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\* PRIOR TO ISSUE 5, SHEET 28 WAS ... 2C WAS 28.

SHEET INDEX NOTES

- WHEN CHANGES ARE MADE IN THIS DRAWING ONLY THOSE SHEETS AFFECTED WILL BE REISSUED.
- THIS SHEET INDEX WILL BE REISSUED AND BROUGHT UP TO DATE EACH TIME ANY SHEET OF THE DRAWING IS REISSUED, OR A NEW SHEET IS ADDED.
- THE ISSUE NUMBER ASSIGNED TO A CHANGED OR NEW SHEET WILL BE THE SAME ISSUE NUMBER AS THAT OF THE SHEET INDEX.
- SHEETS THAT ARE NOT CHANGED WILL RETAIN THEIR EXISTING ISSUE NUMBER.
- THE LAST ISSUE NUMBER OF THE SHEET INDEX IS RECOGNIZED AS THE LATEST ISSUE NUMBER OF THE DRAWING AS A WHOLE.

SUPPORTING INFORMATION

CATEGORY	NO.
EQUIPMENT DRAWING	ED-3C351-( ) ED-3C352-( ) ED-3C353-( ) ED-3C354-( ) ED-3C355-( ) ED-3C356-( ) ED-3C357-( ) J98718A-( ) J98718B-( ) J98718C-( )
EQUIPMENT DESIGN REQUIREMENTS	J98718 901-505-153

NOTICE - NOT FOR USE OR DISCLOSURE OUTSIDE THE BELL SYSTEM EXCEPT UNDER WRITTEN AGREEMENT.

SD-3C104-01 IN22  
COMMON SYSTEMS  
24 CHANNEL PCM BANK, TYPE D3  
APPLICATION SCHEMATIC

AT&TCO STANDARD

SD-3C104-01-1

25 SHEETS

2

BELL TELEPHONE LABORATORIES INCORPORATED

65

ISSUE NO.	CD	DATE	BY	APPV
1	1	12-22-71	JAC	JCD
2A	1A	5-2-74	JAC	JCD
3B	2B	5-2-74	JAC	JCD
4B	3B	1-14-76	JAC	JCD
5B	4B	12-9-76	JAC	JCD

CIRCUIT NOTES:

101. PROVIDE FUSING AS FOLLOWS:

FIG. NO.	DESIG	FUSE AMP	POTENTIAL	ONE PER
9 MD	-4ES -4BS	30 30	-48V A -48V B	TRIPLE 7 FT. BAY ARRANGEMENT
6 MD	-4BS	30	-48V	BAY (11'-6" OR 9')
11	-4BS	100	-48V	2 BAYS (11'-6" OR 9'-0")
12	-4BS -4BS	100 100	-48A -48B	2 TRIPLE 7'-0" BAY ARRANGEMENT
6 MD 9 MD 11,12	20M <sub>2</sub> SEE NOTE 122	SEE NOTE 122	SEE NOTE 108	25 BAYS (11'-6" OR 9'-0") OR 8 A OR B FEEDERS (TRIPLE 7'-0" ARRANGEMENTS)

\* NOTE FOR INDIVIDUAL CKT FUSES SEE SD-3C115-01 & SD-3C116-01 PWR DIST CKTS.

FEATURE OR OPTION	PROVIDE		
	FIG	APP OR WRG	QUANTITY
SHOP WIRED BAY FOR 3 24 CHANNEL PCM BANKS TYPE D3 INCLUDING HOT SPARE AND MAINT. SHELF	1	S, Z	72
	2	S	3
	3	S	3
	4	S	3
CHANNEL ACCESS UNIT	5		1
	12		1
SHOP WIRED BAY FOR 4 24 CHANNEL PCM BANKS TYPE D3 (FOR TRIPLE 7' ARRANGEMENT)	1	S, Z	96
	2	S	4
	3	S	4
	4	S	4
SHOP WIRED BAY FOR 6 24 CHANNEL PCM BANKS TYPE D3 (FOR 11'-6" ARRANGEMENT)	1	S, Z	144
	2	S	6
	3	S	6
	4	S	6
FOR HOT SPARE AND MAINT SHELF ADD CHANNEL ACCESS UNIT	7		6
	8		1
SHOP WIRED BAY FOR 5 24 CHANNEL PCM BANKS TYPE D3 (FOR 9' ARRANGEMENT)	1	S, Z	120
	2	S	5
	3	S	5
	4	S	5
CHANNEL ACCESS UNIT	7		5
	11		1
SHOP WIRED BAY FOR 4 24 CHANNEL PCM BANKS TYPE D3 INCLUDING HOT SPARE AND MAINT SHELF (FOR 9' ARRANGEMENT)	1	S, Z	96
	2	S	4
	3	S	4
	4	S	4
CHANNEL ACCESS UNIT	5		1
	11		1

