

BURIED PLANT

TERMINATION OF BURIED SERVICE WIRES AT JUNCTIONS WITH AERIAL PLANT

CONTENTS	PAGE
1. GENERAL	1
2. JUNCTION WITH AERIAL CABLE	2
3. JUNCTION WITH MULTIPLE WIRE	5
4. JUNCTION WITH C RURAL WIRE	7
5. JUNCTION WITH OPEN WIRE	8

1. GENERAL

1.01 This section describes methods of terminating buried service wires at junctions with aerial plant such as aerial cable, multiple line wire, C rural wire, or open wire.

1.02 This section has been reissued to:

- Delete reference to D underground wire which was superseded by E buried wire
- Include use of F-44541 armored service wire, and F-59307 and F-59377 filled service wire
- Include use of 700-type connector.

Since this is a general revision, arrows ordinarily used to indicate changes have been omitted.

1.03 Section 629-720-205 covers the termination of buried service wire at junctions with other buried plant. Unless otherwise stated the term service wire as used in this section refers to B service wire, F-44541 armored service wire, F-59307 and F-59377 filled service wire, and E buried wire.

1.04 *The metallic shield of service wires must always be grounded at the subscriber's protector when fed from any type of aerial or buried plant.* Methods for grounding in a fuseless

station protector are shown in Section 629-720-205. *This grounding at subscribers premises is required to protect against lightning damage and to minimize shock or fire hazards, caused by power contacts.*

1.05 In order to minimize fire or shock hazards at the subscriber's premises when fuseless station protectors are used, a short piece of fine gauge wire must be placed in the circuit at the junction of the buried service wire and the aerial facility so it will fuse open *at the pole* in the event of a sustained power contact. This fine gauge wire is known as a *fusible link*, and it must be smaller in current carrying capacity than the conductors of the service wire in order to make certain that it will burn open instead of the conductors of the buried service wire. In general, the 24-gauge copper conductors used in a cable terminal stub or in a connecting block with a 49-type cable terminal are satisfactory fusible links for service wire conductors. *Block wire is a satisfactory fusible link for E buried wire conductors but is not satisfactory with B service wire, F-44541 armored service wire, or F-59307 or F-59377 filled service wire conductors*, because of an insufficient difference in fusing characteristics.

1.06 Service wires should be identified at terminations by means of tags made from B glass tape. Cut about 5 inches of glass tape and wrap it around the wire, pressing the sticky side against itself to make the tag. It can be readily marked with pencil or pen to designate the subscriber or to identify the route of the wire. These tags are shown in Fig. 1.

1.07 The 700-type connectors are used to join conductors in any combination of gauges without stripping the insulation (see note) as follows:

- **701-2A Connector**—19- through 26-gauge: Used to splice two wires or bridge one wire to one through wire.

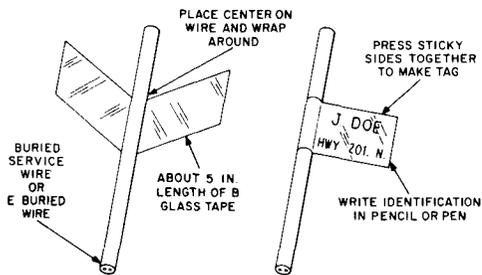


Fig. 1—Identifying Tags

- **700-3B Connector**—17-through 26-gauge: Used to splice three wires or bridge up to two wires to one through wire.

Section 632-205-215 covers the complete description and use of the 700-type connectors.

Note: Where 700-type connectors are used to splice E buried wire the insulation must be removed.

- 1.08 The E connector presser is the only approved tool for pressing the 700-type connectors. Use of other tools may result in improperly made connections.



THE 700-TYPE CONNECTORS SHALL NOT BE EXPOSED TO SOLVENT OR SOLVENT FUMES, SUCH AS B CLEANING FLUID, ACETONE, ETC. SUCH SOLVENTS CAN DAMAGE OR DESTROY THE PLASTIC CONNECTOR PARTS.

- 1.09 Where B wire connectors are used to join 19-gauge wire to 26-gauge wire, splice a short-length (approximately 8 inches) of 24-gauge PIC wire between the 19-gauge and 26-gauge conductors using B wire connectors. Section 632-205-201 lists the conductor combinations that can be joined with B wire connectors.
- 1.10 When joining E buried wire to a cable pair with B wire connectors, split apart the conductors for approximately 2 inches. Where the

service wire insulation joins the B wire connector, place vinyl tape over the joint.

