

## C RURAL WIRE

### DESCRIPTION, PRECAUTIONS, AND PLACING OPERATIONS

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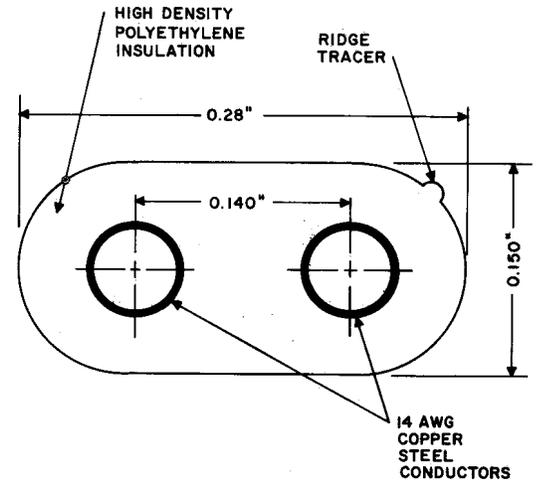


Fig. 1—C Rural Wire—Cross Section

**1. GENERAL**

- 1.01 This section describes C rural wire and outlines precautions and placing operations.
- 1.02 This section is reissued to revise information on the attachment of C rural wire on outside corner poles with corners up to a 10-foot pull.

**2. DESCRIPTION**

- 2.01 C rural wire (Fig. 1) is a self-supporting, insulated paired wire. It consists of two parallel 14 AWG, 30 percent conductivity, extra high strength copper-steel conductors insulated with high density polyethylene. A single ridge is molded in the insulation to provide conductor identification. The wire weighs approximately 35 pounds per 1000 feet and has a breaking strength of 1100 pounds. It can be used in spans up to 350 feet, 550 feet, and 600 feet in the heavy, medium, and light storm loading areas, respectively.
- 2.02 C rural wire shall not be used in place of drop wire for the span between a pole and a building.

**3. PRECAUTIONS**

- 3.01 The safety precautions contained in the following sections shall be observed:

SECTION	TITLE
620-131-010	Safeguards Before Climbing Poles
620-132-010	Testing—General
620-133-010	Temporary Supports
620-105-010	Joint Use Poles, Observations and Tests to be Made Before Climbing

- 3.02 The following precautions shall be observed when placing C rural wire on joint use poles, at power line crossings, and in nonjoint use situations involving electric induction from power lines:

- (a) **Joint Use Construction:** Prior to placing the initial section of wire, when placing from a moving reel, or prior to sagging when placing from a stationary reel, connect both conductors

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to an effective ground such as a grounded metallic cable sheath or multigrounded neutral ground wire. Additional sections of wire shall be grounded either as indicated for the initial section or by bonding the conductors of both sections. Adequate precautions shall be taken to prevent the wire from contacting power conductors. (See Section 623-102-010.) Rubber gloves shall be worn during stringing and sagging operations and during the operation of grounding the conductors when the wire has been placed from a stationary reel.

(b) **Power Crossings:** Temporary ties or supports shall be used to prevent contact with the electric conductors in the crossing span. (See Section 623-101-010.) Insulating gloves shall be worn during stringing and sagging operations.

(c) **Electric Induction from Power Lines:** In joint use construction or in nonjoint use construction where electric induction is sufficient to require drainage, the precautions contained in 3.02(a) will also serve to reduce the effects of electrical induction. In nonjoint use construction, where grounds as specified in 3.02(a) are not available, connection of the conductors to grounds such as anchor rods, down guys, or ground rods should be made to reduce the effects of electrical induction.

