

DMS-1* DIGITAL MULTIPLEX SYSTEM
J7208A CONTROL CONCENTRATOR TERMINAL
J7209A REMOTE CONCENTRATOR TERMINAL
J7209C POWER BAY
BAY ASSEMBLY INSTALLATION

CONTENTS	PAGE	
1. GENERAL	1	
2. SYSTEM CONFIGURATION	1	
CCT Bay Configuration	2	
RCT Bay Configuration	2	
Power Bay Configurations	4	
3. TOOLS, MATERIALS, AND DRAWINGS	6	
4. BAY INSTALLATION	7	
A. Floor Planning and Preparation	7	
B. Unpacking and Erecting Bay Assemblies	7	
C. Securing Bay to Floor	10	
D. Securing Bay to Auxiliary Framing	10	
E. Final Quality Check	10	
5. CABLING AND FUSING	10	
1. GENERAL		
1.01 This section contains information and procedures for installing Control Concentrator Terminal (CCT), Remote Concentrator Terminal (RCT), and Power Bays for the DMS-1 system.		1.03 Information and procedures for installing DMS-1 RCT cabinets are contained in 640-2131-200, J7209B RCT Cabinet, Description and Installation.
1.02 <i>Reason for Reissue:</i> to add new and revised information. Since this is a general revision, changes are not marked by arrows in the margin.		
		2. SYSTEM CONFIGURATION
		2.01 The DMS-1 system provides telephone service for up to 256 subscriber lines. The system functions,
		(a) as a remote switch, to concentrate 256 subscriber lines on 48 digital transmission channels;
		(b) as a digital transmission system, to connect the subscriber lines, through the digital channels on cable or radio digital transmission facilities to the central office switching equipment.
		2.02 The DMS-1 system has three main parts:
		(1) a CCT located in the central office;
		(2) from one to four RCT located near groups of subscribers, and connected in a loop arrangement to the CCT;
		(3) either one or two working DS1 lines (LD-1, NE-T1, or equivalents), and one protection DS1 line. Each line has standard order-wire and DS1 line fault-locate facilities. The DS1 lines are used to interconnect the CCT and RCT.

* DMS-1 is a trademark of Northern Telecom Limited

CCT BAY CONFIGURATION

2.03 The CCT equipment is mounted in standard 19-inch bays which are available in three heights (Fig. 1). In each case, the equipment is arranged in a pair of bays; an initial bay and an extension bay. The CCT bay arrangements are as follows:

(a) 7-foot Bay:

J7208A

- List 1 – Initial Bay (3 line shelves)
- List 2 – Extension Bay (5 line shelves)

(b) 9-foot Bays:

J7208A

- List 3 – Initial Bay (3 line shelves)
- List 4 – Extension Bay (5 line shelves)
- List 12 – Initial Bay (4 line shelves)
- List 13 – Extension Bay (4 line shelves)

(c) 11.5-foot Bays:

J7208A

- List 5 – Initial Bay (3 line shelves)
- List 6 – Extension Bay (5 line shelves)
- List 14 – Initial Bay (6 line shelves)
- List 15 – Extension Bay (2 line shelves)

2.04 **CCT Initial Bay.** The CCT initial bays are factory-assembled and -wired, and include the following:

- (a) the bay framework assembly
- (b) common shelf 1 assembly
- (c) common shelf 2 assembly
- (d) fuse panel
- (e) order-wire and fault-locate shelf assembly (J7208A, List 9), if ordered (optional)
- (f) line shelves (J7208A, List 7), quantity as ordered (maximum of 3 per List 1, 3, and 5)
- (g) one jackfield assembly (J7208A, List 8), if ordered (optional)
- (h) miscellaneous mounting and cabling hardware.

2.05 **CCT Extension Bays.** The CCT extension bays are factory-assembled and -wired, and include:

- (a) the bay framework assembly

(b) line shelves (J7208A, List 7), quantity as ordered (maximum of 5 per List 2, 4, and 6; 4 per List 13; 2 per List 15)

(c) miscellaneous mounting and cabling hardware.

2.06 Shipped with the CCT bays, but not part of the bay assemblies, are the connectorized cables for connecting the CCT to the office distribution frame. These cables are ordered from drawing ED7208-51, cut to lengths specified for the job.

2.07 The plug-in circuit packs and cards for the equipment shelves are not part of the bay assemblies. They are ordered and shipped separately.

RCT BAY CONFIGURATION

2.08 The RCT may be mounted in specially designed cabinets (J7209B) for installation on concrete pads or piers; or on standard 19-inch equipment bays for installation in huts or telephone office buildings.

2.09 The RCT bay installations only are covered in this section. RCT cabinet installations are covered by 640-2131-200.

2.10 For hut or office building installation the RCT equipment is mounted in standard 19-inch bays which are available in three heights (Fig. 2). In each case, the equipment is arranged in a pair of bays; an initial bay and an extension bay. The RCT bay arrangements are as follows:

(a) 7-foot Bays:

J7209A

- List 1 – Initial Bay (3 line shelves)
- List 2 – Extension Bay (5 line shelves)

(b) 9-foot Bays:

J7209A

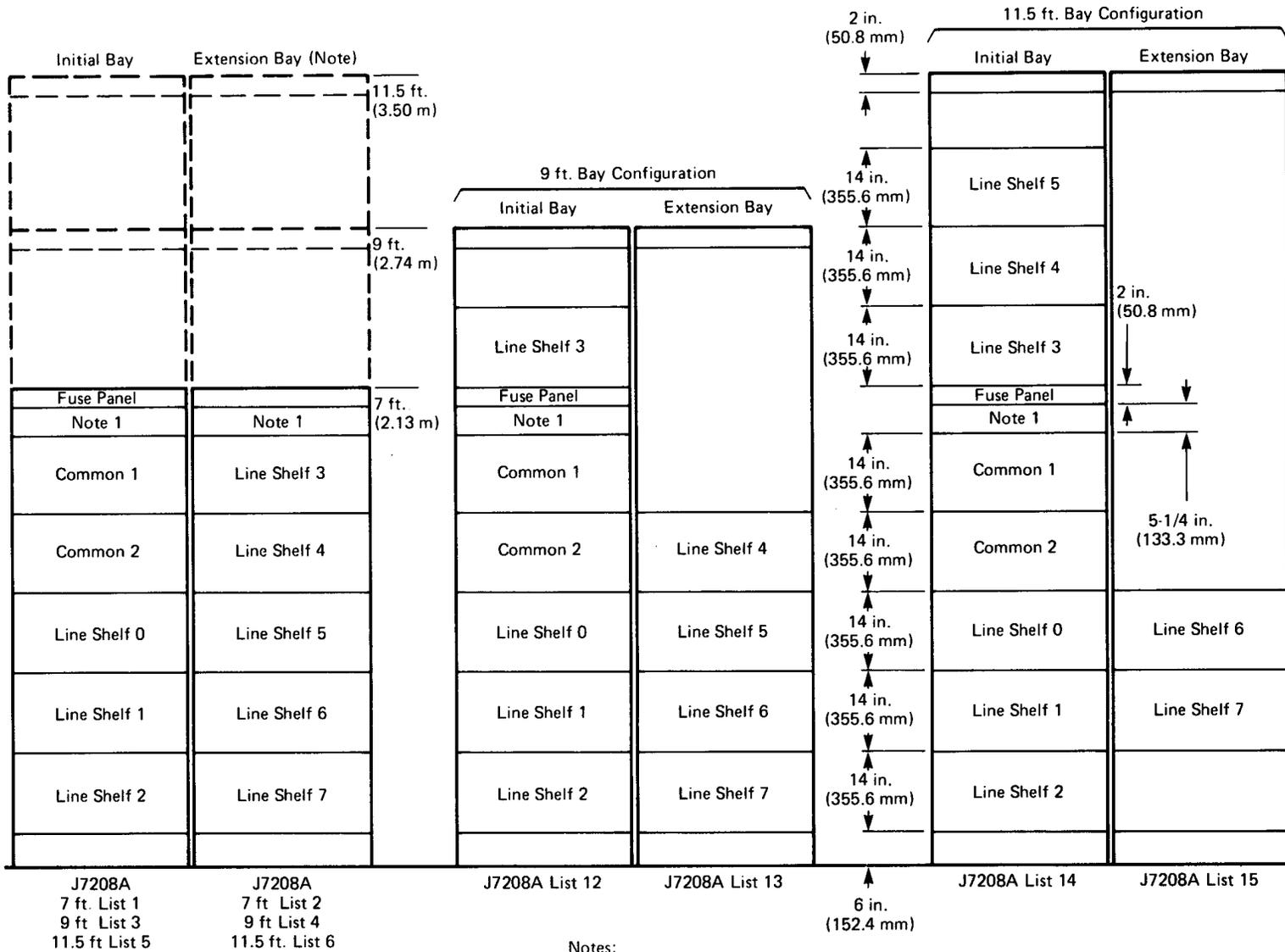
- List 3 – Initial Bay (3 line shelves)
- List 4 – Extension Bay (5 line shelves)
- List 12 – Initial Bay (4 line shelves)
- List 13 – Extension Bay (4 line shelves)

(c) 11.5-foot Bays:

J7209A

- List 5 – Initial Bay (3 line shelves)
- List 6 – Extension Bay (5 line shelves)
- List 14 – Initial Bay (6 line shelves)
- List 15 – Extension Bay (2 line shelves)

2.11 **RCT Initial Bay.** The RCT initial bays are factory-assembled and -wired, and include:



Notes:

1. This space reserved for either an Order-wire and Fault-locate shelf, or a Star Protection shelf.
2. Extension bay can be either on the right side or left side of the initial bay.

Fig. 1 – CCT Bay Configurations

SECTION 363-2011-201

- (a) the bay framework assembly
- (b) common shelf assembly
- (c) power shelf assembly
- (d) fuse panel
- (e) order-wire and fault-locate shelf assembly (J7209A, List 9), if ordered (optional)
- (f) line shelves (J7209A, List 7), quantity as ordered (maximum of 3 per List 1, 3, and 5)
- (g) one jackfield assembly (J7209A, List 8), if ordered (optional)
- (h) miscellaneous mounting and cabling hardware.

2.12 *RCT Extension Bays.* The RCT extension bays are factory-assembled and -wired, and include the following:

- (a) the bay framework assembly
- (b) line shelves (J7029A, List 7), quantity as ordered (maximum of 5 per List 2, 4, and 6; 4 per List 13; 2 per List 15)
- (c) miscellaneous mounting and cabling hardware.

2.13 Shipped with the RCT bays, but not part of the bay assemblies, are the connectorized cables for connecting the RCT to the subscriber line distribution frame. These cables are ordered from drawing ED7208-51, cut to lengths specified for the job.

2.14 Plug-in circuit packs for the RCT bay equipment shelves are ordered and shipped separately.

POWER BAY CONFIGURATIONS

2.15 The J7209C power bay is used with hut-installed RCT to provide 48-V power for the RCT. The equipment in the bay includes a J2357E rectifier to provide 48-V power from a 115/230-V, 60-Hz supply; and up to 10 shelves of batteries for emergency power. Space is provided for an optional backup rectifier. A typical power bay configuration is shown in Fig. 3.

