

WIDEBAND DISTRIBUTING FRAME
"PICTUREPHONE®" CENTRAL OFFICE
GENERAL DESCRIPTION

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5. DESIGNATIONS	7	1.02 The WBDF is a cross connection point in the PICTUREPHONE central office and provides	
FIGURE		(a) A standard interface between transmission equipment and switching equipment in the central office and	
1. Wideband Distributing Frame—Single Frame	3	(b) Circuit appearances for all video loops and trunks at known level points so that traffic balancing operations or other circuit rearrangements can be carried out.	
2. Equipment Locations in Wideband Distributing Frame	4	1.03 The WBDF is arranged to provide cross connection facilities for all circuits envisioned in a PICTUREPHONE switching office (Fig. 3).	
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		2. PHYSICAL DESCRIPTION	
		2.01 The WBDF [ED-27758-()] contains either a single frame or a double frame. The single frame arrangement is shown in Fig. 1; Fig. 2	

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shows how either the single or the double frame is arranged.

2.02 A single frame is 11 feet, 6 inches high and 4 feet wide, and a double frame is 8 feet wide (Fig 2). Each WBDF contains 6 vertical columns of terminal blocks with 720 four-wire terminations in each vertical for a total of 4320 four-wire terminations. A double frame provides 8640 four-wire terminations. Each vertical column contains eighteen 251F terminal blocks having 8 solderless wrap terminals in a row, and each block has 20 rows. Space between each vertical column is provided for running cross connect jumpers. Jumper ducts are provided at the top and bottom of the frame for running jumpers between vertical columns. Space is provided at the bottom of the WBDF for a test line distributor, video distribution amplifiers, or other circuits. Swinging designation strip holders are provided on each side of a vertical column. The designation strip holders are hinged and swing outward to allow access for running cross connect jumpers in the duct between the vertical columns.

3. SIZE REQUIREMENTS

3.01 PICTUREPHONE switching offices may have 4:1 or 8:1 traffic concentration. With 4:1 concentration one WBDF designated WBDF 0 is required. When 8:1 concentration is provided, two WBDFs designated WBDF 0 and WBDF 1 are required. Fig. 2 shows how the frames will appear. Where 8:1 concentration is desired but growth is limited to 1600 lines, a single frame can be used as shown in Fig. 2 by the parenthetical assignments.

3.02 The potential growth of a switching office is normally decided at initial installation. If the need for a second WBDF is established, the additional floor space will be dedicated at this time.

4. EQUIPMENT LOCATIONS

4.01 Both calling party video and called party video are associated in a quad of two twisted pairs of cross connection wire. Each circuit termination on the WBDF consists of a 4-wire terminal group with designations T, R, T1, and R1. The terminal blocks on the vertical columns have 8 terminals in each row as per Fig. 9. Two 4-wire terminations can be made on each row of the terminal strips. The terminal strips are divided

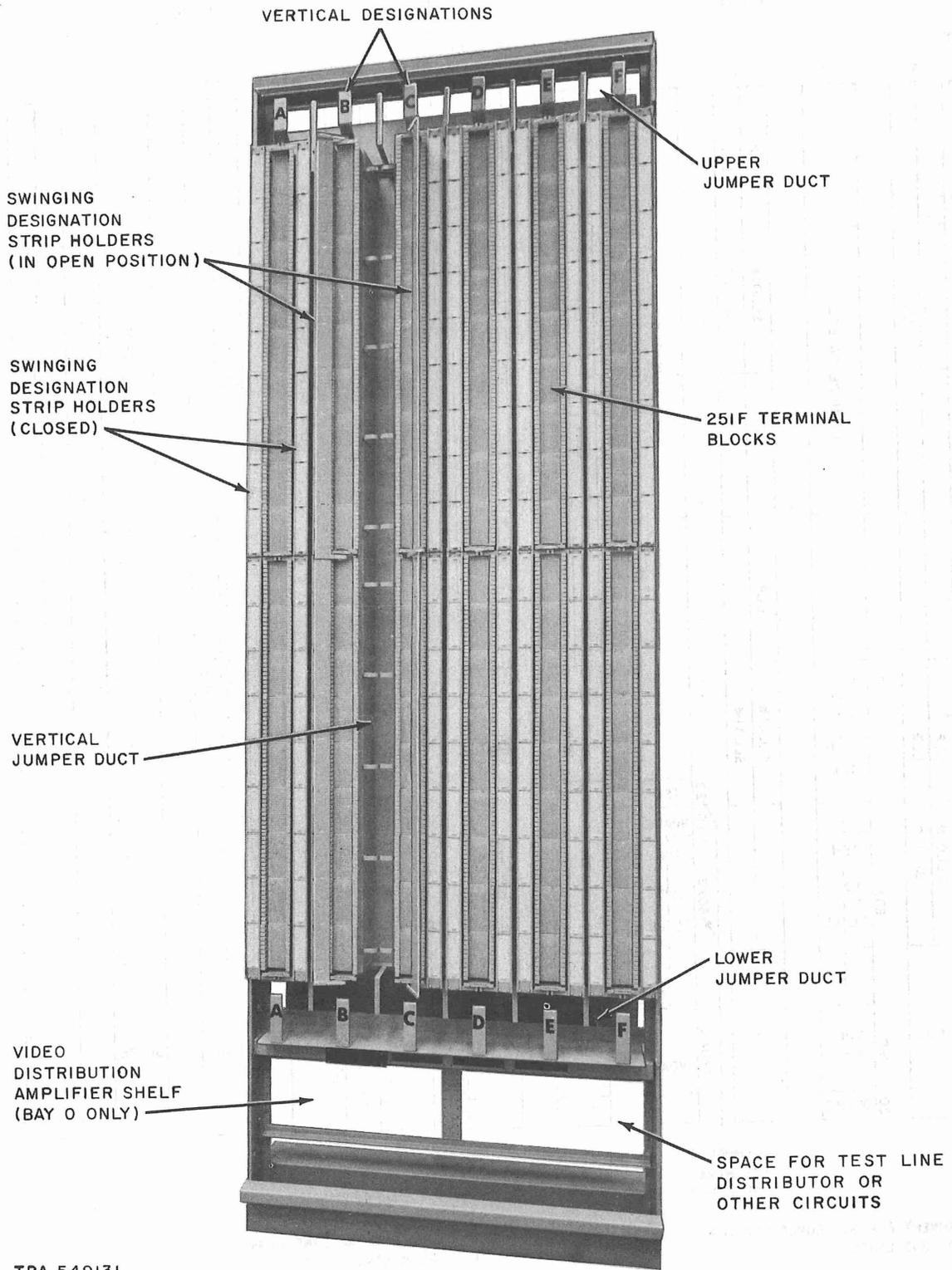
down the middle; even numbered equipment is assigned to the left side of the terminal block; and odd equipment is assigned to the right side of the terminal block.

