

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 wire, C Rural Wire, or open wire.

1.02 This section has been reissued to:

- (a) Change title
- (b) Expand coverage of junctions with aerial plant
- (c) Delete material on junctions with buried plant.

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.

1.04 *The armor wire of D Underground Wire or the aluminum tape of B Service Wire 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 subscriber's premises is required to protect against lightning damage and to minimize shock or fire hazards, caused by sustained 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 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 D Underground or B Service Wire conductors. Block wire is a satisfactory fusible link for D Underground Wire conductors, but is *not* satisfactory with B Service Wire conductors, because of an insufficient difference in fusing characteristics.

1.06 Underground or 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.

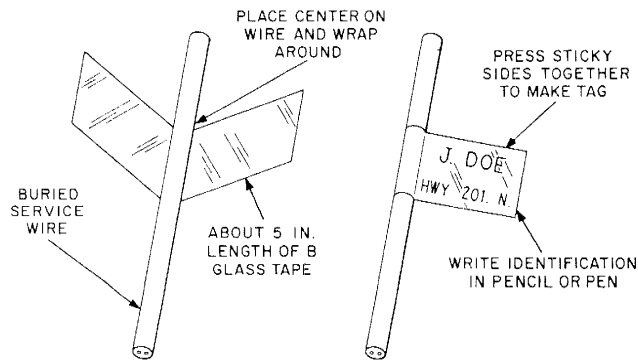


Fig. 1—Identifying Tags

1.07 The B Wire Connector should be used to join buried service wire with PIC cable conductors inside a cable closure as indicated in Section 632-205-201.

1.08 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 armor wire or the aluminum tape 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 D Underground Wire and bond the armor wire to the strand or terminal housing. When the length of buried wire is greater than 500 feet, the resistance of the armor wire, because of its length, will limit the fault current to safe values. **The B Service Wire is 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.

