BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

SECTION G36.130.1
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AT&T Co Standard

BURIED WIRE
WIRING AT TERMINATIONS

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1. GENERAL

1.01 This section describes the connections required between the conductors and shield of buried wire and the plant on which the wire terminates.

1.02 Where lightning is not a factor in plant maintenance, the references of this section to connections of armor or shield wire can be disregarded. In such cases the armor of UG wire should be cut off even with the neoprene jacket at terminations.

1.03 In connection with rearrangements of the older buried wire installations in which shield wire was used, the shield wire can in general be handled in the manner recommended for the armor of UG wire.

1.04 In terminating buried wire in buried wire terminals, the left side of the terminal plate, as viewed from the front, should be considered as the side toward the central office. Subscriber connections or circuits extending beyond the terminal should then be terminated on the opposite or right side of the terminal plate.

2. LIGHTNING PROTECTION

2.01 When properly terminated, the steel armor wires of UG Distribution Wire furnish lightning protection for the wire. Under these conditions, differences in potential between conductors and armor are kept relatively low in the event of a lightning stroke to the telephone plant or to the immediate surroundings. This prevents insulation punctures or at least tends to limit the extent of any damage. Except where specifically indicated, separate ground wires are not required.

2.02 Ordinarily the armor is extended to a point of termination, as described later in the section. The following exceptions are made at station terminations. In these cases the armor is not terminated but is cut off flush with the jacket at the station end:

(a) When all plant is underground to the central office and a station protector is not required.

(b) Where the buried wire feeds from open wire or drop wire and the length of buried wire between the open wire or drop wire and the station protector is less than 500 feet.

Disposition of Unterminated Pairs

2.03 Sections of buried wire 500 feet or more in length which are not in use should be disposed of in the manner described below to avoid differences in potential between conductors and armor or shield wire. This should be done on new installations when some time may elapse before the wire is placed in service or where existing service is being disconnected.

(a) **New Installations**—If the wire is not being terminated at the time of placing, twist the conductors and armor together and wrap with friction tape.

(b) **Service Disconnections**—If the wire has been terminated and service is being discontinued:

(1) At the **station end,**

a. If the buried wire is terminated in a station protector which is to remain in place, leave the terminations as they are.

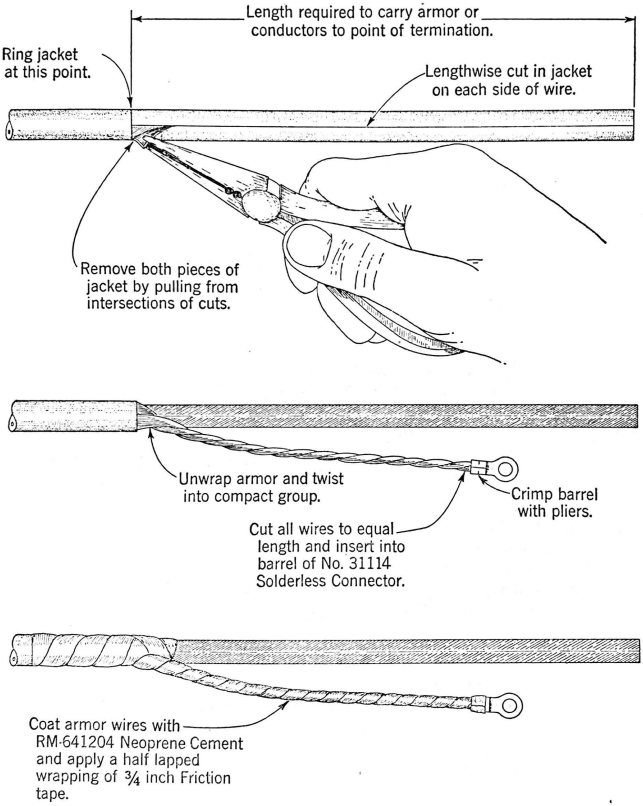
b. If there is no station protector or the station protector is being removed, twist together the armor and conductors. Coat the bunched wires with RM-641204 Neoprene Cement, wrap with friction tape and bury.

