

**BULK PROTECTED REMOTE TERMINALS
INSTALLATION OF SHELVES
"SLC*"--96 CARRIER SYSTEM**

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4. Securing Two Metallic or Fiber SLC-96 Carrier Systems to Frame	7	1.01 This section covers the installation of shelves for the <i>bulk protected</i> , rack-mounted <i>metallic</i> and <i>fiber</i> SLC-96 Carrier System remote terminals. Bulk protection is defined as those remote	

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terminals which use 190-type protector blocks to provide electrical protection.

1.02 This section is reissued to include installation of shelves and interconnection between shelves for the fiber SLC-96 Carrier System. Revision arrows are used to emphasize the more significant changes.

1.03 The remote terminals include the ED-97948-30 minihut, the ED-97973-30 B equipment platform (BEP) used in the controlled environment vault (CEV), and the ED-97972-30 electronic equipment enclosure (EEE). The installation of shelves includes interconnection between the shelves, backplane access, grounding, and ac power. The installation of the shelves also requires connections to the intermediate cabling provided in the prewired structures. For the installation of equipment bays that were not provided in the prewired structure, see the corresponding ED drawing.

2. EQUIPMENT AND MATERIAL REQUIRED

A. Metallic SLC-96 Carrier System

2.01 The equipment and materials required to fill one ED-97162 seven-foot frame are as follows:

- **128A Apparatus Mounting** (1 or 2 Required): Furnished with two alignment pins and four No. 12-24 screws for each apparatus mounting.

Note: The second apparatus mounting must be installed if two J1C141AG or J1C141AH-1, L1 channel banks are installed in one bay.

- **3A Battery Charger:** Furnished with two alignment pins and four No. 12-24 screws.
- **1A Power and Jack Panel:** Furnished with two alignment pins and four No. 12-24 screws.
- **J1C141AG or J1C141AH-1, L1 Channel Bank** (1 or 2 Required): Furnished with two alignment pins and six No. 12-24 screws for each bank.

Note: The second channel bank may be installed at a later time.

- **ED-97986-30 Miscellaneous Pair Panel** (One required for bays 1 and 11 only): Furnished with two alignment pins and four No. 12-24 screws.
- **Extension Cords** (obtain locally): Table A lists the lengths required for each bay.

▶TABLE A◀

CORD LENGTHS REQUIRED FOR DIFFERENT BAYS

TYPE OF REMOTE TERMINAL	MAXIMUM NO. OF BAYS	CORD LENGTHS (FT) (NOTE)
Minihut	1	15
	2 to 3	25
	4 to 5	12
BEP	1 to 10	8
EEE	1 to 20	8

Note: Cords should be 14-gauge and rated SJO or better in accordance with National Electrical Code.

B. Fiber SLC-96 Carrier System

2.02 ▶The equipment and materials required to fill one ED-97162 seven-foot frame are as follows:

- **128A Apparatus Mounting** (1 or 2 Required): Furnished with two alignment pins and four No. 12-24 screws for each apparatus mounting.

Note: The second apparatus mounting must be installed if two J1C141AH-1, L2 channel banks are installed in one bay.

- **3A Battery Charger:** Furnished with two alignment pins and four No. 12-24 screws.
- **1A Power and Jack Panel:** Furnished with two alignment pins and four No. 12-24 screws.
- **J1C141AH-1, L2 Channel Bank** (1 or 2 Required): Furnished with two alignment pins and six No. 12-24 screws for each bank.

Note: The second channel bank may be installed at a later time.

- **Lightguide Cable Interconnection Terminal (LCIT)** (1 Required for Minihut, 2 Required for B Equipment Platform, and 3 Required for Electronic Equipment Enclosure): Furnished with two alignment pins and four No. 12-24 screws for each LCIT.

Note: One LCIT will serve twelve SLC-96 fiber carrier systems. Each system terminates 4 single fibers at the LCIT for a total of 48 single fibers in one LCIT.

- **ED-97986-30 Miscellaneous Pair Panel** (One required for bays 1 and 11 only): Furnished with two alignment pins and four No. 12-24 screws for each panel.

- **Extension Cords** (Obtain locally): Table A lists the lengths required for each bay.♦

3. INSTALLATION OF SHELVES (METALLIC AND FIBER "SLC"-96 CARRIER SYSTEMS)

- 3.01** ♦Install the alignment pins, furnished with each shelf, on both frame uprights. The location of the alignment pins for the various configurations are shown in Fig. 1, 2, and 3.♦

