

WIRING AND CABLING

REINFORCEMENT OF CABLE FORMS

1. GENERAL

1.01 This section covers information for reinforcement or bracing of cable forms.

1.02 This section is reissued to revise the information so that it is in agreement with Section 800-612-156 covering the general equipment requirements for placing, securing, and supporting cable forms.

1.03 In general, the equipment arrangement and design of cable forms make unnecessary the bracing or reinforcement of such forms. In some cases, where forms contain only a few wires or where the skinners are too few or too long to provide good support for the forms, some supplementary support is required. Also, the location of equipment may be such as to make reinforcement of the forms desirable where the rear of the equipment is on an aisle having heavy maintenance activity. Except on electronic-type switching equipment, reinforcement or bracing of the forms to provide mechanical strength and to resist movement of the forms should be provided only when specified in the design specifications or drawings, or by the telephone company. Reinforcement or bracing of forms on electronic-type switching equipment shall not be used without the approval of the responsible Bell Laboratories design engineer.

2. TOOLS AND MATERIALS

2.01 A listing of tools and materials is shown in Table A.

3. METHODS

3.01 When supplementary supports are specified for cable forms, use type AP (insulated iron) wire for reinforcing and bracing as indicated in Fig. 1, 2, and 3. Locate the reinforcing wire on the side of the forms away from the equipment. Fasten the wire tightly to the forms with No. 6-, 9-, or 10-ply sewing twine, spacing the ties approximately 3 inches apart. Cut ends of twine close to the knot. ♦Where horizontal forms are

TABLE A

CODE OR SPECIFICATION NO. TOOLS	DESCRIPTION
—	6-1/2 Inch P- Long Nose Pliers
—	5-Inch Diagonal Cutters
—	6-Inch Screwdriver
MATERIALS	
Type AP (P-368466)	No. 12 BWG Insulated Iron Wire
TW or THW	No. 12 AWG Insulated Aluminum Wire
—	6-, 9-, or 10-Ply Waxed Rayon Twine per Material Spec. 59018
P-353446	} As reqd
P-110258	
KS-20986, L2	0.250 x 9/16 x 0.049 Washer
	Nylon Cable Ties

run parallel to the AP reinforcing wire, KS-20986 nylon cable ties may be used, instead of the twine, as specified in Section 800-612-153.♦

(a) For convenience in specifying cable form braces in the design specifications or drawings, or in job specifications, reference numbers CFB1, CFB2, and CFB3 are assigned to the three types of cable form braces shown in Fig. 1, 2, and 3, respectively.

3.02 Brace forms to the framework where the arrangements are such that the end of the brace wires can be conveniently fastened (as in the case of forms at relay rack units), as shown in Fig. 1 and 2. Attach the brace wires to the rear of the relay rack uprights with 0.216—24 x 3/8 inch special head machine screws in the tapped holes regularly provided in the uprights. By

properly locating the brace wire, it should be possible to avoid conflict with the screws used to attach the relay rack units to the frame uprights.

- (a) Where the mounting plates are fastened directly to the relay rack uprights (without the use of unit mounting bars), the regular mounting plate screws at the points of fastening of the cable form brace wires should be replaced by screws long enough to permit attaching the brace wire to the end of the screw by means of a nut and washer at the rear of the upright.

3.03 *Where conditions are not suitable for attaching the form braces to the framework,* reinforcement should be provided in a manner similar to the example shown in Fig. 3. While a closed loop arrangement of reinforcement is shown, the shape of the reinforcement may be varied to suit conditions. The U- and L-shaped reinforcement will also be commonly used for supporting small or weak forms from adjacent rugged forms. In general, this type of cable form brace would be used only for the support of occasional individual weak forms from adjacent rigid forms, although it may sometimes be found more convenient to use this type of reinforcement for reconditioning wiring, instead of braces described in 3.02.

- (a) Another method of reinforcing a thin or weak form may be employed where the form is located so that the closed loop arrangement cannot be used to support it from an adjacent rigid form. This is to include two or three No. 16 gauge type AM wires (dummies) or one or two No. 12 AWG TW or THW aluminum

wires in the form to provide the necessary stiffness.

3.04 *Cable-Duct Framework:* When forms extend outside of the frame uprights, attach the form brace wires in a manner similar to that shown in Fig. 1 and 2 for the application on angle relay racks. The brace wire should be mounted under the heads of the mounting plate screws with a P-110258 washer on each side of the brace wire eyelet. Replace the regular mounting screws with longer screws of the same type. Forms between the uprights requiring reinforcement shall be treated per Fig. 3.

3.05 *Box-Type Framework:* When forms extend outside of the frame uprights, attach the form brace wires in a manner similar to that shown in Fig. 1 and 2 for the application on angle relay racks. Forms between the uprights requiring reinforcement shall be treated per Fig. 3.

- (a) Where the self-tapping mounting plate screws are inserted from the front (apparatus side), the screw at the points of fastening of the cable form brace wire should be replaced by a screw of sufficient length to permit attaching the brace wire to the end of the screw by means of a nut and washer at the rear of the upright. The screw should be long enough to permit the nut to be fully engaged beyond the tapered portion of the self-tapping screw.

- (b) Where the mounting plate screws are inserted from the rear (wiring side), the cable form brace wire should be mounted under the heads of the screws in the same manner as specified for cable-duct framework in 3.04.

