

FASTENING FRAMES AT TOP OF
FRAME BULB ANGLE-TYPE

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| <ul style="list-style-type: none">1. <u>GENERAL</u>1.1 <u>Scope</u>1.11 This section covers requirements and information for fastening the tops of bulb angle-type frames to auxiliary framing as well as for isolated frames or frames extending more than 2'-6" beyond auxiliary framing.2. <u>FASTENING FRAMES TO AUXILIARY FRAMING</u>2.1 <u>Obstructions</u>2.11 Where an obstruction exists at the top of a frame and it prevents the frame from being fastened to the auxiliary framing, it should be treated in accordance with Paragraph 3.2.12 When a T-bolt is less than 1-3/4" from a frame junction plate and insertion is not possible from below, it will be necessary to insert and fasten frames to auxiliary framing with T-bolts before frame junction plate is installed.2.13 Figure 5B shows how the fastening details can be assembled when an obstruction at the top of the frame prevents insertion of the T-bolts between the frame top angles from below. | <ul style="list-style-type: none">2.2 <u>At 11'-6" Level</u>2.21 In toll, toll terminal, toll repeater, carrier, large step-by-step PBX's offices where frames are installed in regular rows and are of uniform height, the auxiliary framing should be at the 11'-8" level. The bulb angle-type frames should be fastened to the auxiliary framing with T-bolts and clips as shown in Figure 12C.2.22 Where the auxiliary framing bars fall directly over one T-bolt used to fasten the frame junction plate, the frame fastening T-bolt can be used in place of the shorter bolt and the bars secured to this bolt the same as at other locations.2.3 <u>At 11'-7-1/2" or 11'-9-1/2" Level</u>2.31 Where additional crossbar frames are being installed in offices where the auxiliary framing was installed at 11'-7-1/2" or 11'-9-1/2" above the floor, the added frames should be supported in a manner similar to that used for the existing frames except that, where the added frames are grouped together and in a separate building bay from the original equipment, separate auxiliary framing at the normal crossbar level should be used, braced as required without regard to the bracing in the original installation. |
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2.32 In No. 1 Crossbar and Crossbar Tandem Offices or in additions of two or more building bays of frames to existing offices, where there is a minimum clearance of 13'-0" under all obstructions, the auxiliary framing should be installed 11'-9-1/2" above floor.

2.4 In Step-By-Step Offices With 11'-8" Framing Over Bulb Angle-Type Switch Frames

2.41 Support ladder-type cable racks over relay racks, message register racks, and similar frames as shown in Figures 62H, 62L, and 12G.

2.42 Support ladder-type cable racks over bulb angle-type frames adjacent to bulb angle-type switch frames as shown in Figures 62J and 12G.

2.43 Support ladder-type cable racks over bulb angle-type frames adjacent to channel-type step-by-step frames as shown in Figures 62M and 12G.

2.5 Bulb Angle-Type Frames in No. 5 Crossbar Offices

2.51 Bulb angle frames such as the fuse bay should be attached to No. 5 Crossbar-type auxiliary framing, as shown in Figure 12F.

2.6 In Step-By-Step Offices With 11'-6" Framing

2.61 This paragraph is rated A&M Only. Where a few bulb angle frames are installed in a step-by-step, local manual or toll manual offices with 11'-6" auxiliary framing, the auxiliary framing should be fastened directly to the top angles, as shown in Figure 12C to maintain a uniform level of auxiliary framing throughout the office. Where the number and location of the bulb angle-type frames is such that a 2" clearance can conveniently be obtained, as in the case of a group of automatic ticketing frames in a step-by-step office, the fastening shown in Figure 12G should be used.

2.62 This paragraph is rated A&M Only. Support ladder-type cable rack over relay racks, message register racks, and similar frames in step-by-step offices as shown in Figure 62D.

2.63 This paragraph is rated A&M Only. Support ladder-type cable rack over bulb angle-type frames adjacent to channel-type switch frames as shown in Figure 62E.

