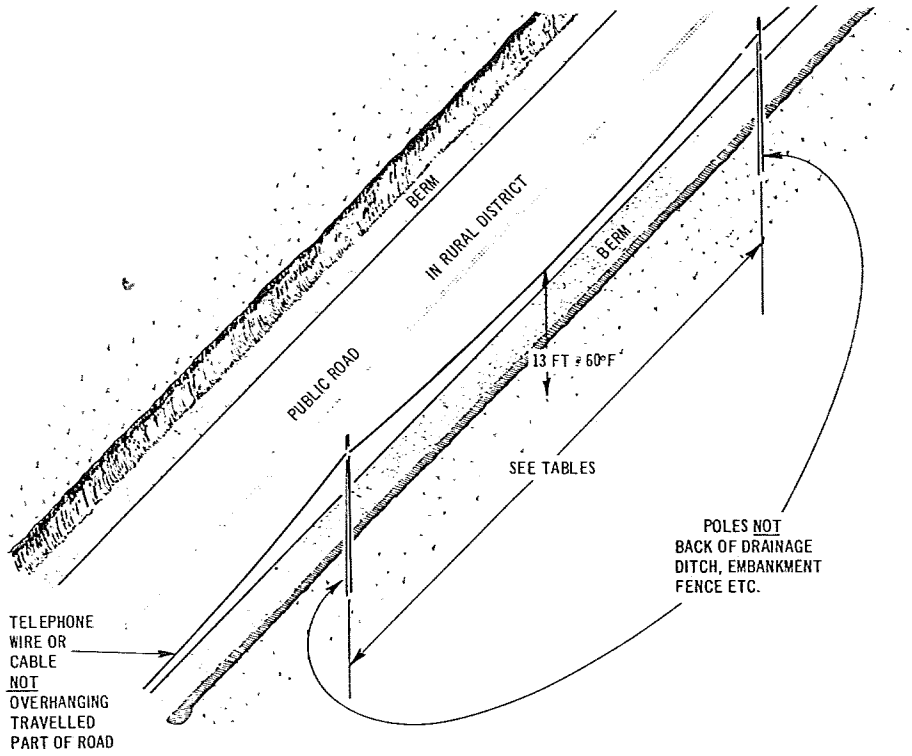

Fig. 4

3. CLEARANCES – CROSSING BELOW POWER WIRES AND CABLES

Multiple Line Wire Below:

KIND OF POWER FACILITY	CONSTRUCTION[3] CLEARANCES FOR POWER SPAN LENGTHS OF: 150-LESS ft. in.	151-250 ft. in.	251-350 ft. in.
300 Volts[1] or less			
Service wires or cables	2-0	2-3	2-6
Line wires	2-0	2-3	2-6
If within 6 feet of telephone pole[4] (See Section 620-210-012)	4-0	4-3	4-6
301-750 Volts[1] — Phase wires	4-0	4-3	4-6
751-8700 Volts[1] — Phase wires	4-0	4-3	4-6
If within 6 feet of telephone pole[4] (See Section 620-210-012)	6-0	6-3	6-6
8701-50,000 Volts[1] — Phase wires	6-0	6-3	6-6
Grounded neutrals — Systems of:			
Up to 22,000 volts to ground	2-0	2-3	2-6
Over 22,000 volts to ground	Same as associated phase wires		
Other neutrals	Same as associated phase wires		
Grounded metal sheath cables or any cable lashed to grounded strand, and voltage	2-0	2-0	2-0
Spacer cable [2]			
300 volts[1] or less	2-0	2-0	2-0
If within 6 feet of telephone pole[4]	4-0	4-0	4-0
301-750 volts[1]	4-0	4-0	4-0
751-8700 volts[1]	4-0	4-0	4-0
If within 6 feet of telephone pole[4]	6-0	6-0	6-0
8701-50,000 volts[1]	6-0	6-0	6-0

1. Voltage to ground if power circuit is grounded, voltage between wires if not.

2. Illustrated in Section 620-216-013.

3. Maintenance clearances for all span lengths up to 350 feet are the same as the construction clearances shown in the "150-less" column.

4. Every effort should be made to avoid these situations and establish a common pole crossing instead.

4. MISCELLANEOUS CLEARANCES

Multiple Line Wire Above:

Power service drops or power line wires of 300 volts or less, foreign guys, foreign communication cables, trolley span wires.

SPAN LENGTH OF MULTIPLE LINE WIRE (Feet)	CLEARANCE IN FEET, INCHES CONSTRUCTION	MAINTENANCE
300-less	2-0	2-0
301-350	2-1	2-1
351-400	2-11	2-9
401-450	4-0	3-6
451-500	4-10	4-3
Trolley contact wires 750 volts — less		
300-less*	4-0	4-0
Multiple Line Wire Below:		
Foreign guys or communications cables ⌀		
Any span length	2-0	2-0
Neon signs		
Any span length	4-0	4-0
Multiple Line Wire Alongside:		
Neon signs		
Any span length	2-0	2-0

* Place wire guard at point of crossing.

⌀ Span length of foreign cable not over 350 feet.