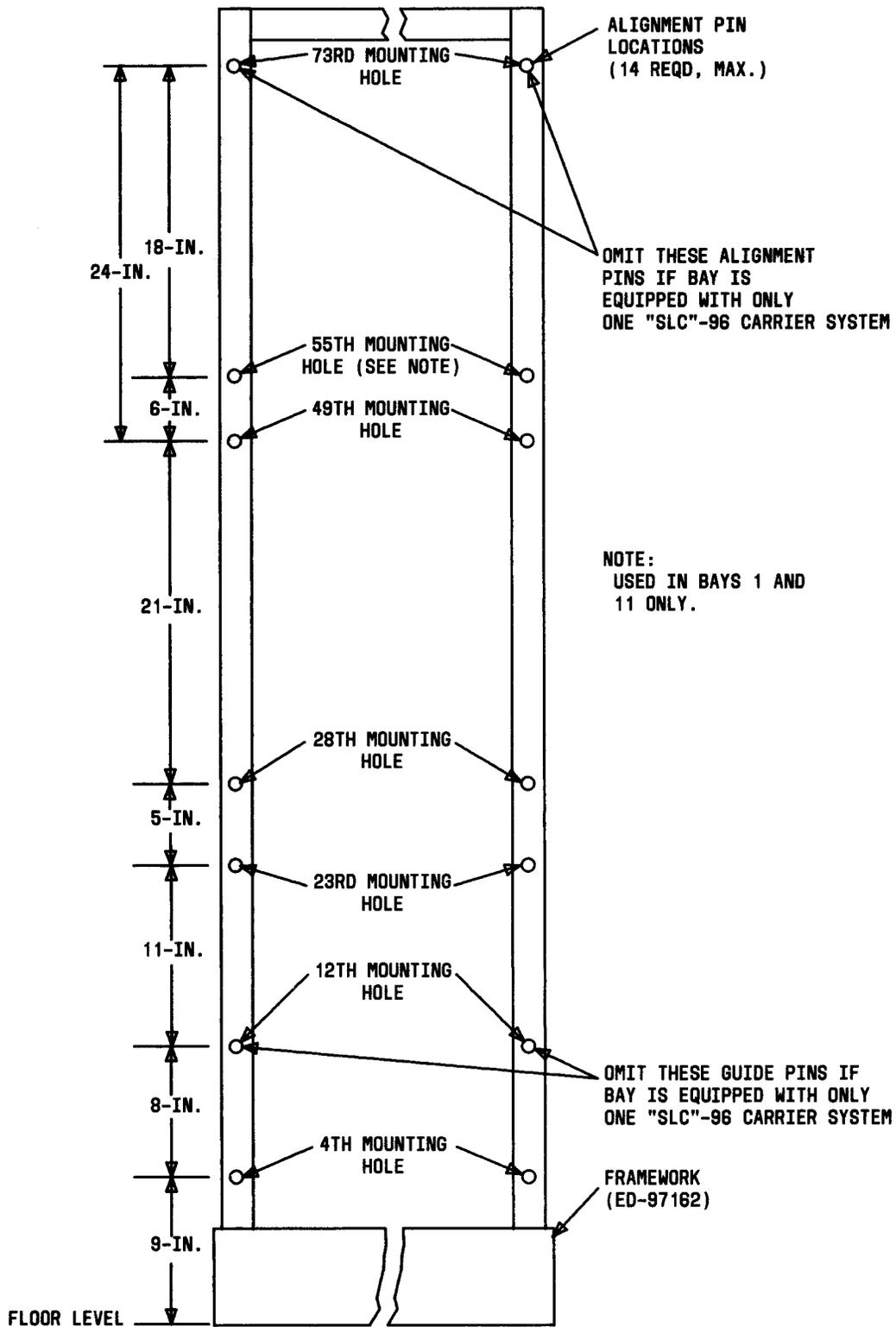


Fig. 1—Alignment Pin Locations For Two Metallic or Fiber SLC-96 Carrier Systems

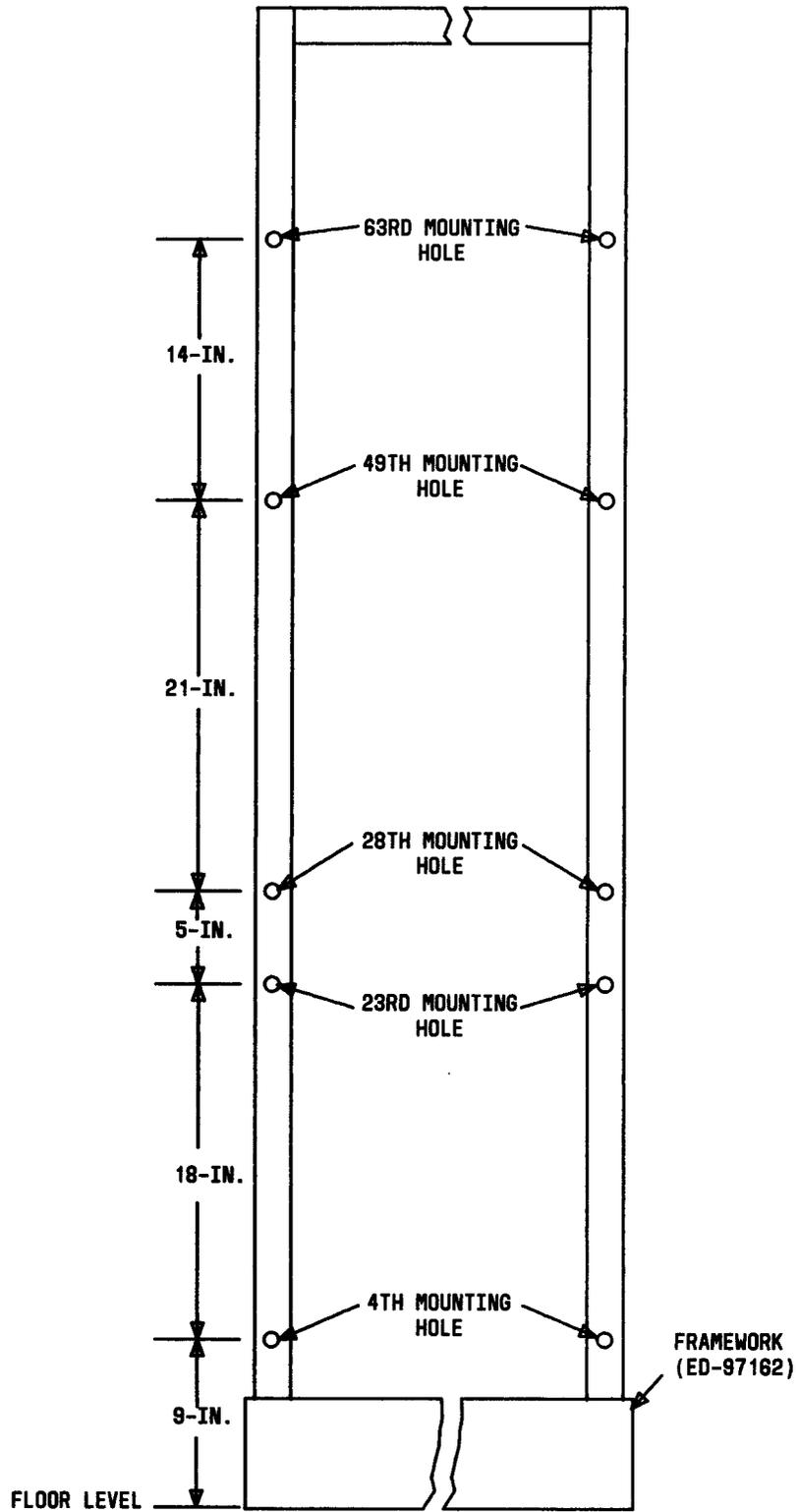


Fig. 2—Alignment Pin Location for One Fiber SLC-96 Carrier System and One LCIT

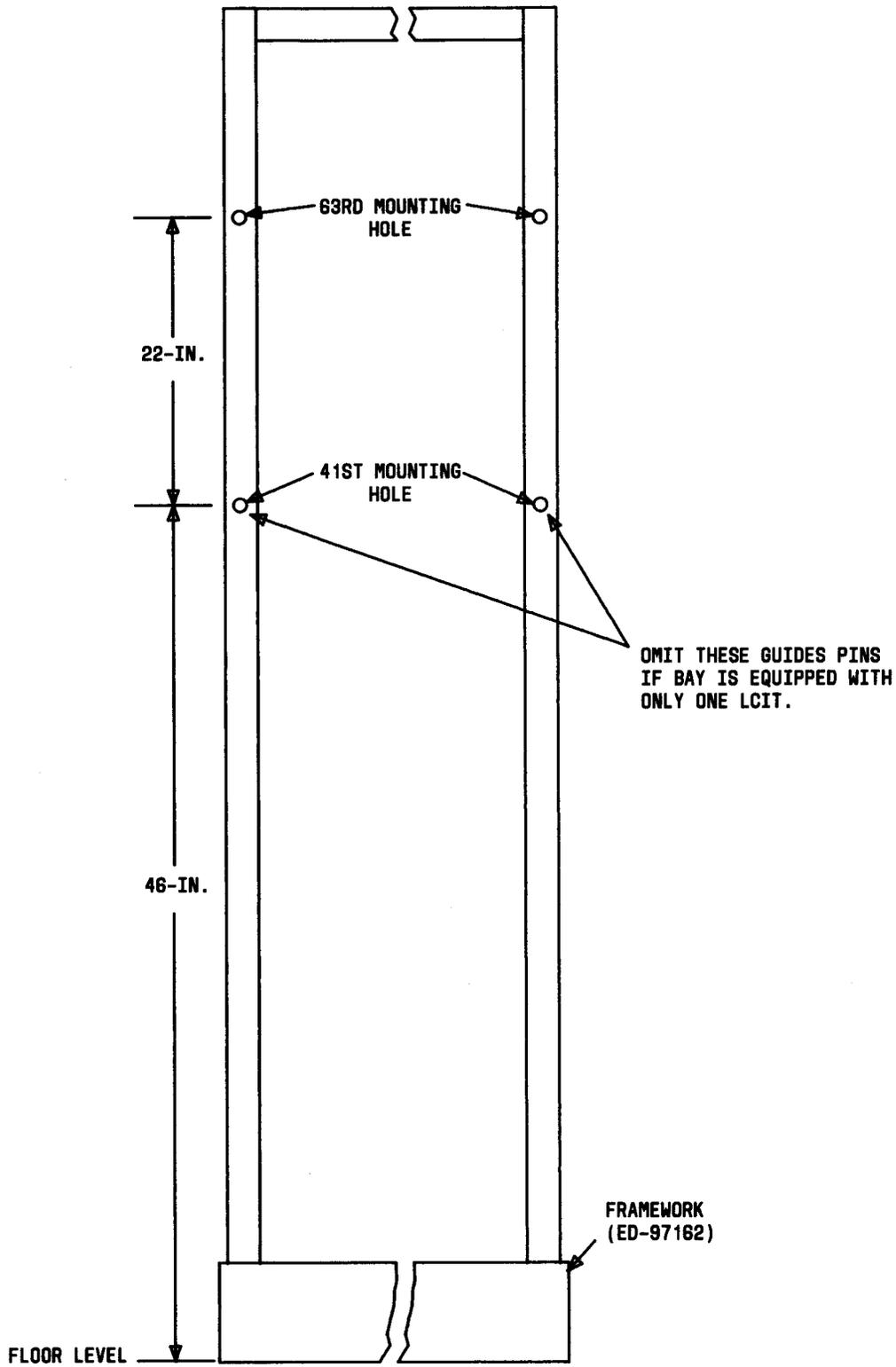


Fig. 3—Alignment Pin Locations for Two LCITs (Fiber SLC-96 Carrier System)

3.02 Starting at the bottom of the frame, position the shelves over the alignment pins and attach to the frame uprights, using the screws furnished

with each shelf. Arrangement of shelves of both the metallic and fiber SLC-96 Carrier Systems is shown in Fig. 4, 5, and 6.