4.02 Cross connection wires can be brought to the even numbered positions (left side) or to the odd numbered positions (right side) from the fanning strips on either side of the terminal blocks allowing short jumpers to be run to either adjacent vertical column. When necessary, a single crossing of quad is permitted.

4.03 Equipment is assigned to the WBDF in fixed locations chosen to control unnecessarily long cross-connections and the resulting crosstalk exposure. Fig. 2 shows the assignment of 4-wire appearances on the WBDF.

4.04 Switching and transmission equipment is terminated on alternate vertical columns. That is columns A, C, and E provide terminations for line link and trunk link frames, while columns B, D, and F provide terminations for loop, trunk, tandem, and VDA repeaters. For convenience it is desirable to wire terminals from the top down within a vertical column. Line link frames and loop repeaters which require the bulk of the wiring are therefore located at the top of the frame. Trunk links, trunk repeaters, and tandem repeaters which have relatively few frame appearances are located at the lower end of the vertical columns. This arrangement maintains a convenient separation of switching and transmission equipment.

4.05 Line links are assigned to vertical columns A, C, and E. For load balancing purposes it is desired to provide ready access from each loop repeater output to a number of line link switch groups. Each line link frame contains five switch groups. The even numbered line link frames are assigned to the left side of a vertical column and the odd numbered line link frames are assigned to the right side of a vertical column. This splitting of vertical columns between two line link frames doubles the number of line link switch groups that can be accessed by each loop repeater with very short cross connect wiring. Fig. 2 shows the assignment locations for line frames and supplemental line link frames on the WBDF. Fig. 4 shows in detail the line link switch and vertical assignments for line link 0 and 1 (LL 0 and LL1). Other line links are similarly assigned; reference should be made to Fig. 2 for WBDF position numbers. An



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Fig. 1—Wideband Distributing Frame—Single Frame

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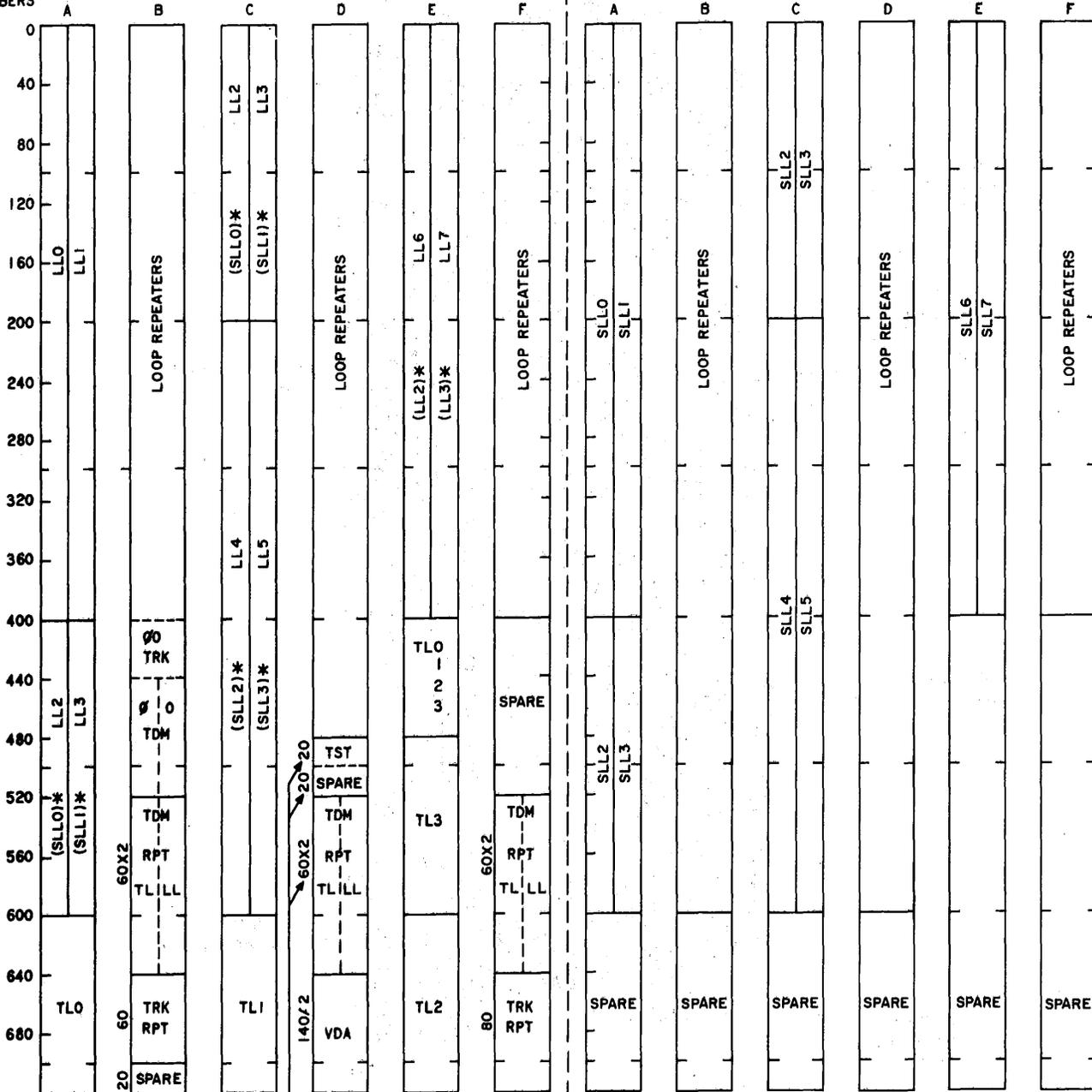
WBDF O