2.16 The power bay equipment is mounted in a standard 19-inch, factory-wired bay assembly which is available in three heights:

J7209C

- List 1 — 7-foot Power Bay
- List 2 — 9-foot Power Bay
- List 3 — 11.5-foot Power Bay

2.17 The factory-wired bay assemblies include a maximum of 10 (maximum 8, if List 6 is ordered) battery shelves (J7209C-1, List 4).

2.18 Shipped as part of the bay assemblies are:

- (a) One J2357E rectifier (part of the framework assemblies, J7209C Lists 1, 2, and 3).
- (b) One set of four batteries (J7209C, List 5) for each battery shelf ordered from List 4. (Shipped in separate containers.)
- (c) One backup rectifier, J2357E (J7209C, List 6), if ordered.

Notes:

1. This space reserved for either an Order-wire and Fault-locate shelf, or a Star Protection shelf.
2. Extension bay can be either on the right side or left side of the initial bay.

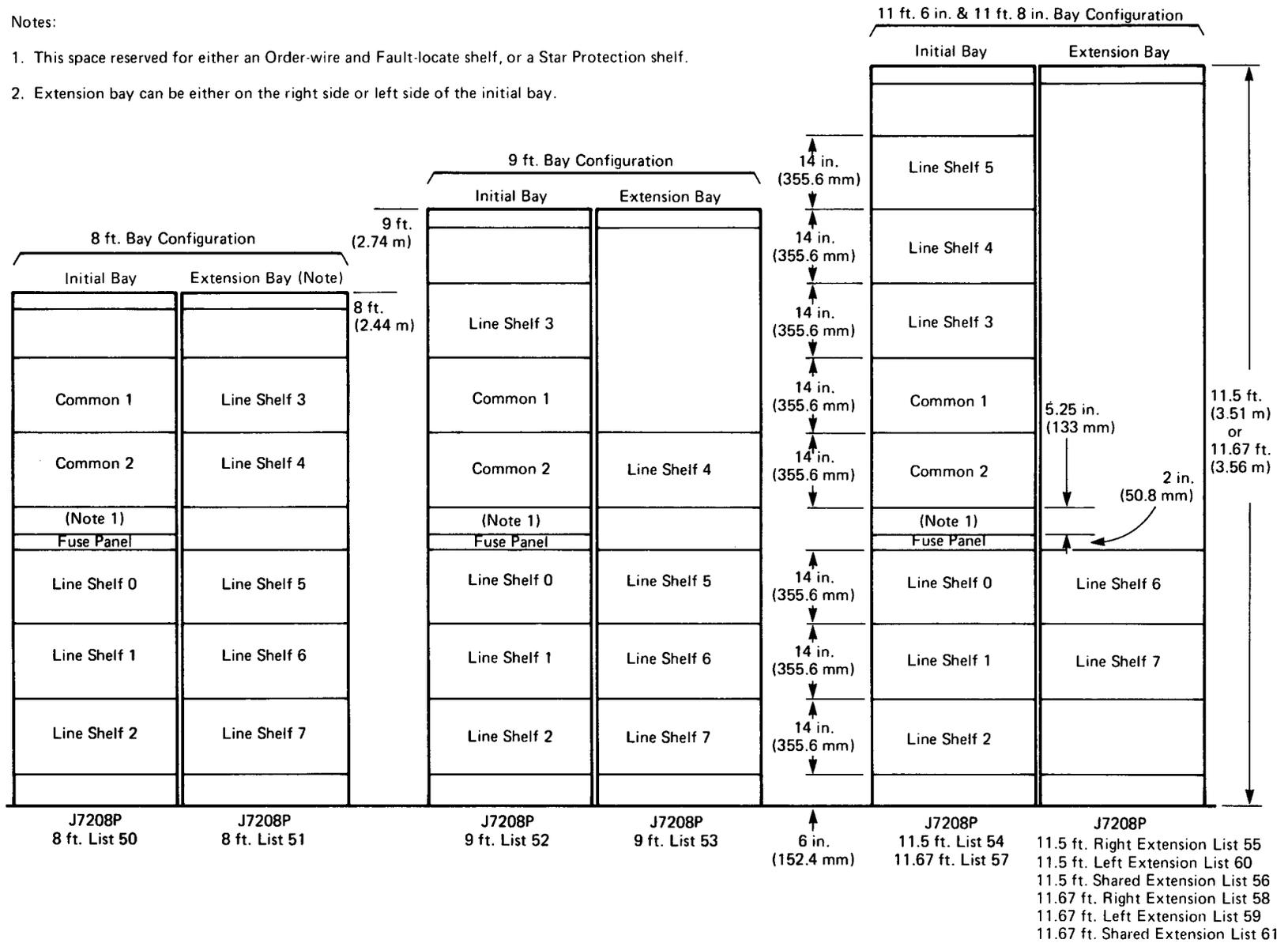


Fig. 2 – RCT Bay Configurations

SECTION 363-2011-201

3. TOOLS, MATERIALS, AND DRAWINGS

3.01 *Tools.* The following tools are required for installing the DMS-1 bay assemblies.