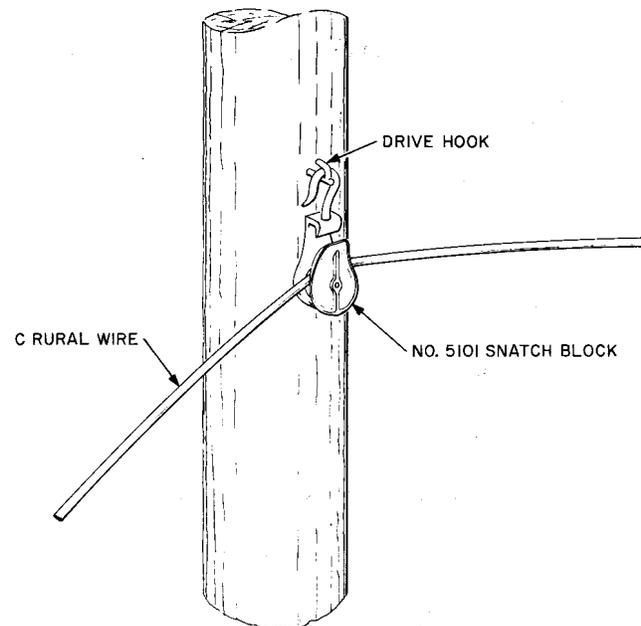
**3.03** The polyethylene insulation on C rural wire has low crushing strength; therefore, the wire should be handled carefully when pulled over drive hooks or other small radius supports. Place P wire guards at all contact points to prevent damage to insulation when C rural wire is placed through trees.

**3.04** Vehicular traffic should not be allowed to pass over wire. The wire should be suspended temporarily above roads, driveways, etc, or adequately protected by planks or other means to prevent damage to the conductor insulation.

### 4. PLACING

**4.01** When placing C rural wire from a moving reel, the wire may be lifted with a wire raising tool and laid over a drive hook. At corners where the wire pulls against the hook (inside corners) and at poles where downward change in grade exceeds 10 percent, support the wire during

placing and sagging in a 5101 snatch block attached to the drive hook. (See Fig. 2.)



**Fig. 2—Wire Placed With Snatch Block**

**4.02** C rural wire may be pulled over drive hooks from a stationary reel, except at corners where the wire pulls against the hook and at poles where the downward change in grade exceeds 10 percent. At such locations, support the wire during placing and sagging in a 5101 snatch block as shown in Fig. 2. Prevent the wire from dragging over obstructions in the span by use of a wire payout reel equipped with a B reel brake placed between the wire supply reel and the first pole of the wire run. A single turn of wire is made around the payout reel and tension maintained by the reel brake. Do not pass the wire through the loop on the reel brake tension arm.

**4.03** The dead-end support may be used where temporary dead ends are required to maintain clearances during placing operations.

### 5. SAGGING

**5.01** Sag C rural wire in accordance with the sag tables in Section 624-710-011.

5.02 The dead-end support can be used as a temporary grip during the sagging operation.

5.03 C rural wire should not be pulled around corners exceeding a 10-foot pull during the final sagging operation. In leads where such corners exist, it will be necessary to sag the wire by sections and to dead end the wire in both directions.

6. ATTACHING TO POLES

6.01 After sagging but before making the pole attachment, introduce at least 10 complete twists (in either direction) into the wire in each span. This will minimize noise from power line induction as well as the dancing of the wire in high winds. These twists may be placed in two spans of wire at an intermediate pole, after the attachments have been made to the adjacent poles, by lifting the D wire support at the intermediate pole and rotating it through ten complete turns before placing it on the drive hook. Where there is an odd number of spans, rotate the D wire support at the pole between the last span and the next to last span through ten complete turns in the *same direction* as the last previous rotation. This will introduce 20 twists into the next to last span in order to get 10 twists into the last span.