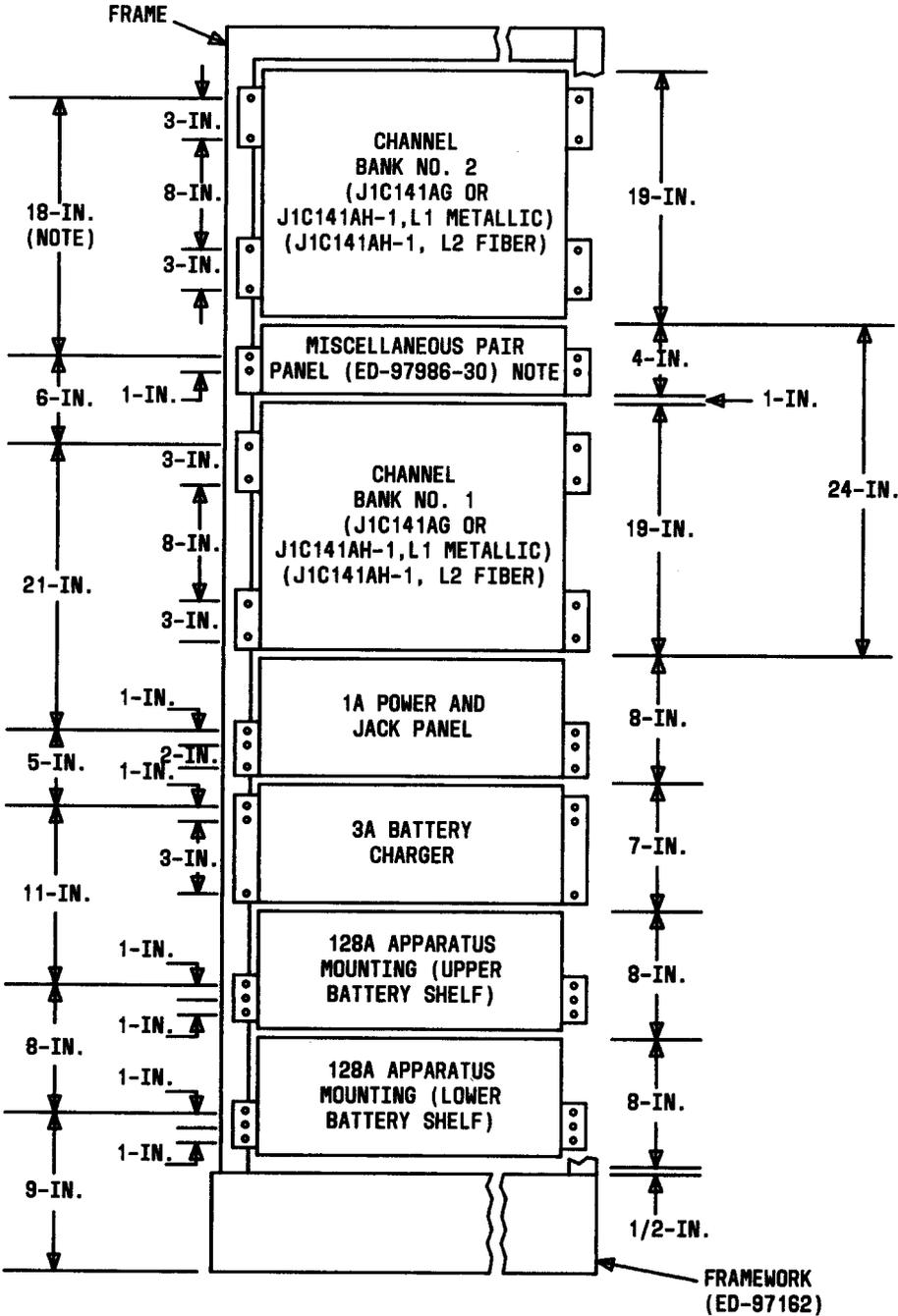


Fig. 4—Securing Two Metallic or Fiber SLC-96 Carrier Systems to Frame

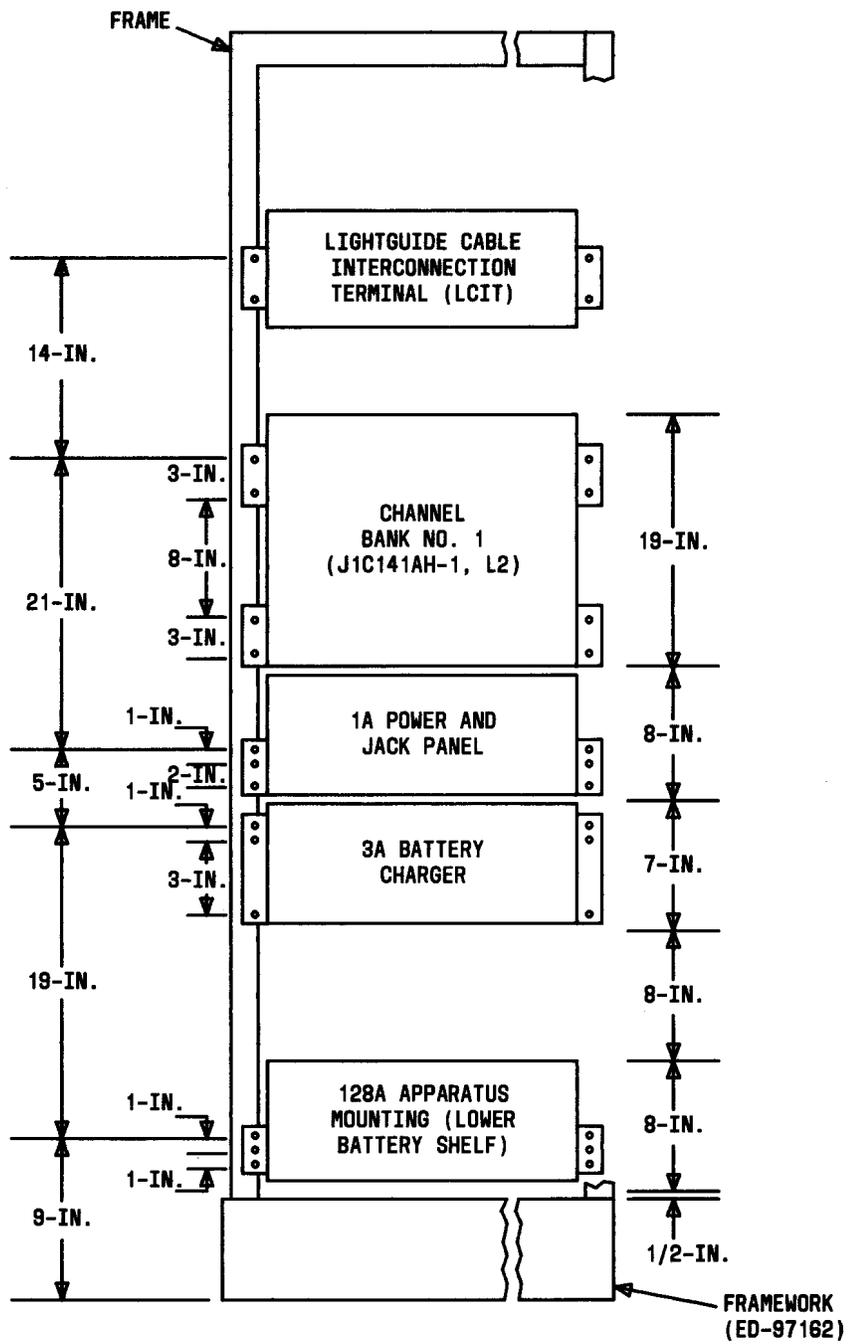


Fig. 5 — Securing One Fiber SLC-96 Carrier System and One LCIT to Frame

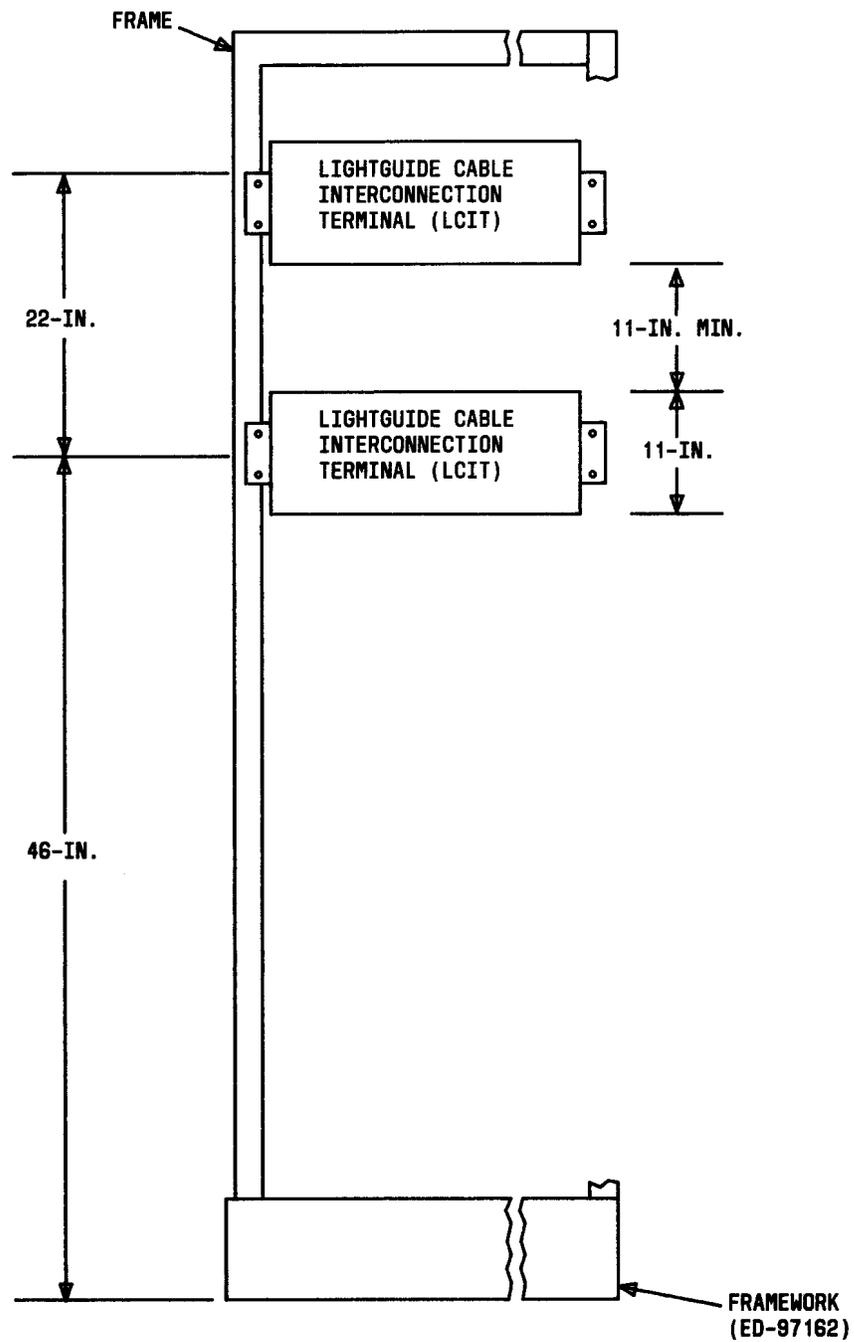


Fig. 6—Securing Two LCITs to Frame (Fiber SLC-96 Carrier System)

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Note: Four No. 12-24 screws are required to secure each shelf, except the channel banks which require six each.