QUANTITY	DESCRIPTION
1	Claw Hammer
1	Pinch Bar, 30-inch long
1	Vacuum Cleaner
1	Electric Drill, 1/2-inch capacity
1	Drill Bit, Carballoy tipped, 5/8 inch
1	Hoisting Fixture
1	Chain Hoist, 1 ton capacity
1	Platform Ladder, of required height
1	Spirit Level, 24-inch long
1	Chalk Line for Marking Lineup
1	Setting Tool for Floor Anchor Installation
1	Steel Square, 16 × 24 inch
2	Dolly Trucks
1	Wrench Set, 1/2-inch square drive
1	Hexagonal Socket, 1/2-inch square drive, 5/8 hex. dimension by 3-inch deep
1	Tin Snips, 10-inch long

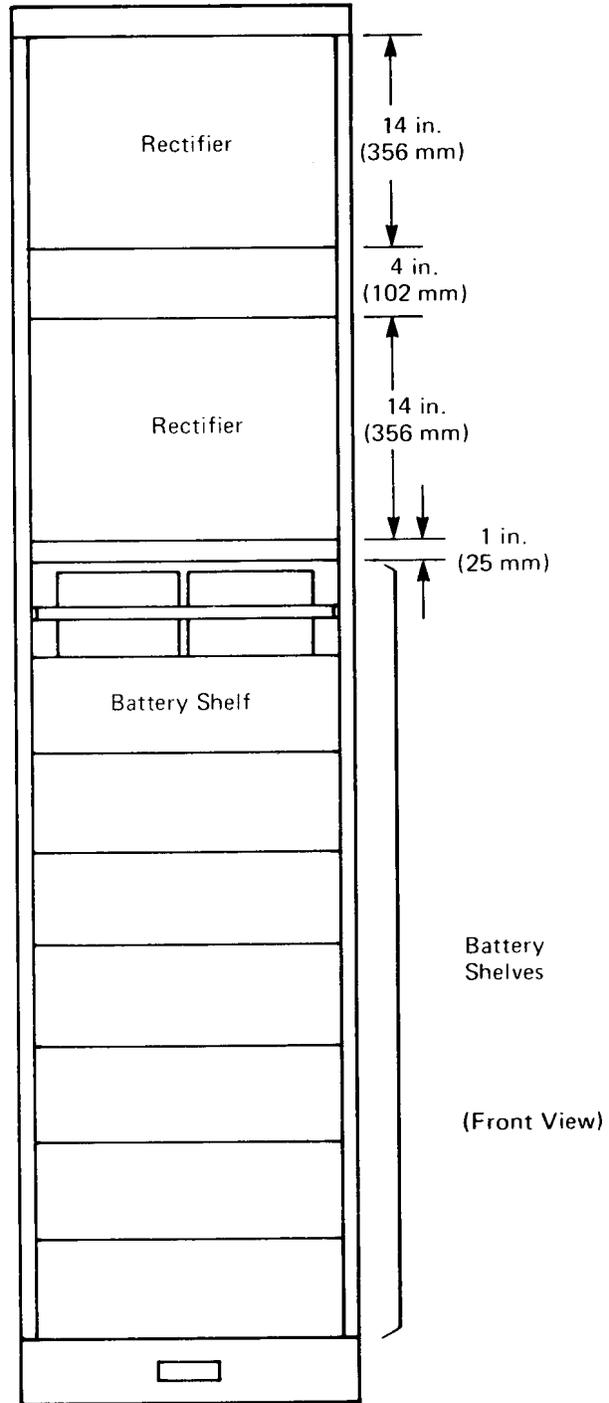


Fig. 3 — Power Bay Configuration

3.02 *Material.* The following material is required for installing DMS-1 bay assemblies:

Felt Pens

Masonite Sheets, 8 by 4 feet (for floor protection)

Roll of RC44550 Tape, Durex Acetate Fiber, Adhesive

RE80005 Shims, 1/16 by 1-1/2 by 3-1/4 inches, as required

RE80006 Shims, 1/8 by 1-1/2 by 3-1/4 inches, as required

3.03 *Drawings.* The following drawings are required for reference while installing the CCT and RCT bays.

J7208A-1	DMS-1 Control Terminal	Concentrator
J7209A-1	DMS-1 Remote Terminal	Concentrator
J7209C-1	DMS-1 Power Bay	
ED1408-70	Equipment Bay Assembly	Framework
ED1410-70	Cabinet Type End Guard	
ED1431-50	Grounding Arrangements	
ED7208-51	Connectorized Cable Assemblies	

4. BAY INSTALLATION

Note 1: The information and procedures in 4.01 through 4.10 apply to all CCT and RCT bay assemblies unless otherwise stated.

Note 2: Paragraphs 4.01 through 4.10 contain only general information for the physical installation of CCT and RCT bay assemblies. Reference must be made to floor plan drawings, job specifications, and other applicable documents for full details of particular installations.

A. Floor Planning and Preparation

4.01 The layout of the office or hut floor for erecting and securing DMS-1 bays must be done in accordance with the floor plan drawings and the job specification for the installation concerned.

4.02 Marking all reference and layout lines on the floor before erecting a bay simplifies the detection and correction of errors and misalignments as the installation proceeds.

4.03 Use the following general procedure to mark and prepare the floor for installation of a bay.

- (1) Verify that the area dimensions and the location of floor plugs and other reference points correspond to the floor plan drawing.

- (2) Where reference points (e.g., floor plugs) are not accessible due to floor coverings or other equipment, locate reference lines from cable holes or other frames already in place.

- (3) Where the equipment area is new, use according to standard procedures, a chalkline and felt pen to mark the bay aisles and determine the front base line of the aisle.

- (4) Where the bay assembly extends or fills an existing aisle, mark the front-of-bay line with a felt pen and any convenient straight edge. See Fig. 4 for a sample sketch.

Note: Leave a space of 1/8 inch between adjacent bays to accommodate possible irregularities in the bay uprights.

- (5) At the location where the bay is to be installed, mark the bay anchor points on the floor, by using the dimensions shown in Fig. 5.