- 1.11. Unterminated pairs of buried service wire should be prepared as described in Section 629-720-205.

2. JUNCTION WITH AERIAL CABLE

- 2.01 At the cable terminal or closure where buried service wire feeds from aerial cable and where the length of the buried service wire is:

(a) **500 feet or less, do not bond** the metallic shield to the strand or terminal housing. This will **protect the subscriber's location from possible fire** caused by excessive power fault, should the circuit come in sustained contact with power lines of any voltage.

(b) **More than 500 feet.** Use E buried wire and bond the metallic shield to the strand or terminal housing. When the length of buried wire is greater than 500 feet, the resistance of the E buried wire because of its length, will limit the fault current to safe values. **The B service wire, F-44541 buried wire, and the F-59307 filled service wire are not to be used for distances of more than 500 feet.**

- 2.02 No carbon block protection is required between the cable conductors and the buried service wire conductors unless severe lightning exposure exists. (See 2.08.)

- 2.03 Buried service wire can be brought up a pole and terminated directly in a pole- or strand-mounted cable terminal or cable closure if the cable conductor is 24- or 26-gauge. Where fuseless protectors are used at the station and the cable conductor is 22- or 19-gauge and exposed to power contact, a fusible link is required between the cable pair and the service wire. As stated in 1.05, the 24-gauge conductors in a cable stub or the connecting block of a 49-type cable terminal are satisfactory fusible links. At the groundline the wire should be protected with an 8-foot length of No. 0 U cable guard. A typical installation terminating in a 49-type cable terminal is shown in Fig. 2.

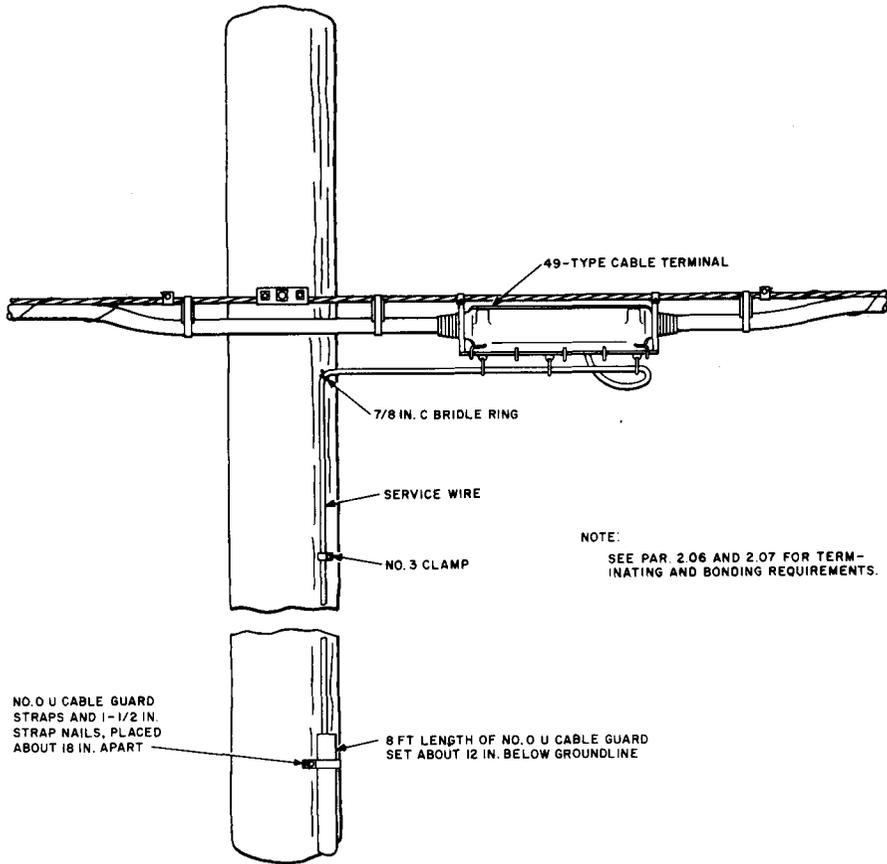


Fig. 2—Buried Plant Run up a Pole

Inside a Cable Terminal

2.04 Where the buried wire is 500 feet or less in lengths, grounding of the metallic shield at the cable terminal is omitted. Cut off the metallic shield and wrap with two turns of vinyl tape to protect against sharp edges (Fig. 3).