(2) At the **central office end,** if the buried wire is terminated in a 102-type terminal or an 83A protector, leave the terminations as they are. Under all other

conditions disconnect the conductors and armor and handle as in (a) or bridge them all to a common ground post.

Terminating Armor of UG Wire

2.04 To prepare the armor of UG wire for termination, proceed as follows:



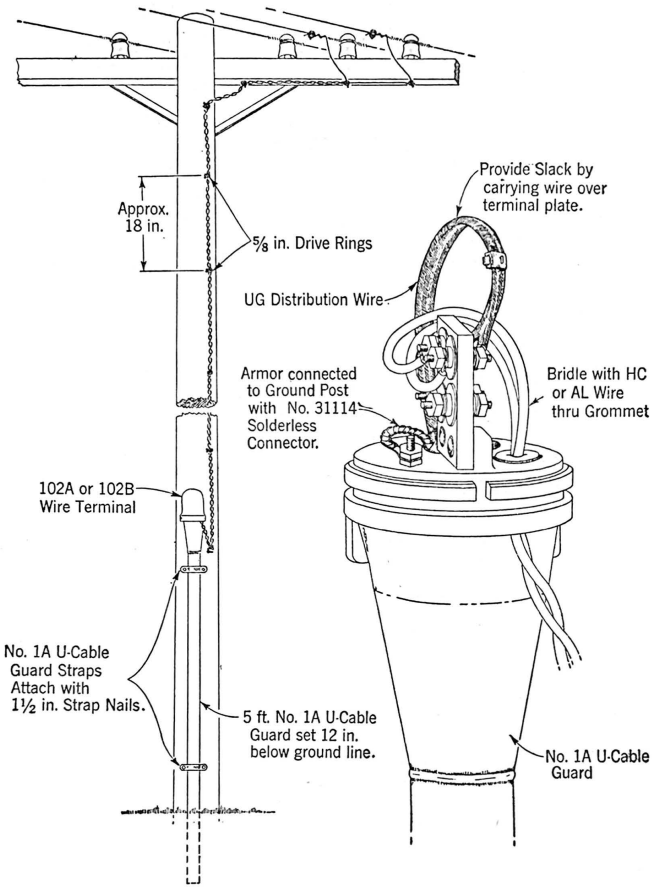
3. PROTECTING INSULATION AT TERMINATIONS

3.01 Removal of the neoprene jacket from buried wire exposes the insulation to deterioration. When the wire is terminated in a housing which is not lightproof, the exposed insulation should be protected by applying a coating of RM-641204 Neoprene Cement. Coat all exposed surfaces, both the outside of the insulation and the surfaces exposed by splitting.

3.02 The D-156209 and 102-type wire terminals and the UG-16 cable terminal are lightproof. Buried wire terminated in them does not need to be protected with cement. When the 102-type terminal is mounted without the use of pipe or a U guard, the wire entrance should be plugged with Plastic Duct Seal.

4. AERIAL WIRE CONNECTIONS

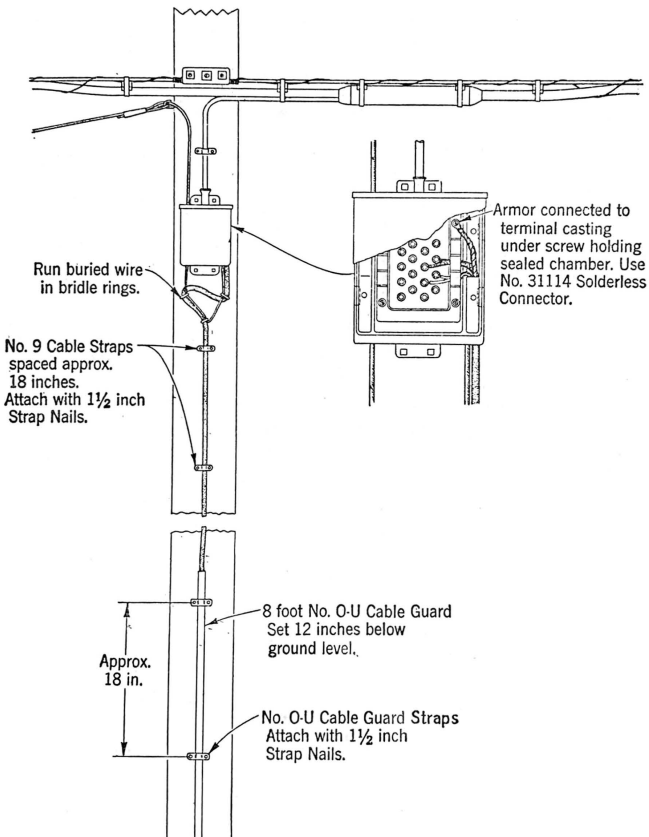
4.01 All connections between buried wire and aerial wire, whether open wire or drop wire, should be made through a 102A or 102B Wire Terminal for protection reasons. The illustration shows a typical connection to open wire.



