

FASTENING FRAMES AT BOTTOM OF FRAME
EXCEPT WHEN BOLTS ARE SET IN EPOXY CONCRETE

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1. GENERAL

1.1 Scope

1.11 This section covers the requirements and procedures for the fastening of all types of frames (except ESS and Toll Frames associated with ESS), racks, and cabinets to floors and walls.

2. ASSOCIATED INFORMATION

2.1 Reference should also be made to Section 20A (General Information) and to floor plan drawings and specification information furnished the job.

NOTE: Instruction for installing and setting self-drilling anchors in masonry, using the R-4416 Electric Roto-Stop Hammer are contained in Section 9A.

3. PLACING EQUIPMENT

3.1 During the erecting operations the frames should as far as practical, be so located that the front edges as well as the ends of the frames bases coincide with the associated lines previously placed on the floor.

NOTE: Permissible manufacturing variations in the widths of the frames may result in the overall lengths of the lineups being greater or less than the dimensions shown on the floor plan drawings. Where this condition occurs the variation should be taken at the end of the lineup away from the main aisle.

4. FLOOR FASTENINGS

4.1 All equipment structures (frames, racks, etc.) having angle or channel base members shall, unless otherwise specified, be fastened to the floor. A hold-down bolt should be placed at each hole provided in the base angle unless otherwise specified on the framework assembly drawing.

4.11 Some light frameworks and cabinets may be fastened to the floor as shown in Figure 1.

4.12 Structures with sheet metal bases, such as bulb angle-type crossbar frames and relay racks, cable duct-type frames with integral guard rails, and sheet metal box-type frames (No. 5 crossbar) have a continuous slot in the base from one end of the frame to the other. Adjacent frames in a lineup are bolted together and the entire lineup should be treated as a unit and bolted to the floor as shown in Figures 6, 7 or 7A, using one bolt as near each end as practicable and intermediate bolts not to exceed approximately 10'-0" centers. Two floor bolts shall be used to fasten each isolated bay. Duct-type frames arranged back to back shall, for this purpose, be considered as two separate lineups.

4.13 As stated herein, cable duct-type frames with detachable guard rails, when aligned in a single row, are rigidly fastened and properly spaced at the top by means of a junction pipe, but are not rigidly joined together at the uprights. Therefore, after the frame has been spaced on the floor with regard to the indentation marks at the bases of the frames, one hold-down bolt, centrally located in the base, as shown in Figure 7, should be used for each frame in a line.

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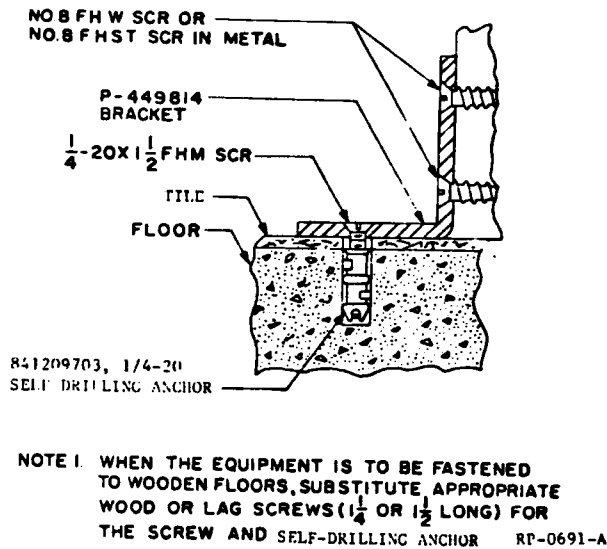


FIG. 1 FASTENING DESKS, CABINETS OR LIGHT FRAMEWORKS TO FLOORS
(PAR. 4.11)
(BSP 800-614-154 Fig. 1)