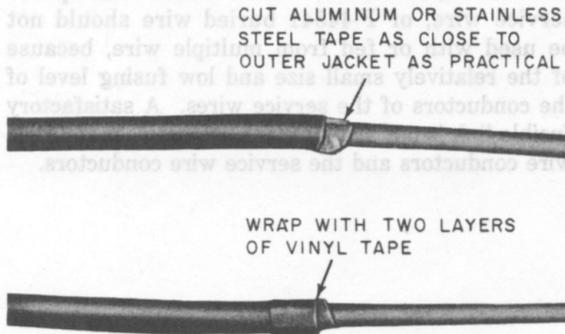


Fig. 3—Removal of Aluminum or Stainless Steel Tape

2.05 Where the buried wire is over 500 feet in length, the metallic shield of the E buried wire must be bonded to the cable terminal. A B bond clip and B appliance wire are installed on the metallic shield in a solderless connector as shown in Fig. 4.

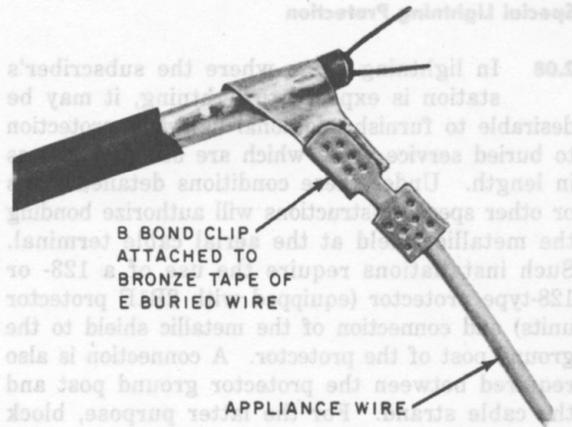


Fig. 4—Bonded Shield of E Buried Wire

2.06 Inside a cable terminal, the conductors of service wires are terminated on the binding post in the usual manner. The cable stub conductor of the pole- or wall-mounted terminal provides the fusible link. In the case of a 49-type cable terminal, the 24-gauge conductors of the connecting block serve as the fusible links between the cable conductors and the buried plant conductors.

2.07 Where the length of buried wire is over 500 feet, bond the metallic shield to the terminal housing with a B bond clip and B appliance wire. In a 49-type cable terminal fasten the appliance wire under a convenient screw in the base assembly.

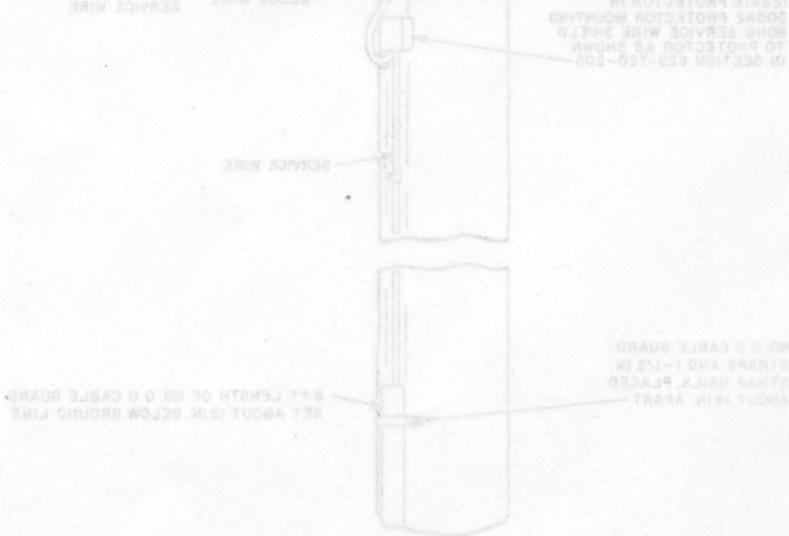


Fig. 5—Termination for Special Lightning Protection

Special Lightning Protection

2.08 In lightning areas where the subscriber's station is exposed to lightning, it may be desirable to furnish additional lightning protection to buried service wires which are 500 feet or less in length. Under these conditions detailed plans or other special instructions will authorize bonding the metallic shield at the aerial cable terminal. Such installations require the use of a 123- or 128-type protector (equipped with 2B1E protector units) and connection of the metallic shield to the ground post of the protector. A connection is also required between the protector ground post and the cable strand. For the latter purpose, block

wire is required as a fusible link to prevent the metallic shield from overheating. A typical installation is shown in Fig. 5.