3.03 When mounting the upper channel bank, do not abrade cabling on top of bank at edge of bay crossarm.

4. INTERCONNECTION BETWEEN SHELVES

A. Metallic SLC-96 Carrier System

4.01 After shelves are installed, make electrical connections between shelves as follows. See Fig. 7 and 8.

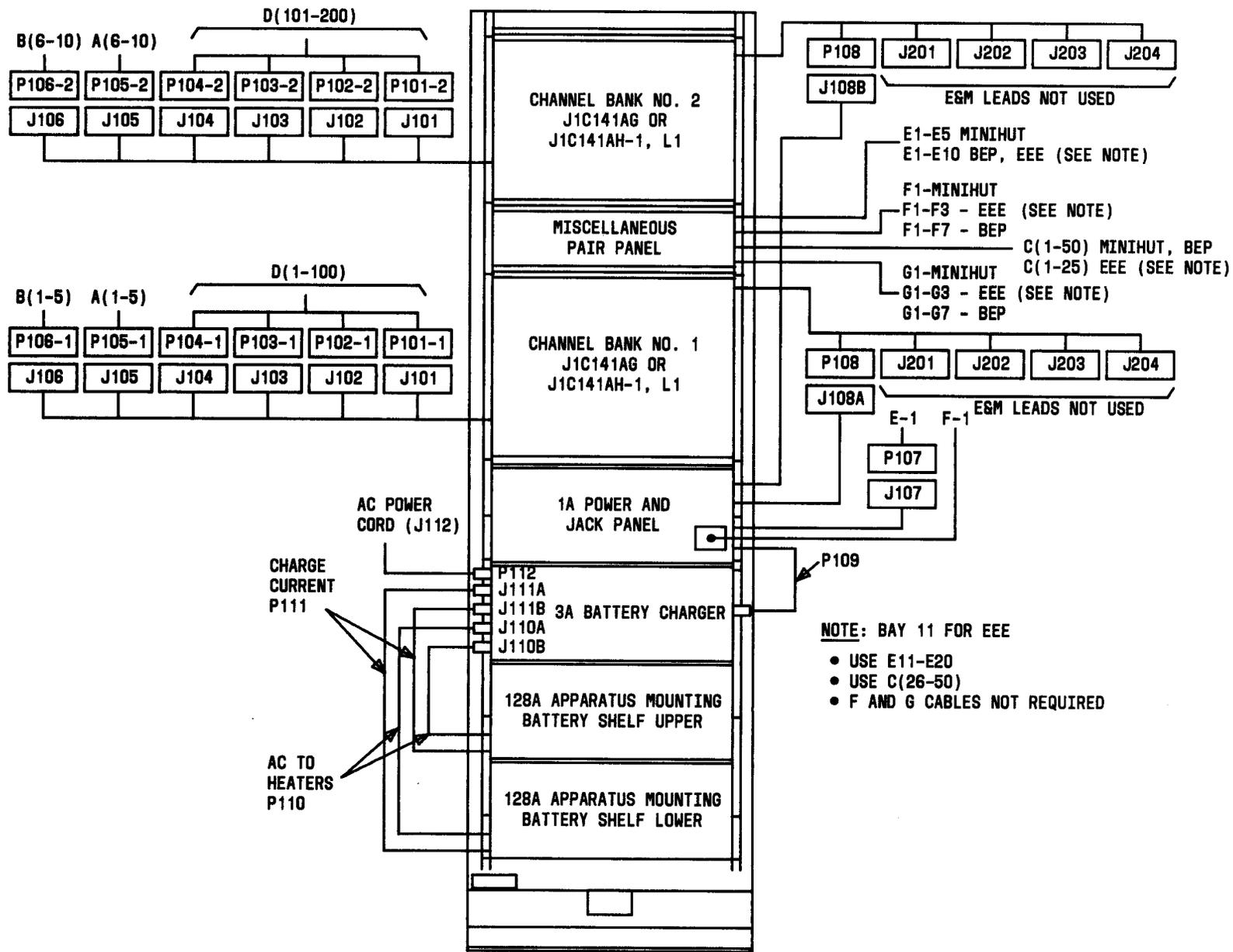


Fig. 7—Interconnections Between Shelves for Bay 1 (Bay 11 Similar Except as Indicated)