6.02 Attachments at dead-end poles are made with the dead-end support as shown in Fig. 3 and 4.

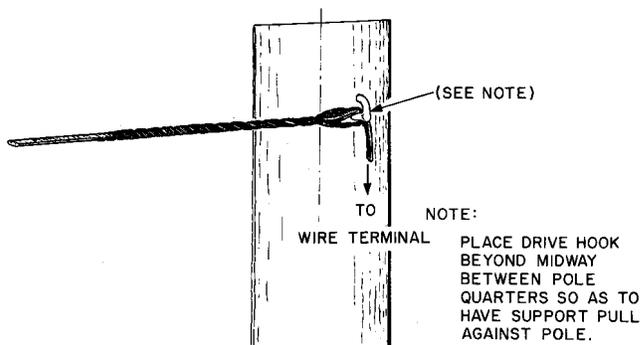


Fig. 3—Wire Dead-ended Without a Guy

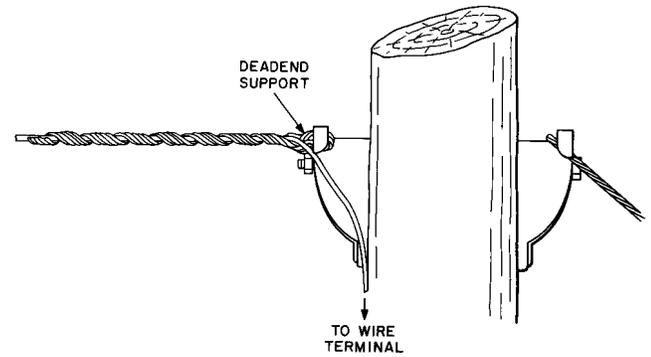


Fig. 4—Wire Dead-ended With a Guy

6.03 The dead-end support can be applied to the C rural wire as follows (Fig. 5):

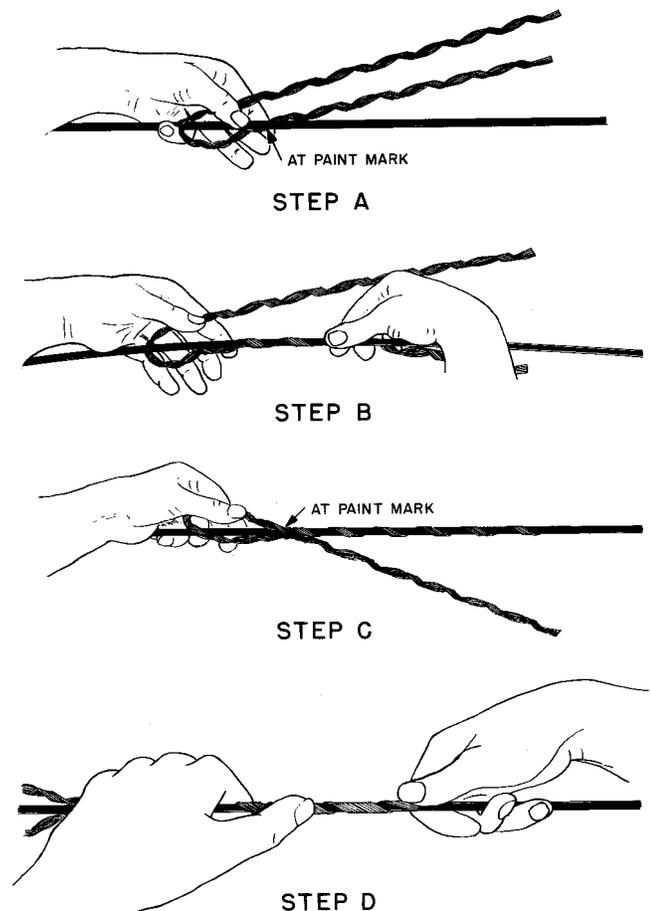


Fig. 5—Placing Dead-end Support

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- (a) Hold the support with the eye toward or engaged with the pole hardware. Place the wire between the spirals in one of the legs at the point indicated by the colored paint marking.
- (b) Wrap the leg around the wire using the thumb and forefinger and working from the point of contact near the eye toward the tail of the leg. Wrap the entire length of the leg around the wire. **Do not wind by holding tail end of leg.**
- (c) Cross the second leg over the first at the color-marked points, and wrap it around the wire in the same manner.
- (d) Make sure the end of each leg is completely over the wire. It may be necessary to snap in the end with thumb pressure.