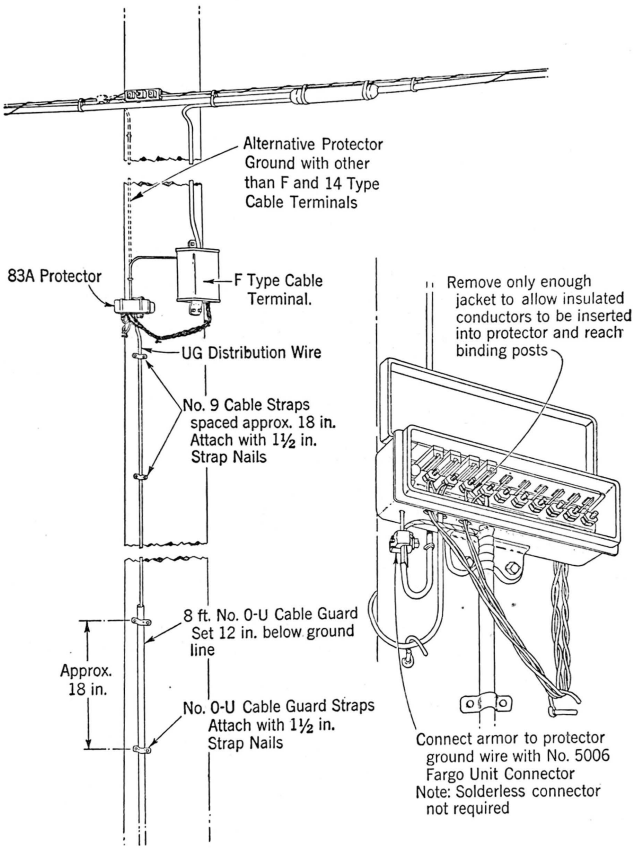
5. AERIAL CABLE CONNECTIONS

5.01 Buried wire connecting to aerial cable should be terminated directly on the cable terminal binding posts except as noted in 5.03. Connect the armor of UG wire to the terminal casting at any convenient point.

5.02 As an example, the following illustration shows the armor connected under one of the screws holding the sealed chamber to the body of the terminal. Equally suitable locations for bonding the armor will usually be found on other types of aerial cable terminals. If a bond cannot be made in this manner, make the connection directly to the sheath by means of an L Ground Clamp.



5.03 Where local practice requires protection of any working drops from an aerial cable regardless of length of drop, install protection as illustrated.



5.04 If the aerial cable terminal to which connection is to be made is located on a pole other than the one on which the buried wire terminates, carry the circuit to the cable terminal with open wire or drop wire. Mount a 102-type wire terminal on the buried wire pole and make the connection between buried wire and aerial wire through it.

5.05 Connect the armor of UG wire to the ground post of the 102-type wire terminal. Depending on the distance between the buried wire terminal pole and the cable terminal or sheath, provide protection for the cable in either of two ways:

(a) If the distance is not over two spans, extend the armor to the cable sheath by stringing HC Drop Wire from the ground post of the 102-type terminal to the nearest point at which the wire can be bonded to the sheath, strand or terminal casting.