WBDF I

POSITION
NUMBERS

(4:1 AND 8:1)

(8:1 ONLY)



NUMBER OF
TERMINALS
RESERVED

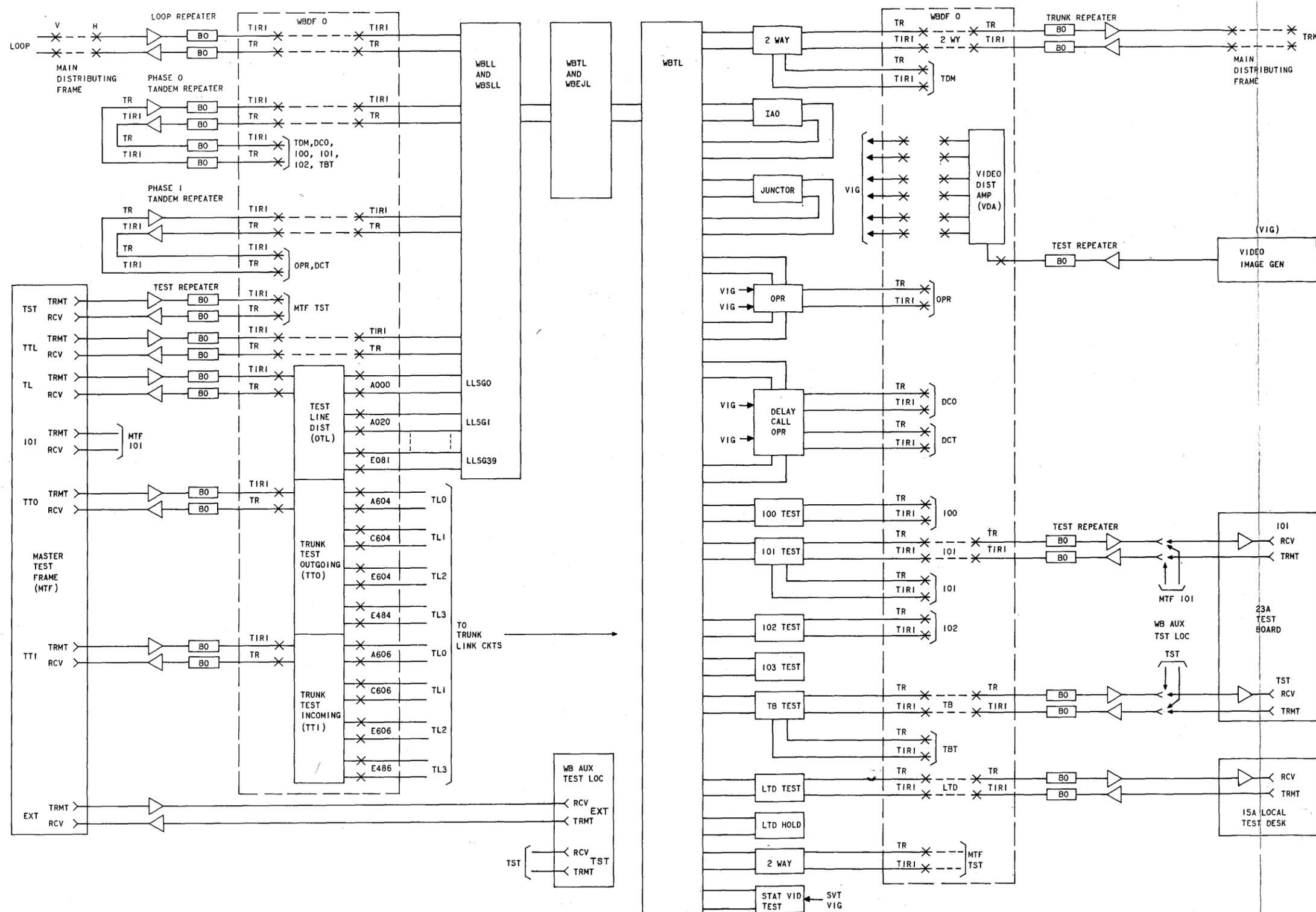
LEGEND

- LL - LINE LINK
- SLL - SUPPLEMENTAL LINE LINK
- TL - TRUNK LINK
- TDM RPT - TANDEM REPEATER
- TRK RPT - TRUNK REPEATER

* () ASSIGNMENT FOR 8:1 CONCENTRATION
FOR UP TO 1600 LINES.