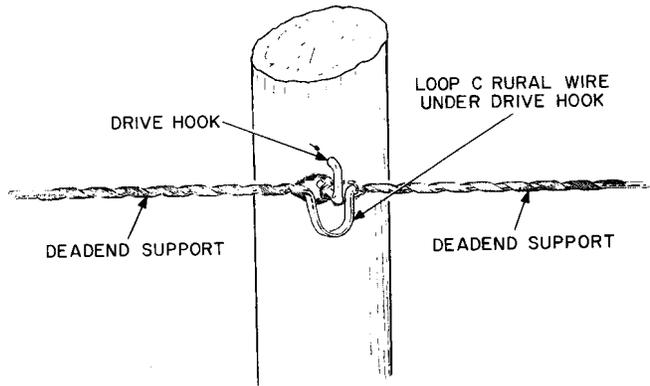
**6.04** Attachments on in-line poles and poles with corners up to a 10-foot pull are made with the D wire support as follows:

- **CONDITION A (Fig. 6)**—On in-line poles, on poles with changes in grade up to 10 percent, and on inside corner poles with corners up to a 10-foot pull.

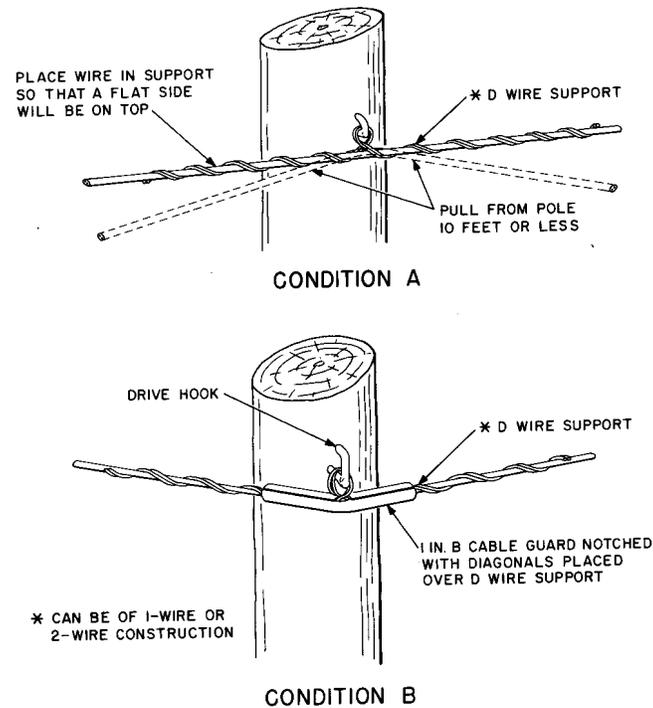
- **CONDITION B (Fig. 6)**—On outside corner poles, with corners up to a 10-foot pull.

◆ **Note:** In high wind areas where dancing can be expected, all attachments should be made as described in 6.06.◆

**6.05** Where attachments are made to poles adjacent to road crossings, C rural wire shall be dead ended in both directions, as illustrated in Fig. 7.



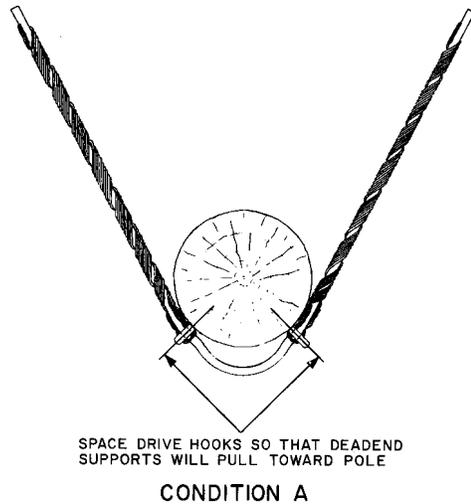
**Fig. 7—Dead-end Wire in Both Directions**



**6.06** At corner poles where the pull is more than 10 feet or at poles where the change in grade is greater than 10 percent, dead end the C rural wire from both directions as follows:

- **CONDITION A (Fig. 8)**—At outside corners where there is more than 10 feet of pull.
- **CONDITION B (Fig. 8)**—At inside corners where there is more than 10 feet of pull.