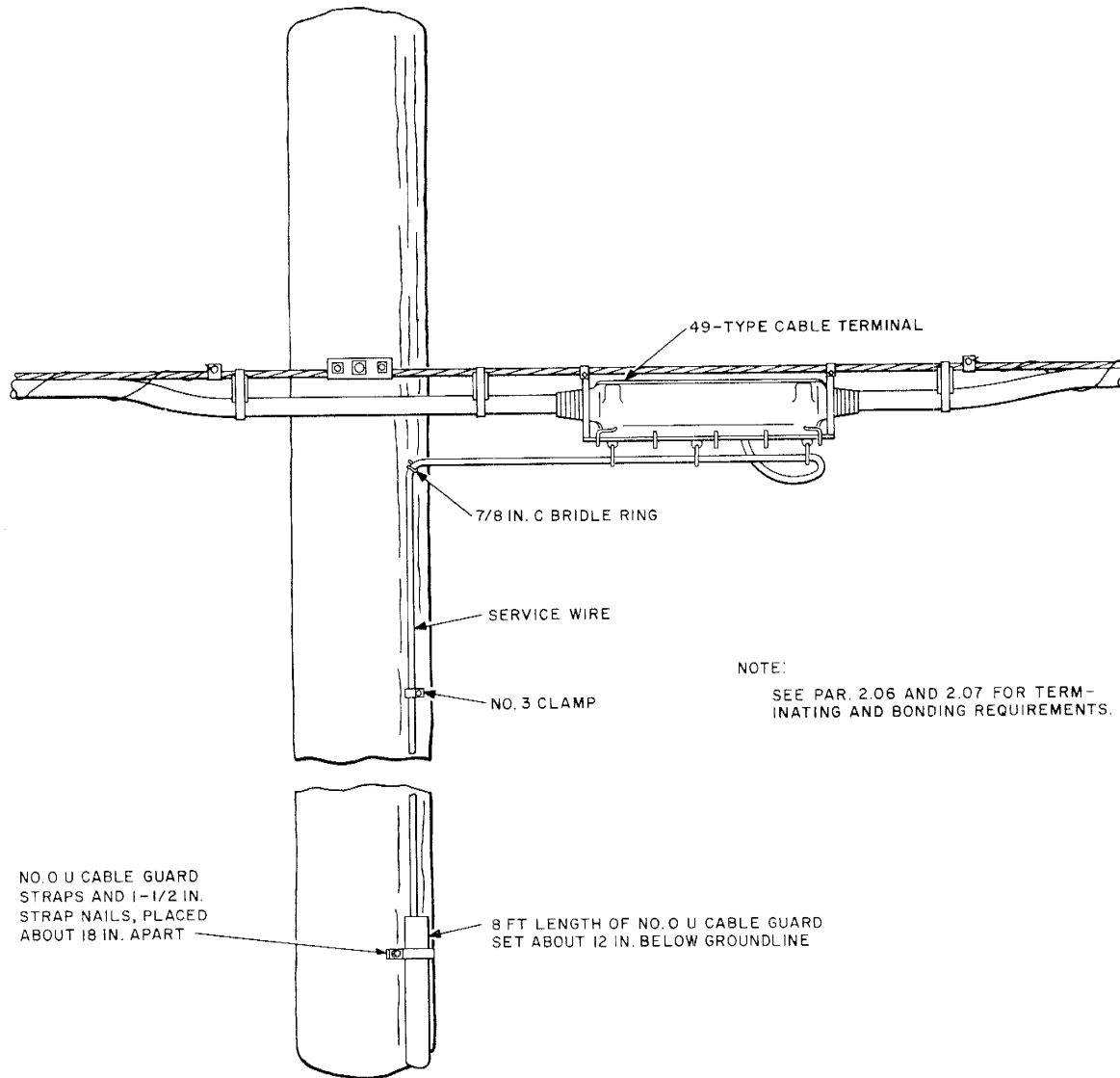


Fig. 2—Buried Plant Run up a Pole

Inside a Cable Terminal

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

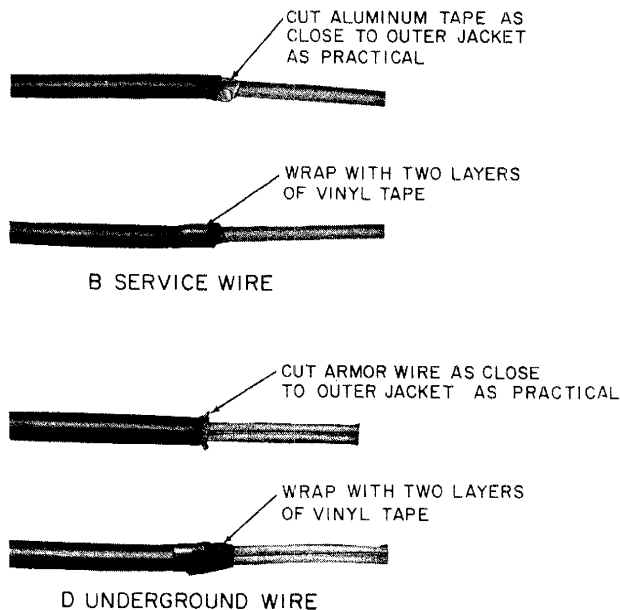


Fig. 3—Removal of Aluminum Tape or Armor Wire

2.05 Where the buried wire is over 500 feet in length and the armor wire of the D Underground Wire is to be grounded to the cable terminal, terminate the armor wire in a solderless connector as shown in Fig. 4.

2.06 Inside a cable terminal, the conductors of D Underground Wire or B Service Wire should be terminated on the binding post in the usual manner. The cable stub 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.

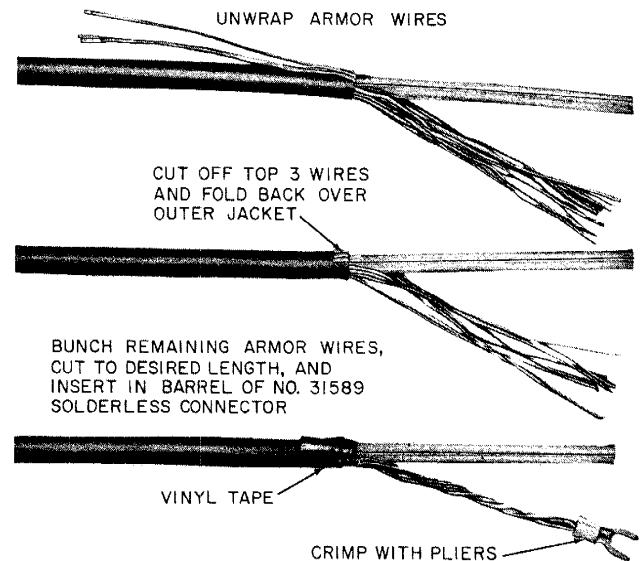


Fig. 4—Armor Wire of D Underground Wire Terminated in No. 31589 Solderless Connector

2.07 Where the length of the buried wire is over 500 feet, grounding of the armor wire to the terminal housing with a solderless connector is required. In a 49-type cable terminal fasten the solderless connector under a convenient nut or screw in the base assembly.

