C RURAL WIRE
CLEARANCES
MEDIUM LOADING AREA

CONTENTS PAGE

1. GENERAL

1.01 This section covers the recommended clearances for C rural wire in the medium loading area. The values specified meet, and in some cases exceed, the requirements of the National Electrical Safety Code (1981 Edition). They apply under conditions of 60°F with no wind or ice. This section contains the information formerly contained in Section 624-700-016.

1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.

1.03 ***Construction*** clearances for span lengths over 200 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 C rural wire unless the storm loading is quite severe.

1.04 ***Maintenance*** clearances should exist after the wire has been through one or more cycles of storm loading and the temperature returns to 60°F. Wire should be resagged only if clearances at 60°F are less than the maintenance values shown in this section. Clearances above ground or fixed objects will, however, ***decrease*** as the temperature ***rises*** above 60°F, since the sag increases. The amount by which clearances should be adjusted for temperature may be determined by comparing the sags shown for the actual temperature with the sags shown for 60°F (Section 624-710-011).

1.05 The clearances shown for wire ***overhanging*** the traveled part of the road are considerably larger than clearances required where no such overhang is involved (Fig. 1).

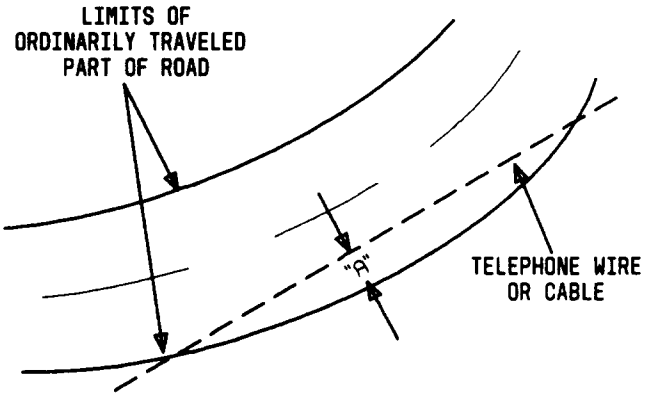


Fig. 1—Overhang—Running Along Public Roads

1.06 The clearances for ***wire crossing alleys, roads, etc,*** show one set of values for general use and a second (generally lower) set of values when one pole is within 50 feet of the edge of the road as shown in Fig. 2.

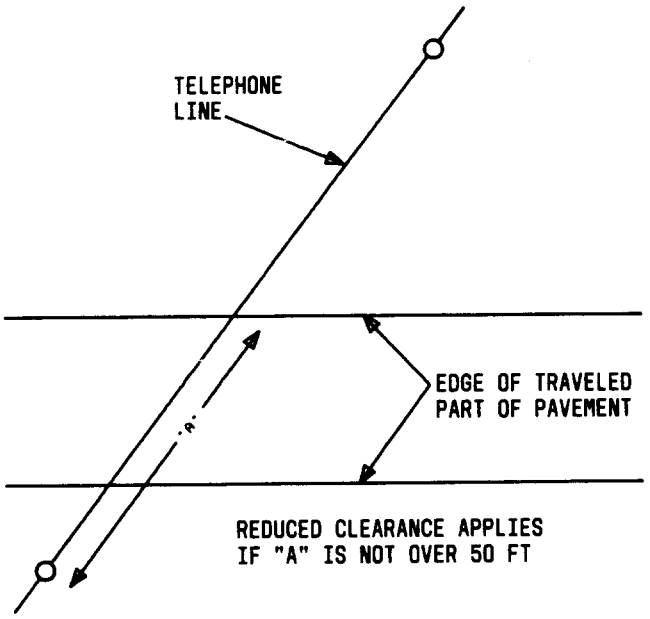


Fig. 2—Midspan Sag Diagram

1.07 Where poles can be located within 50 feet of the far edge as shown in Fig. 2, it will not always be necessary to base the height of attachment upon 100 percent of the midspan sag. The approximate percentage of sag which should be used in determining the height of pole attachments when Fig. 2 applies is shown below. This procedure should be ignored for spans under 180 feet.

SPAN (FT)	PERCENT 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
441-500	40

Example: A 400-foot span crossing a residential driveway has a sag of 30 inches. The far edge of the driveway is within 50 feet of the pole. The far edge of the driveway is 2 feet higher than the ground where the pole is located. The construction clearance is 11 feet 11 inches as described in Part 2. The sag 50 feet from the pole will be 45 percent of the midspan sag or 13-1/2 inches (use 14 inches). The minimum height of the pole attachment is then 11 feet 11 inches plus 2 feet plus 14 inches or 14 feet 1 inch.

1.08 Pole lines ***crossing private property*** (fields, woods, etc), and constructed before 1977, did not require specific clearances. The clearances for this construction was considered a "designer's choice" to accommodate the existing conditions. Very often clearances of 12, 14, or 16 feet were adequate for the terrain. The ***1977 National Electrical Safety Code*** specified that if wire or cable was added to such a facility, the new addition must have road crossing clearances of 18 feet at 60°F. The ***1981 Edition of the Code*** states the ***existing*** clearances can be maintained when facilities are added on lines built ***prior*** to 1977. For lines constructed ***after*** 1977, road crossing clearances must be maintained where pole lines cross fields, go through woods, etc. In either case, road crossing clearances must be maintained where pole lines cross nonresidential driveways.

1.09 To determine the ***clearances required from power conductors,*** 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 are generally considered to be effectively grounded.

Power companies occasionally attach the neutral ABOVE the phase wire as shown in Fig. 3. Therefore, it is important to identify the neutral wire before determining separation requirements. The neutral can usually be identified by observing the presence of the following.

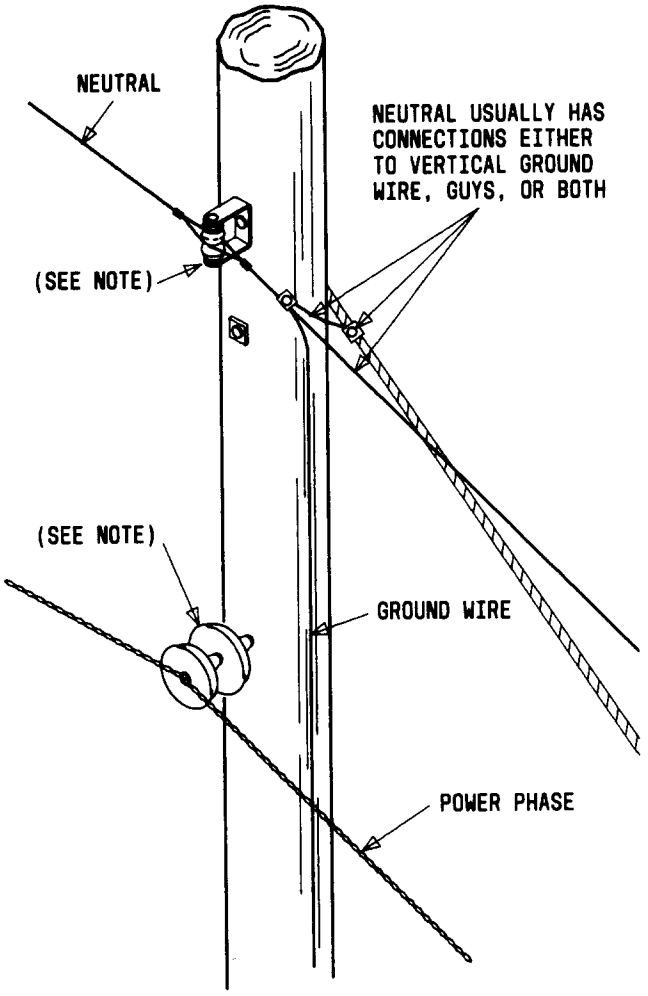
(a) ***The neutral is usually bonded to a vertical ground wire at least every 1300 feet and more often when transformers are present.***

(b) ***The neutral is normally bonded to power guys which do not contain insulators.***

(c) ***Neutrals are sometimes carried on smaller insulators than those carrying phase wires.***