3. JUNCTION WITH MULTIPLE WIRE

3.01 Where multiple wire is exposed to power contact and a fuseless protector is used at the station, B service wire F-59307 waterproof service wire, or F-44541 buried wire should not be used with or fed from multiple wire, because of the relatively small size and low fusing level of the conductors of the service wires. A satisfactory fusible link is not available for use between multiple wire conductors and the service wire conductors.

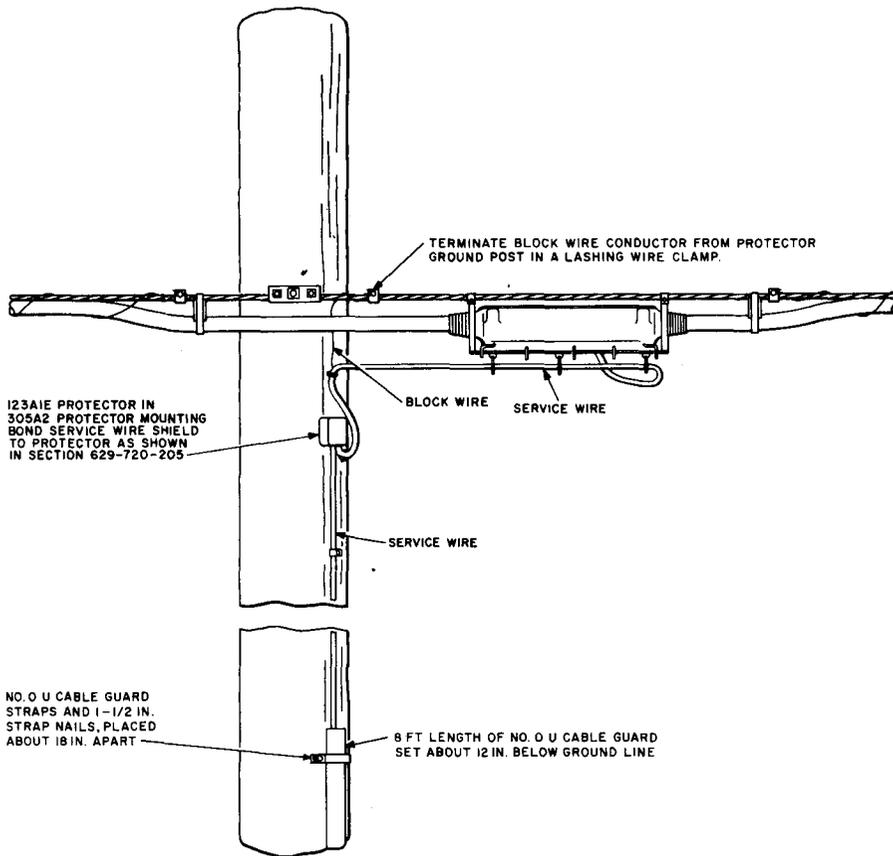


Fig. 5—Termination for Special Lightning Protection

3.02 E buried wire can be used with or fed from multiple wire where the multiple wire is exposed to power contact and fuseless station protection is used. E buried wire should be brought up a pole and terminated in a 101B2 wire terminal. The metallic shield should be cut back and taped as shown in Fig. 3. Connect the

conductors of E buried wire to the conductors of the multiple wire with block wire. At the groundline the wire should be covered with an 8-foot length of No. 0 U cable guard. Figure 6 shows a typical example of E buried wire being connected to a 105-type wire terminal.