Special Lightning Protection

2.08 In heavy lightning areas where the subscriber's station is severely 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 armor wire or aluminum tape 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 armor wire or aluminum tape 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 common wire or aluminum tape from overheating. A typical installation is shown in Fig. 5.

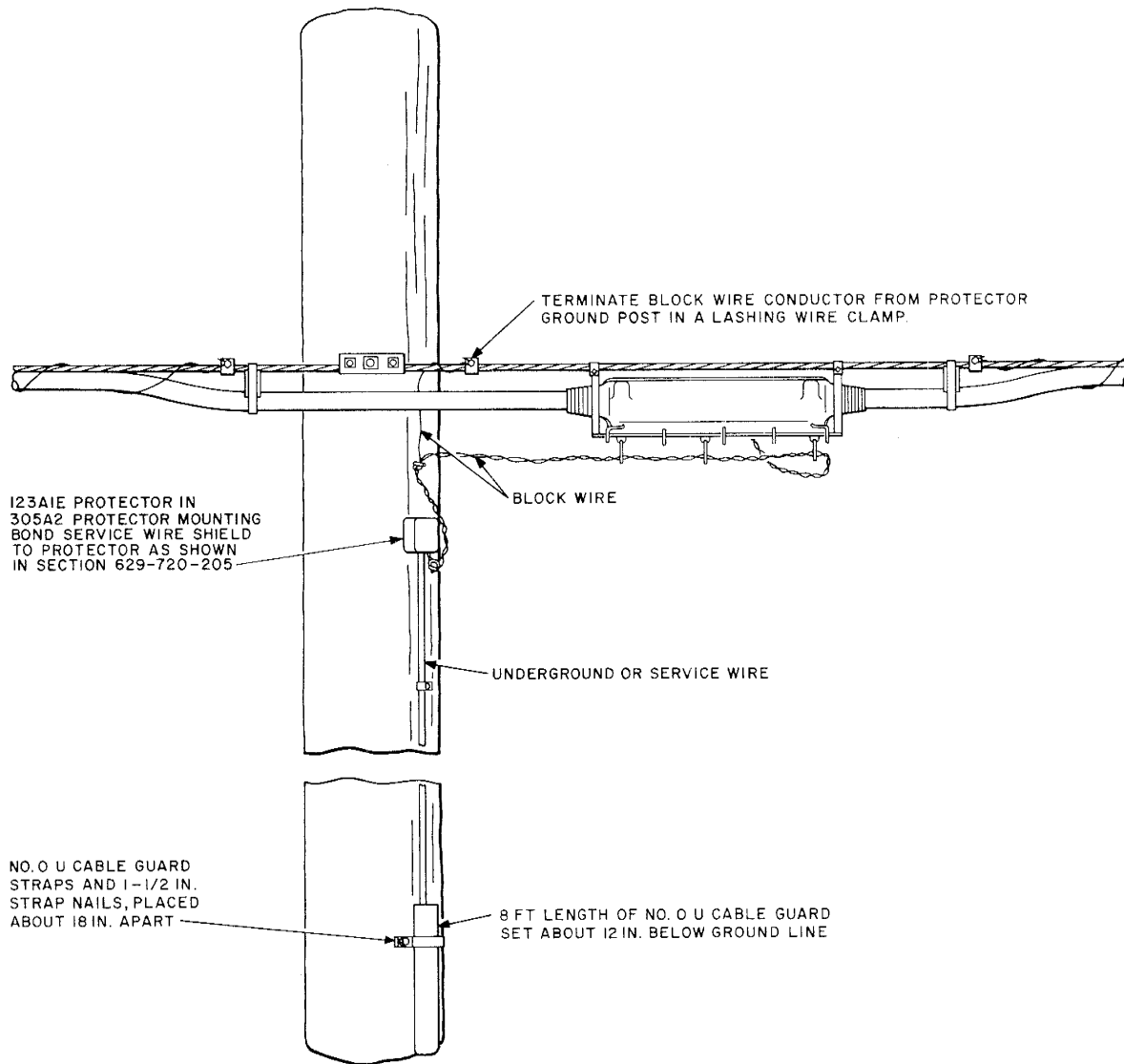


Fig. 5—Termination for Special Lightning Protection

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 should not be used with or fed from multiple wire, because of the relatively small size and low fusing level of the conductors or B Service Wire. A satisfactory fusible link is not available for use between multiple wire conductors and B Service Wire conductors.