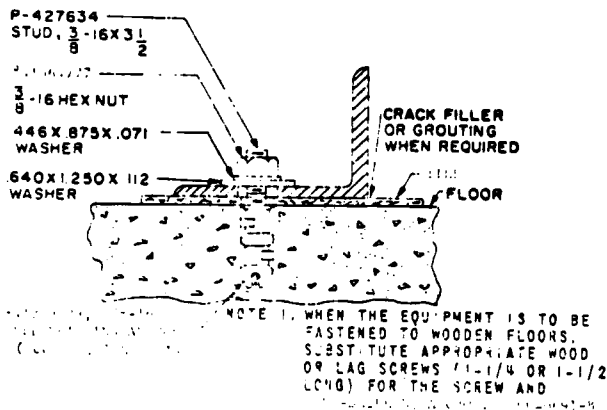


FIG. 3 FASTENING FRAMES AND RACKS OF ANGLE BASE CONSTRUCTION TO FLOORS
(PAR. 4.17)
(BSP 800-614-154 Fig. 3)

4.14 In cases where it is impracticable either to bolt the frame uprights or frame bases together, as for example, angle-type relay racks in the same line-up with cable duct-type frames, the two types of frames should be treated separately and floor bolts provided as required for each separate line-up.

4.15 Formerly crossbar-type frames were aligned approximately 1/2" above the floor and the space under the frame bases filled with grouting. Frames added in an existing lineup where grouting has been used should be similarly grouted. The additional frames should however, be bolted to the floor and to each other in the manner described herein.

4.16 Where there is but a single frame in the lineup, two floor bolts will be required, located as near to each end of the frame as possible (approximately 3-3/4" from each upright), as is the case of isolated bays of other types of base construction.

4.17 The LDF is bolted to the floor as shown in Figure 3 with one floor bolt at each end unit and one at every third intermediate unit, approximately twelve bays apart.

4.18 Step-by-step bulb angle-type frames have sheet metal bases. A hold-down bolt should be placed in each hole provided in the base as shown in Figure 4D.

5. NUMBER AND LOCATION OF FLOOR BOLTS

5.1 The number and location of floor bolts should be as indicated below, except where earthquake protection is specified, in which case the number, size and location should be in accordance with the section covering "Earthquake Protection".

5.2 Structures with sheet metal bases shall, with the exceptions mentioned below, be fastened to the floor as outlined in Paragraph 4.12).

5.21 In bays where fuse record book holders per drawing ED-91261-50 are to be located in the metal bases, the self-drilling anchor assembly should be placed at the extreme end of the bay, so as to provide clearance for the fuse record book holder when installed later.