2.7 In Manual Toll, No. 1 Crossbar, Crossbar Tandem, and No. 4 Toll Switching System Office With 11'-8" or 11'-9-1/2" Framing Over Bulb Angle-Type Frames

2.71 Support ladder-type cable racks over bulb-angle-type frames as shown in Figures 62H, 12F, and 12G.

2.72 Support overframe bar-type cable rack over bulb-angle-type frames as shown in Figures 62Q and 12F.

3. ISOLATED OR EXTENDING 2'-6" BEYOND AUXILIARY FRAMING

3.1 In general, high type auxiliary framing should be used for the support of isolated frames. However, isolated frames and frames that extend more than 2'-6" beyond auxiliary framing should be supported with short pairs of framing bars or channels from cable racks as shown in Figures 15A, 15D, 15E, 62D, 62E, 62H, 62J, 62L, 62M, and 62A. Refer to Figure 5 for method of fastening auxiliary framing to underside of cable rack. An isolated frame shall be supported at least at two points.

3.11 When short pieces of channel or framing bars are used for the support of frames, the bars or channels shall be cut so that the ends projecting to the outside of the cable rack stringers are approximately + 1/4" from the edges of the supporting saddle clips as shown in Figures 15A, 15D, 15E, 62D, and 62E. This would also apply to Figures 62H and 62J when short pieces of channel or bars are used instead of the regular auxiliary framing.

3.12 When frames are added to a lineup, the short pieces of channel or framing bars that support the end of the existing frame need not be removed.

3.2 Where frames are isolated only in the initial installation but will be in line with and adjacent to other frames in the ultimate, they should be supported by high-type auxiliary framing only so long as they are isolated. When the adjacent frames are installed, the high-type framing should be removed and low framing used for all of the frames.

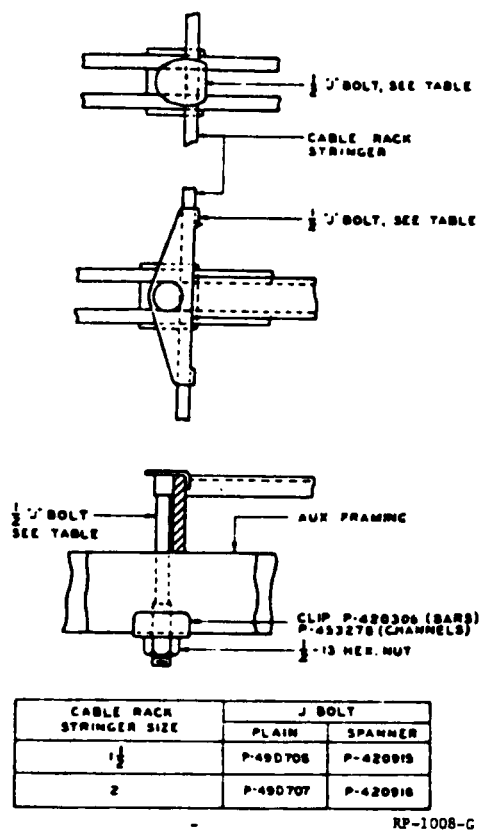


FIG. 5 AUXILIARY FRAMING FASTENED TO UNDER-SIDE OF CABLE RACK (PAR. 3.1)
(BSP 800-614-155, FIG. 5)

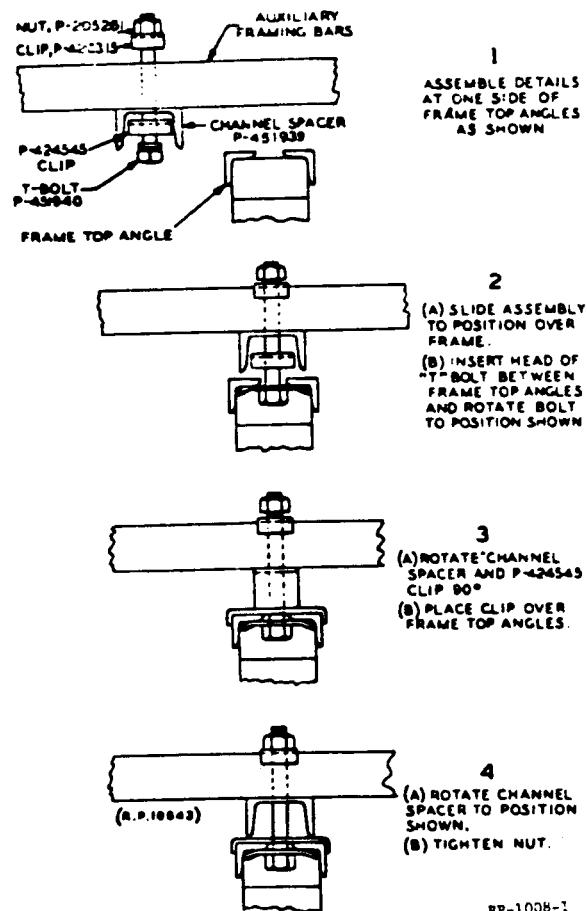


FIG. 5B METHOD OF ASSEMBLING ANGLE BAY FASTENING DETAILS WHERE AN OBSTRUCTION PREVENTS INSERTION OF "T" BOLTS BETWEEN BAY TOP ANGLES FROM BELOW (PAR. 2.42)

