CONVENTIONAL DISTRIBUTING FRAMES

DESCRIPTION

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1. GENERAL

1.01 This section describes the various types of main distributing frames and combined distributing frames commonly used in larger multiunit central office buildings.

1.02 The reasons for reissuing this section are listed below. Since this reissue is a general revision, no revision arrows have been used to denote significant changes.

(1) To add information on 308- and 310-type connectors

(2) To revise Fig. 1 through 4

(3) To revise Tables A and B

(4) To add paragraph 4.03

(5) To generally update this section.

1.03 Included in this section is information pertaining to combined distributing frames, low profile distributing frames, and B-type main distributing frames having both protective apparatus and interconnecting facilities on one frame. The protector frames which mount ***only*** protective apparatus are covered in Section 201-219-101.

1.04 The main distributing frame in a central office building is primarily an interface between

outside plant cable pairs and central office equipment. A combined distributing frame is basically a main distributing frame which is used to interconnect trunks and miscellaneous equipment in addition to central office equipment.

1.05 Some of the basic type frames and terms used are:

- Conventional frame
- Main distributing frame (MDF)
- Combined distributing frame (CDF)
- B-type MDF
- A-type MDF
- Low profile conventional distributing frame (LPCDF).

1.06 ***Conventional Frame:*** A type of frame constructed of a steel framework employing vertical angles, channel transverse arms, top and base angles, rectangular tie bars, and angle guard rails. Conventional frames can be of various heights and lengths as necessary to serve the particular central office building where it is located. The term conventional frame is used as opposed to the modular type frames which are covered in separate sections.

1.07 ***Main Distributing Frame (MDF):*** Basically the MDF is that frame in a central office building where provision is made for a flexible association of outside plant cable pairs to central office equipment. The cable pairs and the central office equipment are interconnected on the MDF by means of cross-connection jumpers. The outside plant cable pairs may terminate on protective apparatus mounted directly on the MDF, or they may terminate on protective apparatus mounted on a separate protector frame. Where a separate protector frame and MDF are used, office cabling (tie cables) connects the outside plant cable pairs from the protector frame to the MDF.

1.08 ***Combined Distributing Frame (CDF):*** A CDF is that frame in a central office building having provisions for trunk and miscellaneous interconnections in addition to outside plant to central office interconnections. A CDF can be a conventional B-type frame.

1.09 ***B-Type MDF:*** This is a single unit conventional frame that provides for all protective apparatus mounting, outside plant cable pair terminations, and cable pair to central office equipment interconnections on a single frame. No separate protector frame is used with a B-type MDF. (This type frame may be used as a CDF.)

1.10 ***A-Type MDF:*** Some early design frames are designated as A-type MDFs. A-type frames will not be separately described in this section as they are basically the same as B-type frames differing only in the following respect. On A-type frames, outside plant cable pairs are terminated on terminal strips on the ***horizontal*** side of the frame; central office equipment is terminated on fuse mountings or protectors mounted on the ***vertical*** side of the frame. On B-type frames, outside plant cable pairs are terminated on protectors, connectors, or jacks mounted on the ***vertical*** side of the frame; central office equipment is terminated on terminal strips or connecting blocks on the ***horizontal*** side.

1.11 ***Low Profile Conventional Distributing Frame (LPCDF):*** This is a B-type conventional distributing frame developed to meet the needs of buildings which comply with restrictions of the new equipment building standards. The LPCDF is basically a floor mounted, earthquake resistant, cut-down version of the taller conventional frames.

2. B-TYPE DISTRIBUTING FRAMES

A. B-Type Distributing Frame (Without Separate Protector Frame)

2.01 The B-type distributing frame (Fig. 1) is a single frame which has protector, connector, or jack mountings on one side (vertical) of the frame and terminal strips or connecting blocks on the other side (horizontal) of the frame. Outside plant cable pairs are terminated on the protectors, connectors, or jacks; central office equipment is terminated on the terminal strips or connecting blocks. Detailed descriptions of the various type protectors, connectors, and jacks used on distributing frames are found in Sections 201-206-101, 201-207-101, 201-208-101 and 201-208-105.

2.02 Cross-connections are made between the outside plant on the vertical side and the central office equipment on the horizontal side.