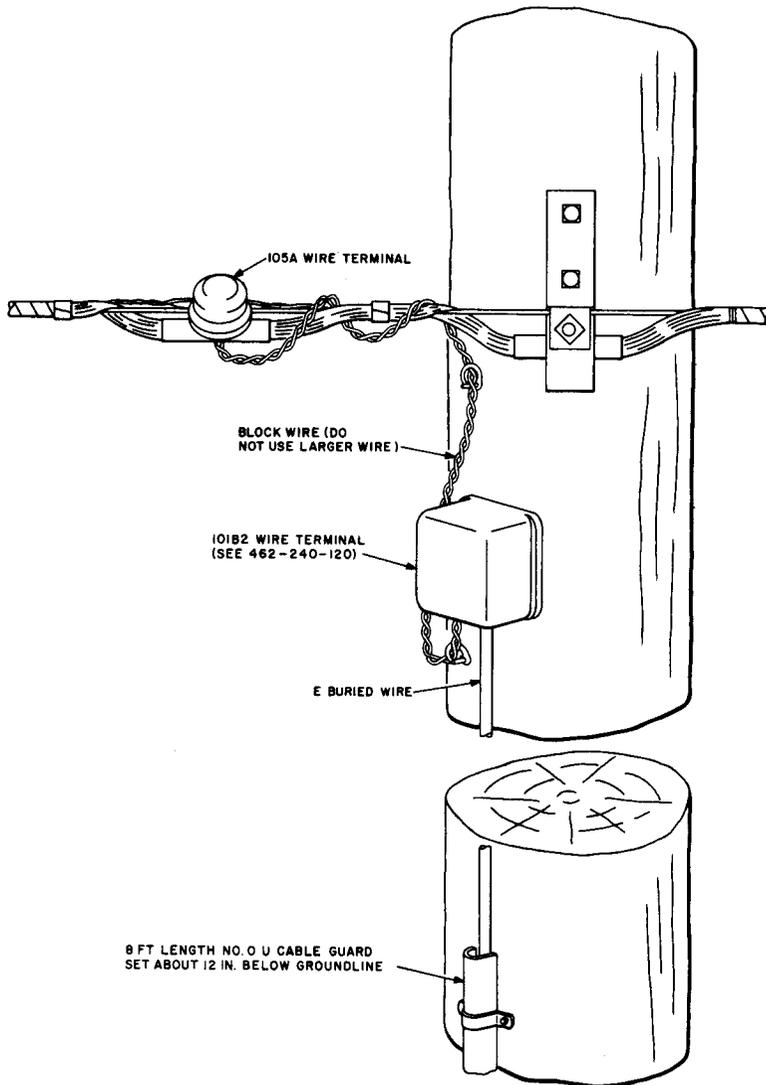


Fig. 6—E Buried Wire Terminated to Multiple Line Wire

3.03 The block wire serving as a fusible link between the E buried wire conductors and the multiple wire conductors can be terminated in a 105A wire terminal, a 104-type wire terminal, a 116-type protector, a 108-type wire terminal, or in similar wire terminals used with multiple wire.

4. JUNCTION WITH C RURAL WIRE

4.01 Do not connect B service wire F-59307 or F-59377 filled service wire, or F-44541 armored

service wire to C rural wire because of the small size of the conductors of the service wire.

4.02 At the junction with C rural wire, E buried wire can be brought up a pole and terminated in a 101B2 wire terminal. The metallic shield should be cut off and taped as shown in Fig. 3. Block wire should be used to bridle between the 101B2 wire terminal and the 107-type wire terminal on the C rural wire. At the groundline the E buried wire should be covered with an 8-foot length of No. 0 U cable guard. A typical installation is shown in Fig. 7.