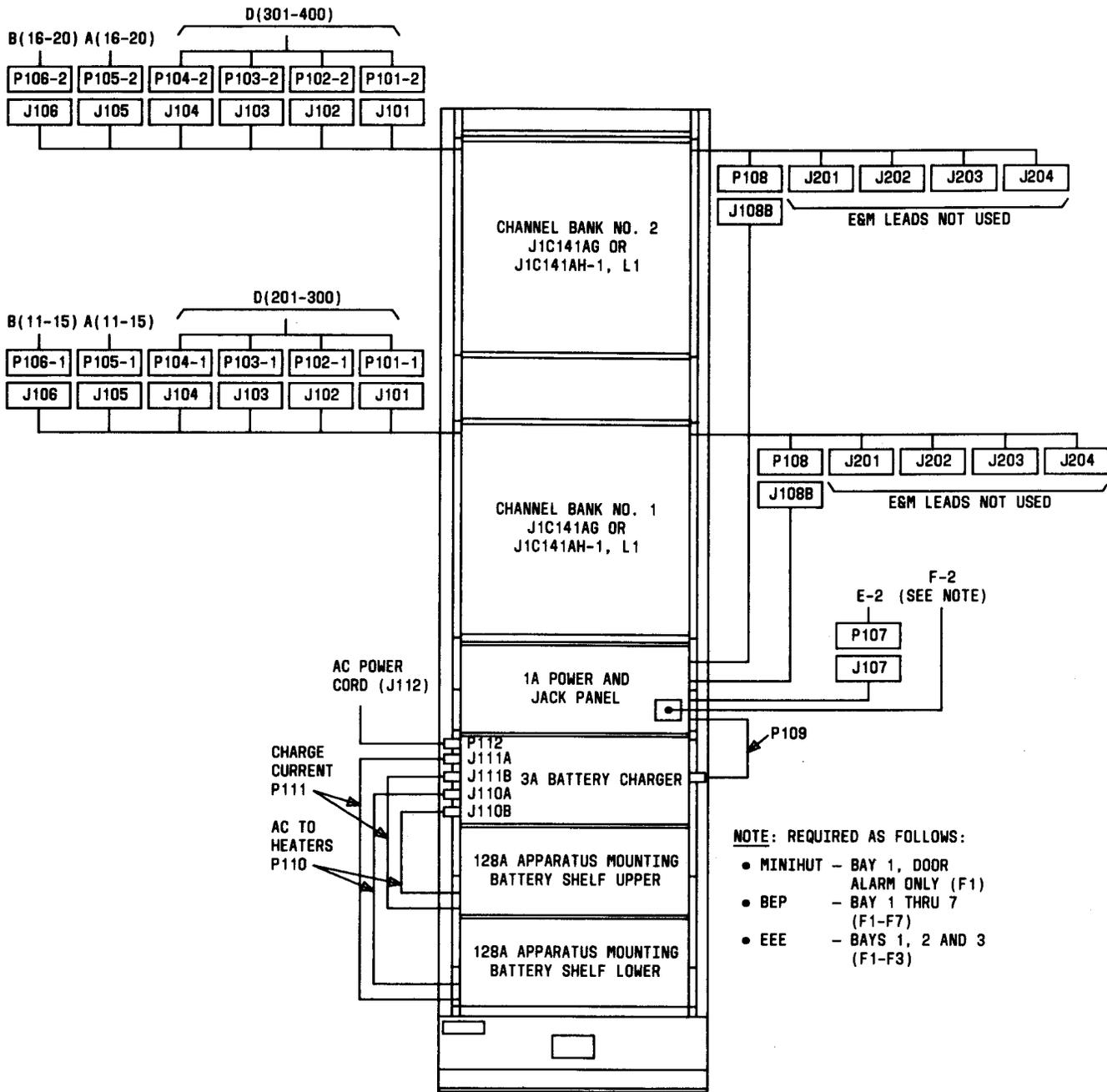


Fig. 8—Interconnections Between Shelves for Bay 2 (Typical for Bays 3 Through 10 and 12 Through 20)

- (1) Connect lead (P108) from channel bank No. 1 to lead (J108A) from power and jack panel.
- (2) If the second channel bank is installed, connect lead (P108) from channel bank No. 2 to lead (J108B) from power and jack panel.
- (3) Connect lead (P109) from power and jack panel to jack (J109) on 3A battery charger.
- (4) Connect lead (P110) from lower battery shelf to jack (J110A) on 3A battery charger.
- (5) Connect lead (P111) from lower battery shelf to jack (J111A) on 3A battery charger.

Note: Steps 6 and 7 are not required if bay is equipped with only one channel bank and one battery shelf.

- (6) Connect lead (P110) from upper battery shelf to jack (J110B) on 3A battery charger.
- (7) Connect lead (P111) from upper battery shelf to jack (J111B) on 3A battery charger.
- (8) Make electrical connections to the intermediate cabling provided in the prewired structures as follows. Refer to Section 640-250-224.

(a) Connect leads (J101 through J106) from each channel bank to corresponding leads of the **A**, **B**, and **D** intermediate cables.

(b) Connect lead (P107) from miscellaneous pair panel of bay 1 or bay 11 to lead (J107) from power and jack panel of each associated bay.

(c) If necessary, connect corresponding intermediate F alarm cables to power and jack panel. See Fig. 5.

(9) Dress and tie down leads to frame using cable ties.

(10) Install the "SYSTEM" identification label, provided with each J1C141AG or J1C141AH-1, L1 channel bank, at a visible location, eg, on the wire cover (if used) or at the front left or right side of the bank.

B. Fiber SLC-96 Carrier System

4.02 ♦After shelves are installed, make electrical connections between shelves and intermediate cables as follows. See Fig. 9 and 10.