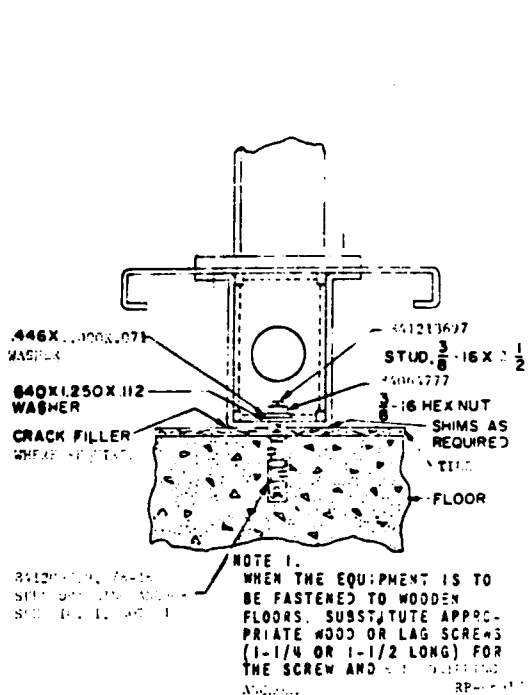
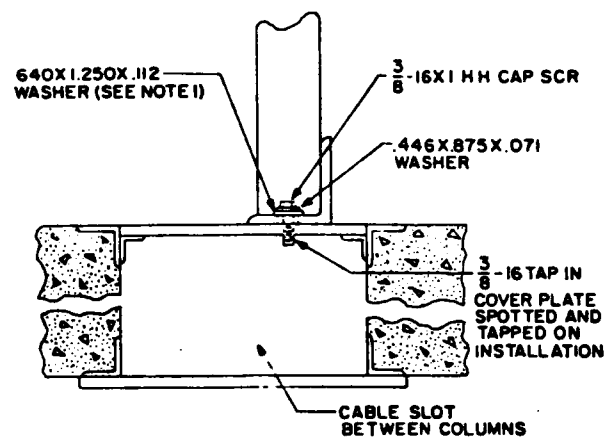
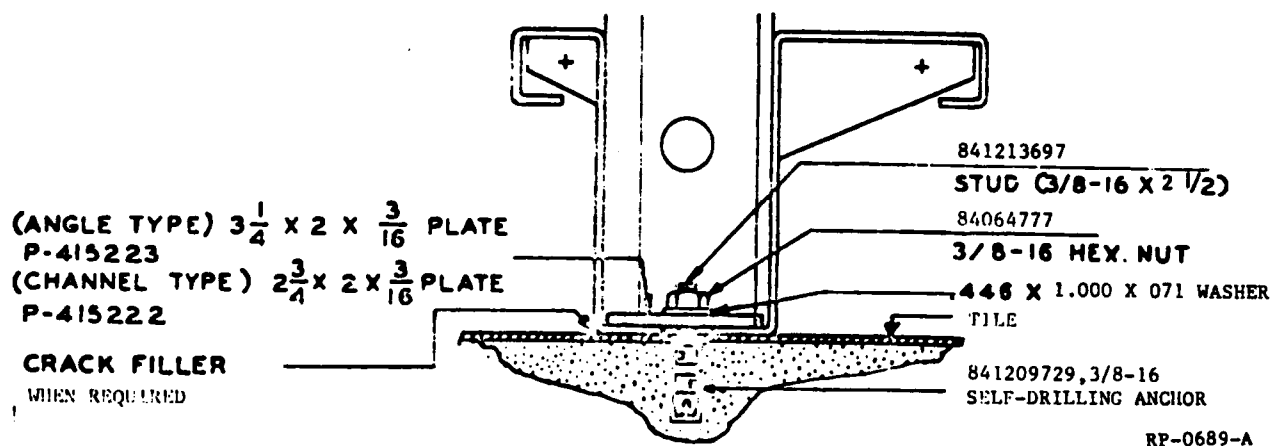


FIG. 4D FASTENING ANGLE-TYPE STEP-BY-STEP FRAMES TO FLOORS (PAR. 4.18) (BSP 800-614-154 Fig. 4D)



RP-0691-D

FIG. 4E FASTENING FRAMES TO COVERS OF CABLE SLOTS BETWEEN COLUMNS (PAR. 5.64) (BSP 800-614-154 Fig. 4E)



RP-0689-A

FIG. 6 FASTENING CHANNEL AND ANGLE-TYPE RELAY RACK OR CROSSBAR FRAMES, HAVING SHEET METAL BASE CONSTRUCTION, TO FLOORS (ANGLE-TYPE UPRIGHT SHOWN) (PAR. 4.12) (BSP 800-614-154 Fig. 6)

5.22 Two floor bolts shall be used to fasten each isolated frame. Duct-type frames arranged back-to-back, shall be considered as two lineups for this purpose.

5.3 Shop welded structures with angle base members shall be fastened to the floor as follows:

5.31 Two floor bolts shall be used to fasten each isolated frame and one floor bolt per bay in line of bays.

NOTE: An isolated frame is one which is set apart from all other frames and therefore cannot be bolted directly to another frame. If a single frame is adjacent to an open space, such a frame is isolated. If there are two or more frames on either side of the open space, they are considered two separate lineups and are treated accordingly.

5.32 Two floor bolts shall be used to fasten each bay of floor supported relay rack.

5.33 All other frames of like-base construction; unless otherwise specified on the framework assembly drawings, floor bolts should be located in each of the bolt holes provided in the base members.

5.34 On job assembled frames having a common base angle for two or more bays, such as SxS frames with floor angles, floor bolts should be located as shown on the frame assembly drawings.