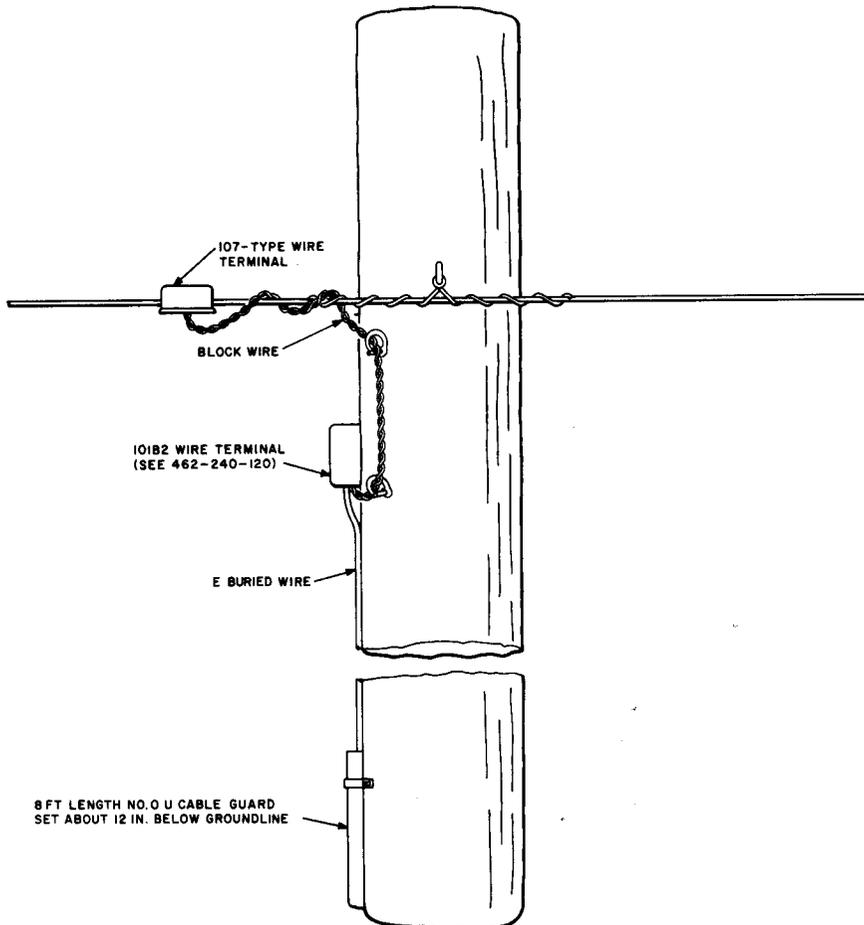


Fig. 7—Termination of E Buried Wire and Rural Wire

5. JUNCTION WITH OPEN WIRE

5.01 B service wire, F-59807 and F-59377 filled service wires or F-44541 armored service wire should not be used with or fed from open wire because of the relatively small size and low fusing level of the conductors of the service wire.

5.02 At the junction with open wire, E buried wire can be brought up a pole and terminated in a 101B2 wire terminal. The metallic shield should be cut off and taped as shown in Fig. 3. Block wire must be used between the protector and the open wire. At the groundline the wire should be covered with an 8-foot length of No. 0 U cable guard. A typical installation is shown in Fig. 8.

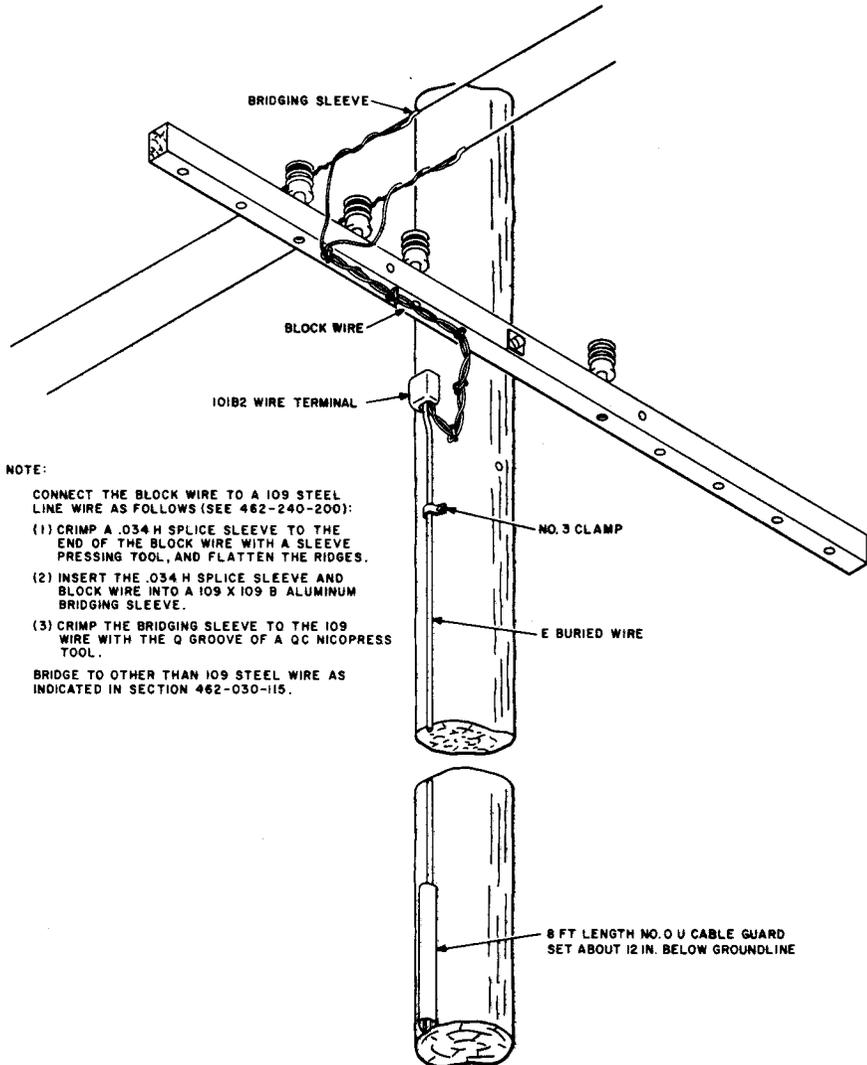


Fig. 8—Termination of E Buried Wire and Open Wire