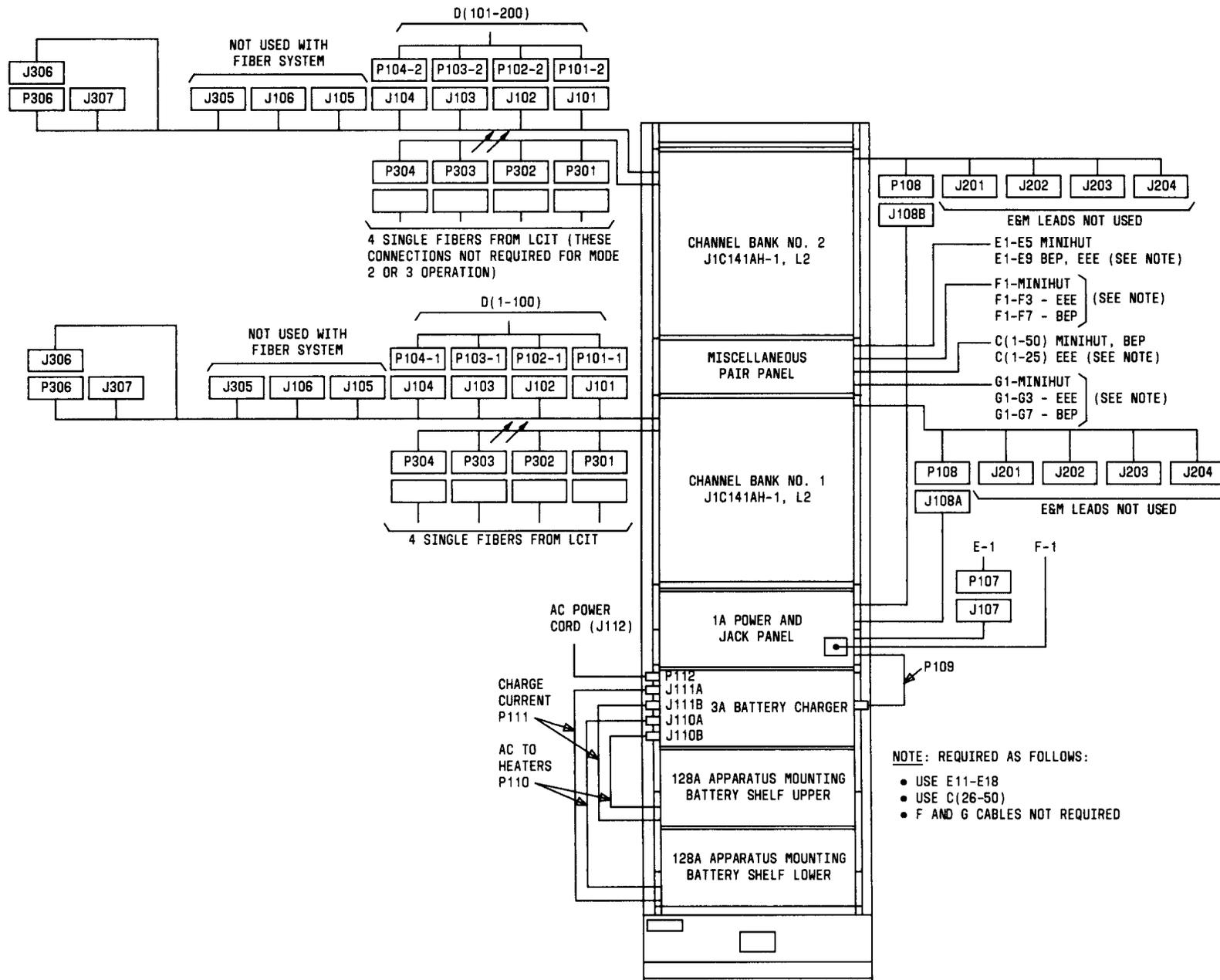
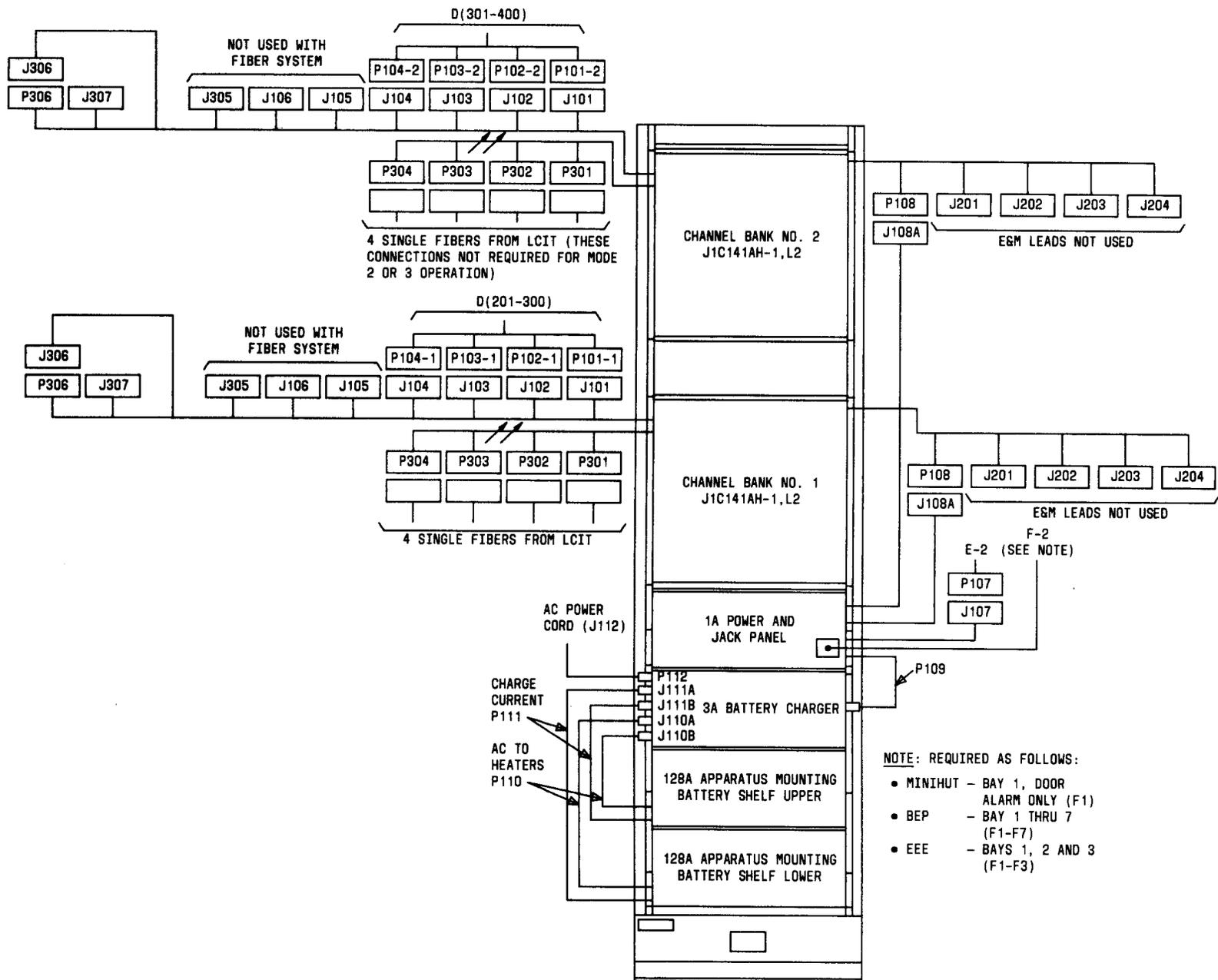


Fig. 9—Interconnection Between Shelves for Bay 1 (Bay 11 Similar Except as Indicated)



NOTE: REQUIRED AS FOLLOWS:

- MINIHUT - BAY 1, DOOR ALARM ONLY (F1)
- BEP - BAY 1 THRU 7 (F1-F7)
- EEE - BAYS 1, 2 AND 3 (F1-F3)

Fig. 10—Interconnection Between Shelves for Bay 2 (Typical for Bays 3 Through 9 and Bays 12 Through 18)

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- (1) Connect lead (P108) from channel bank No. 1 to lead (J108A) from power and jack panel.
- (2) If the second channel bank is installed, connect lead (P108) from channel bank No. 2 to lead (J108B) from power and jack panel.
- (3) Connect lead (P109) from power and jack panel to jack (J109) on 3A battery charger.
- (4) Connect lead (P110) from lower battery shelf to jack (J110A) on 3A battery charger.
- (5) Connect lead (P111) from lower battery shelf to jack (J111A) on 3A battery charger.

Note: Steps 6 and 7 are not required if bay is equipped with only one channel bank and one battery shelf.

- (6) Connect lead (P110) from upper battery shelf to jack (J110B) on 3A battery charger.
- (7) Connect lead (P111) from upper battery shelf to jack (J111B) on 3A battery charger.
- (8) Make electrical and optical connections to the intermediate cabling provided in the prewired structure as follows. Refer to Section 640-250-224.

- (a) Connect lead (P107) from miscellaneous pair panel of bay 1 or 11 to lead (J107) from power and jack panel of each associated bay.
- (b) Connect leads (J101 through J104) from each channel bank to the corresponding leads of the **D** intermediate cables.
- (c) **Caution: Before connecting the lightguide intermediate cable in Steps (d) and (e), refer to Section 365-302-102 which covers cleaning and handling of lightguide cable connectors.**
- (d) Connect single fiber leads (P301A through P304A) from channel bank to single fiber leads (P301 through P304) from LCIT. Connection of these leads at channel bank No. 2 are not required for Mode 2 or 3 operation.
- (e) Connect the single fiber leads (P301 through P304) from the channel bank to the interconnection panel of the LCIT according to the Engineering Work Print.
- (f) If necessary, connect corresponding intermediate F alarm cables to power and jack panel. See Fig. 11.

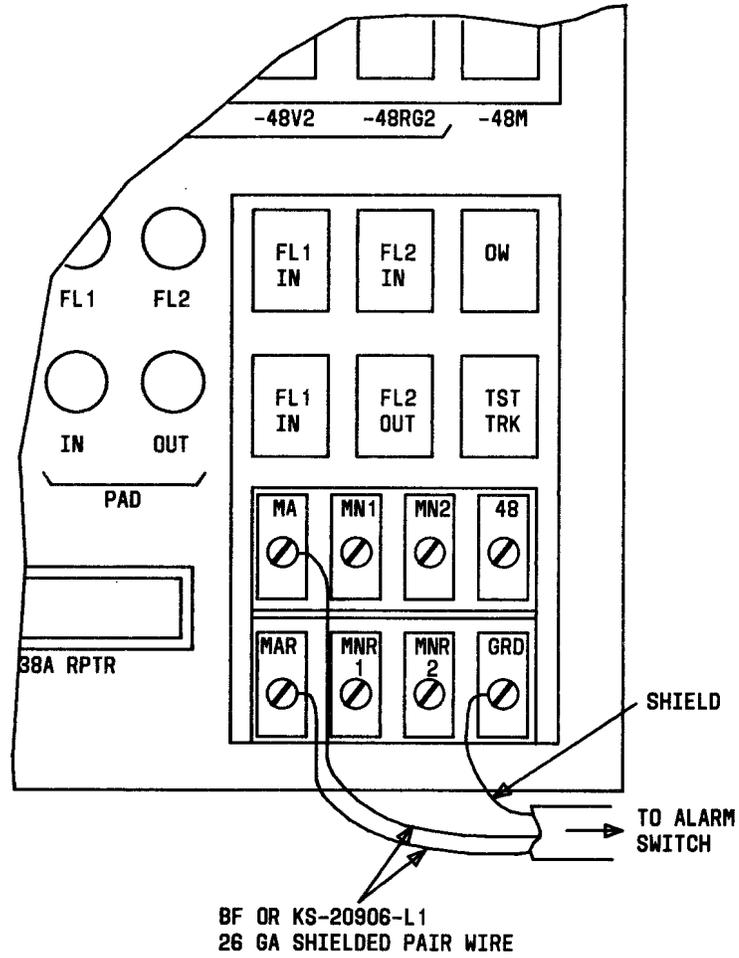


Fig. 11—Terminating Shielded Alarm Pair From Miscellaneous Pair Panel to 1A Power and Jack Panel

- (9) Each channel bank comes wired for Mode 1 operation, ie, leads (J306 and P306) from each channel bank are connected together. To change from Mode 1 to Mode 2 or 3 operation, disconnect lead (J306) from lead (P306) at each bank and connect lead (J307) from channel bank No. 2 (slave bank) to lead (P306) from channel bank No. 1 (master bank).
- (10) Dress and tie down leads to frame using cable ties.
- (11) Install the "SYSTEM" identification label, provided with each J1C141AH-1, L2 channel bank, at a visible location, eg, on the wire cover (if used) or at the front left or right side of the bank.