2.03 Various vintage B-type frames have an assortment of equipment arrangements and vary in

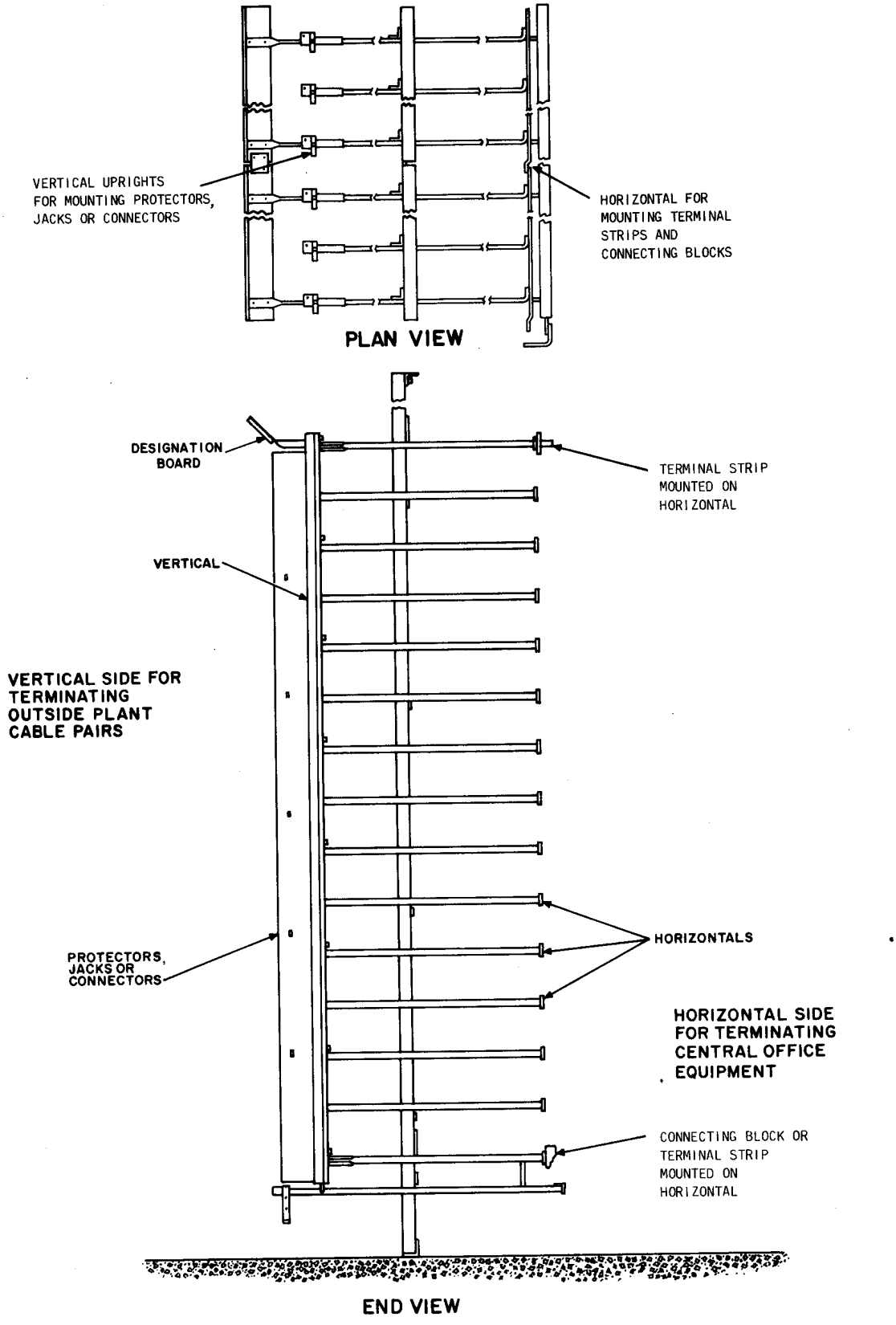

Fig. 1—B-Type Main Distributing Frame

height (Table A). Most of the 14-1/2 foot frames were originally designed with a mezzanine platform shown in Fig. 1. The cables were split with some pairs appearing on a vertical above the mezzanine platform and some pairs appearing on the vertical below the mezzanine platform. In some installations, rolling ladders are installed instead of mezzanine platforms to provide access to the upper levels of the frame. Due to rearrangements and the introduction of newer types of protector mountings, jacks, or connectors, cable pairs may be terminated as above or may be terminated on adjacent consecutive verticals, all above or all below the mezzanine platform. In some instances, cables may be split with some pairs appearing in one location and some pairs in another location. Local cabling records must be consulted in order to determine the exact location of cable pairs.