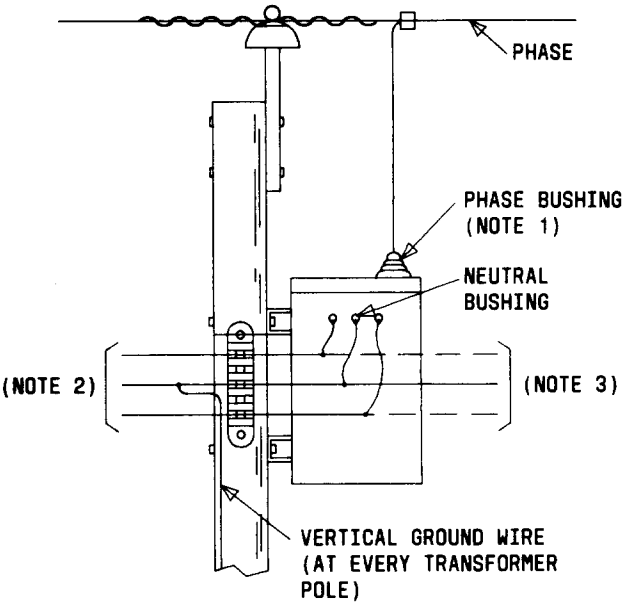
(d) ***The neutral is sometimes carried on a lighter-colored insulator than the phase wires.***

(e) ***On transformer poles, the bushing for the neutral is usually smaller than the bushing for the phase connection. The neutral bushing is often located near the secondary bushings (Fig. 4).***



NOTE:
COMPARE SIZE OF INSULATORS: NEUTRAL IS USUALLY ON SMALLER INSULATOR

Fig. 3—Inverted Power Construction



NOTES:
1. PHASE BUSHING IS USUALLY LARGER THAN NEUTRAL BUSHING.
2. NEUTRAL CAN BE ANY ONE OF THESE. POSITION DEPENDS ON WIRING AT TRANSFORMER.
3. NEUTRAL ALWAYS CARRIES THROUGH WHEN PHASE CARRIES THROUGH. SECONDARIES ARE DEAD ENDED IN SOME CASES.

Fig. 4—Identification of Neutral at Transformer Location

(f) ***Where secondaries are dead ended, if the phase wire is carried through, the neutral will also be carried through.***

Note: If, after considering these factors, sufficient identification of the neutral wire has not been made, consult your supervisor or the electric utility company. However, if the neutral is attached ***above*** the phase wire, provide the clearance specified for phase wires of appropriate voltage.

1.10 The clearances from streetlights show one value for grounded fixtures and a larger value for nongrounded fixtures. Streetlight fixtures bonded to cable suspension strand that is connected to a low-impedance ground or a ground wire of a multigrounded neutral (MGN) power system 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.

1.11 The clearances from grounded transformers, capacitors, etc, are smaller than for nongrounded transformers, etc. ***Since it is not generally possible to determine by sight whether or not power equipment is grounded, local instructions will designate areas where transformer and/or capacitor cases are grounded.***

1.12 Clearances shown in this section should be used unless the detail plans show other values. Clearances shown on the plans may be less than those shown in this section where engineering forces have recognized factors not allowed for in this section. Clearances for span lengths, voltages, and conditions not shown in this section are an engineering responsibility and will be shown on the detail plans.

Note: Work prints may, in some cases, show greater clearances since the values recommended are based upon a maximum vehicle or equipment height of 14 feet. In cases where greater equipment height might be expected, the engineer may elect to show greater clearances.

2. CLEARANCES ABOVE GROUND OR RAILS

2.01 The required C rural wire clearances above various ground or rail environment and in relation to span lengths are shown in Table A. Figures 1, 2, 5, 6, and 7 are referenced in Table A.

TABLE A

SITUATION	REF	155-LOW		156-175		176-200		201-225		226-250	
		CONST FT IN.	(MTCE) FT IN.	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	-	27-0	(27-0)	Must be supported on 6M strand if span length exceeds 125 feet.							
Special Case	Fig. 5	25-0	(25-0)								
Public Roads											
Generally	Fig. 7	18-0	(18-0)	18-6	(18-6)	19-2	(19-2)	20-0	(19-11)	20-10	(20-8)
Pole not over 50 ft from far edge	Fig. 2	18-0	(18-0)	18-0	(18-0)	18-2	(18-2)	18-6	(18-6)	18-9	(18-8)
Public Alleys											
Generally	Fig. 7	15-0	(15-0)	15-6	(15-6)	16-2	(16-2)	17-0	(16-11)	17-10	(17-8)
Pole not over 50 ft from far edge	Fig. 2	15-0	(15-0)	15-0	(15-0)	15-2	(15-2)	15-6	(15-6)	15-9	(15-8)
Residential Driveways											
Generally	.	10-0	(10-0)	10-6	(10-6)	11-2	(11-2)	12-0	(11-11)	12-10	(12-8)
Pole not over 50 ft from far edge	Fig. 2	10-0	(10-0)	10-0	(10-0)	10-2	(10-2)	10-6	(10-6)	10-9	(10-8)
Flat Roof Bldgs	.	8-0	(8-0)	8-0	(8-0)	8-0	(8-0)	8-1	(8-0)	8-2	(8-0)
Peak Roof Bldgs											
Billboards	.	2-0	(2-0)	2-0	(2-0)	2-0	(2-0)	2-0	(2-0)	2-1	(2-0)
Neon Signs*	.	4-0	(4-0)	4-0	(4-0)	4-0	(4-0)	4-0	(4-0)	4-1	(4-0)
Waterways	Must be shown on detail plans.										
Running Along:											
Public Roads											
Major Overhang	Fig. 1	18-0	(18-0)	18-6	(18-6)	19-2	(19-2)	20-0	(19-11)	20-10	(20-8)
Minor Overhang	Fig. 1 †										
Urban		18-0	(18-0)	18-0	(18-0)	18-0	(18-0)	18-1	(18-0)	18-2	(18-0)
Rural (Lt Traffic)		14-0	(14-0)	14-0	(14-0)	14-0	(14-0)	14-1	(14-0)	14-2	(14-0)
Crossing Parking Lots (Including Roof Top Lots)	‡	18-0	(18-0)	18-0	(18-0)	18-0	(18-0)	18-0	(18-0)	18-0	(18-0)
No Overhang											
Back of Obstr	Fig. 6	8-0	(8-0)	8-0	(8-0)	8-0	(8-0)	8-1	(8-0)	8-2	(8-0)
Not Back of Obstr		13-0	(13-0)	13-0	(13-0)	13-0	(13-0)	13-1	(13-0)	13-2	(13-0)
Public Alleys	.	15-0	(15-0)	15-0	(15-0)	15-0	(15-0)	15-1	(15-0)	15-2	(15-0)

* Wire guard required if span length exceeds 200 feet and pole is over 50 feet from neon sign.

† Provide the same clearances where crossing grazing land, cultivated land, forests, or orchards.

‡ Exception: Where the span length does not exceed 150 feet, provide at least 15 feet clearance at 60°F.