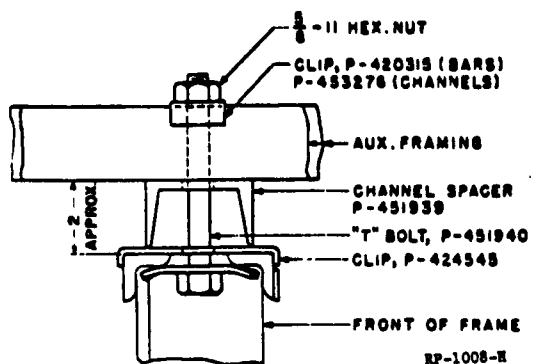


FIG. 12A AUXILIARY FRAMING ATTACHED TO TOP ANGLES OF BULB ANGLE-TYPE FRAMES (PARS. 2.21, 2.61) (BSP 800-614-155, Fig. 12A (MFR DISC Replaced by Fig. 12G))

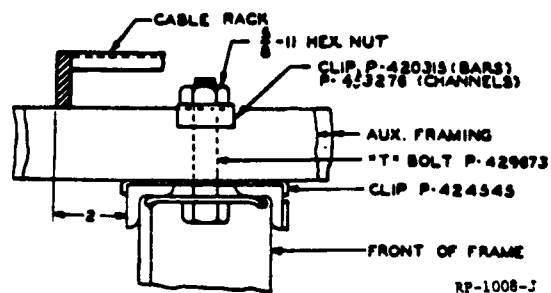


FIG. 12C AUXILIARY FRAMING ATTACHED DIRECTLY TO TOP ANGLES OF BULB ANGLE-TYPE FRAMES (PARS. 2.21, 2.61) (BSP 800-614-155, Fig. 12C)

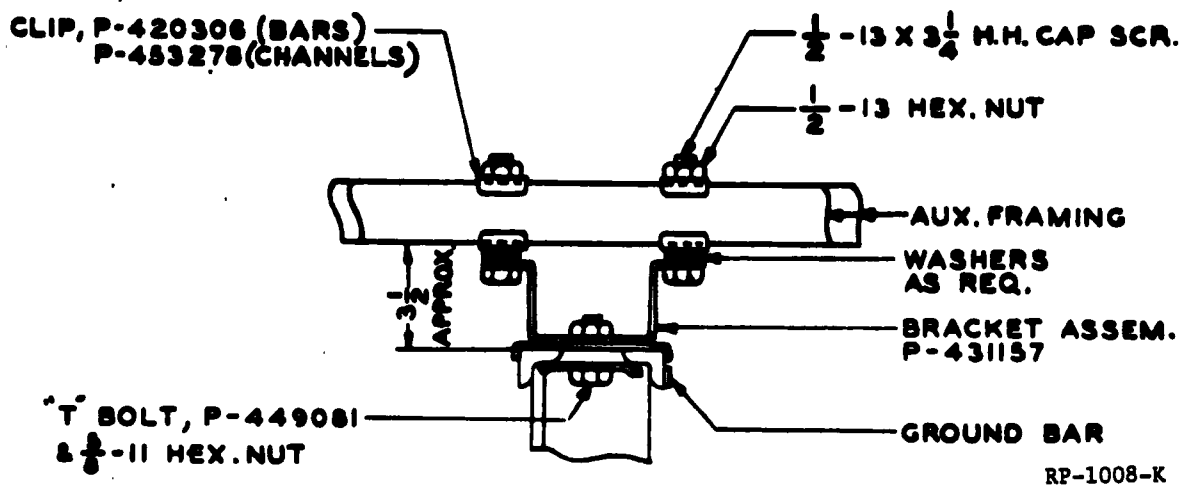


FIG. 12D NO. 5 CROSSBAR-TYPE AUXILIARY FRAMING ATTACHED TO BULB ANGLE FRAMES (PAR. 2.51) (BSP 800-614-155, Fig. 12D (MFR DISC Replaced by Fig. 12F))