5. EQUIPMENT GROUNDING

5.01 After the SLC-96 Carrier System equipment shelves are installed in the frame(s), the power and jack panel, battery charger, and LCIT must be grounded to the frame.

5.02 The lugs on the leads to the power and jack panel and the battery charger are placed under the head of a No. 12-24 screw (furnished with power and jack panel) at the 30th mounting hole, from bottom of frame, as shown in Fig. 12.

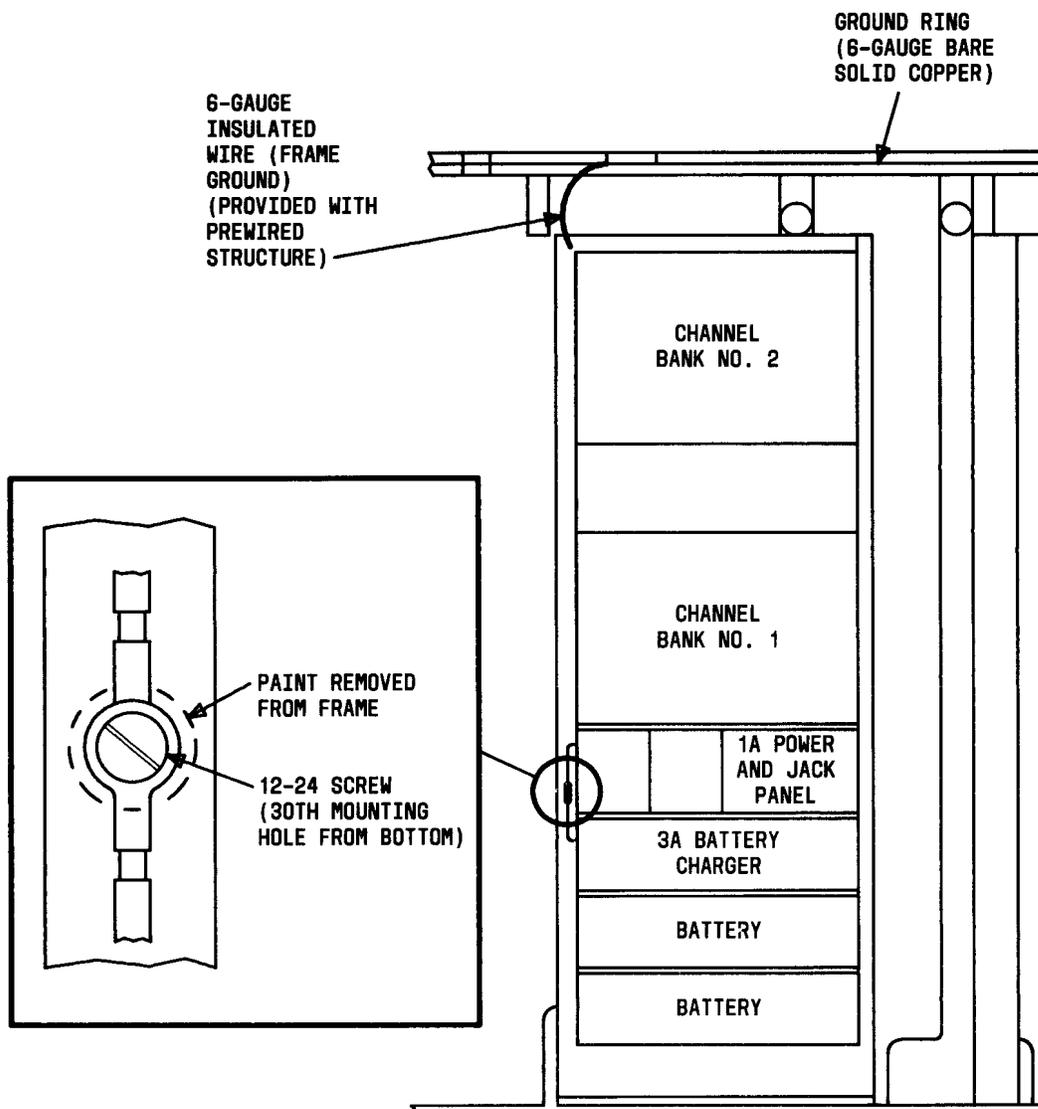


Fig. 12—Equipment Grounding

Note: Before connection is made to the frame, the paint within a 3/4-inch diameter of the mounting hole must be removed down to bare metal.

5.03 For the LCIT, install a 6-gauge wire in the hole located on top of cable clamp as shown in Fig. 13. The other end of the ground wire must be connected to the remote terminal ground ring.