- (6) Drill the floor anchor-holes. Use an electric drill equipped with a masonry drill bit (5/8-inch diameter, 1/2-inch shank). Drill holes about 2-3/8 inches deep (60 mm). Use a vacuum cleaner to remove cement particles from the holes before inserting floor anchors.

- (7) Insert floor anchors in holes and set them; use a setting tool. Cover the anchor holes with adhesive tape, unless the bay is installed immediately after inserting the anchor.

B. Unpacking and Erecting Bay Assemblies

4.04 The DMS-1 bay assemblies are packed for shipment from the factory as illustrated in Fig. 6.

4.05 Before unpacking and moving a bay assembly to the assigned floor position,

- (a) check the packing slips to verify that all items are received; report any discrepancies immediately

- (b) inspect the shipping containers for evidence of damage during shipment; report any such evidence immediately, so that damage claims can be initiated.

Caution: Take extreme care when moving, unpacking, and erecting the bay assemblies. Avoid strain on the framework which might damage the PCB backplanes.

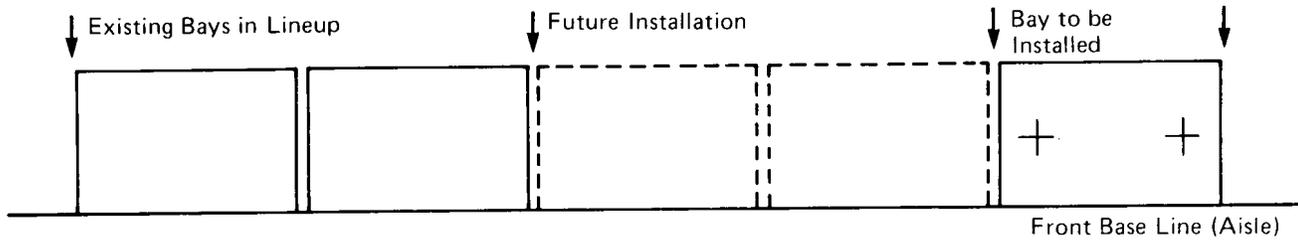


Fig. 4 – Marking Floor for Bay Installation

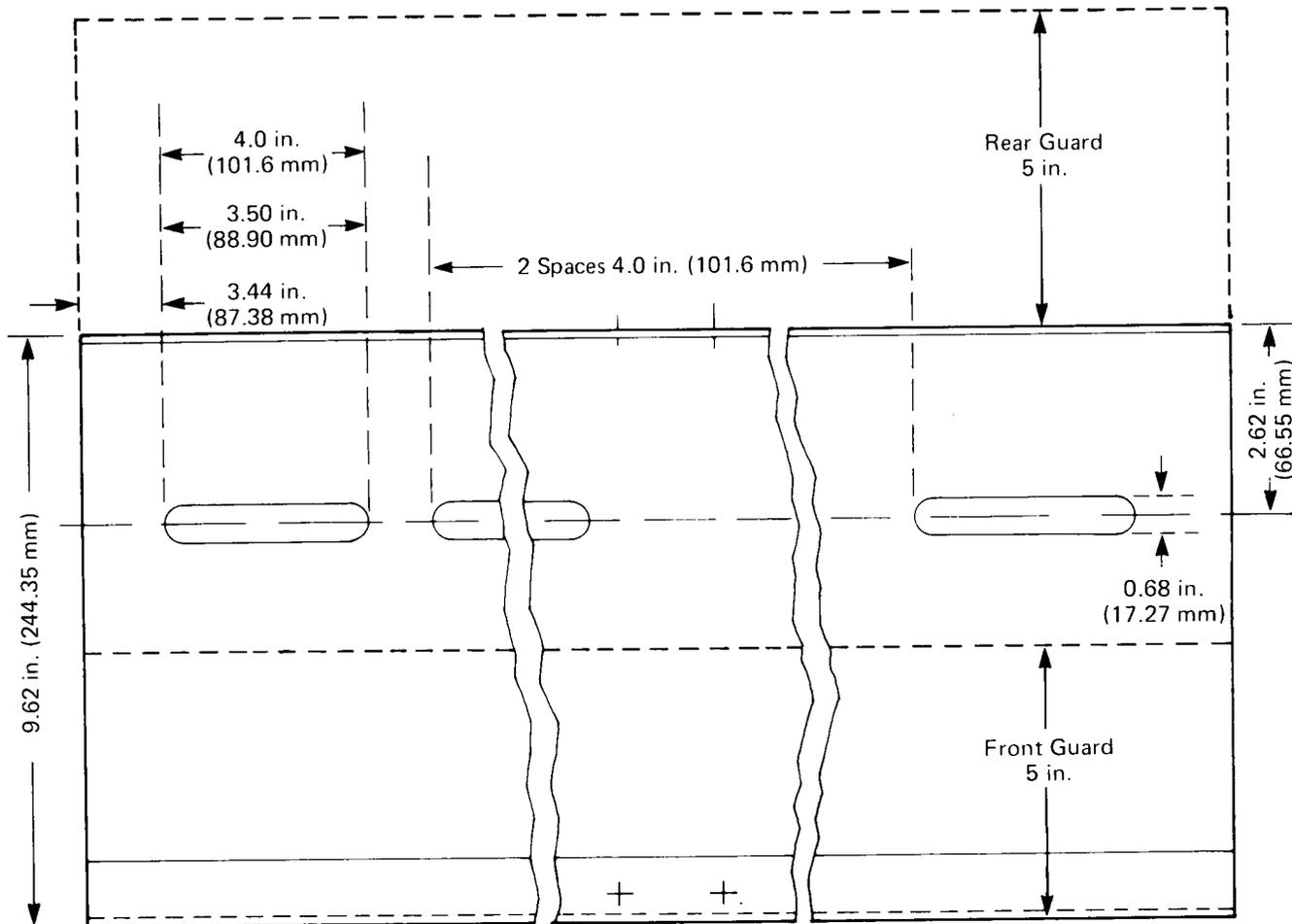
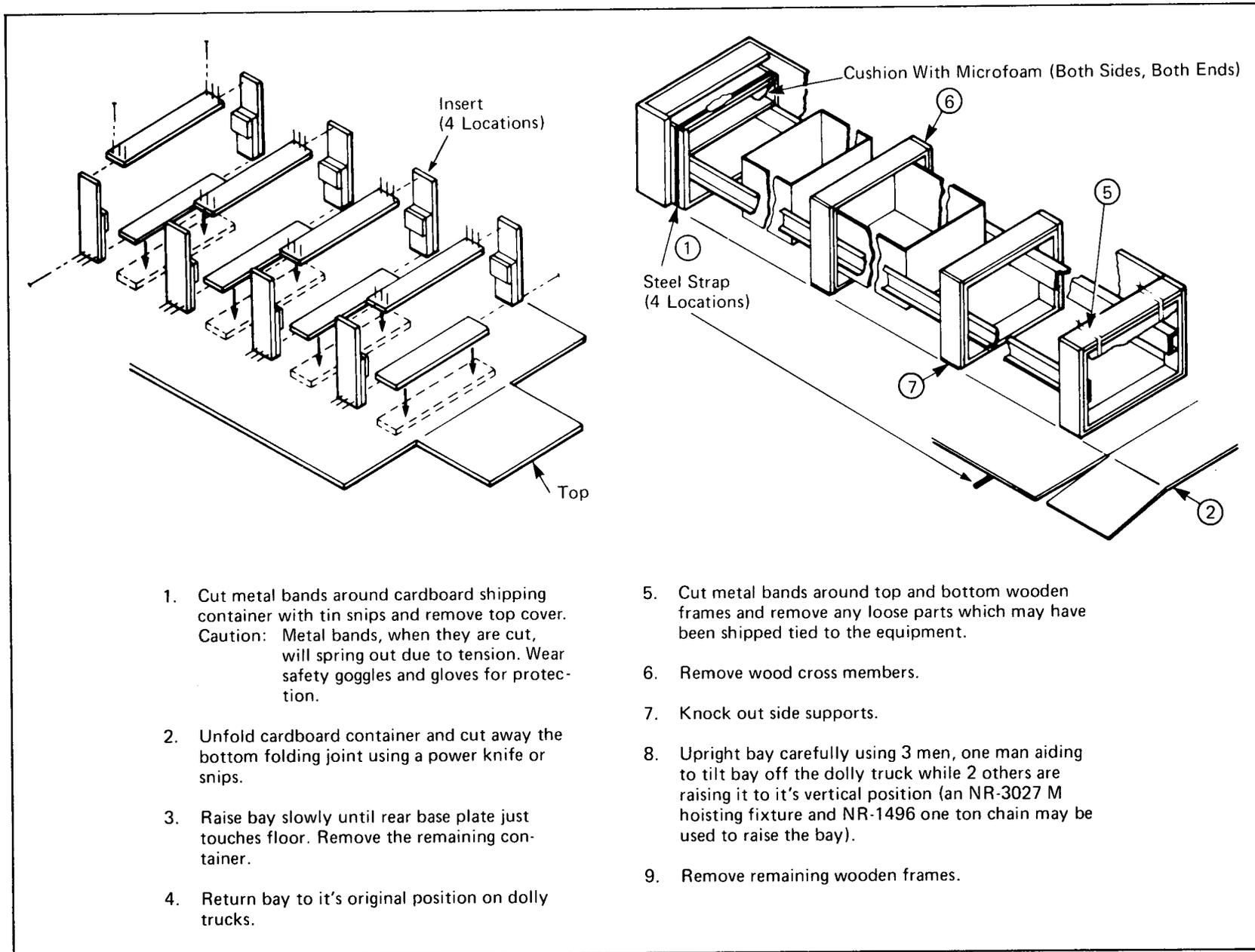


Fig. 5 – Single Bay Base Measurements