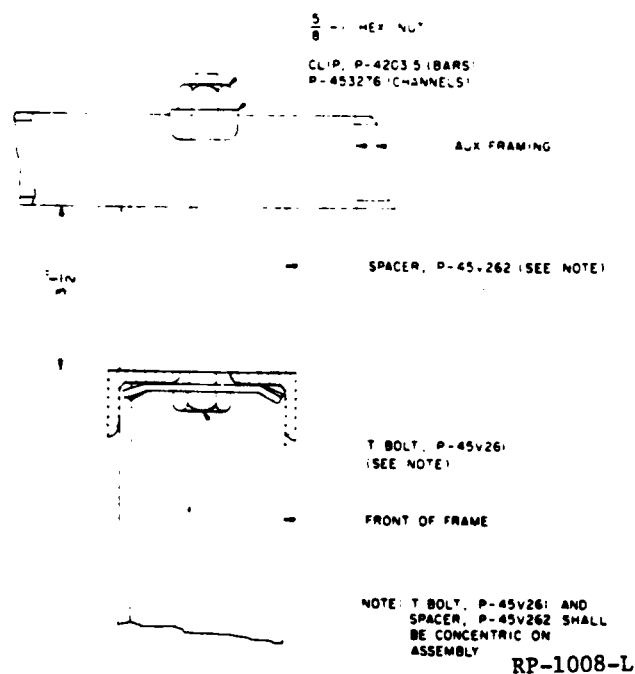


FIG. 12F AUXILIARY FRAMING ATTACHED TO TOP ANGLES OF BULB ANGLE-TYPE FRAMES
11'-9-1/2" AUXILIARY FRAMING (PAR. 2.51)
(BSP 800-614-155, Fig. 12F)

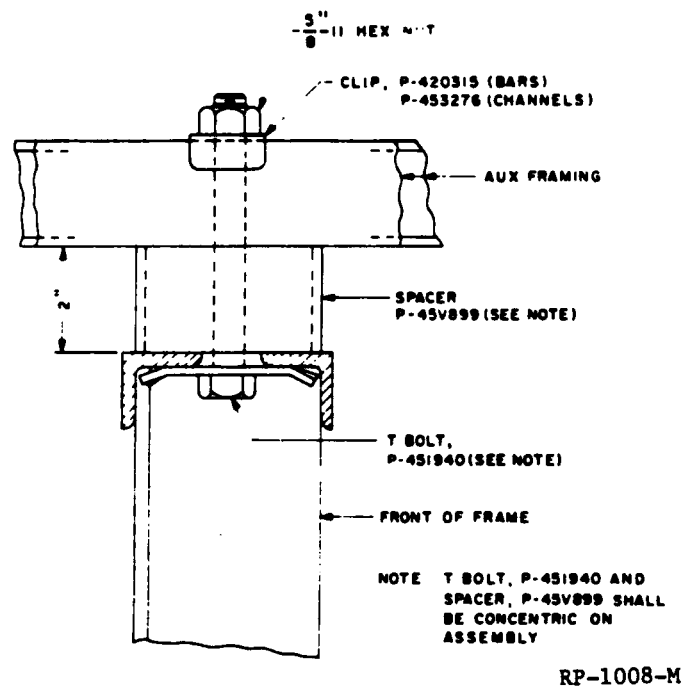


FIG. 12G AUXILIARY FRAMING ATTACHED TO TOP ANGLES OF BULB ANGLE-TYPE FRAMES
11'-8" AUXILIARY FRAMING (PARS. 2.21, 2.61)
(BSP 800-614-155, Fig. 12G)