PLUG-IN UNITS REQD PER FIG. 1, 3, 4				
PLUG-IN UNIT	SLOT DESIG	UNIT OR CODE	CONNECTOR DESIG	CONNECTION KEY POS
TRANSMIT	TU	J98718AA	J101	10 & 35
ALARM CONTROL	ACU	J98718AC	J103	7 & 32
RECEIVE	RU	J98718AB	J104	23 & 48
TRANSMISSION MONITOR	TMU	J98718AG	J105	8 & 33
INTERFACE	IU	J98718AF	J106	22 & 47
POWER CONVERTER	PCU	J87380	J107	24 & 49
TRUNK PROCESSING	TPU	J98718AD	J108	9 & 34
			J109	18 & 43
			J110	NONE
			J111	19 & 44
			J112	15 & 40

PLUG-IN UNITS REQD PER FIG. 3, 5, 8				
PLUG-IN UNITS	SLOT DESIG	UNIT OR CODE	CONNECTOR DESIG	CONNECTION KEY POS
TRANSMIT	TU	J98718AA	J201	10 & 35
ALARM CONTROL	ACU	J98718AC	J202	10 & 35
RECEIVE	RU	J98718AB	J203	7 & 32
TRANSMISSION MONITOR	TMU	J98718AG	J204	23 & 48
INTERFACE	IU	J98718AF	J205	8 & 33
CODE GENERATOR	CGU	J98718AE	J206	22 & 47
POWER CONVERTER	PCU	J87380A	J207	24 & 49
CHANNEL UNIT	CU	ANY CODE	J208	9 & 34
CHANNEL ACCESS	CAU	J98718AJ	J209	18 & 43
			J210	NONE
			J211	21 & 46

CIRCUIT NOTES: (CONTINUED)

104. USE FIG. 7A, 7B OR 7C TO EQUALIZE FOR DIFFERENT CABLE LENGTHS BETWEEN D3 BANKS & OFFICE REPEATERS OR D3X1 AS FOLLOWS:

USE FIG	CABLE LENGTH IN FEET	
	DIRECT TO RPTR	TO D3X1
7C	0 TO 150	0 TO 150
7A	150 + TO 450	150 + TO 450
7B	450 + TO 750	450 + TO 655

USE FIG. 7D WHEN PADS OR EQUALIZERS ARE LOCATED ON THE BANK TERMINATING ASSEMBLY.

105. ALL POWER DISTRIBUTION PANELS CONTAIN PRIMARY FUSING FOR VOLTAGE SUPPLIED. A MAXIMUM OF 2 J98718A OR J98718B BAYS MAY BE FED FROM A COMMON FUSED FEEDER A MAXIMUM OF 2 J98718C L1 BAYS MAY BE FED FROM ONE COMMON FUSED "A" AND ONE COMMON FUSED "B" FEEDER. MAXIMUM CURRENT DRAIN PER FULLY EQUIPPED D3 BANK BAYS AS FOLLOWS:

J98718A, L1	24.0 AMPS
J98718B, L1	25.5 AMPS
J98718B, L2	17.5 AMPS
J98718C, L1	20.0 AMPS
J98718C, L2	13.5 AMPS

MAX CURRENT DRAIN FOR ONE FULLY EQUIPPED D3 CHANNEL BANK IS 4 AMPS.  
MAX CURRENT DRAIN FOR ONE FULLY EQUIPPED HOT SPARE & MAINTENANCE SHELF IS 1.5 AMPS.