3.02 D Underground 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. D Underground Wire should be brought up a pole and terminated in a 101B2 Wire Terminal. At the groundline the wire should be covered with an 8-foot length of No. 0 U Cable Guard. Cut off the armor wire as shown in Fig. 3. Connect the conductors of D Underground Wire to the conductors of the multiple wire with

block wire. Fig. 6 shows a typical example of D Underground Wire being connected to a 105-type wire terminal.

3.03 The block wire serving as a fusible link between the D Underground Wire conductors and the multiple wire conductors can be terminated

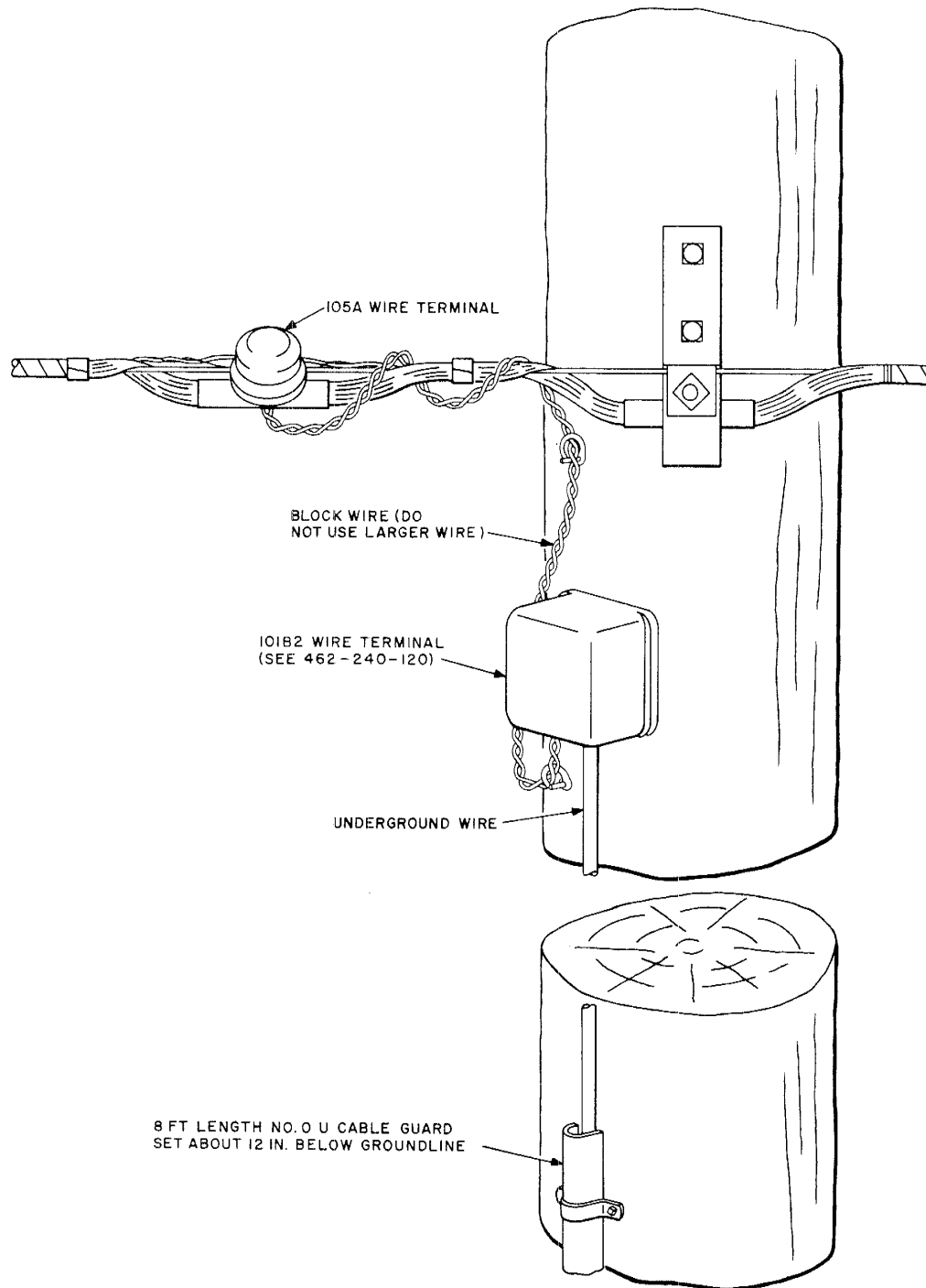


Fig. 6—Underground Wire Terminated to Multiple Wire

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 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, D Underground Wire can be brought up a pole and terminated in a 101B2 Wire Terminal. At the groundline the D Underground Wire should be covered with an 8-foot length of No. 0 U Cable Guard. The armor wire should be cut off 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. A typical installation is shown in Fig. 7.