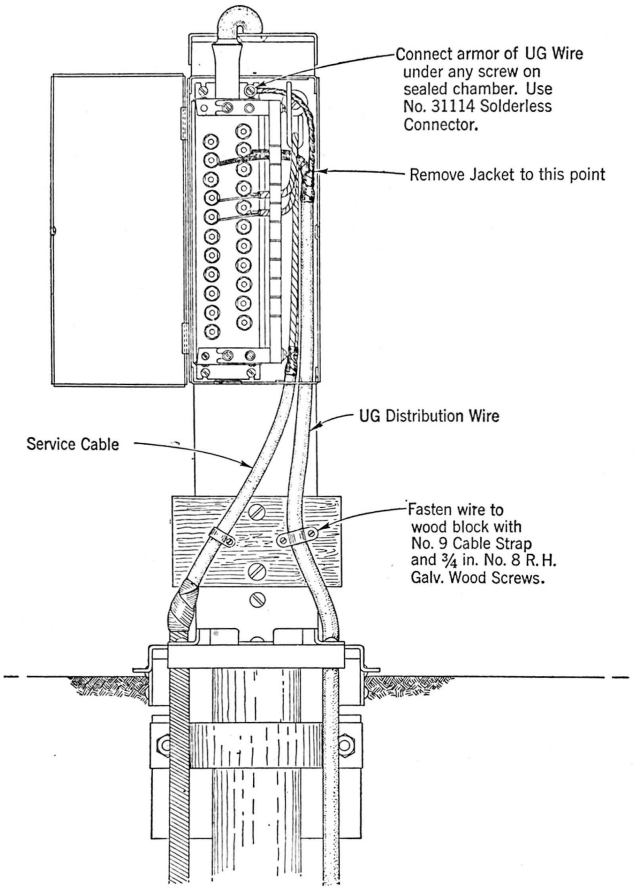
(b) If the distance is over two spans, place an 83A Protector Mounting at the cable terminal pole and terminate the extension of the buried wire circuit in it. Bridle to the cable terminal and ground the protector to the terminal casting or to the strand.

6. BURIED CABLE CONNECTIONS

6.01 Connections between buried wire and buried cable should be made as follows:

Pedestal Type Cable Terminal

6.02 Terminate buried wire in the GA11A or GA16A terminals in pedestal mountings in the manner recommended for service cables. Connect the armor at any convenient point in the terminal which is electrically in contact with the cable sheath.



UG-16 Cable Terminal

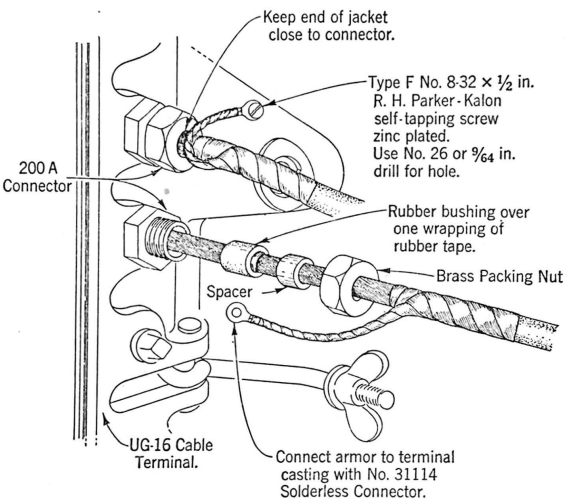
6.03 Terminate buried wire at UG-16 Cable Terminals as follows:

(1) Remove the brass pipe plug nearest the terminal binding posts on which the buried wire is to terminate. In its place insert the brass housing of a 200A Connector

with the threads coated with plumbers' lead or other suitable compound.

(2) Remove the neoprene jacket from UG wire to expose a length of insulated conductors sufficient to reach from the outside of the connector to the binding posts, and to leave enough armor to reach a convenient connecting point as illustrated.

(3) Complete the termination as shown.



Pole Mounted Terminal from Buried Cable

6.04 Terminate UG wire in a terminal fed from buried cable but mounted on a post or pole in the manner described for connection to an aerial cable terminal.

7. BURIED WIRE JUNCTIONS

7.01 At all junctions of buried wire establish a 102-type terminal. Connect the central office lead, as described in Part 1, and bridge the branch leads in the terminal as required. Connect the armor of each UG wire to the ground post of the terminal.