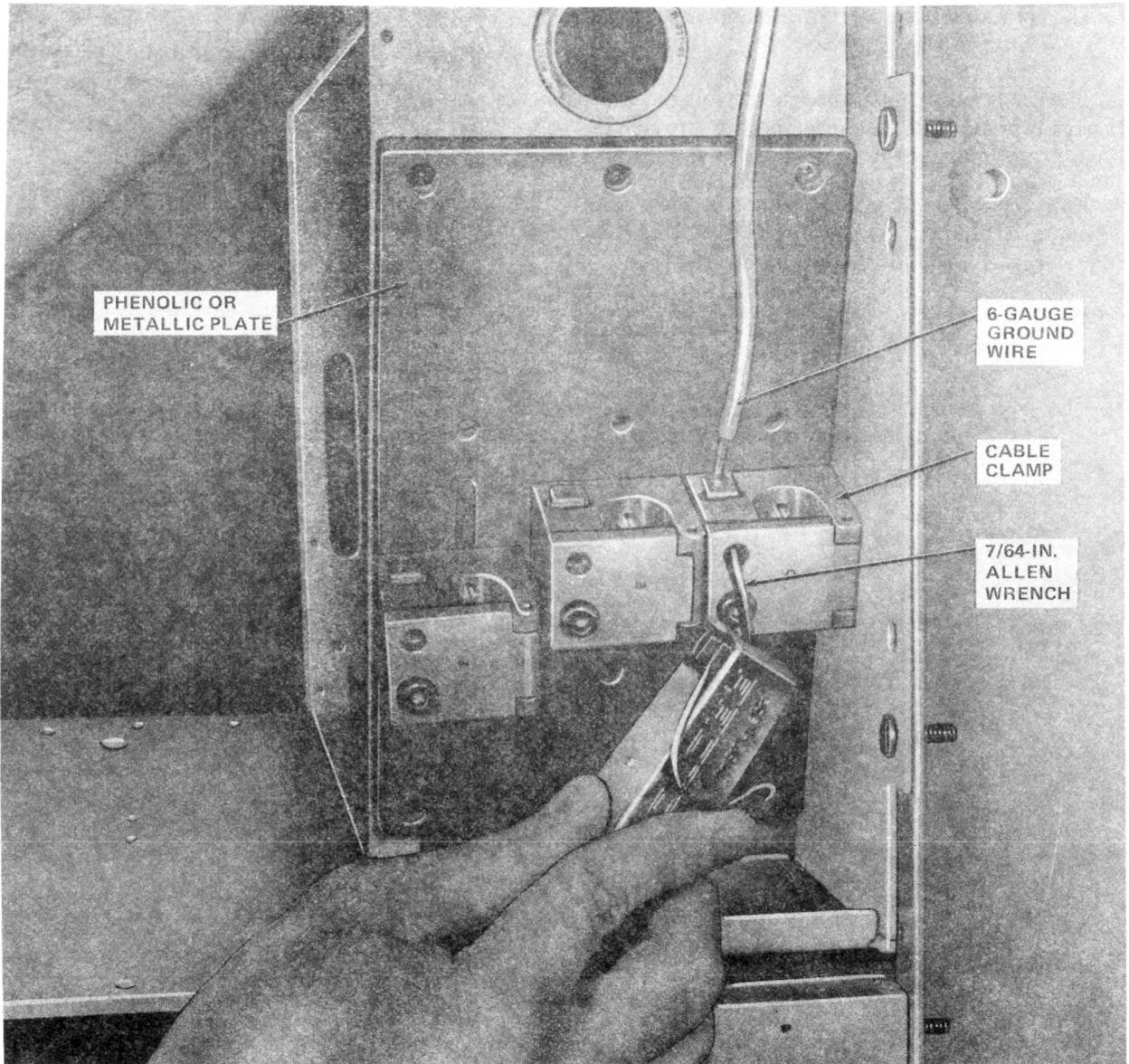


Fig. 13—Installation of Ground Wires

6. WIRING AC POWER TO EQUIPMENT BAYS

6.01 The 120 Vac power is supplied to each bay by means of extension cords purchased locally. The cord lengths required are listed in Table A. The cord's female connector (J112) should be a HUBBELL TWISTLOCK* 5207 connector, or equivalent, with an outside diameter of 1-7/16 inches or less to allow mating with the 3A battery charger (P112). The male end of the cord should be a HUBBELL TWISTLOCK 5266C connector, or equivalent. See Fig. 7 through 10.

6.02 The cords run from standard 120 volt receptacles to male bases mounted on the left side of the 3A battery charger (one per bay).

6.03 *For the minihut*, the receptacles are mounted above the ac power panel and the cords are dressed around the area above the frames.

*Registered trademark of Harvey Hubbell, Inc.

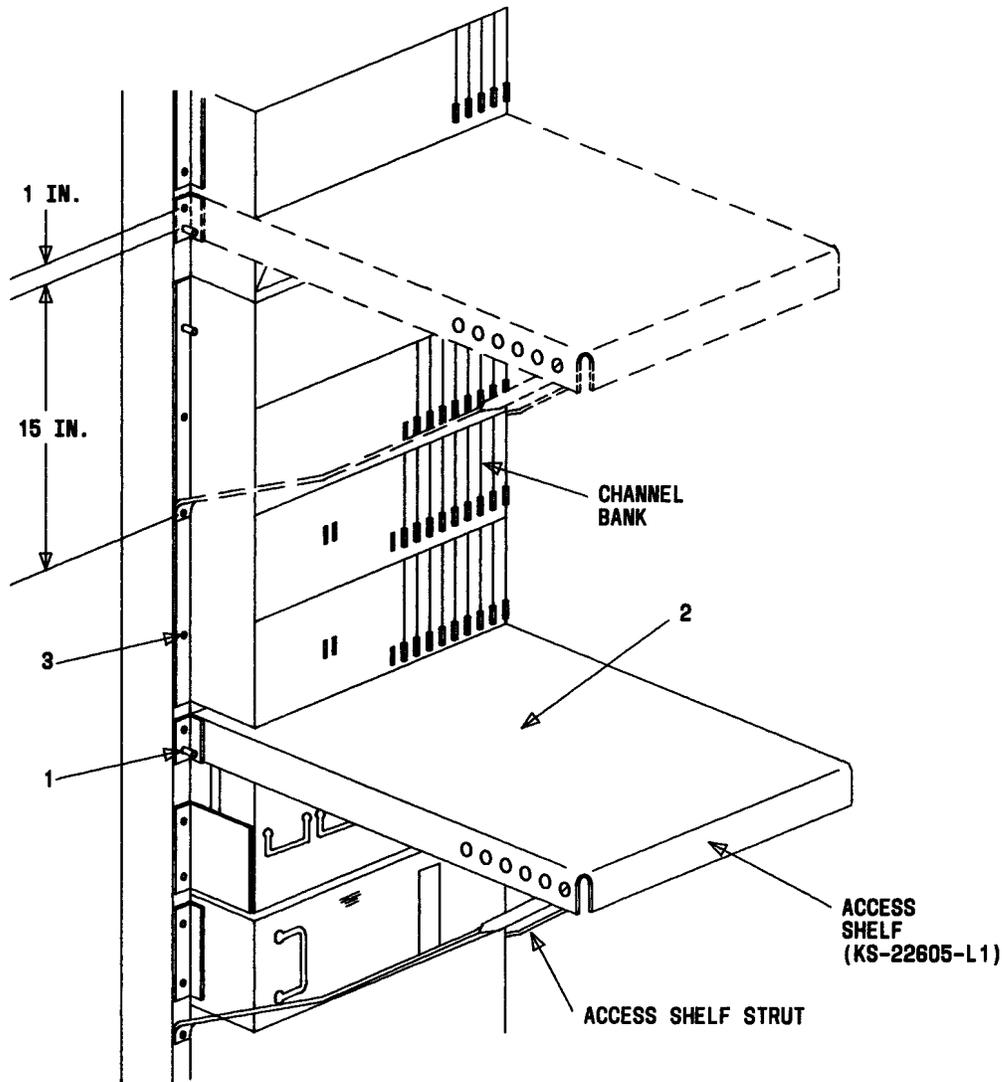
The cords to bays 1 and 2 should be run clockwise (over the door) from the ac power panel, and the cords to bays 3, 4, and 5 should be run counterclockwise from the ac power panel.

6.04 *For the BEP and EEE*, the 8-foot cords are run to labeled receptacles located directly above the frame.

Note: The cords should *never* be tied down. The fastening of an extension cord is a National Electrical Code violation.

7. BACKPLANE ACCESS

7.01 To obtain backplane access of an installed and interconnected channel bank in a SLC-96 Carrier System structure, use the KS-22605-L1 access shelf and follow the steps outlined in Fig. 14.



1. INSTALL ALIGNMENT PINS IN THE SECOND HOLE BELOW THE BOTTOM OF THE CHANNEL BANK (ONE ON EACH SIDE).
2. SLIDE THE ACCESS SHELF OVER THE ALIGNMENT PINS AND SECURE THE SHELF AND STRUTS TO THE FRAME (ON BOTH SIDES) WITH THE SCREWS PROVIDED WITH THE SHELF. IN SOME CASES THE MOUNTING HOLES MAY COINCIDE WITH EXISTING SCREWS OR ALIGNMENT PINS. IF THIS OCCURS, REMOVE SCREWS OR PINS AND USE THAT LOCATION FOR MOUNTING THE SHELF. A SCREW-HOLDING SCREWDRIVER MAY BE CONVENIENT TO INSTALL SCREWS IN DIFFICULT TO REACH LOCATIONS. IT MAY BE NECESSARY TO TEMPORARILY REMOVE WIRE COVERS OR OTHER INTERFERING OBJECTS WHEN INSTALLING THE SHELF.

NOTE: THE ACCESS SHELF STRUTS ARE ATTACHED 15-INCHES BELOW THE ALIGNMENT PINS HOLDING THE SHELF. THE HOLES ON THE SIDES OF THE ACCESS SHELF ARE FOR MOVING THE STRUTS WHEN THE DISTANCE BETWEEN THE SHELF ALIGNMENT PINS AND THE STRUTS FRAME MOUNTING LOCATION MUST EXCEED 15-INCHES; THIS IS NECESSARY WHEN THERE IS INTERFERENCE WITH OTHER EXISTING MOUNTING BRACKETS.

3. REMOVE THE SIX SCREWS SECURING THE CHANNEL BANK TO THE FRAME AND SLIDE THE CHANNEL BANK FORWARD AND OFF THE ALIGNMENT PINS. PULL THE RIGHT SIDE OUT AND AROUND TO GAIN BACKPLANE ACCESS. IT MAY BE NECESSARY TO TEMPORARILY REMOVE CABLE TIES TO ALLOW MOVEMENT OF CHANNEL BANK.

Fig. 14—Backplane Access