2.04 The vertical uprights of the frame are generally spaced on 8-inch centers, and the protectors, connectors, or jacks are bolted directly to the uprights. The cable pair terminating capacity of a vertical depends on the height of the frame and the type of terminating apparatus installed. Table A lists the number of cable pairs that can be terminated on verticals of various height frames using various type protectors, connectors, or jacks.

2.05 The length of a frame and the number of verticals provided vary with the size of the central office building.

2.06 Terminal strips or connecting blocks mounted on the horizontal side of the distributing frame may be of assorted sizes, shapes, and capacities. Basically, the various type terminal strips or connecting blocks all serve the same purpose. They provide a means for terminating and cross-connecting the central office equipment appearing on the frame. Plant records must be consulted to determine both the location and the method of terminating central office equipment on the frame.

2.07 The number of horizontals and the spacing of the horizontals on the distributing frame vary according to each particular installation. Figure 1 shows a typical B-type MDF.

B. B-Type Distributing Frame Used With Double-Sided Protector Frame

2.08 The B-type distributing frame may be used with the double-sided protector frame as shown in Fig. 2. The distributing frame has terminal strips or connecting blocks mounted on verticals on the side facing the protector frame and on horizontals facing away from the protector frame. The capacity per frame vertical of this type frame arrangement is twice that of the B-type distributing frame used without the separate protector frame. The double-sided protector frame is described in Section 201-219-101.

C. Low Profile Conventional Distributing Frame (LPCDF)

2.09 The LPCDF (Fig. 3) is a B-type distributing frame similar to other conventional frames in that the frame comprises a horizontal side for termi-

TABLE A

NUMBER OF OUTSIDE PLANT CABLE PAIRS TERMINATED PER VERTICAL ON VARIOUS FRAMES (CONVENTIONAL)

FRAME HEIGHT (FEET)	C-50 OR E-50 PROTECTOR	300-TYPE CONNECTOR	444-C TYPE JACK	301-TYPE CONNECTOR	302-TYPE 3 A3, B3 CONNECTOR (NOTE 2)	303-TYPE CONNECTOR	305 AND 310-TYPE CONNECTOR (NOTE 1)
14 1/2	400	400	800	800	800	800	1200
12 1/2	300	300	600	600	600	600	1200
11 1/2	300	300	600	600	600	600	1200

Note 1: A maximum of 1200 pairs per vertical may be terminated. Any number greater can cause congestion problems in the vertical bays.

Note 2: Double-sided protector frames only.