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Fig. 2—Equipment Locations in Wideband Distributing Frame



- LEGEND
- BO - BUILD OUT NETWORK
 - DCO - DELAY CALL ORIGINATING
 - DCT - DELAY CALL TERMINATING
 - EXT - EXTENSION TRUNK
 - IAO - INTRAOFFICE
 - LLSG - LINE LINK SWITCH GROUP
 - LTD - LOCAL TEST DESK
 - MTF - MASTER TEST FRAME
 - OTL - ORIGINATING TEST LINE
 - SVT - STATION VIDEO TEST
 - TBT - TESTBOARD TEST
 - TTI - TRUNK TEST INCOMING
 - TTL - TERMINATING TEST LINE
 - TTO - TRUNK TEST OUTGOING
 - VDA - VIDEO DISTRIBUTION AMPLIFIER
 - VIG - VIDEO IMAGE GENERATOR
 - WBDF - WIDE BAND DISTRIBUTING FRAME
 - WBEJL - WIDE BAND EXTENDED JUNCTION LINK
 - WBTL - WIDE BAND TRUNK LINK
 - WBSLL - WIDE BAND SUPPLEMENTAL LINE LINK

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Fig. 3—No. 5 Crossbar Wideband Switching Office—Wideband Distributing Frame Interfaces

exception to this arrangement of line links would be where an 8:1 concentration is desired, but growth is limited to 1600 lines. In this case line links are assigned as shown in Fig. 2 and 4 by the parenthetical assignments where line links 2 and 3 (LL 2 and LL 3) are assigned to the E vertical column and supplemental line links are assigned to the C vertical column.

4.06 Trunk links are assigned to the A, C, and E vertical columns. There is overflow space in vertical E for additional trunk link appearances. Since trunk circuits may be installed on trunk link frames without regard to type, the trunk circuits are similarly assigned to the WBDF and the only restriction being that all 4-wire appearances of a given trunk appear together. Fig. 7 showing a sample trunk link designation card illustrates typical trunk assignments.

4.07 Tandem repeaters are assigned to verticals B, D, and F. Trunk repeaters are assigned to verticals B and F. The video distribution amplifiers (VDA) repeaters and test repeaters are assigned to vertical D. Tandem repeaters differ from others in that both sides of a 2-way repeater appear at the WBDF. The two 4-wire appearances of a tandem repeater appear on the same 8-terminal row of a terminal block. Connections to the line link (Fig. 2 and 9) will be from the right side (odd WBDF position) and connections to the trunk link from the left side (even WBDF position).

4.08 The VDA are mounted on the bottom of the WBDF, and their inputs and outputs are terminated on the terminal blocks on the bottom of vertical D as shown in Fig. 5. The video image generator (VIG) output has one appearance on the bottom of vertical D (Fig. 5) which is connected to any one of 14 VDA inputs shown. Other VDA inputs may be fed from this VDA output or from other VDA outputs in those cases where different VIG output signals are required. The VDA output appearances consist of two 2-wire appearances per 4-wire horizontal position on the terminal block. Since most operator circuits requiring connection to the VDA outputs do so in pairs, no confusion will arise when cross connecting as T and R leads connect to T and R leads and T1 and R1 leads connect to T1 and R1 leads. In a few rare instances where only one connection is required, only the T and R lead will be used and the T1 and R1 leads are left unconnected.

4.09 Any VDA may be used to multiple video signals (other than VIG) at the WBDF if it is not required in the VIG distribution.

4.10 The test line distributor which is mounted at the bottom of the WBDF is connected directly to the 4-wire appearances of its associated circuits. This is reflected in Fig. 6 and 7 by the filled in designation in the cross connect destination column on the designation cards. This method of termination reduces the connections necessary and permits wiring via the front of the WBDF to the test line distributor circuit.

4.11 Spare positions are designated in WBDF 0 adjacent to equipment which may require expansion. Positions in vertical columns B, D, and F are unassigned to accommodate new circuits which might be required by later PICTUREPHONE developments. In addition adequate space is available in WBDF 1 to accommodate any new type of circuits which may be required in the future.

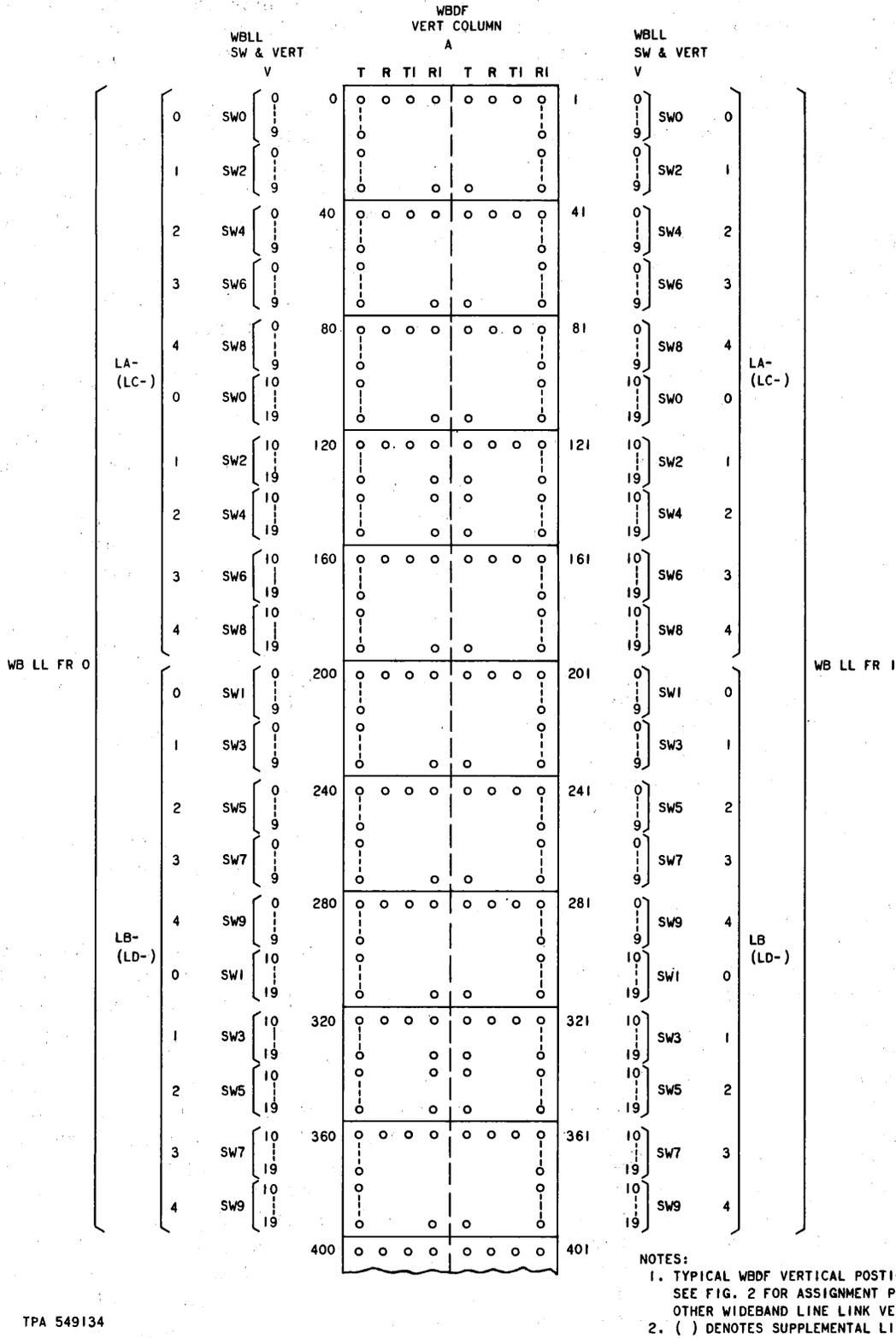
4.12 In PICTUREPHONE switching offices not fully equipped, the WBDF may not have equipment assigned to all locations; however, the equipment that is provided should be *assigned* according to the *fixed locations* (Fig. 2).