1. Cut metal bands around cardboard shipping container with tin snips and remove top cover. Caution: Metal bands, when they are cut, will spring out due to tension. Wear safety goggles and gloves for protection.
2. Unfold cardboard container and cut away the bottom folding joint using a power knife or snips.
3. Raise bay slowly until rear base plate just touches floor. Remove the remaining container.
4. Return bay to it's original position on dolly trucks.

5. Cut metal bands around top and bottom wooden frames and remove any loose parts which may have been shipped tied to the equipment.
6. Remove wood cross members.
7. Knock out side supports.
8. Upright bay carefully using 3 men, one man aiding to tilt bay off the dolly truck while 2 others are raising it to it's vertical position (an NR-3027 M hoisting fixture and NR-1496 one ton chain may be used to raise the bay).
9. Remove remaining wooden frames.

Fig. 6 – CCT and RCT Bay Unpacking Procedure

SECTION 363-2011-201

4.06 When ready to start the installation,

- (1) place the bay assembly, in its shipping container, front side up on two dolly trucks;
- (2) remove the outer cardboard container by following Steps 1 through 4 on Fig. 6;
- (3) move the bay assembly, on the dolly trucks, to the assigned floor position.

4.07 When the bay assembly is at the assigned floor position, complete the unpacking and uprighting of the bay assembly by following Steps 5 through 9 on Fig. 6.