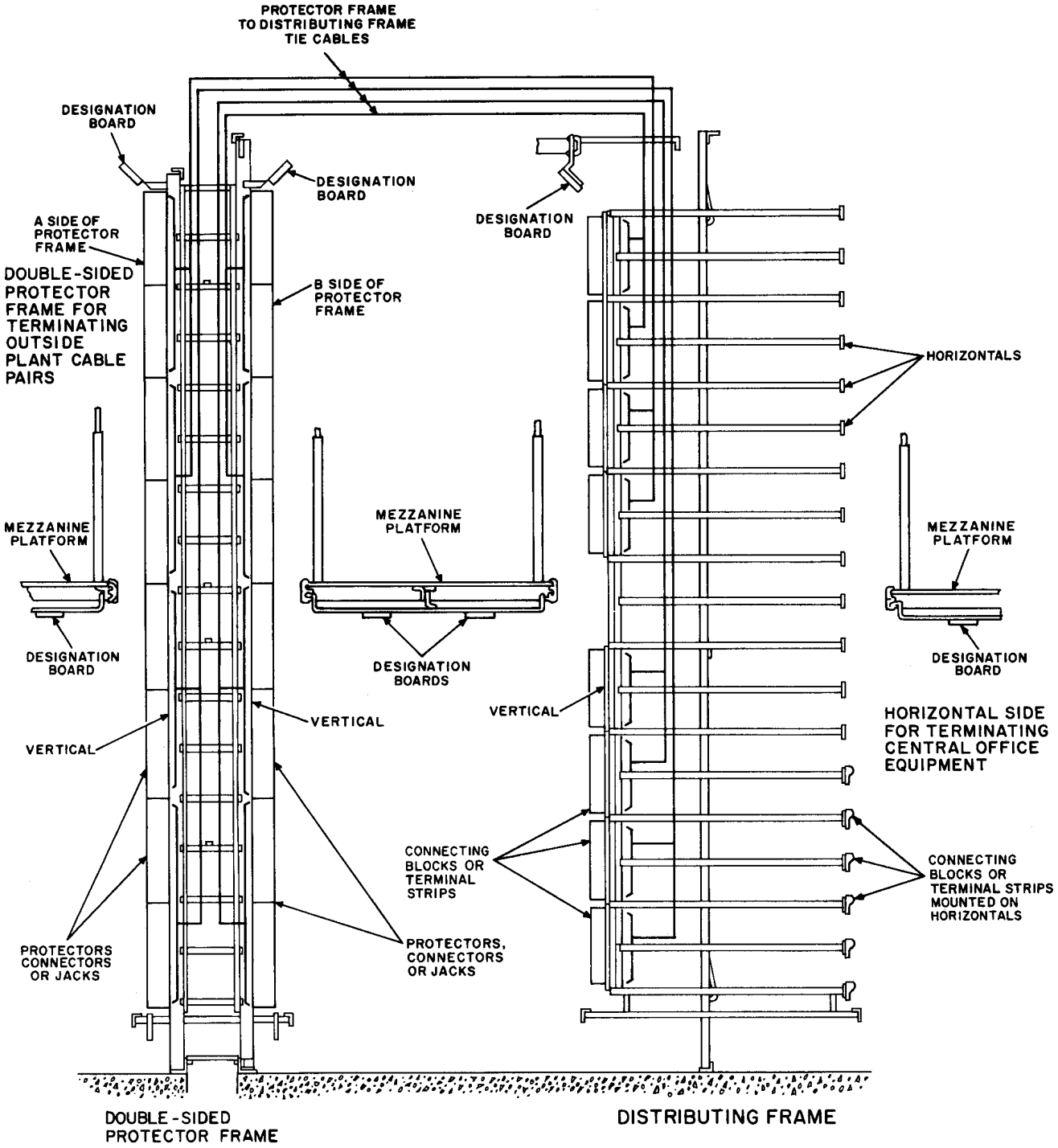

Fig. 2—Distributing Frame With Double-Sided Protector Frame

nating line equipment, trunk circuits, etc, and a vertical side for terminating outside plant cable pairs. The LPCDF basically is 8 feet high, 4 feet 3 inches wide at the guard rails, and has an 8-inch center-to-center spacing between both the vertical members and the horizontal shelves. The frame contains 10 horizontal shelves. Each is approximately 20 inches deep.