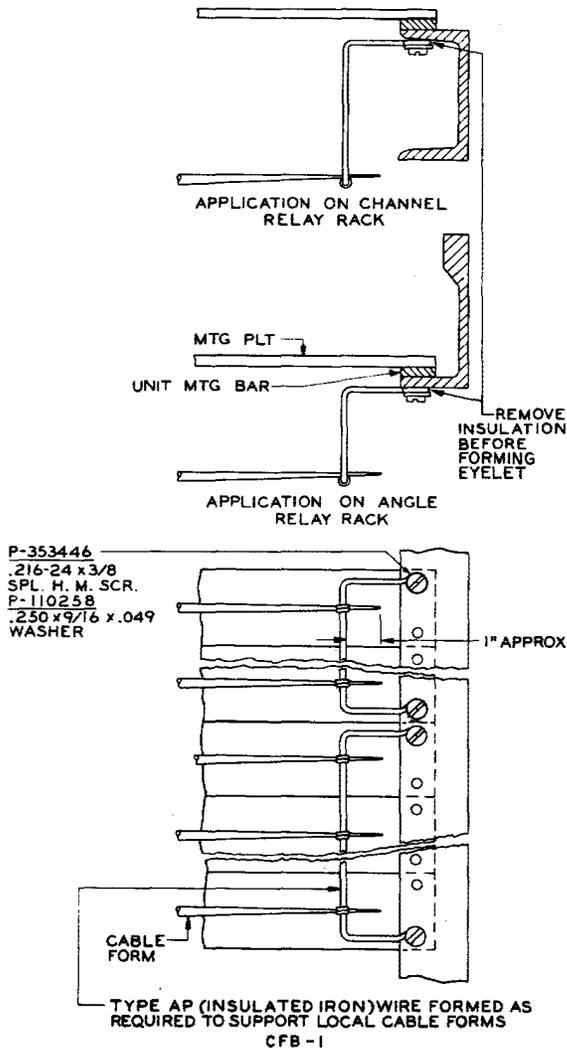


Fig. 1—Bracing Horizontal Cable Forms to Frame Uprights (Relay-Rack Unit Shown)

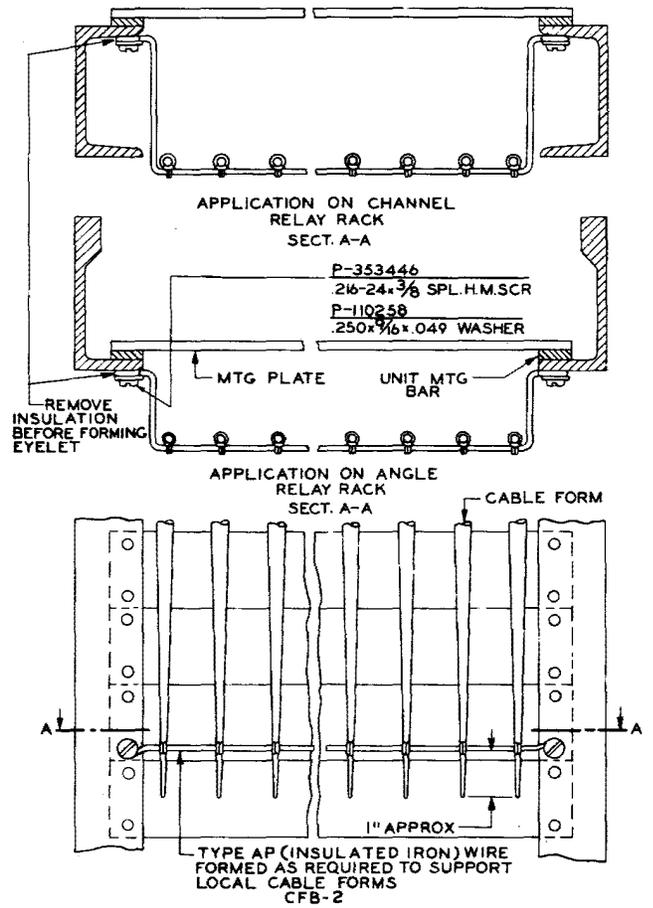


Fig. 2—Bracing Vertical Cable Forms to Frame Uprights (Relay-Rack Unit Shown)

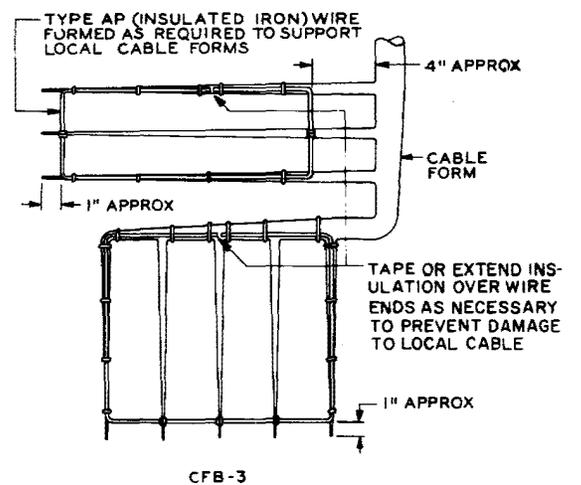


Fig. 3—Reinforcement of Cable Forms