C. Securing Bay to Floor

4.08 After the bay has been moved into an upright position at its assigned position, secure it to the floor as follows:

- (1) Carefully slide the bay into position in the equipment line-up. At least two men are needed for this operation.
- (2) Support the bay temporarily with one or two supporting straps tied around the top channel of the bay and the auxiliary framing channels above the bay.
- (3) Insert the floor anchor bolts, with anchor plates, to secure the bay assembly to the floor anchors (Fig. 7). Do not tighten the bolts at this stage.
- (4) With a spirit level, check the leveling of the bay on the base, top channel, and both uprights in turn. Where necessary, use 1/16-, or 1/8-inch shims, or both, under either or both sides of the bay to assure correct alignment and leveling.

Note: As a general rule, 11.5-foot bays should not deviate by more than 1/4 inch (6 mm) from the perpendicular, and 7- and 9-foot bays by more than 3/16 inch (5 mm). Deviation from the baseline alignment must not exceed 1/8 inch (3 mm) in all cases.

- (5) Tighten the floor anchor bolts with a socket wrench and extension handle (Fig. 7).

D. Securing Bay to Auxiliary Framing

4.09 After the bay assembly is secured to the floor, it must be secured to the overhead auxiliary framing.

- (1) Remove the temporary supporting straps (4.08[2]). Avoid disturbing the floor anchors by pushing or leaning against the bay assembly.

- (2) Assemble and install the top support assemblies in accordance with Fig. 8.

Note: Depending on the height of the auxiliary framing, the installer is supplied with either group 53A, 53B, 53C, or 53D assemblies from drawing ED1241-73, as specified for the job.

- (3) Recheck the bay assembly alignment and leveling, and adjust if the assembly has shifted from its previously aligned position (see 4.08[4]).

- (4) Tighten the auxiliary framing support bolts securely.

E. Final Quality Check

4.10 When the bay assembly installation has been completed, check the installation as follows:

- (1) Verify that all nuts and bolts on the bay assembly are securely tightened.
- (2) Check that the bay is correctly aligned and leveled (4.08[4]).
- (3) Make sure that the base assembly of the bay is thoroughly cleared of all foreign material (metal filings, wire clippings, and other loose material). Use a vacuum cleaner, if necessary.
- (4) Check that all tools and material are removed from the bay area.
- (5) Ensure that the floor around the bay installation is clean.

5. CABLING AND FUSING

5.01 For detailed information on the external wiring and cabling for the DMS-1 bays, refer to the Cabling Diagrams (CAD) on the Section G sheets of the schematic drawings as follows:

CCT Bay: SD7208-01

RCT Bay: SD7209-01

Power Bay: SD7209-01

5.02 Current and fusing requirements at the CCT and RCT are given in Table A.

**TABLE A
CURRENT AND FUSE REQUIREMENTS**

NO. OF LINES	CCT BAY (Note 6)			RCT BAY (Note 6)			RCT CABINET		
	I (Note 1) (A)	POWER (W)	FUSE (A)	I (Notes 1,2) (A)	POWER (W)	FUSE (A)	I (Notes 3,4,5) (A)	POWER (W)	FUSE (Note 4) (A)
32	7	350	15	9	450	15	3.5	550	5
128	9	450	15	11	550	15	4.0	650	5
256	11	550	15	13	650	15	5.0	800	7.5

Notes:

1. Current in amperes at 48 V dc, with all options and three QPP437A repeater/line power packs installed.
2. Current with 20 percent of subscriber lines off-hook. Each line draws 50-mA current.
3. Current in amperes at 230 V, 60 Hz, and 80 percent efficiency and 70 percent power factor. At 115 V, assume twice the current and twice the fuse rating.
4. Add 6.5 A at 115 V, or 3.5 V, at 230 V, if heaters are installed in the cabinet.
5. Current for dual cabinet RCT: For two 128 line cabinets, the current for 128 lines must be doubled.
6. Where power is applied from a source that does not provide individual fusing for the DMS-1 feeder, a separate 15 A fuse must be provided between the power distribution point and the DMS-1 bay.