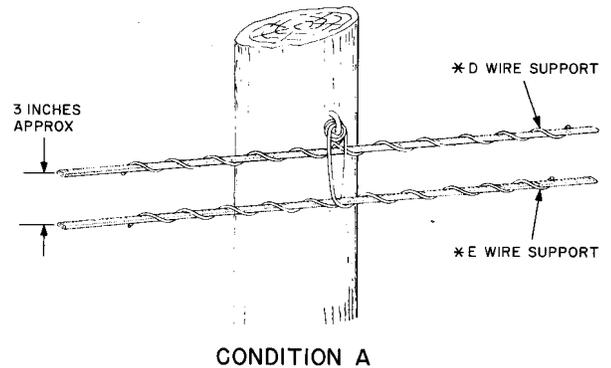
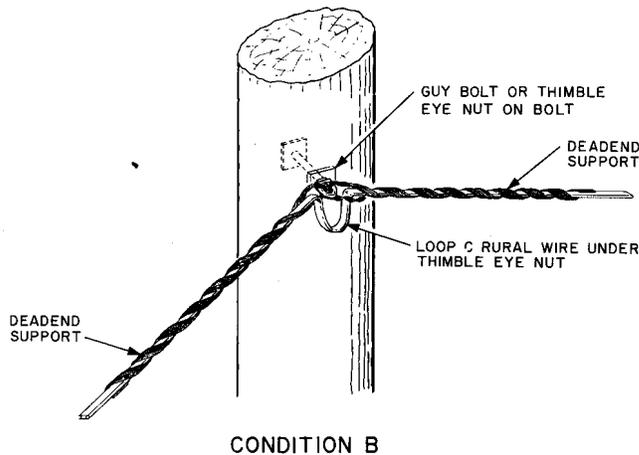
**Fig. 6—Attachment to Poles (In-line)—Change in Grade and Corner**



● **CONDITION A (Fig. 9)**—At in-line pole or pull away from pole at corners up to 10 feet of pull.

● **CONDITION B (Fig. 9)**—At outside corners with up to 10 feet of pull.

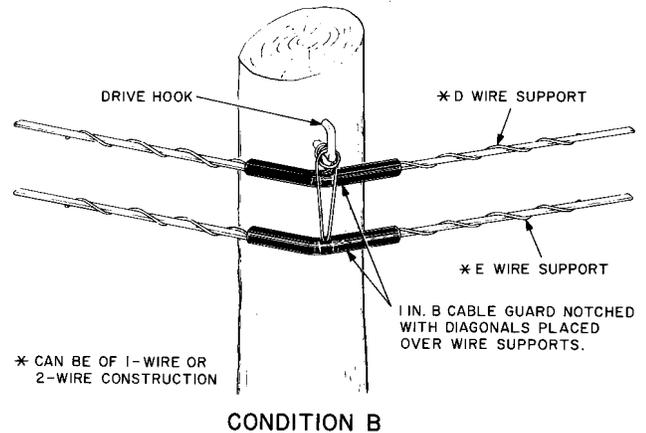
**7.02** The second C rural wire at dead-end poles and at corners with more than 10 feet of pull should be attached on its own attachments in the same manner as the first wire with a minimum separation of 3 inches from the first wire.



**Fig. 8—Poles—Corner With Over 10 Feet or Change in Grade Over 10 Degrees**

**7. PARALLEL RUNS ON SAME POLE LINE**

**7.01** Two or more parallel C rural wires on the same pole line should be separated from each other by at least 3 inches. Care should be taken to adjust the sags in these spans so that the lower wire will have a larger sag than the upper wire. At in-line poles and at corner poles with pulls up to 10 feet, a second C rural wire can be attached to the same drive hook by using the E wire support as follows:



**Fig. 9—Parallel Runs on Same Pole Line**

## 8. ATTACHING TO CROSSARMS

8.01 The same twists described in 6.01 should be carried out when attaching to a crossarm.

8.02 Attachments to crossarms on in-line poles and on poles with corners up to 10 feet of pull are made with the C wire support as shown in Fig. 10. Other C rural wires can be run parallel to the first provided a separation of at least 3 inches is maintained.