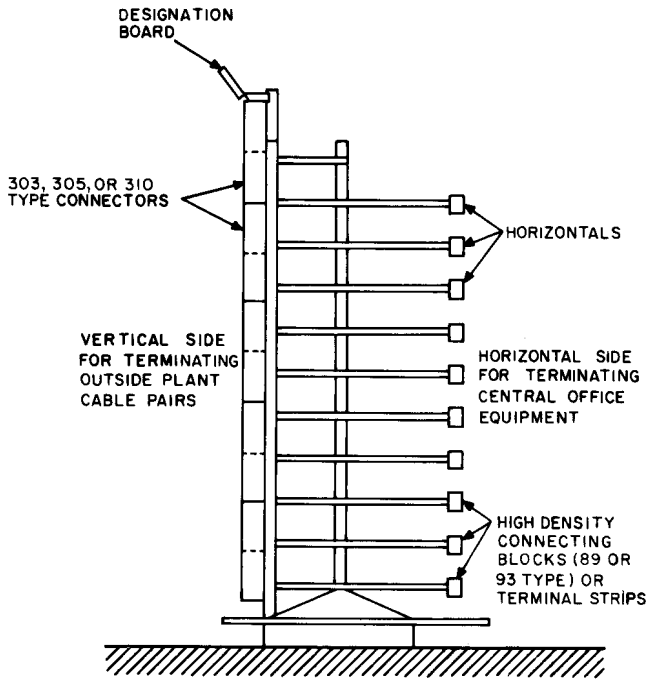

Fig. 3—Low Profile Conventional Distributing Frame

2.10 Outside plant cable pairs are terminated directly on 303-, 305- or 310-type connectors mounted on the vertical members of the LPCDF. The line equipment is terminated on the horizontal side on high density terminal strips or connecting blocks such as 89- or 93-type connecting blocks or 336-type terminal strips.

2.11 Low profile frames are divided into three groups per ED-97754-71 (Table B). The following groups reflect the frame height and the type connectors and terminal strips or connecting blocks which are used with each group:

- ***Group 1 LPCDF*** is 8 feet high and will accommodate four 303-type or eight 305- or 310-type connectors on each vertical. High density 89- or 93-type connecting blocks or 336-type terminal strips are mounted on the horizontal side.

- ***Group 2 LPCDF*** is identical to Group 1, except that the vertical members are 9 feet high, and each vertical will accommodate five 303-type connectors or ten 305- or 310-type connectors. High density 89- or 93-type connecting blocks or 336-type terminal strips are mounted on the horizontal side.

- ***Group 6*** can be added to either Group 1 or 2 to form a LPCDF which will accommodate five 336-type terminal strips or ten 89- or 93-type connecting blocks on each vertical. High density 336-type terminal strips or 89- or 93-type connecting blocks also mount on the horizontal side. Group 6 LPCDF is then used with the low profile double-sided protector frame (LPDSPF) which will accommodate five 302-type or eight 308-type connectors per vertical on each side (see Fig. 4).

2.12 The LPCDF can accommodate four 303-type or eight 305- or 310-type connectors on the vertical side of the Group 1 of ED-97754-71. Five 303-type connectors or ten 305- or 310-type connectors can be mounted on the Group 2 of ED-97754-71 which has taller verticals (only) extending into the 8 to 9 foot space. This additional space is normally allocated to cross-aisle cabling (the tie-cabling between the LPDSPF and the LPCDF). This additional space, with the taller verticals, is available when outside plant cables enter the distributing frame vertical bays from below and are terminated directly on connectors that are mounted on the LPCDF verticals.

2.13 The LPCDF structural configuration (Fig. 3) differs basically from existing conventional frames as follows:

(a) A gusseted floor mounting plate has been added to eliminate ceiling bracing.

(b) On the vertical side of the frame, the vertical members have been connected with a vertical bar to the floor mounting plate for stability.

2.14 The frame is compatible with new and existing apparatus and is supplied in units of six verticals.

2.15 The ultimate capacity of the LPCDF is dependent on:

TABLE B

OUTSIDE PLANT TERMINATION CAPACITY FOR LPCDF

GROUP NO. PER ED-97754-71	FRAME SYSTEM	TYPE CONNECTOR	PAIRS PER VERTICAL	PAIRS PER FOOT OF FRAME LENGTH
Group 1	LPCDF only (8 ft.)	303	400	600
		305,310	800	1200
Group 2	LPCDF only (9 ft. vertical)	303	500	750
		305,310	1000	1500
Group 6	LPCDF with LPDSPF	302	500 (Each side of LPDSPF)	1500 (LPDSPF)
		308	800 (Each side of LPDSPF)	2400 (LPDSPF)

- Whether the LPCDF is used alone either as Group 1 or Group 2 (see paragraph 2.11) or in conjunction with the LPDSPF (Table B).

- Using 303-, 305-, or 310-type connectors on the LPCDF alone or 302- or 308-type connectors on the LPDSPF (Table B).

- Nature of the assignment procedures. The total jumper shelf capacities listed in Table C are based on random assignment.

D. Low Profile Conventional Distributing Frame (LPCDF) Used With Low Profile Double-Sided Protector Frame

2.16 When the LPCDF is used with the LPDSPF as shown in Fig. 4, the line equipment is terminated directly on high density terminal strips or connecting blocks such as 89- or 93-type connecting blocks or 336-type terminal strips. The outside plant is terminated directly on the companion LPDSPF on 302- or 308-type connectors. The outside plant pairs are tie-cabled to the terminal strips or connecting blocks mounted on the vertical side of the LPCDF. The LPDSPF is covered in Section 201-219-101.