TABLE A (Contd)

SITUATION	REF	251-275		275-300		301-325		326-350	
		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 Special Case		Not recommended for these span lengths.							
Public Roads									
Generally	Fig. 7	21-8	(21-6)	22-6	(22-3)	To be shown on plans.			
Pole not over 50 ft from far edge	Fig. 2	18-11	(18-11)	19-2	(19-1)	19-5	(19-2)	19-7	(19-3)
Public Alleys									
Generally	Fig. 7	18-8	(18-6)	19-6	(19-3)	20-0	(20-0)	21-2	(20-10)
Pole not over 50 ft from far edge	Fig. 2	15-11	(15-11)	16-2	(16-1)	16-5	(16-2)	16-7	(16-3)
Residential Driveways									
Generally	.	13-8	(13-6)	14-6	(14-3)	15-4	(15-0)	16-2	(15-10)
Pole not over 50 ft from far edge	Fig. 2	10-11	(10-11)	11-2	(11-1)	11-4	(11-2)	11-7	(11-3)
Flat Roof Bldgs	.	8-2	(8-0)	8-3	(8-0)	8-4	(8-0)	8-4	(8-0)
Peak Roof Bldgs									
Billboards	.	2-1	(2-0)	2-2	(2-0)	2-2	(2-0)	2-4	(2-0)
Neon Signs*	.	4-1	(4-0)	4-2	(4-0)	4-2	(4-0)	4-4	(4-0)
Waterways	.	Must be shown on detail plans.							
Running Along:									
Public Roads									
Major Overhang	Fig. 1	21-8	(21-6)	22-6	(22-3)	23-4	(23-0)	24-2	(23-10)
Minor Overhang	Fig. 1								
Urban		18-5	(18-3)	18-9	(18-6)	19-1	(18-9)	19-7	(19-0)
Rural (Lt Traffic)		14-5	(14-3)	14-9	(14-6)	15-1	(14-9)	15-7	(15-0)
No Overhand									
Back of Obstr	Fig. 6	8-2	(8-0)	8-3	(8-0)	8-4	(8-0)	8-4	(8-0)
Not Back of Obstr		13-2	(13-0)	13-3	(13-0)	13-4	(13-0)	13-7	(13-0)
Public Alleys	.	15-5	(15-3)	15-9	(15-6)	16-1	(15-9)	16-7	(16-0)

* Wire guard required if pole is over 50 feet from neon sign.

TABLE A (Contd)

SITUATION	REF	351-375		375-400		401-425		426-450	
		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 Special Case		Not recommended for these span lengths.							
Public Roads									
Generally	Fig. 7	To be shown on detail plans.							
Pole not over 50 ft from far edge	Fig. 2	19-8	(19-5)	19-11	(19-8)	20-1	(19-9)	20-4	(19-11)
Public Alleys									
Generally	Fig. 7	22-3	(21-9)	23-4	(22-8)	24-4	(23-6)	25-7	(24-8)
Pole not over 50 ft from far edge	Fig. 2	16-8	(16-5)	16-11	(16-8)	17-1	(16-9)	17-4	(16-11)
Residential Driveways									
Generally	.	17-3	(16-9)	18-4	(17-8)	19-4	(18-6)	20-7	(19-8)
Pole not over 50 ft from far edge	Fig. 2	11-8	(11-5)	11-11	(11-8)	12-1	(11-9)	12-4	(11-19)
Flat Roof Bldgs	.	8-3	(8-0)	8-4	(8-0)	8-5	(8-0)	8-6	(8-0)
Peak Roof Bldgs Billboards	.	2-3	(2-0)	2-4	(2-0)	2-5	(2-0)	2-6	(2-0)
Neon Signs*	.	4-3	(4-0)	4-4	(4-0)	4-5	(4-0)	4-6	(4-0)
Waterways	.	Must be shown on detail plans.							
Running Along:									
Public Roads									
Major Overhang	Fig. 1	25-3	(24-9)	26-4	(25-6)	27-4	(26-6)	28-7	(27-8)
Minor Overhang	Fig. 1								
Urban	.	19-9	(19-3)	20-2	(19-6)	20-7	(19-9)	21-1	(20-0)
Rural (Lt Traffic)	.	15-9	(15-3)	16-2	(15-6)	16-7	(15-9)	17-1	(16-0)
No Overhand									
Back of Obstr	Fig. 6	8-3	(8-0)	8-4	(8-0)	8-5	(8-0)	8-6	(8-0)
Not Back of Obstr		13-6	(13-0)	13-8	(13-0)	13-10	(13-0)	14-4	(13-0)
Public Alleys	.	16-9	(16-3)	17-2	(16-6)	17-7	(16-9)	17-11	(17-0)

* Wire guard required if pole is over 35 feet from neon sign.

TABLE A (Contd)

SITUATION	REF	451-475		475-500		501-525		526-550	
		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 Special Case		Not recommended for these span lengths.							
Public Roads									
Generally	Fig. 7	To be shown on detail plans.							
Pole not over 50 ft from far edge	Fig. 2	20-6	(20-1)	20-8	(20-2)	20-10	(20-3)	21-0	(20-3)
Public Alleys									
Generally	Fig. 7	26-8	(25-7)	27-10	(26-5)	28-11	(27-2)	30-2	(28-0)
Pole not over 50 ft from far edge	Fig. 2	17-6	(17-1)	17-8	(17-2)	17-10	(17-3)	18-0	(17-3)
Residential Driveways									
Generally	.	21-8	(20-7)	22-10	(21-5)	23-11	(22-2)	25-2	(23-0)
Pole not over 50 ft from far edge	Fig. 2	12-6	(12-1)	12-8	(12-2)	12-10	(12-3)	13-0	(12-3)
Flat Roof Bldgs	.	8-7	(8-0)	8-8	(8-0)	8-10	(8-0)	9-1	(8-0)
Peak Roof Bldgs									
Billboards	.	2-7	(2-0)	2-8	(2-0)	2-10	(2-0)	3-1	(2-0)
Neon Signs*	.	4-7	(4-0)	4-8	(4-0)	4-10	(4-0)	5-1	(4-0)
Waterways	.	Must be shown on detail plans.							
Running Along:									
Public Roads									
Major Overhang	Fig. 1	29-8	(28-7)	30-10	(29-5)	31-11	(30-5)	33-2	(31-0)
Minor Overhang	Fig. 1								
Urban	.	21-4	(20-3)	21-11	(20-6)	22-6	(20-9)	23-2	(21-0)
Rural (Lt Traffic)	.	17-4	(16-3)	17-11	(16-6)	18-6	(16-9)	19-2	(17-0)
No Overhang									
Back of Obstr	Fig. 6	8-7	(8-0)	8-8	(8-0)	8-10	(8-0)	9-1	(8-0)
Not Back of Obstr		14-1	(13-0)	14-1	(13-0)	14-1	(13-0)	14-1	(13-0)
Public Alleys	.	18-4	(17-3)	18-11	(17-6)	19-6	(17-9)	20-2	(18-0)

* Wire guard required if pole is over 35 feet from neon sign.