8. SUBSTATION CONNECTIONS

8.01 In determining the need for a station protector, current Station Installation and Maintenance Practices should be followed. In any event, however, any station served by buried wire 500 feet or more in length requires a station protector for lightning protection, unless otherwise specified in local instructions.

8.02 The information relating to the preference for water pipe grounds, as covered in the Station Installation and Maintenance Practices, applies in the installation of station grounds associated with buried wire services. Before installing driven grounds for station protection, therefore, make certain that no water pipe system or other suitable underground metallic structure is available.

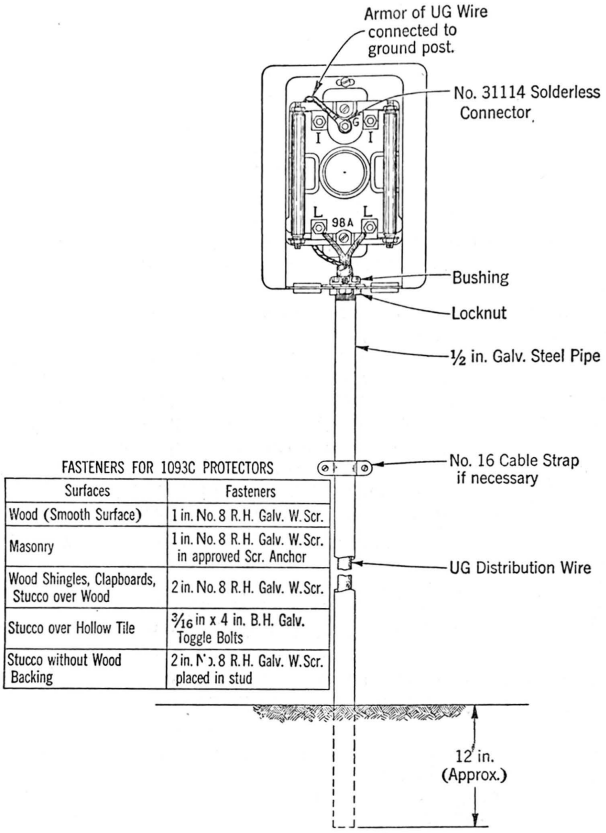
8.03 In approaching a subscriber's building with buried wire, keep the wire at least six feet away from lightning rod, radio and power system grounds.

8.04 For station protection, 1093C Protectors mounted outside the building will be the usual form of protection. Mount the protector at a height of about four feet above the ground, except where unusual circumstances such as the hazard of floods, would call for a greater height.

8.05 Remove the porcelain bushing from the protector mounting and in its place attach a length of pipe, as illustrated. Push the buried wire through the pipe and mount the protector. Complete the termination as follows:

(a) If the buried wire feeds from open wire or drop wire and is less than 500 feet in length, remove only enough jacket to allow the buried wire to be terminated on the "L" posts of the protector. Cut off the armor flush with the end of the jacket. When the termination is completed, the ends of the armor wires should not extend beyond the end of the pipe bushing.

(b) In all other cases, remove about nine inches of jacket from the wire and terminate the conductors and armor as shown.



FASTENERS FOR 1093C PROTECTORS

Surfaces	Fasteners
Wood (Smooth Surface)	1 in. No. 8 R.H. Galv. W.Scr.
Masonry	1 in. No. 8 R.H. Galv. W.Scr. in approved Scr. Anchor
Wood Shingles, Clapboards, Stucco over Wood	2 in. No. 8 R.H. Galv. W.Scr.
Stucco over Hollow Tile	3/16 in x 4 in. B.H. Galv. Toggle Bolts
Stucco without Wood Backing	2 in. No. 8 R.H. Galv. W.Scr. placed in stud

9. IDENTIFICATION OF CIRCUITS

9.01 Circuits can be identified at terminals by tagging the wires "North," "South" etc., or "1," "2," "3," etc., or other suitable designation. A convenient tagging arrangement can be had by the use of aluminum coaxial pair tags stamped with the desired letter or numeral. The use of these tags on UG Distribution Wire is illustrated on page 5.