3. DESIGNATIONS

3.01 Verticals on the B-type frame are numbered consecutively from one, starting at either end of the frame depending on direction of growth (left to right or right to left). Designation boards (Fig. 5) are provided for the top of the frame; when the frame is equipped with a mezzanine platform, duplicate boards are located under the mezzanine platform. On the designation boards, the vertical number and the numbers of the cables appearing in the vertical are stamped directly above or immediately in front of each vertical. Where more than one cable appears in a vertical and a mezzanine platform is provided, a horizontal dividing line separates the numbers of the cables appearing in the upper and lower halves of the vertical.

3.02 On the horizontal side of the frame, the vertical number and the cable numbers are stamped on the vertical metal framework. These designations are stamped between the fifth and sixth, and ninth and tenth horizontal shelves. The designations are readily visible from the horizontal side of the frame and are provided as a convenience when running cross-connections. Starting with the bottom shelf, the horizontal shelves are lettered A, B, C, etc.

TABLE C

SHELF CAPACITY FOR LPCDF

TYPE DISTRIBUTING FRAME WIRE	SHELF CAPACITY (SEE NOTE)	
	PEAK JUMPER PILEUP (PAIRS)	TOTAL RANDOMLY ASSIGNED JUMBERS (PAIRS)
U220 (MFR DISC)	4,000	8,000
DT22P (IPVC)	6,500	13,000

Note: Care must be taken to install jumpers with adequate slack so that jumpers can be dressed along the shelves and jumper pileup can grow uniformly over the entire depth of the frame for these capacities to be achieved.