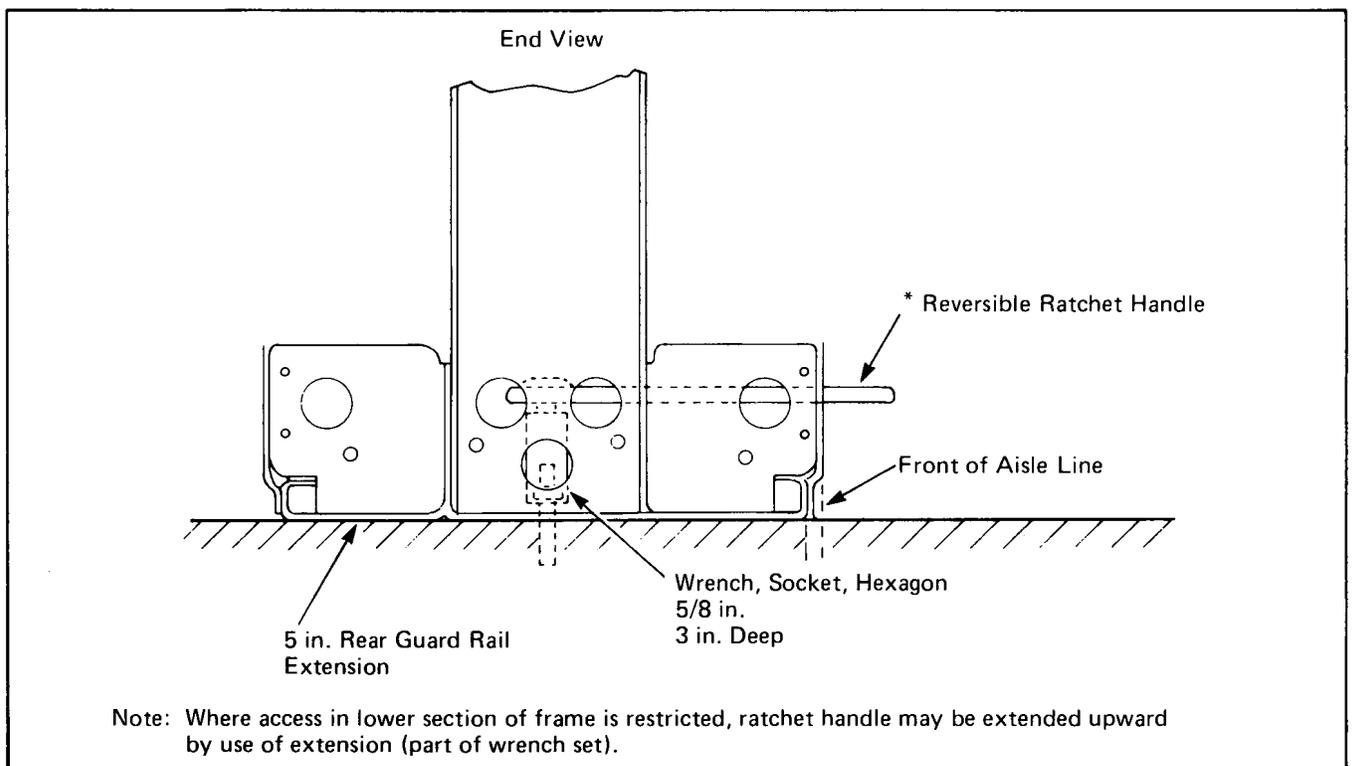


Fig. 7 – Securing Bay to Floor

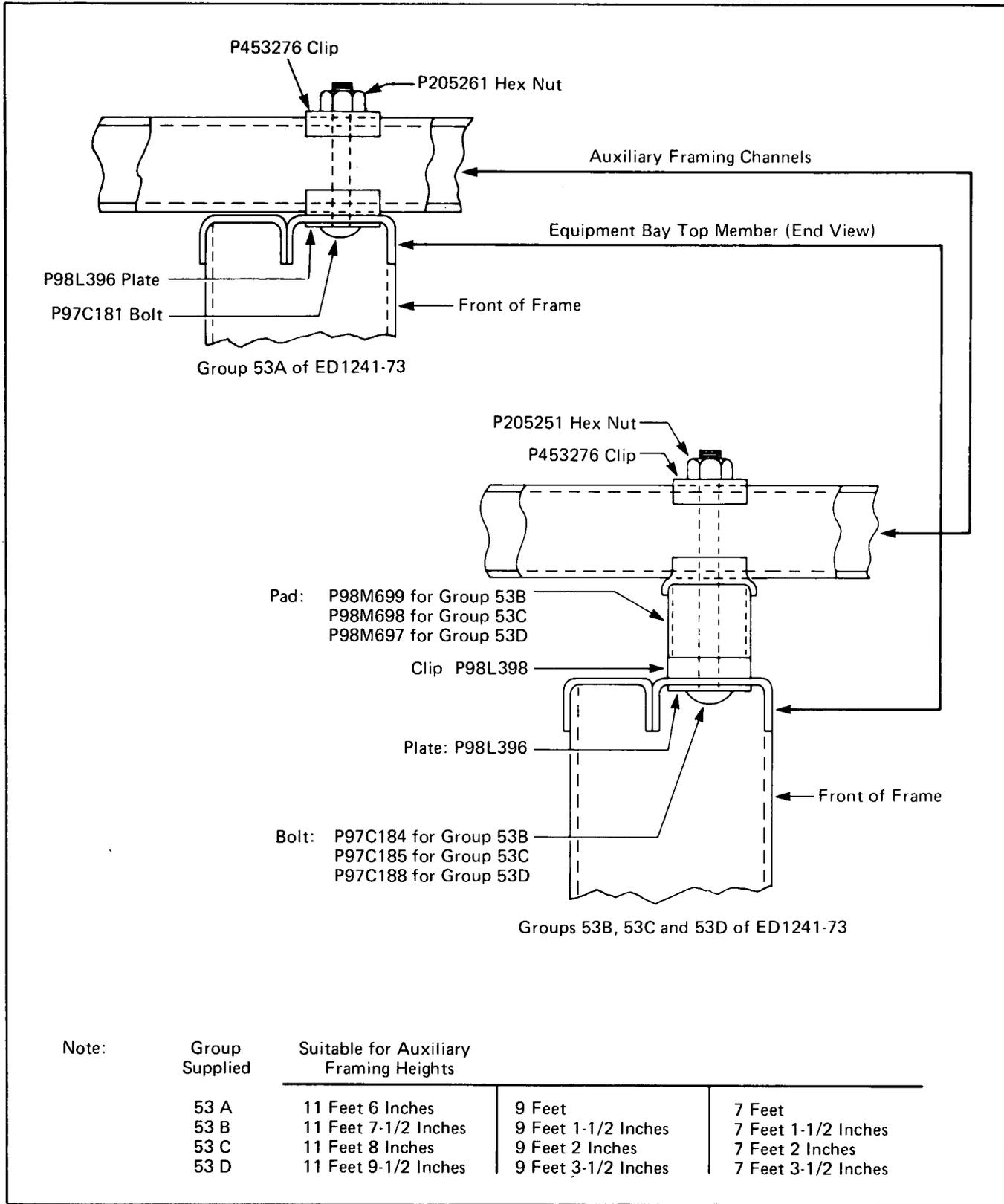


Fig. 8 — Securing Bay to Auxiliary Framing