

PROTECTION

B RURAL WIRE

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1. GENERAL

1.01 This section outlines the protection and grounding requirements for exposed B Rural Wire. In unusual or special cases the protection and grounding details shall be specified by the Plant engineer.

1.02 The Imperial Valley, Mojave Desert, and certain mountainous sections are considered as lightning areas for this practice.

2. GROUNDING STEEL SUPPORT WIRE

2.01 The 109E steel support wire in B Rural Wire should be kept electrically continuous along the lead. If the method of terminating the support wire results in an electrical separation between the ends, the gap should be bridged with a length of 109 steel wire.

2.02 If B Rural Wire is fed from aerial cable, the steel support wire should be connected to the cable suspension strand with a length of 109 steel wire.

2.03 When B Rural Wire is carried on the same pole line with an aerial cable on a grounded suspension strand, the steel support wire should be bonded to the cable suspension strand at intervals of approximately 1/4 mile.

2.04 The steel support wire should be connected to the ground post of all 116-type protectors in which the paired conductors are terminated. This may be done by connecting a short piece of 109 steel wire to the support wire.

2.05 The steel support wire or 109 steel wire should be attached to the pole with 1-1/4 inch B staples when extending it along the pole to the ground connection. Wood molding shall be placed as required in the G10 section on Clearances for Aerial Plant.

### 3. PROTECTION AND GROUNDING

3.01 At junction with cable, B Rural Wire shall be connected to the cable through a 116-type protector under the following conditions unless the wire is served from a protected cable terminal. For an exception to this requirement see Paragraph 3.07.

(a) Where the cable is a toll cable or a combination toll and exchange cable regardless of the length of the B Rural Wire.

(b) Where the cable is an exchange cable in a lightning area and the B Rural Wire is over 1/2 mile in length.

(c) Where the B Rural Wire is more than 2 spans in length and is constructed in joint use with power supply lines in excess of 5,000 volts.

3.02 At junctions of open wire and B Rural Wire, the conductors should be bridled through a 116-type protector under the following conditions:

(a) Where any of the open wire circuits are over 1/2 mile in length in a lightning area.

(b) Where the open wire is more than 2 spans in length and is constructed in joint use with power supply lines in excess of 5,000 volts.

3.03 When B Rural Wire is more than 2 spans in length and is placed in joint use with power supply lines in excess of 5,000 volts, protection shall be provided by placing 116-type protectors as follows. For an exception to this requirement see Paragraph 3.07.

(a) All pairs in the B Rural Wire shall be terminated in a protected type terminal at both ends of the joint use section.

(b) Where the B Rural Wire joint use section is longer than 1500 feet, 116-type protectors shall be placed at approximately 1500 feet intervals. When possible these intermediate protectors should be placed at present or future distribution or branch lead locations in order to reduce the required number of terminals.

3.04 Where joint use construction with supply lines in excess of 5,000 volts is involved and the 116-type protector is required, the ground lug of the protector shall be connected to a low resistance ground, such as a water pipe in addition to the connections required in other paragraphs of this practice. Where a water pipe ground is not available consult your supervisor. In the area served by the Imperial Irrigation District the power multi-grounded neutral wire shall be used as a low resistance ground and attachment shall be made by the power company. For an exception to this requirement see Paragraph 3.07.

3.05 All loading coils placed on B Rural Wire shall be protected with 107B-type protectors on each side of the loading coils as shown on the detail plans.

3.06 Protectors of the 116-type shall be equipped with 107B protectors unless otherwise specified on the detail plans. The 107B protectors are covered in the practices on Protector Blocks.

3.07 In various sections of the Southern California Area, the Southern California Edison Company is at this time operating some substations and associated 11,500 volt and 16,500 volt power lines which are equipped with sensitive ground relays and ground fault current limiting impedances. Because of these power circuit protection features, modified protection will be placed on the B Rural Wire in joint use sections with these power circuits. The following list, intended for information only, shows the power substations, which are now equipped as described above, and the corresponding telephone area. In each specific joint use case in these areas the Plant Engineer will determine from the Protection Engineer that the power circuit involved is protected as described; and if so, will specify protection features in accordance with Paragraph 3.08.

Telephone Exchange Area	S. C. E. Co. Substation Area
Canoga Park	Malibu, Crater
Reseda	Malibu, Crater
Palmdale	Saugus, Anaverde, Little Rock (Special circuits only)
Newhall	Saugus, Agua Dulce
Crescenta	La Canada
Pasadena (Foothill, Lake)	La Canada, Arroyo, Eaton (Special circuits only)
Los Angeles (Lafayette, Adams, Angelus)	City of Vernon
Orange County Exchanges	Atwood, Crown, Fullerton, Fairview, Irvine, Katella, La Palma, Sullivan, Villa Park

3.08 When B Rural Wire is more than 2 spans in length and is in joint use with power supply lines in excess of 5,000 volts with sensitive ground protection as described above, provide protection as follows:

- (a) Terminate all pairs in a 116-type protector at each end of the joint use section. (Except where the wire is fed from a cable terminal which is a protected type.)
- (b) Ground the support wire to a low resistance ground at one location preferably at a 116 protector location. Where the support wire is bonded to the cable suspension strand as specified in Paragraph 2.02, no other grounds are required.