POWER CONVERTER UNIT (PCU)	-48V CURRENT DRAIN * IN AMPERES
SD-82099-01, J87380A	1.2
SD-82099-02, J87380A	0.9
SD-82370-01, J87380B	0.7

\* THESE ARE TYPICAL VALUES. ACTUAL -48V CURRENT DRAIN IS DEPENDENT UPON THE CURRENT THAT IS SUPPLIED FROM THE +4V, +12V & -12V OUTPUT VOLTAGES OF THE PCU. SEE NOTE 107 FOR CURRENT SUPPLIED FROM THESE PCU OUTPUT VOLTAGES AND FOR DETAILED CURRENT DRAINS OF OTHER PLUG-IN UNITS.

106. OFFICE BATTERY SUPPLY LIMITS ARE AS FOLLOWS:

BAT.	CONDITION	VOLTAGE RANGE
-4BS	NORMAL	-45 TO -50
	EMERGENCY	-42.5 TO -53

107.

CURRENT DRAIN - AMPERES PER CIRCUIT (AVG IS TALK CONDITION)		+4V	+12V	-12V	-4BS	-48F	-48BS
DIAL PULSE ORIGINATING(DPO)	SD-3C122-01 J98718BA	AVG .025	.006	.006	.070	.025	-
DIAL PULSE TERMINATING(DPT)	SD-3C123-01 J98718BB	AVG .028	.006	.006	.009	-	-
4 WIRE E & M	SD-3C124-01 J98718BC	AVG .024	.010	.010	.010	-	-
FOREIGN EXCHANGE SUBSCRIBER(FXS)	SD-3C125-01 J98718BD	AVG .042	.007	.007	.023	.050	-
FOREIGN EXCHANGE SERVING OFFICE(FXO)	SD-3C126-01 J98718BE	AVG .050	.006	.006	.030	-	-
2 WIRE E & M	SD-3C127-01 J98718BJ	AVG .026	.005	.005	.007	-	-
REVERTIVE PULSE ORIGINATING(RPD)	SD-3C128-01 J98718BF	AVG .045	.007	.007	.020	.020	-
REVERTIVE PULSE TERMINATING(RPT)	SD-3C129-01 J98718BG	AVG .025	.006	.006	.010	-	-
SLEEVE DIAL PULSE ORIGINATING(SDPO)	SD-3C130-01 J98718BH	AVG .023	.005	.005	.041	.015	-
FOREIGN EXCHANGE SUBSCRIBER-LOOP START	SD-3C131-01 J98718BK	AVG .042	.007	.007	.023	.050	-
FOREIGN EXCHANGE OFFICE-LOOP START	SD-3C132-01 J98718BL	AVG .046	.006	.006	.018	-	-
NO. 2 ESS DI ORIGINATING	SD-3C136-01 J98718BP	AVG .046	.007	.007	-	.050	-
NO. 2 ESS DI TERMINATING	SD-3C136-01 J98718BS	AVG .050	.007	.007	-	.075	-
CHAN TST UNIT SIG & TRANS	SD-3C140-01 J98718BR	AVG .070	.005	.005	-	-	-
4W E & M ER	SD-3C137-01 J98718BT	AVG .026	.020	.020	.007	-	-
2W E & M 900 ER	SD-3C138-01 J98718BU	AVG .026	.020	.020	.015	-	-
2W E & M 600 ER	SD-3C139-01 J98718BV	AVG .026	.020	.020	.007	-	-

CIRCUIT NOTES: (CONTINUED)

107. (CONTINUED)