5. DESIGNATIONS

5.01 Each vertical column is designated by large letters A through F stenciled on the upper and lower jumper ducts.

5.02 Terminals on the terminal blocks in each vertical column are numbered by 4-wire groups from the top down beginning with 000 and 001 for the two 4-wire groups in the top row and ending with 718 and 719 for the two 4-wire groups in the bottom row. The first two 4-wire groups in each 40-terminal group terminal block are designated by stenciled numbers on the adjacent fanning strip. For example, 000 is on the left fanning strip and 001 on the right fanning strip for the first terminal block, 040 and 041, respectively, for the second block, 080 and 081 for the third block, etc. The rear (wiring side) of each vertical column is similarly designated with the numbers stenciled on the adjacent fanning strips.

5.03 Each 4-wire group is designated T, R, T1, and R1. The top two (left and right) 4-wire groups of each terminal block are stenciled with



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Fig. 4—Typical Line Link Assignments in Wideband Distributing Frame

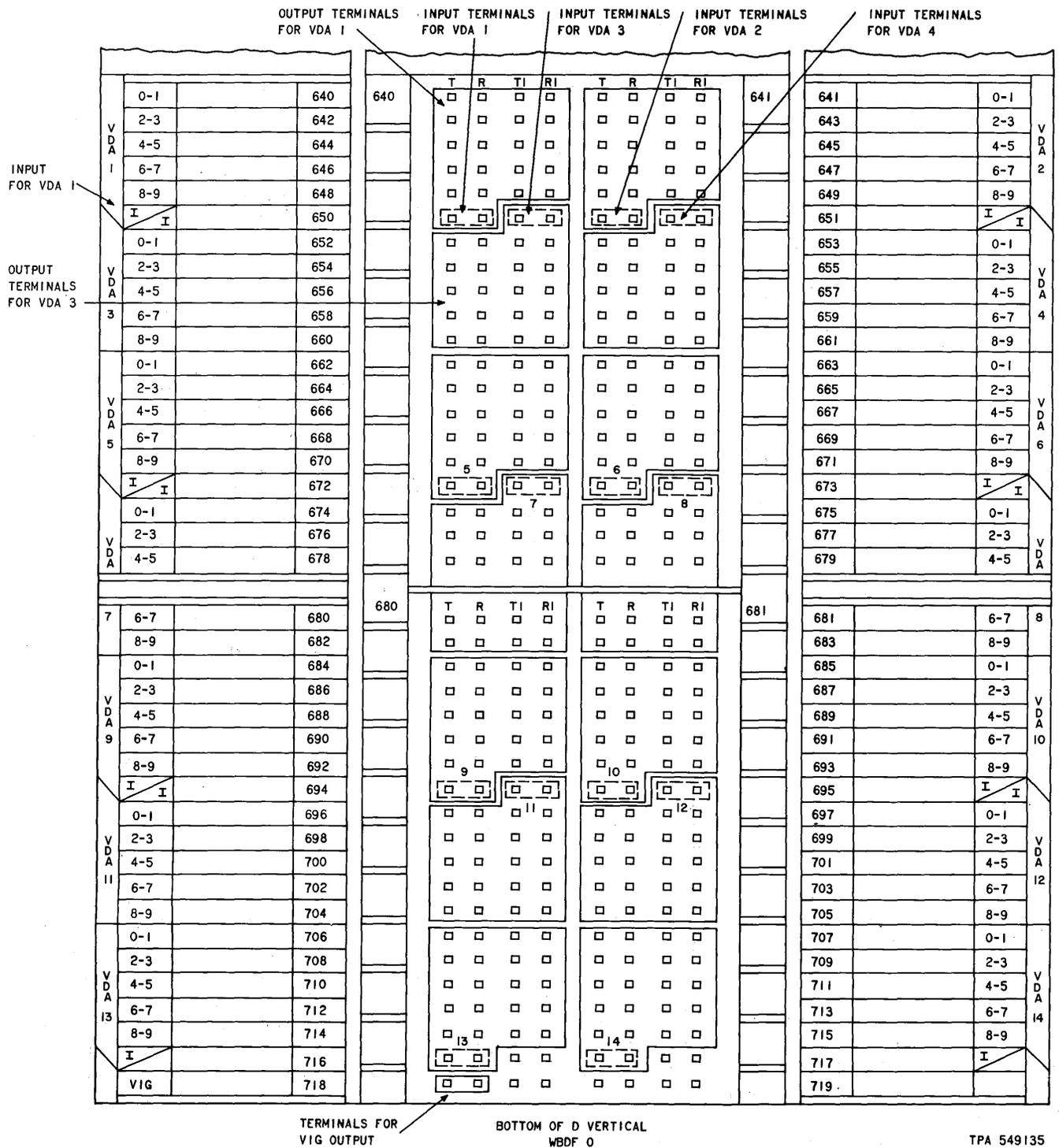


Fig. 5—Assignment of Terminals to Video Distribution Amplifiers

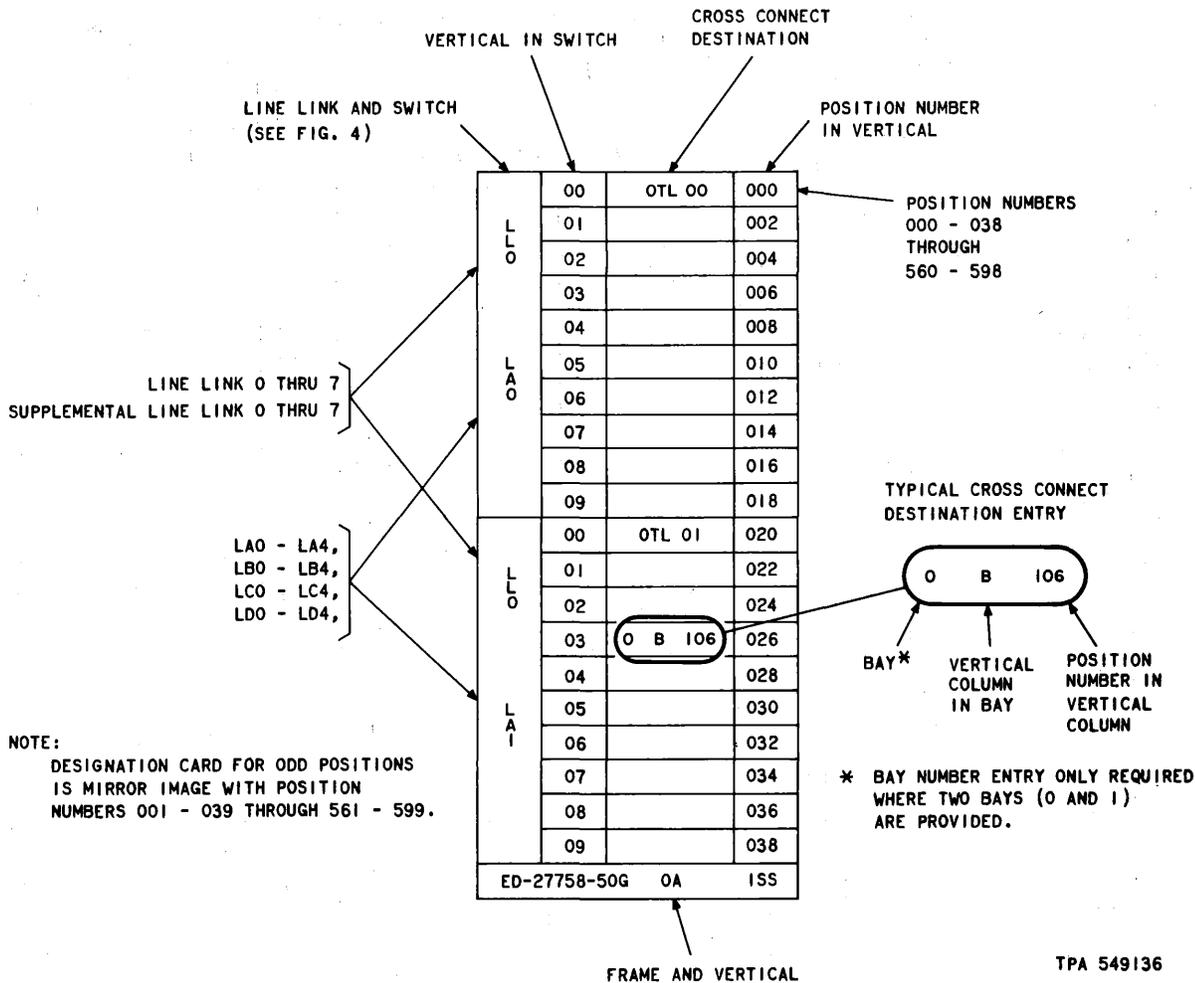


Fig. 6—Typical Line Link Designation Card

these designations. The stenciling appears above the top row of terminals in each block (Fig. 9). The rear (wiring side) of each vertical column is similarly designated.

5.04 All circuits appearing on the WBDF are indicated on designation cards inserted into card holders on the swinging designation strips on either side of a vertical column. The various designation cards are shown in Fig. 6 through 11. Each card has space for designating 20 four-wire terminal groups (half of a terminal block). Separate cards are available for designating the left side and the right side of a terminal block. The left and right designation cards are mirror images of each other.

5.05 The frame number and the vertical letter are indicated on the bottom of each card as

an aid to placing the card in the proper location on the WBDF. Level numbers on the card are matched to the terminal group numbers stenciled on the fanning strip at the top of each block in each vertical column. Only the top number in each block is stenciled. Each designation card has one column for entering cross connect data. Fig. 6 through 11 show the various information on the cards depending on the type of equipment to be designated.