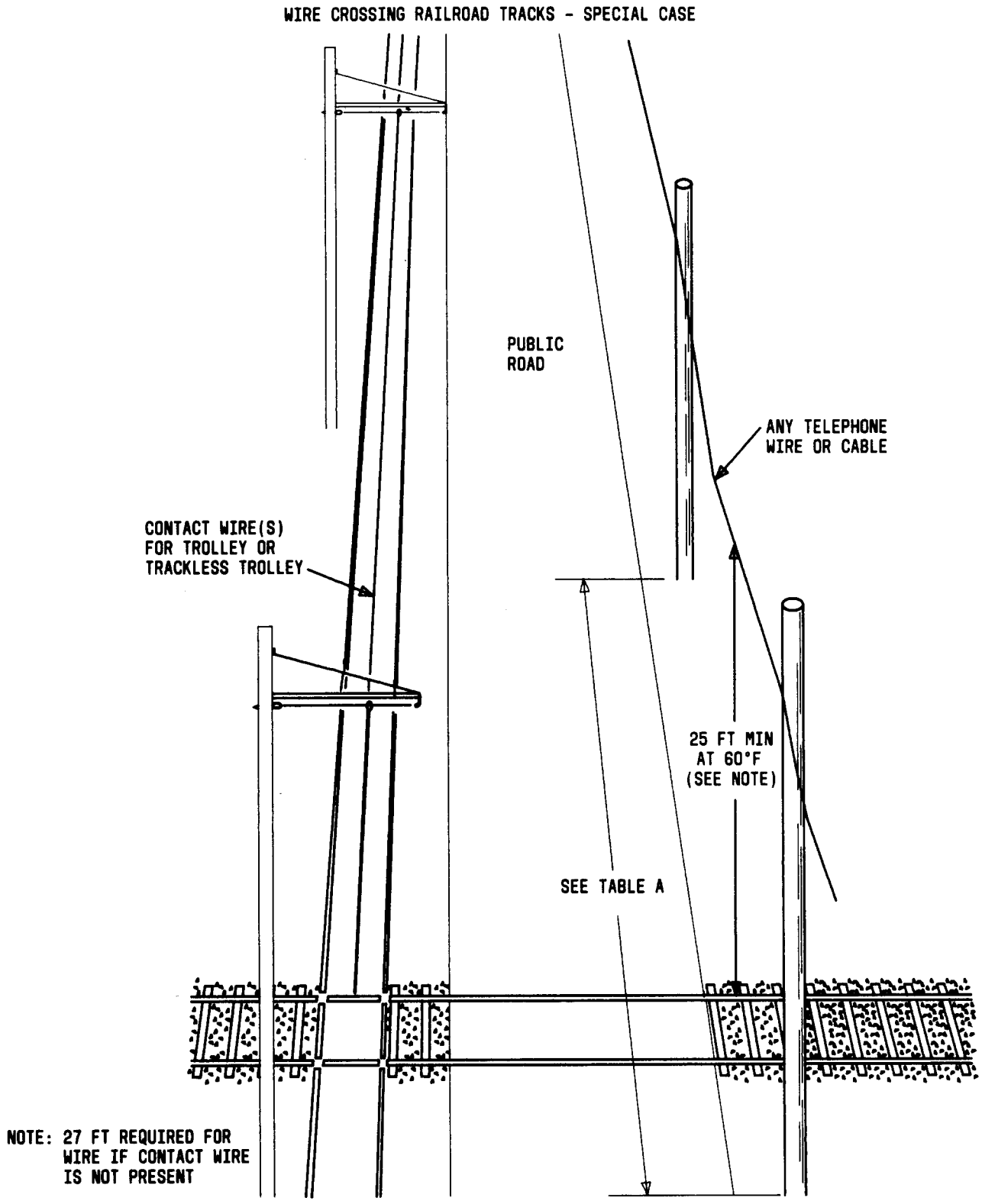


Fig. 5—Wire Crossing Railroad Tracks—Special Case

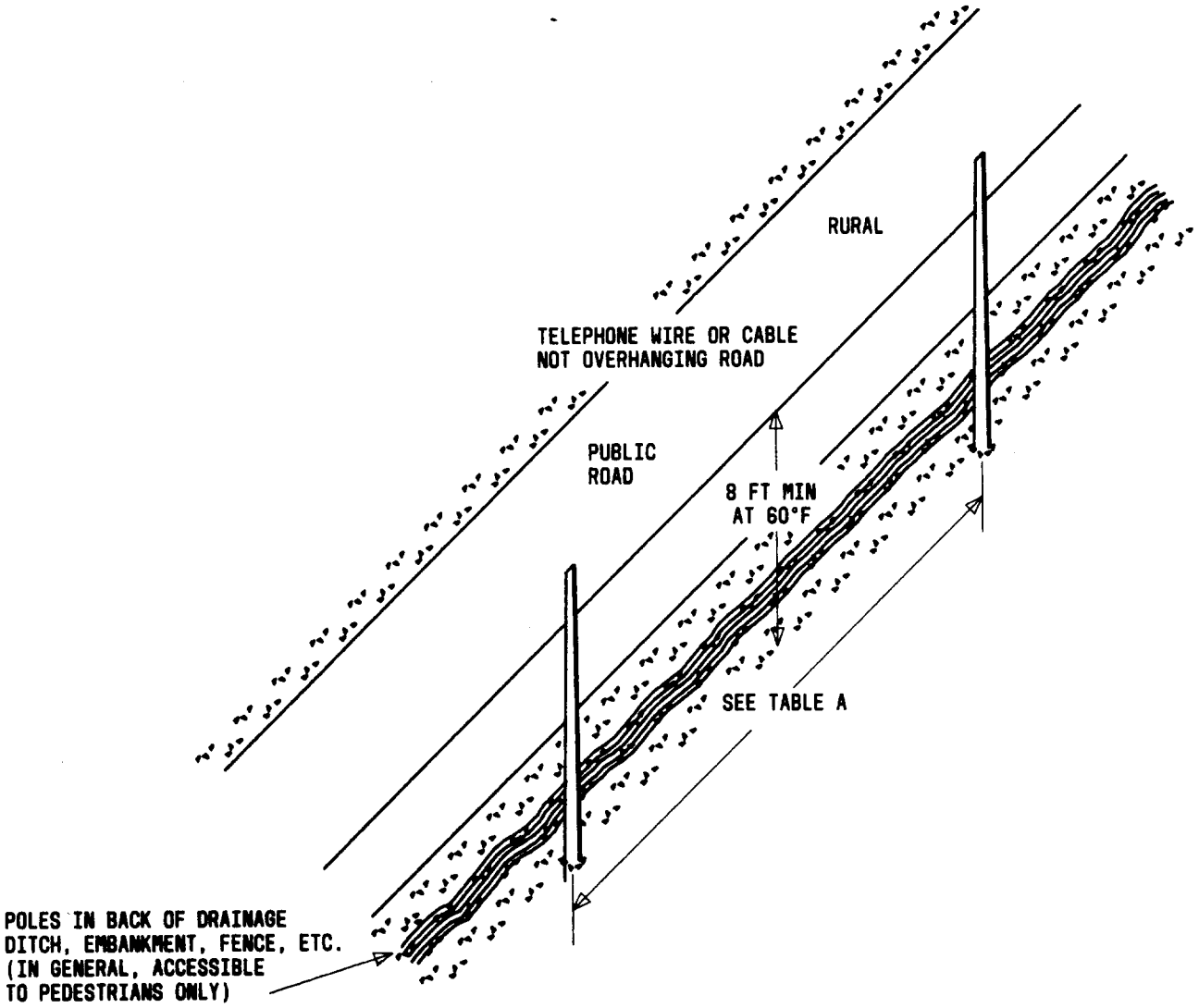


Fig. 6—Running Along Rural Public Roads, Back of Ditches, Etc (No Overhang)

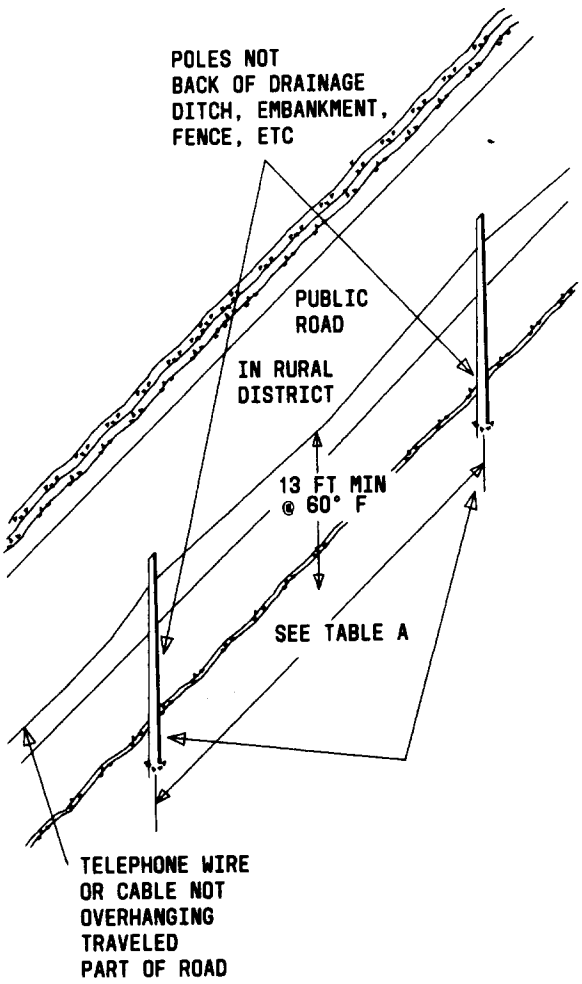
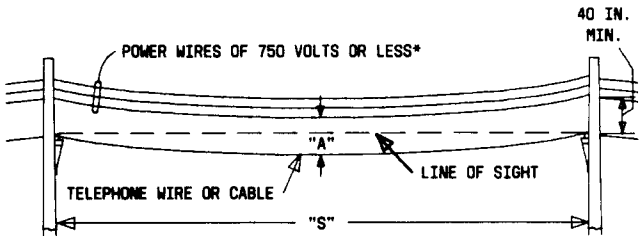