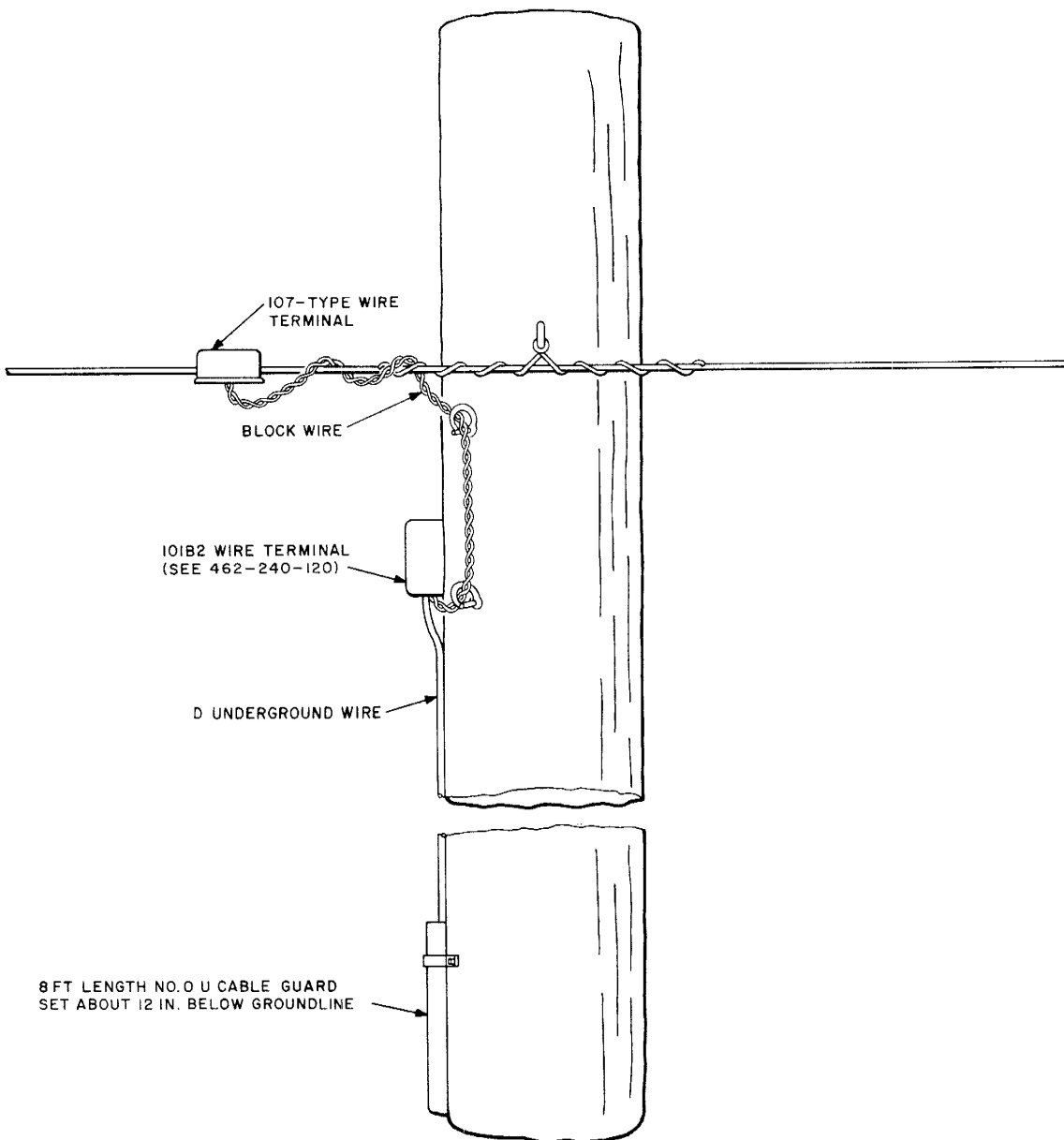


Fig. 7—Termination of Underground Wire and Rural Wire

5. JUNCTION WITH OPEN WIRE

5.01 B 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, D Underground Wire can be brought up a pole and terminated in a 101B2 Wire Terminal. At the groundline the wire should be covered with an 8-foot length of No. 0 U Cable Guard. The armor wire should be cut off as shown in Fig. 3. Block wire must be used between the protector and the open wire. A typical installation is shown in Fig. 8.