5.35 For the end frame of a lineup of sheet metal box type frames and for those intermediate frames which have to be anchored to the floor, locate the self-drilling anchor 7" from either end of the frame. Figure 7A shows the assembly of self-drilling anchor, studs and hold-down plates in the frame.

NOTE: Where a double bay frame is located at the end of a line-up and the Talking Battery Filter unit prohibits placing the floor bolt in the end bay of the frame, the floor fastening may be placed near the center upright of the bay not equipped with a filter. The No. 5 Crossbar Trunk Relay Rack bays which contain Talking Battery Filter units can be determined from the job information and the floor fastenings can be arranged so that the necessity of removing the filter units can usually be avoided while meeting the requirements for fastening sheet metal base frames.

5.4 The entire lineup shall be treated as a unit, using one fastening as near each end as practicable and intermediate fastenings not to exceed 10' - 0" centers.

5.5 In a line-up where there are different types of frames, each group of frames of the same type should be considered as a separate line-up when determining the number and location of floor bolts.

5.6 In some instances such as the floor supported cabinets or casings used for PBX equipment or subscriber premises, drilling of holes for hold-down bolts may not be permitted but, when permitted, they should be installed as follows:

5.61 Cabinets, when aligned end to end, should be fastened to the floor as shown in Figures 7D and 7E at each of the four outside corners and have one fastening in each cabinet at the junctions. The fastenings at the junctions should be diagonally opposed so that there is one fastening at each end of the junction.

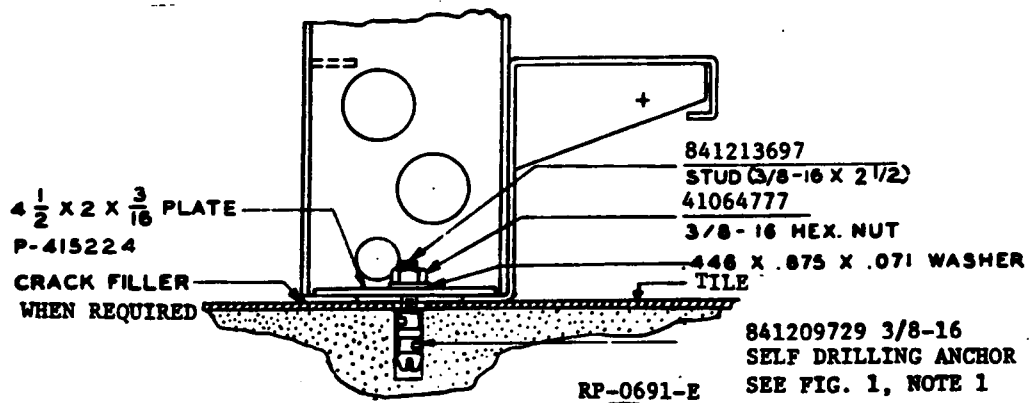


FIG. 7 FASTENING CABLE DUCT-TYPE RELAY RACK, HAVING SHEET METAL BASE
CONSTRUCTION TO FLOORS
(PARS. 4.12, 4.13)
(BSP 800-614-154 Fig. 7)