Fig. 7—Running Along But Not Overhanging Public Roads (Not Back of Obstruction)

3. JOINT-USE SEPARATION IN THE SPAN AND ON THE POLE FROM POWER CONDUCTORS

3.01 Clearance requirements between C rural wire and power conductors of 750 volts or less are shown in Fig. 8.



750 VOLTS OR LESS: INCLUDES NEUTRALS, OTHER THAN MULTIGROUNDED, ASSOCIATED WITH CONDUCTORS OF 750 VOLTS OR LESS			
SPAN LENGTH (S) IN FEET	MIDSPAN SEPARATION (A) IN INCHES		MINIMUM CLEARANCE AT THE POLE IN INCHES (NOTE)
	CONSTRUCTION	MAINTENANCE	
150 or Less	36	30	40
150-200	40 or sag of tel plus 10 if greater*	30 or sag of tel wire if greater*	40
200-250	48 or sag of tel wire plus 18 if greater*	30 or sag of tel wire if greater*	40

NOTE: May have to be greater than 40 inches to meet midspan requirements.

* Lowest power wire must be above the line of sight.

Fig. 8—Separation—750 Volts or Less

Example:

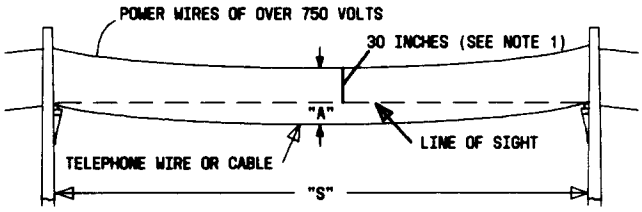
Span length is 250 feet.

Power secondaries have a 30-inch sag.

Telephone wire has a 42-inch sag.

Required separation at midspan is 48 inches or sag of telephone wire + 18 inches, if this is larger. Since 42 + 18 is 60 inches and this is larger than 48, the required midspan separation is 60 inches. Standard 40-inch separation at the pole will provide (40 − 30) + 42, or 52 inches, which is 8 inches short. Separation at pole must be 40 + 8 or 48 inches.

3.02 Clearance requirements between C rural wire and power conductors of over 750 volts are shown in Fig. 9.



GROUNDED POWER SYSTEMS OF UP TO 15,000 VOLTS BETWEEN WIRES (8700 VOLTS TO GROUND) AND OTHER SYSTEMS OF UP TO 8700 VOLTS BETWEEN LINES			
SPAN LENGTH (S) IN FEET	MIDSPAN SEPARATION (A) IN INCHES		MINIMUM CLEARANCE AT THE POLE IN INCHES (Note 2)
	CONSTRUCTION	MAINTENANCE	
150-Less	36	30	40
150-200	40 plus sag of tel wire	30 plus sag of tel wire	40
200-250	48 plus sag of tel wire	30 plus sag of tel wire	40
† GROUNDED POWER SYSTEMS OF 15,000-86,500 VOLTS BETWEEN WIRES (8700-50,000 VOLTS TO GROUND) AND OTHER SYSTEMS OF 8700-50,000 VOLTS BETWEEN LINES			
150-Less	51	45	60
150-200	55 or tel wire sag plus 40 if greater	45 of tel wire sag plus 30 if greater	60
200-250	63 or tel wire sag plus 48 if greater	45 or tel wire sag plus 30 if greater	60

Notes:
1. Power wires must be at least 30 inches above the line of sight if "S" exceeds 150 feet.
2. Clearance at the pole is minimum. Greater clearance may be necessary to meet midspan requirements.

Fig. 9—Separation—Over 750 Volts

Example:

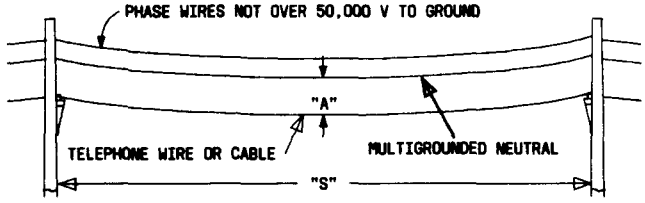
Span length is 250 feet.

Power conductors carry 34,000 volts between wires (20,000 volts to ground) and have a 36-inch sag.

Telephone wire has a 40-inch sag.

Required midspan separation is 63 inches or telephone sag + 48, if larger. The latter 40 + 36 or 76 inches is greater than 63 inches and therefore controls. Note that the standard 60-inch spacing at the pole will provide (60 − 36) + 40 or 64 inches which is 12 inches less than the required 76 inches. The spacing at the pole would have to be increased to 72 inches.

3.03 Clearance requirements between C rural wire and multigrounded neutrals are shown in Fig. 10.



22,000 VOLTS OR LESS TO GROUND 38,000 VOLTS OR LESS BETWEEN WIRES			
SPAN LENGTH (S) IN FEET	MIDSPAN SEPARATION (A) IN INCHES		CLEARANCE AT THE POLE IN INCHES (NOTE 1)
	CONSTRUCTION	MAINTENANCE	
150 or Less	36	30	40
150-200	40	30	40
200-250	48	30	40
22,000 TO 50,000 VOLTS TO GROUND 38,000 TO 86,500 VOLTS BETWEEN WIRES (NOTE 2)			
150 or Less	51	45	60
150-200	55	45	60
200-250	63	45	60

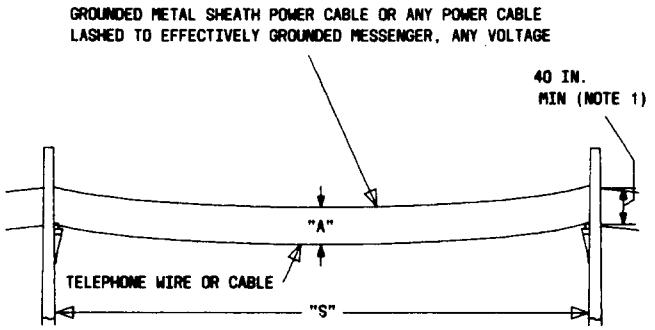
Notes:

1. Clearance at the pole is minimum. Greater clearance may be necessary to meet midspan requirements.
2. Joint use involving C rural is not recommended for voltages above 60 KV phase to phase (34.6 KV to ground) for multigrounded neutrals circuit. For nonmultigrounded neutrals circuits, maximum voltage for joint use is 5 KV.

Fig. 10—Separation—Multigrounded Neutrals

3.04 Clearance requirements between C rural wire and power cables (except spacer cables) are shown in Fig. 11.

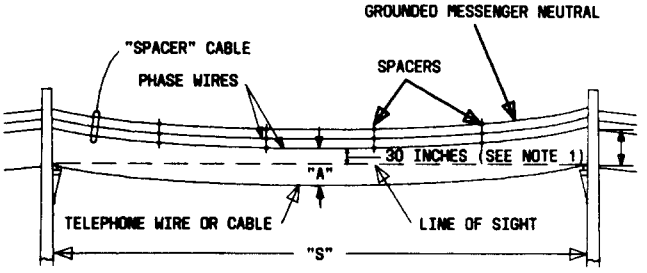
3.05 Clearance requirements between C rural wire and spacer-type power cables are shown in Fig. 12.



GROUNDED POWER CABLE (EXCEPT SPACER CABLE) GROUNDED METALLIC SHEATH, NONMETALLIC SHEATH CABLES LASHED TO GROUNDED MESSENGER, ETC		
SPAN LENGTH (S) IN FEET	MIDSPAN SEPARATION (A) IN INCHES CONSTRUCTION AND MAINTENANCE	CLEARANCE AT THE POLE IN INCHES (NOTE 1)
Any	30	40
NONGROUNDED POWER CABLES (NOTE 2) 8700 VOLTS OR LESS		
Any	30	40
NONGROUNDED POWER CABLES (NOTE 2) 8700 - 50,000 VOLTS		
Any	45	60

Notes:
1. Clearance at the pole is minimum. Greater clearance may be necessary to meet midspan requirements.
2. Generally excludes spacer cable since the supporting messenger is usually grounded.