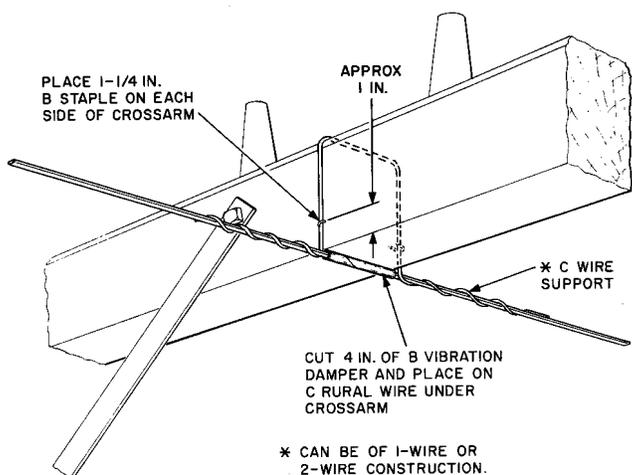


Fig. 10—Attaching to Crossarm on Corner Poles With Pull Up to 10 Feet

8.03 Dead ends for C rural wire attached to crossarms should be made at the pole in accordance with 6.02.

8.04 Corners where the pull is more than 10 feet and less than 50 feet can be made on the crossarms by using guard arm hooks as shown in Fig. 11. At corners with over 50 feet of pull, the wire should be dead ended in the usual manner. When the corner is made with a double arm, attach one guard arm hook in each crossarm to hold the dead-end support.

## 9. ELECTRICAL PROTECTION

9.01 Subscriber stations that are served by C rural wire require a fuse-type station protector. A fuseless type station protector may be used when *both* of the following conditions are met:

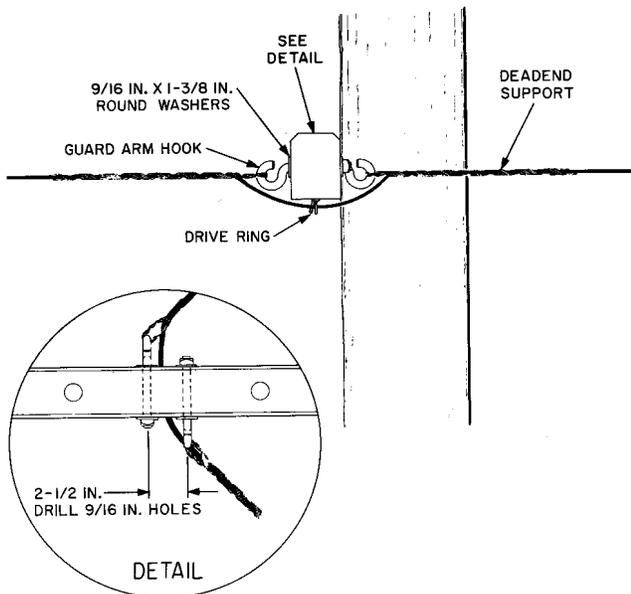


Fig. 11—Attaching to Crossarm on Pole With 10 to 50 Foot Pull

(a) The subscriber's drop wire is connected to the C rural wire by a fuse link of D or E block wire (See 624-730-200); and

(b) The station protector is grounded to a water pipe or to the ground (or electrode) of a multigrounded neutral power system.

9.02 When C rural wire is placed jointly with power circuits less than 2900 volts to ground (5000 volts phase to phase) no special protection is required for the wire unless lightning protection is specified.

9.03 When C rural wire is placed jointly with power circuits exceeding 2900 volts to ground, and less than 11,500 volts to ground (20,000 volts phase to phase) the type and location of protection required should be specified on the detail construction plans. However, protectors are not required under the following conditions:

(a) When C rural wire is installed *below* a metallic sheath telephone cable.

(b) When C rural wire is installed *below* open wire telephone circuits on crossarms or brackets.

(c) On leads of 1000 feet or less in length fed directly from cable.

**9.04** When C rural wire is placed jointly with power circuits exceeding 11,500 volts to ground, the detail construction plans should specify the type and location of the protection.

**9.05** The need for lightning protection at junctions of C rural wire and other types of plant will depend upon the degree of exposure of the wire. The detail construction plans should specify the type and location of this protection when it is required.