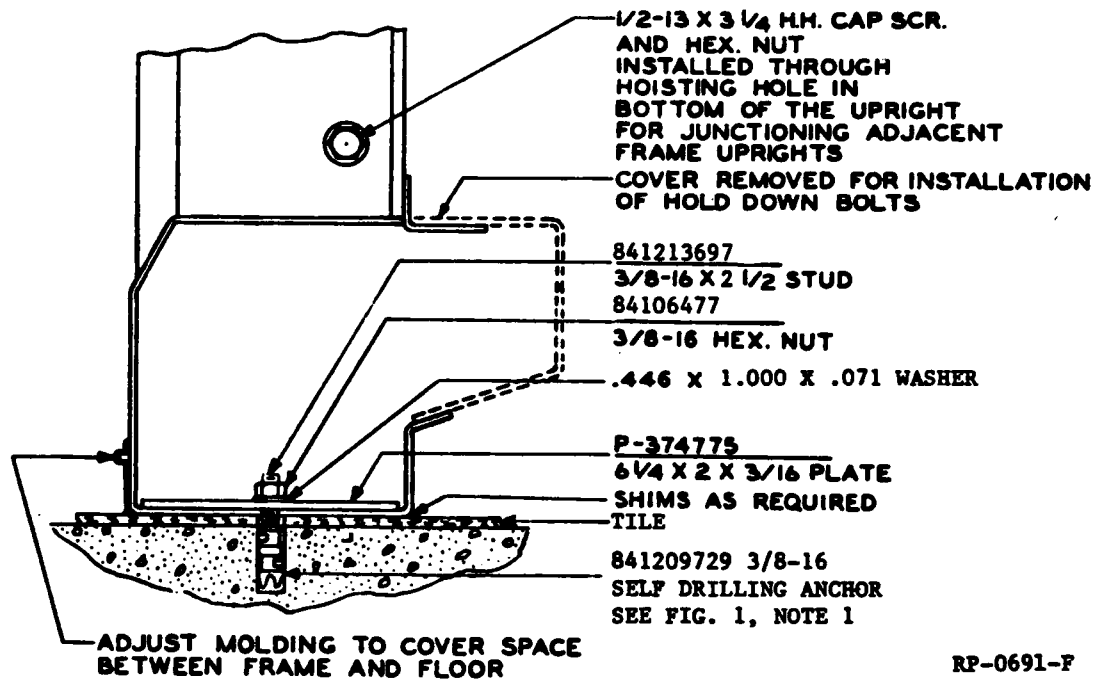


FIG. 7A FASTENING SHEET METAL BOX-TYPE FRAMES (NO. 5 CROSSBAR) TO FLOORS
(PAR. 4.12, 5.35)
(BSP 800-614-154 Fig. 7A)

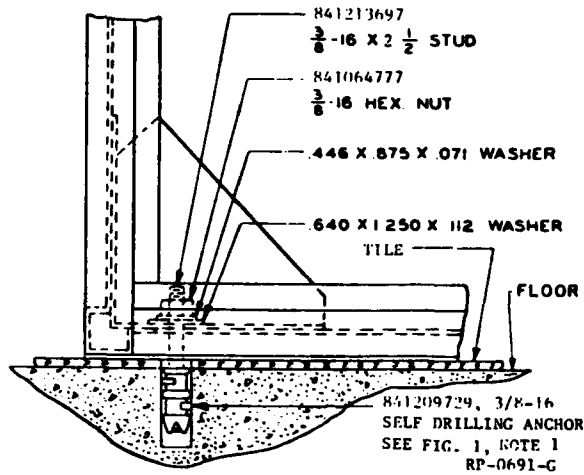


FIG. 7D FASTENING CABINETS WITH ROLLED SHEET METAL CORNER RAILS TO FLOORS (PAR. 5.61) (BSP 800-614-154 Fig. 7D)

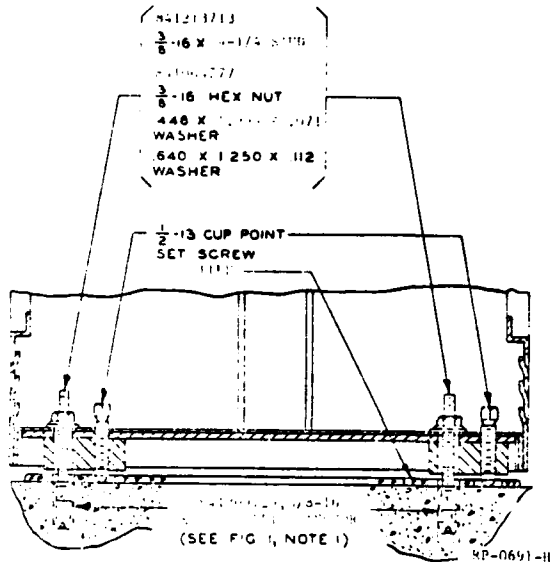


FIG. 7E FASTENING CABINETS HAVING LEVELING SCREWS, OR CASING ON FRAMES HAVING LEVELING SCREWS TO FLOORS - CABINETS SHOWN (PAR. 5.61) (BSP 800-614-154 Fig. 7E)