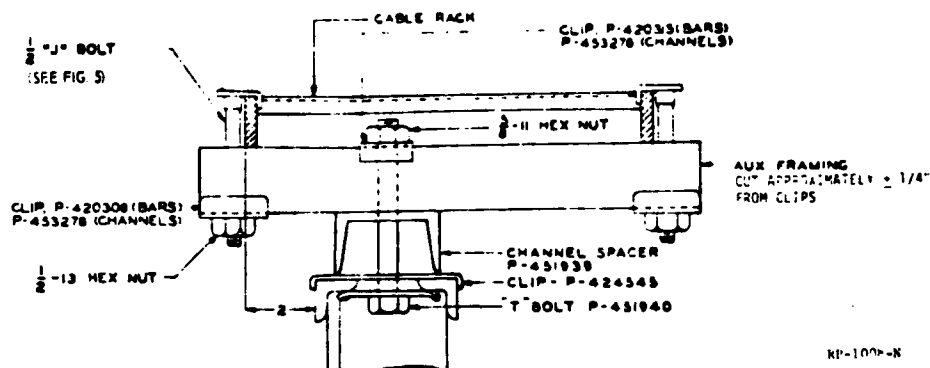


FIG. 15A ISOLATED NO. 1 OR NO. 4 TOLL CROSSBAR FRAME SUPPORTED FROM ONE CABLE RACK - 11'-8\"

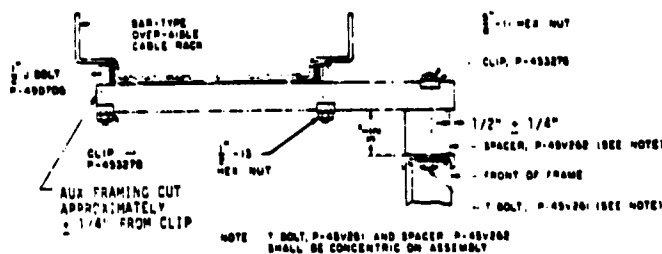


FIG. 15D ISOLATED NO. 1 CROSSBAR FRAME SUPPORTED FROM BAR-TYPE OVER-AISLE CABLE RACK 11'-9-1/2\"

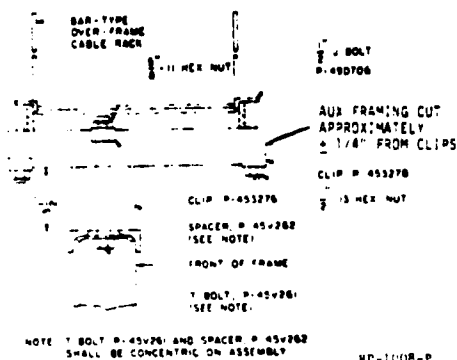


FIG. 15E ISOLATED NO. 1 CROSSBAR FRAME SUPPORTED FROM BAR-TYPE OVER-FRAME CABLE RACK 11'-9-1/2\"

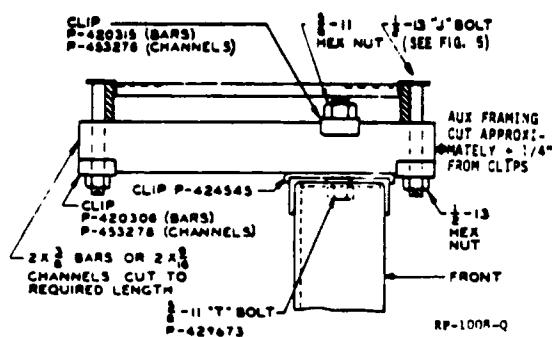


FIG. 62D ANGLE-TYPE RELAY RACK SUPPORTED FROM CABLE RACK BY AUXILIARY FRAMING - STEP-BY-STEP, TOLL AND MANUAL - A&M ONLY (PARS. 2.62, 3.1, 3.11)