5.06 Information on the cross connect destination should be entered on the designation cards before installation as shown in Fig. 6 through 11. Thus only cross-connections provided by the operating company personnel should be entered on the cards when new connections or load balancing occurs. Fig. 6 shows a typical cross connect destination entry.

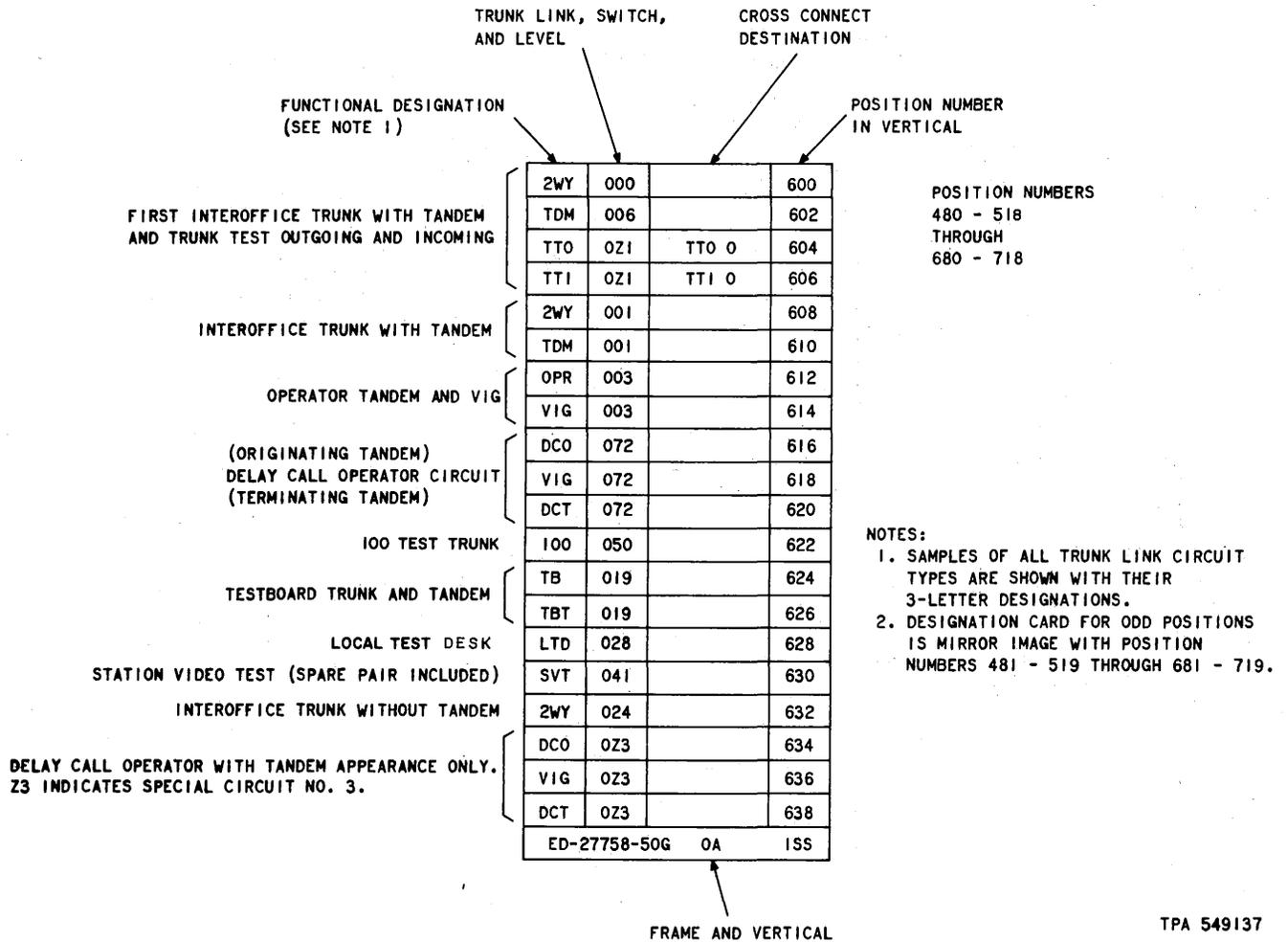


Fig. 7—Typical Trunk Link Designation Card

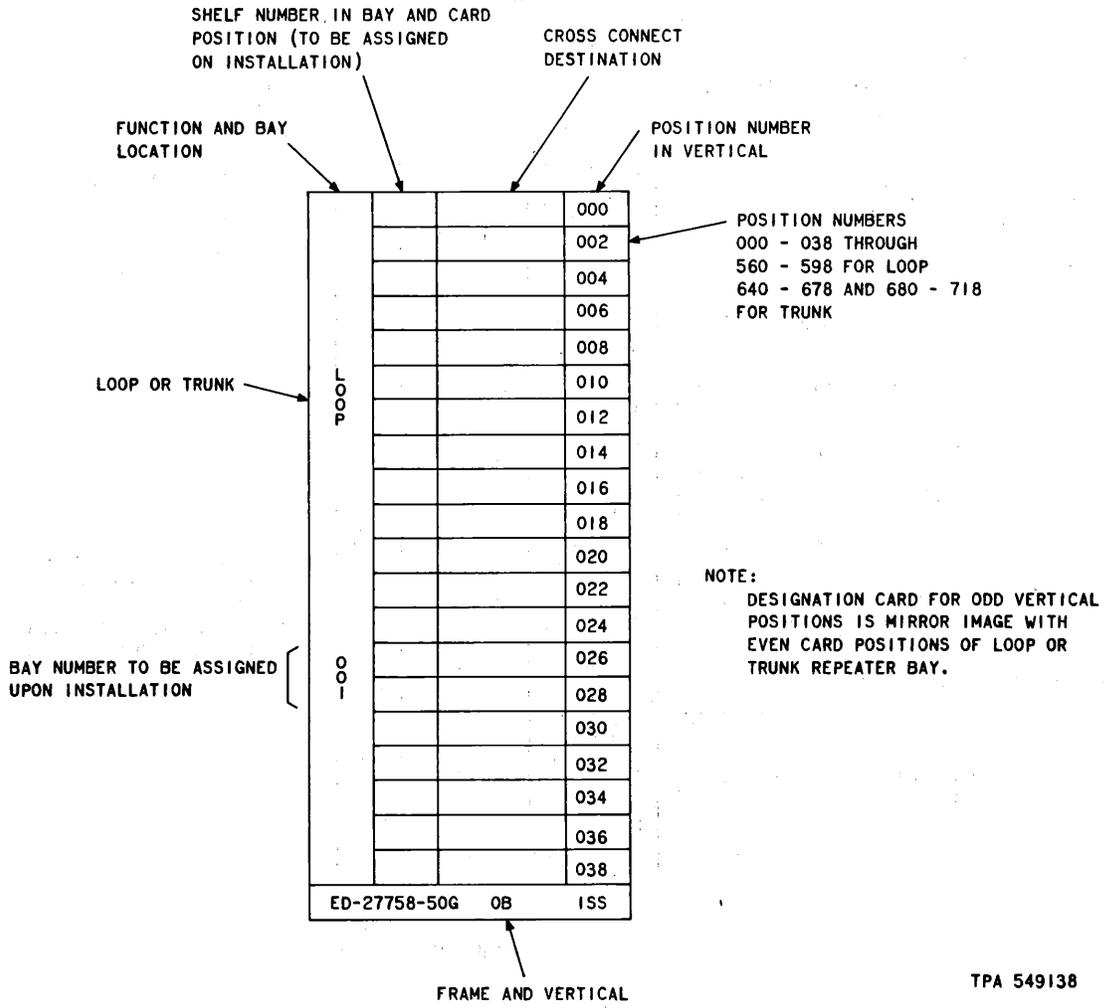
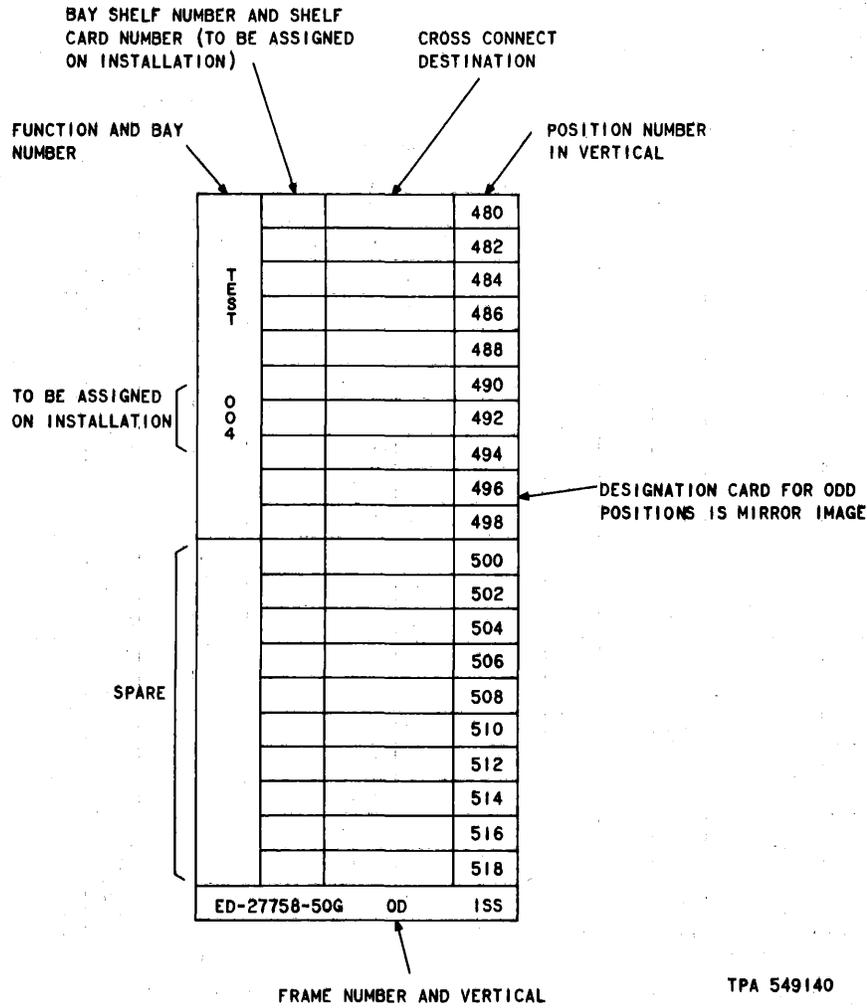


Fig. 8—Typical Loop or Trunk Repeater (Cable Equalizer) Designation Card



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Fig. 10—Typical Test Repeater (Cable Equalizer) Designation Card

FUNCTION AND CARD NUMBER	INPUT POSITION AND OUTPUTS	CROSS CONNECT DESTINATION	POSITION NUMBER IN WBDF VERTICAL
VDA 1	0-1		640
	2-3		642
	4-5		644
	6-7		646
	8-9		648
	I / I		650
VDA 3	0-1		652
	2-3		654
	4-5		656
	6-7		658
	8-9		660
VDA 5	0-1		662
	2-3		664
	4-5		666
	6-7		668
	8-9		670
	I / I		672
VDA	0-1		674
	2-3		676
	4-5		678
ED-27758-50G OD ISS			

POSITION NUMBERS 640 - 678 AND 680 - 716

DESIGNATION CARDS FOR OTHER POSITIONS (SEE FIG. 5)

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Fig. 11—Typical Video Distribution Amplifier (VDA) Designation Card