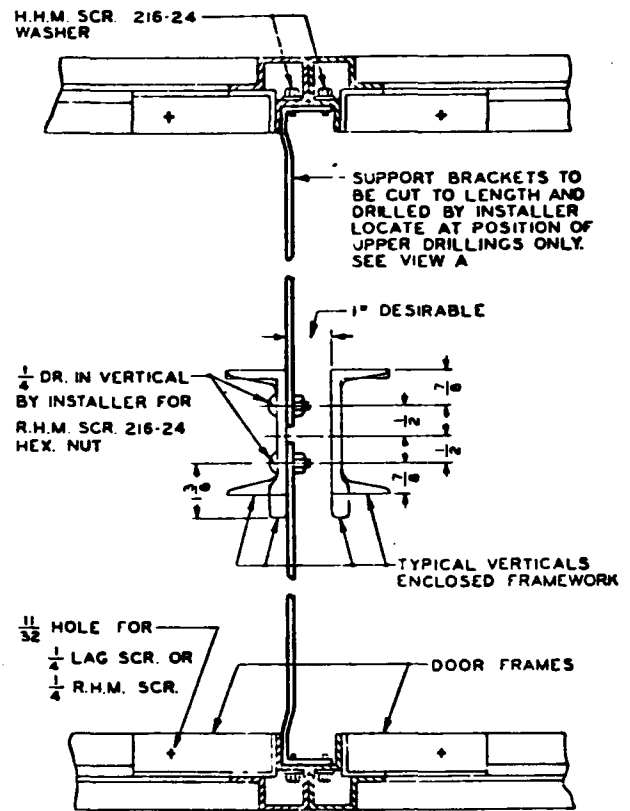
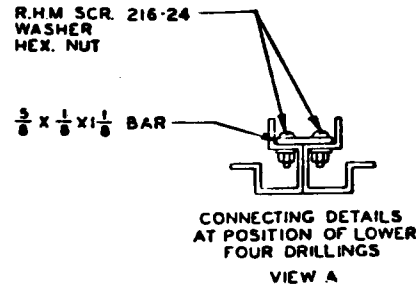


FIG. 7F JUNCTIONING DOOR FRAMES OF CASINGS ALIGNED END TO END WITH ADJACENT END PANELS OMITTED (PAR. 5.63) (BSP 800-614-154 Fig. 7F)

5.62 Isolated cabinets or casings should have four hold-down bolts.

5.63 Casings, when aligned end to end, are generally fastened to the enclosed framework rather than the floor. When casings with rolled sheet metal-type corner rails are arranged end to end with adjacent end panels omitted, the door frames should be anchored to the floor at the junctions and should be fastened together and to the enclosed framework as shown in Figure 7F. If not permissible to drill the floor, the installer should provide two more support brackets at the second screw position from the floor in addition to those in the upper screw position.

5.631 When individual casings 1' 0" deep are used to enclose a single bay of floor-supported relay rack having wide floor angles, the installer should drill and tap 1/4"-20 holes in the floor angles to match 11/32" holes in lower rail of casing door frame and fasten casing to frame with round head machine screws.

5.64 Equipment frameworks located over cable slots should be fastened to the metal covers of the slots as shown in Figure 4E.

6. VERIFICATION ITEMS

Brief Statement of Requirements		Reference	
		Par. No.	Fig. No.
6.1	<u>Bottom Fastening</u>		
6.11	Number and Location of Floor Fastenings Correct.	5.1 to 5.6	
6.12	Frames Located in Accordance with Floor Plan Drawing	3.1	

→No arrows due to extensive changes.

[Vertical line at side of paragraphs indicate requirements.

Engineering Planning Manager
(Installation)

Reason for Reissue:

- (1) To update BSP reference.
- (2) To add self-drilling anchor to figures.