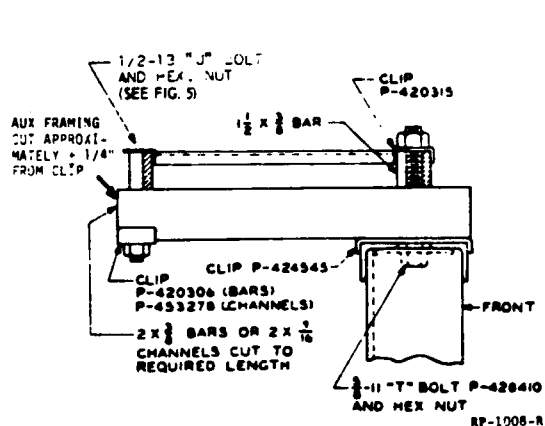
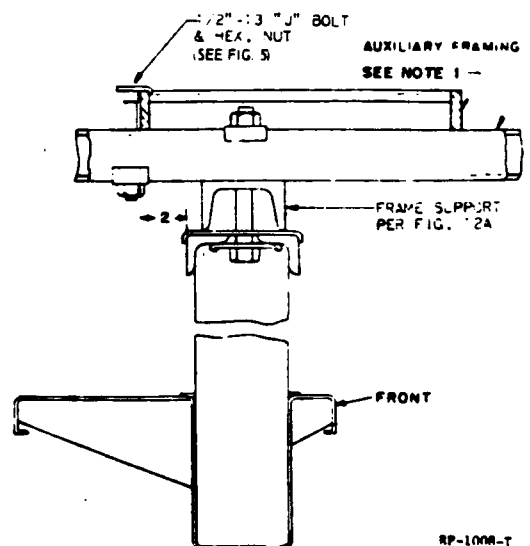
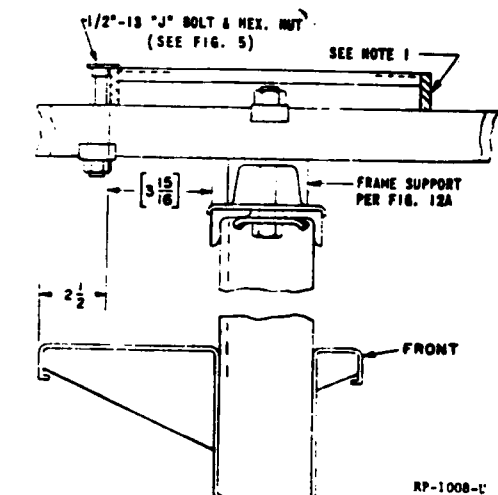


FIG. 62E ANGLE-TYPE FRAMES ADJACENT TO STEP-BY-STEP CHANNEL FRAMES SUPPORTED FROM CABLE RACK BY AUXILIARY FRAMING - A&M ONLY (PARS. 2.63, 3.1, 3.11)
(BSP 800-614-157, Fig. 62E)



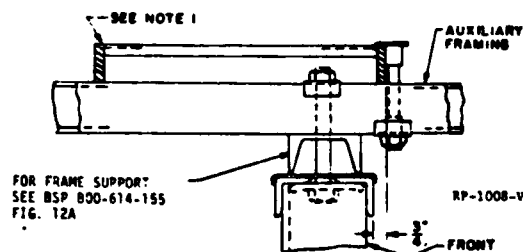
NOTE:
1. TWO "J" BOLTS, ONE AT EACH STRINGER, SHOULD BE USED WHERE SHORT PAIRS OF FRAMING BARS OR CHANNELS ARE USED TO SUPPORT CABLE RACK EXTENDING BEYOND REGULAR FRAMING OR ARE USED FOR THE SUPPORT OF ISOLATED FRAMES.

FIG. 62H ANGLE-TYPE FRAMES SUPPORTED FROM LADDER-TYPE CABLE RACK BY AUXILIARY FRAMING (PARS. 2.41, 2.81, 3.1, 3.11)
(BSP 800-614-157, Fig. 62H)



NOTE:
1. TWO "J" BOLTS, ONE AT EACH STRINGER, SHOULD BE USED WHERE SHORT PAIRS OF FRAMING BARS OR CHANNELS ARE USED TO SUPPORT CABLE RACK EXTENDING BEYOND REGULAR FRAMING OR ARE USED FOR THE SUPPORT OF ISOLATED FRAMES.

FIG. 62J ANGLE-TYPE FRAMES ADJACENT TO ANGLE-TYPE OR CHANNEL-TYPE STEP-BY-STEP SWITCH FRAMES SUPPORTED FROM LADDER-TYPE CABLE RACK BY AUXILIARY FRAMING (PARS. 2.42, 3.1, 3.11)
(BSP 800-614-157, Fig. 62J)



NOTE:
1. TWO "J" BOLTS, ONE AT EACH STRINGER, SHOULD BE USED WHERE SHORT PAIRS OF FRAMING BARS OR CHANNELS ARE USED TO SUPPORT CABLE RACK EXTENDING BEYOND REGULAR FRAMING OR ARE USED FOR THE SUPPORT OF ISOLATED FRAMES.