CURRENT DRAIN - AMPERES PER CIRCUIT (AVG IS TALK CONDITION)		+4V	+12V	-12V	-4BS	-48F	-48BS
4W TRANSMISSION ONLY (4W TO)	SD-3C223-01 J98718SH	AVG .024	.005	.005	-	-	-
2W TRANSMISSION ONLY (2W TO)	SD-3C224-01 J98718SJ	AVG .025	.006	.006	-	-	-
4W PULSE LINK REPEATER (4W PLR)	SD-3C225-01 J98718SK	AVG .027	.006	.007	.008	.010	-
2W RINGDOWN (2W RD)	SD-3C226-01 J98718SL	AVG .040	.012	.008	.018	-	-
4W RINGDOWN (4W RD)	SD-3C227-01 J98718SM	AVG .040	.013	.008	.016	-	-
2W PRIVATE LINE AUTO RINGDOWN (2W PLR)	SD-3C228-01 J98718SN	AVG .049	.026	.011	.001	.096	-
4W PRIVATE LINE AUTO RINGDOWN (4W PLR)	SD-3C229-01 J98718SP	AVG .048	.027	.013	.001	.088	-
4W EQUALIZED TRANSMISSION ONLY (4W ETO)	SD-3C230-01 J98718SQ	AVG .026	.010	.010	-	-	-
5KHz PROG-TRMTR (PGCU-5T)	SD-3C269-01 J98718CA	AVG .008	.004	.004	-	-	-
5KHz PROG-RCVR (PGCU-5R)	SD-3C270-01 J98718CB	AVG .009	.005	.005	-	-	-
8KHz PROG-TRMTR (PGCU-8T)	SD-3C271-01 J98718CC	AVG .090	.004	.004	-	-	-
8KHz PROG-RCVR (PGCU-8R)	SD-3C272-01 J98718CD	AVG .110	.004	.004	-	-	-
4W FOREIGN EXCHANGE SUBR (4W FXS)	SD-3C217-01 J98718SB	AVG .055	.008	.010	.023	.089	-
4W FOREIGN EXCHANGE OFFICE (4W FXO)	SD-3C218-01 J98718SC	AVG .058	.007	.007	.010	-	-
2W DUPLEX SIGNALING (2W DX)	SD-3C219-01 J98718SD	AVG .027	.006	.006	.007	.056	-
4W DUPLEX SIGNALING (4W DX)	SD-3C220-01 J98718SE	AVG .027	.010	.010	.007	.056	-
4W TANDEM (4W TDM)	SD-3C221-01 J98718SF	AVG .047	.009	.005	.014	-	-
TRUNK PROCESSING UNIT (TPU)	SD-3C111-01 J98718AD	AVG .002	-	-	-	.400	-
	SD-3C111-02 J98718AD	AVG .002	-	-	-	.450	-
	SD-3C111-03 J98718AD	AVG .002	-	-	-	.450	-
TRANSMIT UNIT (TU)	SD-3C105-01 FIGS. 1 & 2 J98718AA	AVG 1.004	.180	.127	0.0	0.0	0.0
	SD-3C105-01 FIGS. 3 & 4 J98718AA	AVG 1.002	.117	.672	0.0	0.0	0.0
	SD-3C105-01 FIGS. 5 & 6 J98718AA	AVG -	-	-	-	-	-
RECEIVE UNIT (RU)	SD-3C106-01 FIGS. 1 & 2 J98718AB	AVG 1.20	.140	.160	0.0	0.0	0.0
	SD-3C106-01 FIGS. 3 & 4 J98718AB	AVG 1.20	.120	.115	0.0	0.0	0.0
	SD-3C106-01 FIGS. 5 & 6 J98718AB	AVG -	-	-	-	-	-
ALARM CONTROL UNIT (ACU)	SD-3C107-01 FIGS. 1 & 2 J98718AC	AVG .145	.065	.066	-	-	-
	SD-3C107-01 FIGS. 3 & 4 J98718AC	AVG .150	.006	.001	-	-	-
	SD-3C107-01 FIGS. 5 & 6 J98718AC	AVG -	-	-	-	-	-
CODE GENERATOR UNIT (CGU)	SD-3C110-01 J98718AE	AVG 0.3	0.01	-	-	-	
INTERFACE UNIT (IU)	SD-3C109-01 J98718AF	AVG 0.01	0.01	-	-	-	
PWR DIST CKT	SD-3C116-01 ED-3C356	AVG -	-	-	-	0.05	
PWR DIST CKT	SD-3C115-01 ED-3C352	AVG -	-	-	-	0.05	

CIRCUIT NOTES: (CONTINUED)

108. THE 20 HERTZ RINGING SUPPLY SHALL BE AC-DC NEGATIVE OR SUPERIMPOSED NEGATIVE (AUDIBLE OR NON-AUDIBLE) IN ORDER TO TRIP RINGING AT ALL TIMES. WITHOUT THE NEGATIVE DC COMPONENT, RINGING CAN BE TRIPPED ONLY DURING THE SILENT INTERVAL. RINGING SUPPLIES WITH A POSITIVE DC OR A SUPERIMPOSED AC COMPONENT CANNOT BE USED WITHOUT CKT DAMAGE TO THE FXS CHAN UNITS. IN AUTOMATIC ELECTRIC CO. 35E97 SXS OFFICES USING A GROUNDED GENERATOR SUPPLY, FX SERVICE MAY BE ESTABLISHED BY USING THE 20 HERTZ RINGING SUPPLY ISOLATION TRANSFORMER PER FIG. 10. STRICT CONCURRENCE WITH CIRCUIT NOTE 109 MUST BE MAINTAINED.