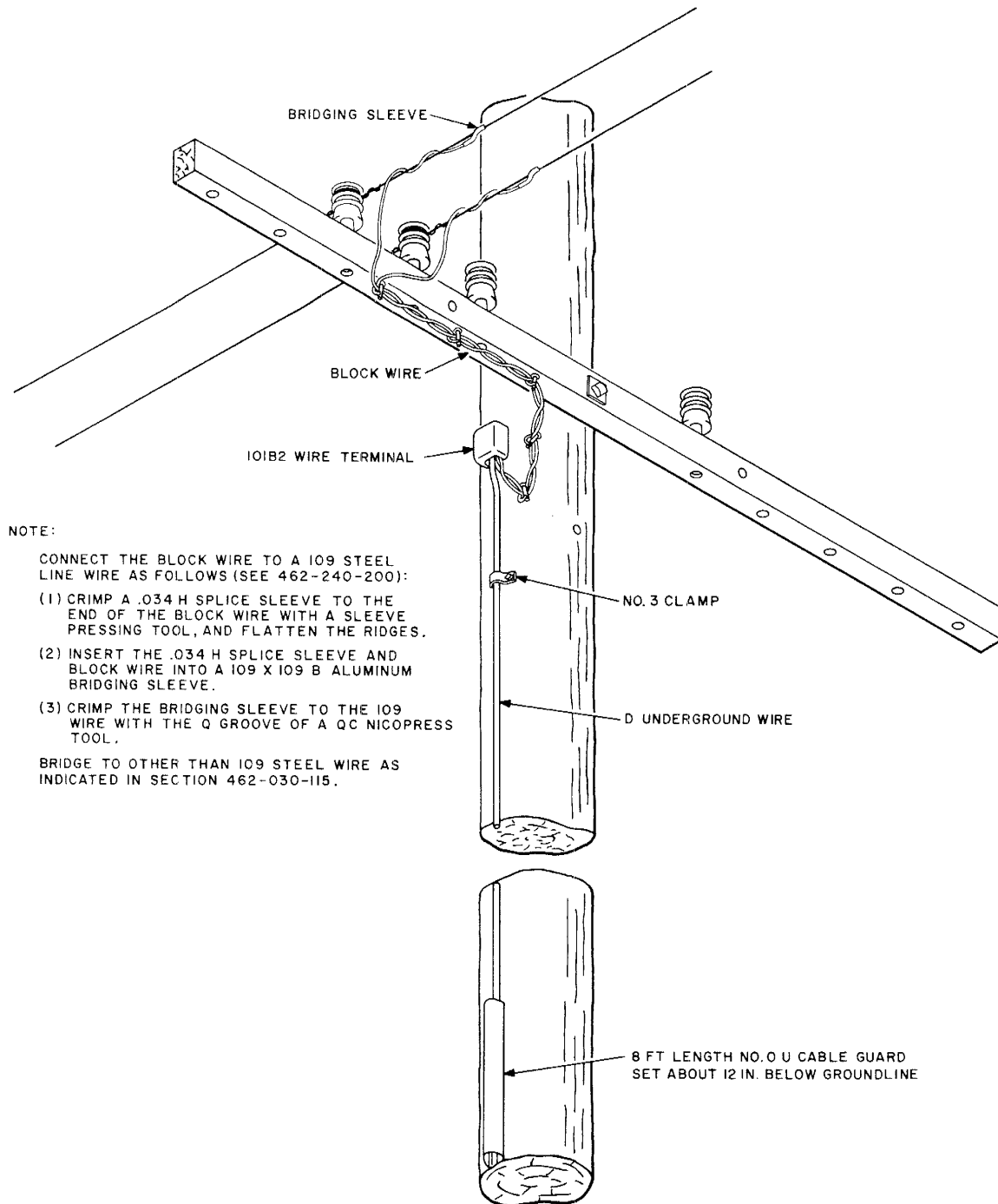


Fig. 8—Termination of Underground Wire and Open Wire