FIG. 62L ANGLE-TYPE RELAY RACK SUPPORTED FROM LADDER-TYPE CABLE RACK BY AUXILIARY FRAMING - STEP-BY-STEP SYSTEMS - 11'-8" FRAMING - A&M ONLY (PARS. 2.41, 3.1)
(BSP 800-614-157, Fig. 62L)

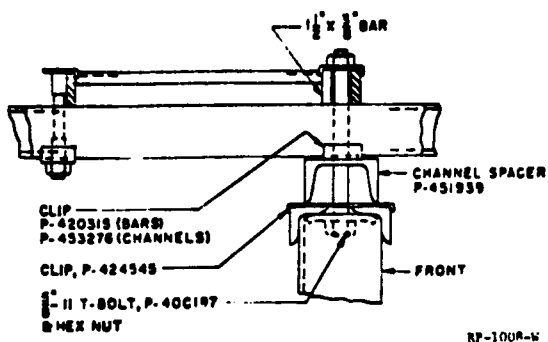


FIG. 62M ANGLE-TYPE FRAMES ADJACENT TO CHANNEL-TYPE STEP-BY-STEP FRAMES SUPPORTED FROM LADDER-TYPE CABLE RACK BY AUXILIARY FRAMING - 11'-8" FRAMING - A&M ONLY (PARS. 2.43, 3.1)
(BSP 800-614-157, Fig. 62M)

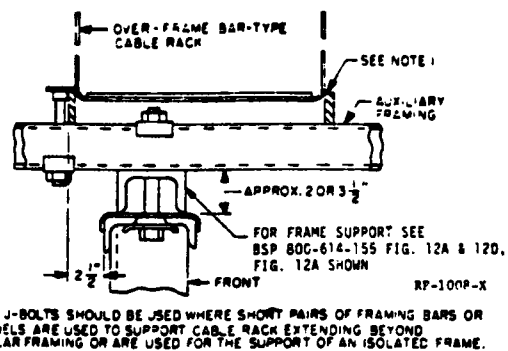


FIG. 62Q LOCATION OF OVER-FRAME BAR-TYPE CABLE RACK OVER ANGLE-TYPE FRAMES (PAR. 2.82)
(BSP 800-614-157, Fig. 62Q)

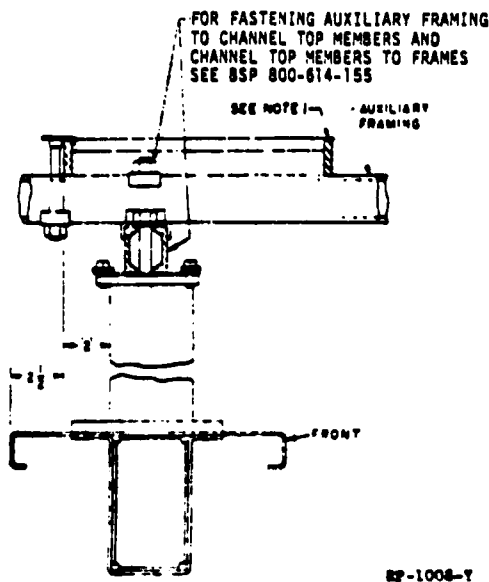


FIG. 63A CABLE RACK SUPPORTED BY AUXILIARY FRAMING OVER BULB ANGLE-TYPE SWITCH FRAMES - STEP-BY-STEP SYSTEM - 11'-8" FRAMING (PAR. 3.1)
(BSP 800-614-157, Fig. 63A)

4. VERIFICATION ITEMS

Brief Statement of Requirements		Reference	
		Par. No.	Fig. No.
4.1	<u>Top Fastenings</u>		
4.11	Where obstructions exist.	2.1	5B
4.12	Frames fastened correctly to 11'-8" framing.	2.4	12A, 12G
4.13	Frames that extend more than 2'-6" beyond last framing bars or channels attached to cable rack.	3.1	15A, 62L, 62M
4.14	Short framing bars or channels cut so that ends are approximately $\pm 1/4"$ from the edges of the supporting saddle clips.	3.11	15A
4.15	Where framing is at 11'-7-1/2" height frames supported correctly.	2.31	
4.16	Where framing is at 11'-9-1/2" height frames supported correctly.	2.31, 2.32	

→ No arrows shown due to extensive changes.

Engineering Planning Manager
(Installation)

Reason for Reissue:

- (1) To update BSP references.
- (2) To update Figures 15A, 15D, 15E, 62D, 62E, and 62F.