Fig. 11—Separation—Power Cables



SYSTEMS OF: 8700 VOLTS OR LESS TO GROUND 15,000 VOLTS OR LESS BETWEEN WIRES		
SPAN LENGTH (S) IN FEET	MIDSPAN SEPARATION (A) IN INCHES CONSTRUCTION AND MAINTENANCE	CLEARANCE AT THE POLE IN INCHES (NOTE 2)
150 or Less	30	40
151-Over	30 plus sag of tel	40
8700 - 50,000 VOLTS TO GROUND 15,000 - 86,500 VOLTS BETWEEN WIRES		
150 or Less	45	60
151 and Over	45 or if larger, 30 plus sag of tel	60

Notes:
1. Power wires must be at least 30 inches above the line of sight if "S" exceeds 150 feet.
2. Clearance at the pole is minimum. Greater clearance may be necessary to meet midspan requirements.

Fig. 12—Separation—Spacer Cables

4. CLEARANCES ON JOINT-USE POLES—OTHER

4.01 Clearances from power transformers, voltage regulators, capacitors, pins, racks, and crossarms are shown in Table B. Tables C and D and Fig. 13 and 14 are referenced in Table B.

TABLE B

POWER FACILITY	SEE TABLE	FIG. OR NOTE
Power transformers, capacitors, regulators	C	Fig. 13
Secondary racks		Fig. 14
Steel Pins		
Metal crossarm braces: Attached to metal crossarms within 1 inch of nongrounded transformer, capacitor cases, or their supports	C	Fig. 13
Attached to wood crossarms less than 1 inch below top of arm		
Attached to wood crossarm 1 inch or more from nongrounded transformer, etc	D	Fig. 13

TABLE C

FOR GROUNDED POWER CIRCUITS		
VOLTAGE TO GROUND	VOLTAGE BETWEEN LINES	CLEARANCE (INCHES)
8700V or Less	15,000V or Less	40*
8701V – 50,000V	15,001V – 60,000V	60*
FOR OTHER POWER CIRCUITS		
–	5000V or Less	40

* May be 30 inches if case is effectively grounded as a uniform procedure over a well-defined area.

TABLE D

FOR GROUNDED POWER CIRCUITS		
VOLTAGE TO GROUND	VOLTAGE BETWEEN LINES	CLEARANCE (INCHES)
8700V or Less	15,000V or Less	12
8701V – 50,000V	15,001V – 86,500V	30
FOR OTHER POWER CIRCUITS		
–	8700V or Less	12
–	8701V – 50,000V	30

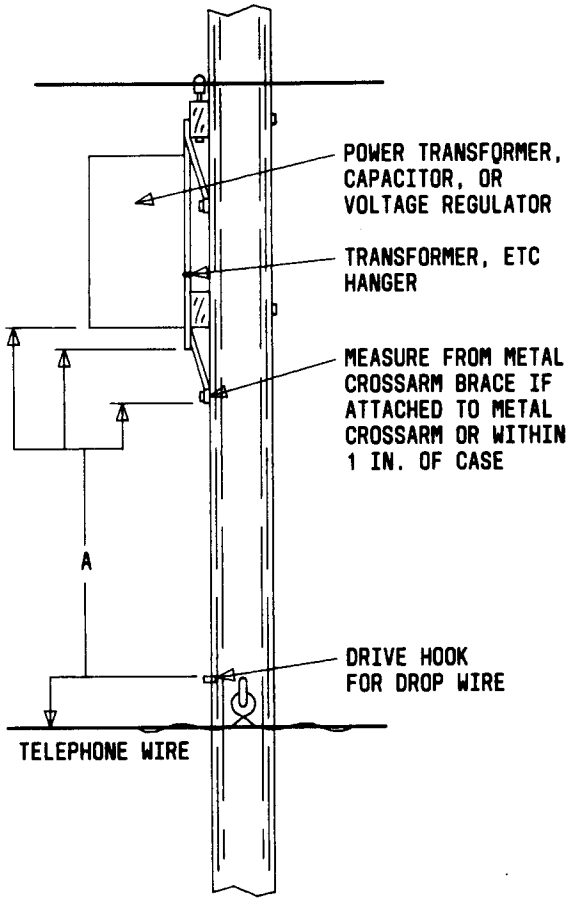
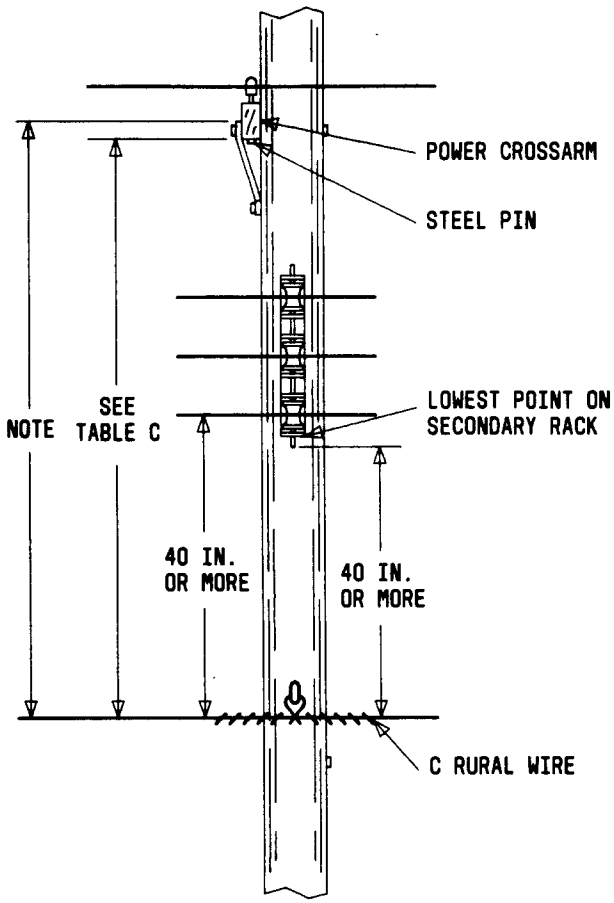


Fig. 13—Vertical Clearance From Power Transformers, Crossarm Braces, Etc



NOTE:
FOR GROUNDED CIRCUITS 8700V OR LESS NEED 48 IN., FOR 8701V TO 50,000V NEED 72 IN. VOLTAGES STATED ARE PHASE TO GROUND.

Fig. 14—Vertical Clearance From Secondary Racks, Steel Pins, and Crossarms

4.02 Clearances from streetlights, traffic lights, trolley wires and associated fixtures, brackets, and wiring are shown in Table E. Figures 15, 16, and 17 are referenced from Table E.

TABLE E

FACILITY	CLEARANCE IN INCHES	
	GROUNDED	NOT GROUNDED
STREETLIGHT FIXTURES AND ASSOCIATED WIRING (FIG. 15 AND 16)		
Streetlight fixtures and span wires above or below tel*	4	20
Drip loop entering fixture from surface of pole	12	
Vertical feed on pins and insulators	6	
Vertical feed on surface of pole	2-minimum 1/8 pole circumference generally	
Vertical feed from crossarm to fixture 40 inches from pole	20	
TRAFFIC LIGHT FIXTURES AND ASSOCIATED WIRING		
Traffic light fixtures and span wires	4	20
Vertical runs for traffic light fixtures and controls	Same clearances as power vertical runs	
TROLLEY SPAN WIRES AND BRACKETS (FIG. 17)		
Span wires and brackets	4	4

* If voltage is ≤ 150V to ground when luminaire is below messenger. If voltage is > 150V and luminaire is below, 20 inches is required.