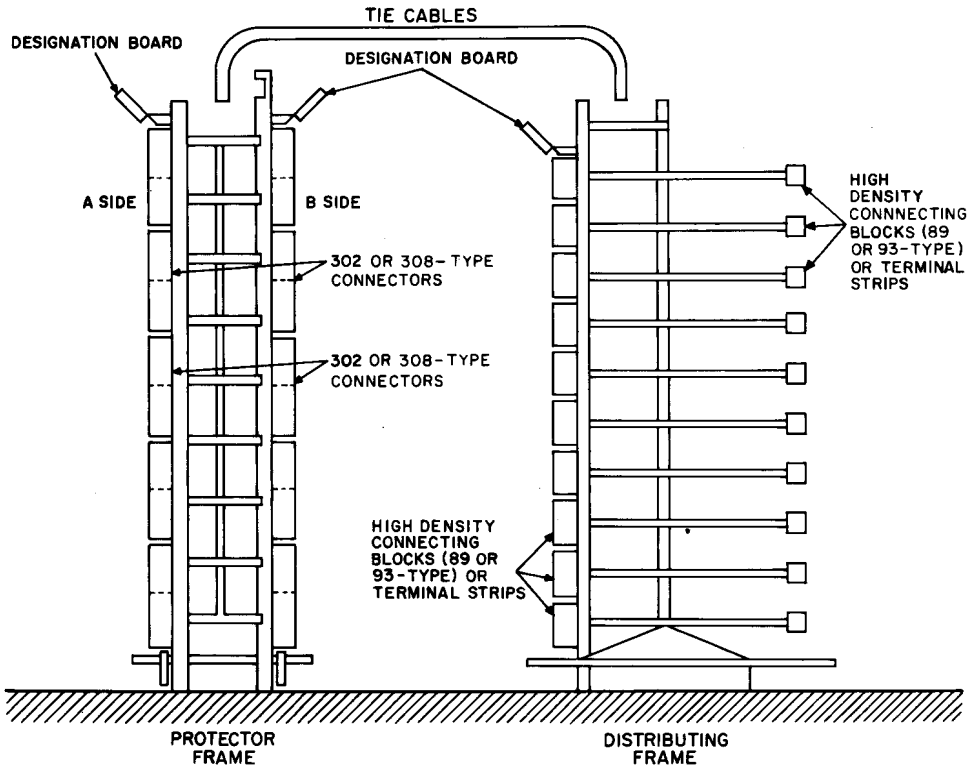

Fig. 4—Low Profile Conventional Distributing and Double-Sided Protector Frames

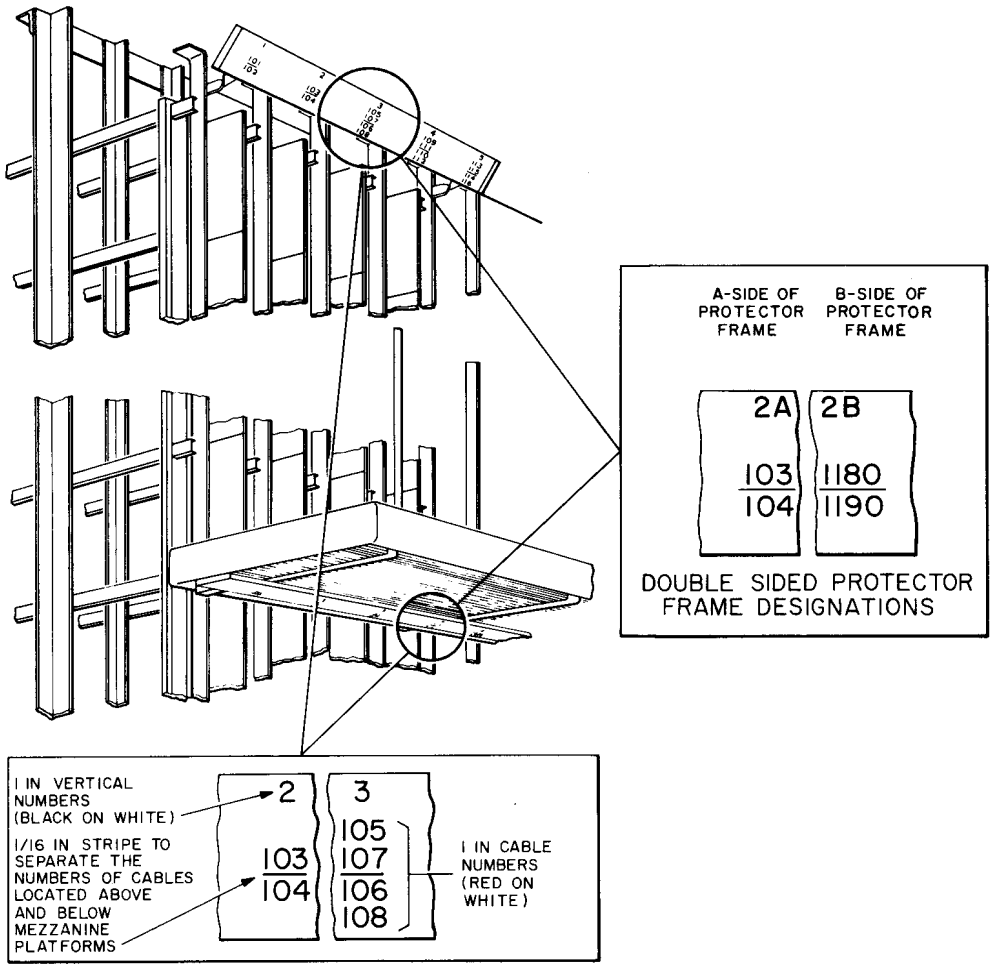

Fig. 5—Typical Designations on Vertical Side of MDF With Mezzanine

3.03 Cable and pair designations on the protectors, connectors, jacks, or terminal strips are covered in the 636 division of Bell System Practices.

3.04 Designations for the double-sided protector frames are covered in Section 201-219-101.

4. MAINTENANCE EQUIPMENT

4.01 Jack boxes for test lines and plugging up lines are placed at regular intervals along the vertical side of the frame.

4.02 Test lines and plugging up lines from test desks require protection but no cross-connection facilities. The first vertical of an MDF, where growth is from left to right, is ordinarily not furnished with jumper rings and is not used for terminating outside plant. Because of this and in order to provide a definite and uniform location for the plugging up and test line protectors, the first vertical of a frame is reserved, regardless of direction of growth, for these lines.

4.03 Some frames may be equipped with miniature test/talk jacks (ED-6C110-10, ED-6C111-10).