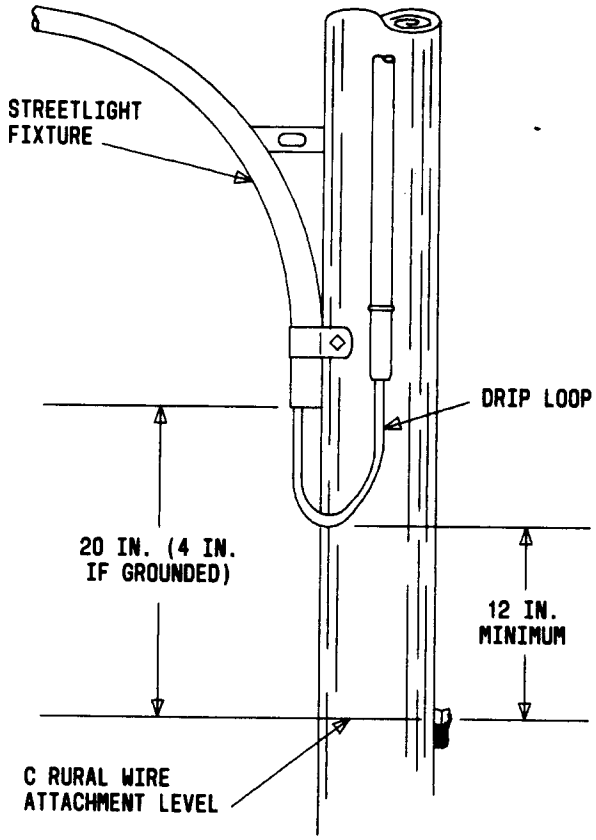


Fig. 15—Clearance From Streetlight Fixture Drip Loop Above C Rural Wire

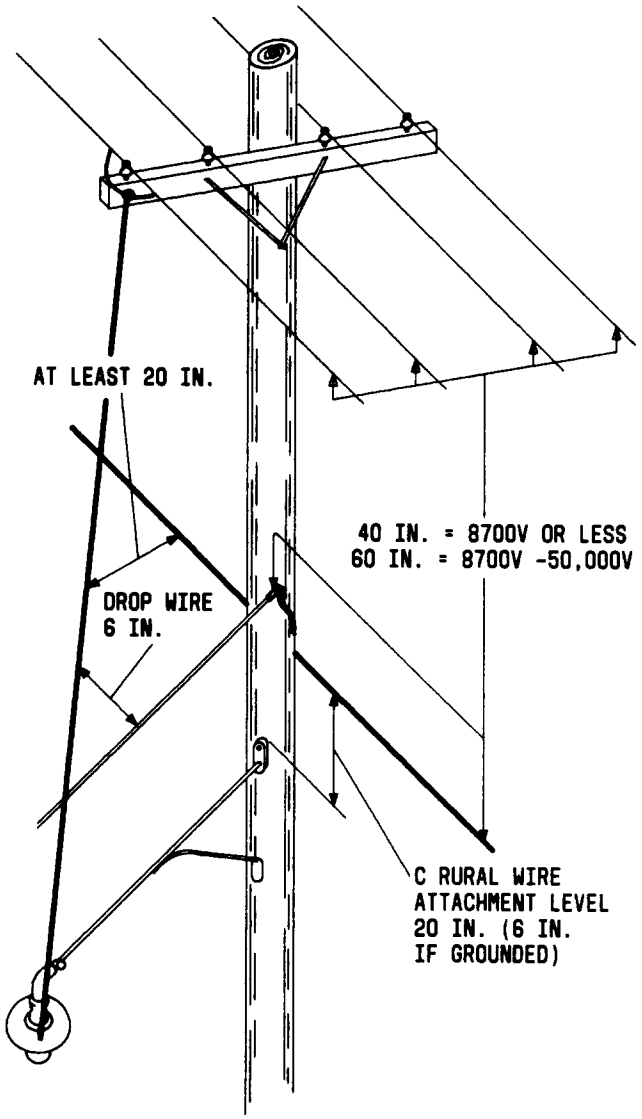


Fig. 16—Clearance of Streetlight Vertical Feed From C Rural Wire

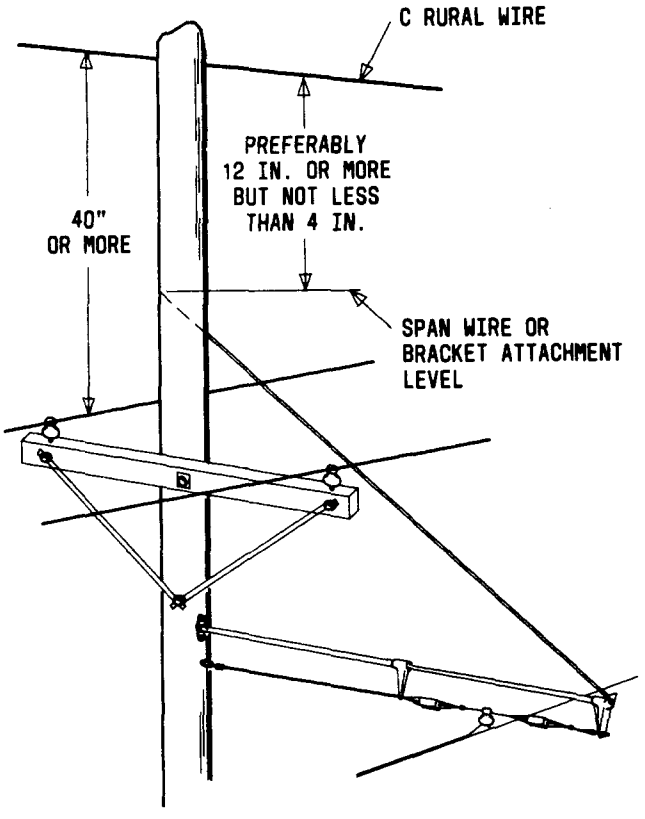


Fig. 17—Clearance Between C Rural Wire and Trolley Wire and Attachment

4.03 Clearances from power guys and of telephone guys from telephone wire are shown in Table F and Fig. 18.

TABLE F

CONDITION	CLEARANCE IN INCHES
POWER GUYS (Fig. 18)	
Power side guys attached above primary wires	40*
Pole-to-pole power guy attached above primary wires	30
Power guys attached to transmission line poles 15,000 volts to ground or higher	24
Pole-to-pole power guys not attached above primary wires but within 12 inches of bare secondary wires and within 12 inches of telephone wires	3†
TELEPHONE GUYS	
From telephone wire	6 where practical, but not less than 3

* From any part of guy which lies between guy insulator and pole. Refer to Section 621-405-201 for information on placing insulators.

† Power guy should be grounded, covered with suitable insulation where they pass power conductors or contain insulator below lowest power conductor and above highest telephone facility. If none of these conditions have been met, notify your supervisor before continuing work operations.

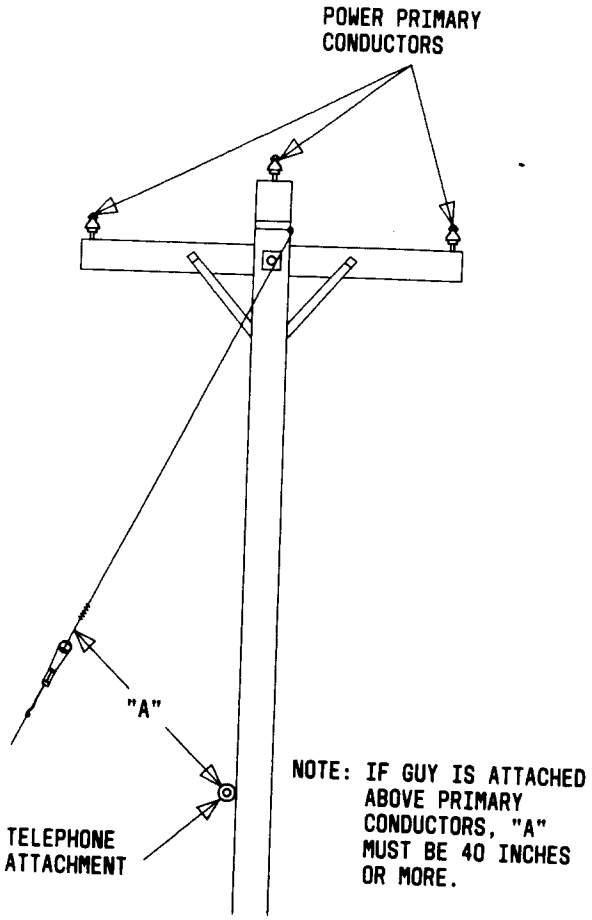
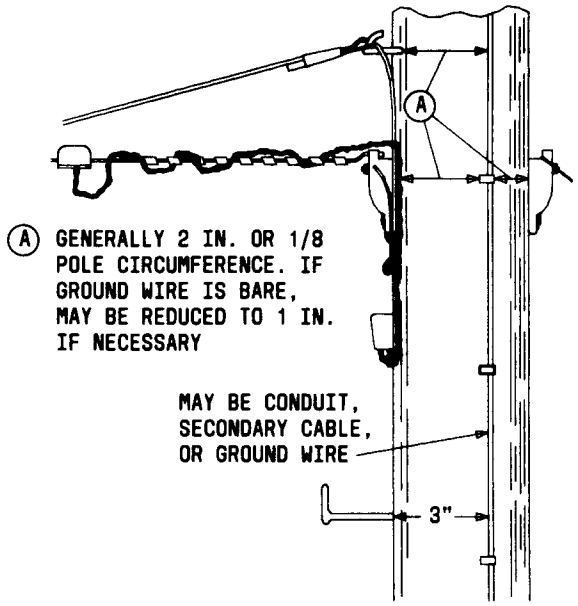


Fig. 18—Clearance Between Power Guy and Telephone Wire

4.04 Clearance from power vertical runs is shown in Fig. 19.



VERTICAL RUNS	
KIND OF VERTICAL RUN	**CLEARANCE IN INCHES**
Power service under 750 volts on pins and insulators	3
Power service on surface of pole from telephone hardware	2-minimum 1/8 pole circumference generally
Bare grounding conductors from telephone hardware	1

Fig. 19—Clearance From Power Vertical Runs on Pole Surface

4.05 Clearances from licensee cable, wire, and attachments are shown in Fig. 20.

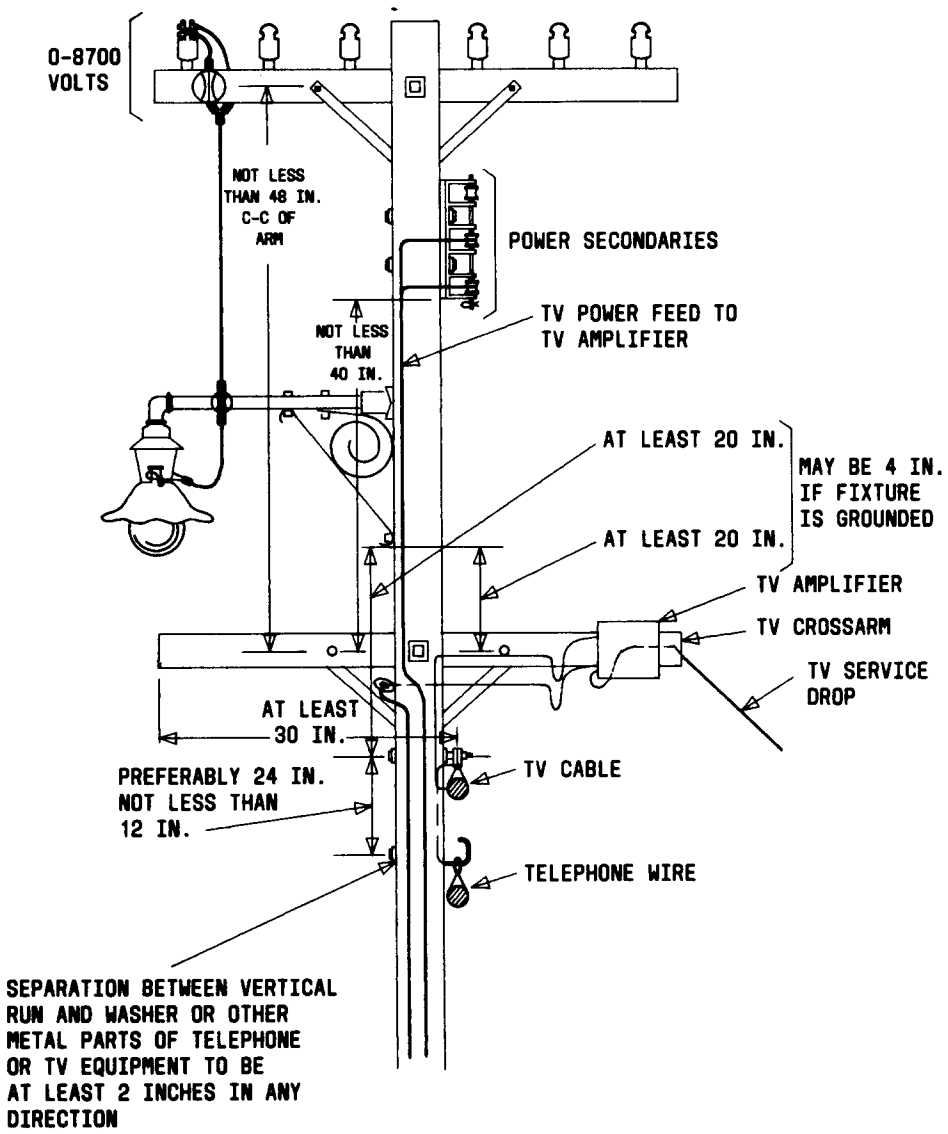


Fig. 20—Clearances of C Rural Wire From Licensee Attachments

5. CLEARANCE FOR C RURAL WIRE AND POWER WIRE OR CABLE

5.01 Clearances for C rural wire crossing below power wires or cable (nonjoint) are shown in Table G.

TABLE G

POWER FACILITY	SPAN LENGTH IN FEET			
	CONSTRUCTION			MAINTENANCE
	150 OR LESS	151-200	201-250	250 OR LESS
	CLEARANCE IN FEET-INCHES			
Nonmetallic sheath on a grounded messenger over 750V	4-0	4-0	4-0	4-0
8701-50,000 volt phase wires*	6-0	6-6	7-0	6-0
Grounded neutrals 22,000 volts or less to ground	2-0	2-6	3-0	2-0
Over 22,000 volts to ground Other neutrals	Same as associated phase wires			
Any metal clad cable lashed to grounded strand, any voltage	2-0	2-0	2-0	2-0
750 volts and less*	4-0	4-0	4-0	4-0
751-8700 volts* Within 6 feet tel pole†	4-0 6-0	4-0 6-0	4-0 6-0	4-0 6-0
8701-50,000 volts	6-0	6-0	6-0	6-0
750 volts and less	2-0	2-0	2-0	2-0
Grounded metal clad service drops				
Messenger supported & cables nonmetallic sheath line conductors	4-0	4-0	4-0	4-0
Messenger supported nonmetallic sheath service drops	2-0	2-0	2-0	2-0
Open conductors – service drops	2-0	2-6	3-0	2-0
Open conductors – line wires	4-0	4-6	5-0	4-0

* Voltage to ground if power circuit is grounded; voltage between if not grounded.

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

6. MISCELLANEOUS CLEARANCES

6.01 Miscellaneous clearances for C rural wire are shown in Table H.

TABLE H

FACILITY	SPAN LENGTH IN FEET	CLEARANCE IN FEET, INCHES	
		CONSTRUCTION	MAINTENANCE
C RURAL WIRE ABOVE			
Power service drops or power wires 300 volts or less. Foreign guys, communication cables, or trolley span wires	200-Less 201-250 251-283 284-316 317-350	2-0 2-2 3-3 4-4 5-7	2-0 2-0 3-0 4-0 5-0
Trolley contact wires 750 volts or less	200-Less	4-0	4-0*
C RURAL WIRE BELOW			
Foreign communication guys or cables	Any span length	2-0	2-0**
Neon signs		4-0	4-0
C RURAL 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 250 feet.