109. IF LOW SIDE OF AUTOMATIC ELECTRIC CO. 35E97 SXS OFFICE 20 HERTZ RINGING GENERATOR IS CONNECTED TO A DC POTENTIAL OTHER THAN GROUND, CONNECT "G" LEAD OF 2205A TRANSFORMER OF FIG. 10 TO THAT EXACT SAME DC POTENTIAL.

110. FOR FIG. 2, PROVIDE ONE PLUG-IN CHANNEL UNIT PER EQUIPPED CHANNEL EXCEPT FOR PCU'S. FOR TYPE REQUIRED SEE TABLE ASSOCIATED WITH NOTE 107.

111. IN CHANNEL UNITS HAVING 1.5dB ATTENUATORS THE CABLING LOSS FROM THE SWITCH TO THE CHANNEL UNIT SHOULD BE BUILT OUT TO 1.5dB TO THE NEAREST 0.1dB USING THE 0 TO 1.5dB ATTENUATORS. IN THE 2-WIRE UNITS ONE ATTENUATOR ADJUSTS BOTH TRANSMIT AND RECEIVE PATHS, WHILE IN THE 4-WIRE UNITS THERE ARE SEPARATE ATTENUATORS FOR TRANSMIT AND RECEIVE.

112. BATTERY POLARITIES FURNISHED AND REQUIRED ON TIP AND RING OF 2-WIRE CHANNEL UNITS DURING THE ON-HOOK CONDITION OF SUPERVISORY CIRCUITS. DIAL PULSE ORIG. SD-3C122-01, FURNISHES BATT ON RING. FOREIGN EXCHANGE-SUBSCRIBER SD-3C125-01, FURNISHES BATT ON RING AND GROUND ON TIP. FOREIGN EXCHANGE-SERVING OFFICE, SD-3C126-01, REQUIRES BATT ON RING AND GROUND ON TIP.

113. EXCEPT WHERE EXTERNAL PRECISION NETWORKS ARE USED WITH 2-WIRE E & M CHANNEL UNITS OR WITH FOREIGN EXCHANGE-SUBSCRIBER CHANNEL UNITS, THE EXCESS CABLING CAPACITANCE SHALL BE BALANCED BY MEANS OF THE NET BUILD-OUT (NBO) CAPACITORS IN THE CHANNEL UNITS. BY TIGHTENING APPROPRIATE SCREWS IN THE CHANNEL UNITS THE NBO CAPACITANCE MAY BE VARIED FROM .000 TO .124UF IN .002UF STEPS.

114. "P2" PAIRS MUST HAVE A MINIMUM OF TWO (2) TWISTS PER INCH.

115. WIRING LABELED "P1" IS TWISTED PAIR AND RUN IN ACCORDANCE WITH ED-3C351-01.

116. CROSS CONNECT LEADS 1, 2 AND 3 AS FOLLOWS:

OFFICE	LEAD		
	1	2	3
STEP-BY-STEP	S (SWITCH SIDE)	SG*	S (LINE SIDE)
NO. 5 CROSSBAR	S2	B1**	NOT USED
PANEL	S	SG*	NOT USED
NO. 1 CROSSBAR OR CROSSBAR TANDEM	S1	SG*	NOT USED
ESS OFFICES	NOT REQD	NOT REQD	NOT REQD
NO. 44 OR NO. 4M	TMB OR MS	SG*	NOT USED

\* PROVIDE (V) AT 1 OF OR VDF  
\*\* PROVIDE (I) WHEN B1 IS ASSIGNED TO LEAD 2.

CIRCUIT NOTES CONTINUED ON SHEET 2C

24 CHANNEL PCM BANK TYPE D3 APPLICATION SCHEMATIC  
SD-3C104-01-2A  
BELL TELEPHONE LABORATORIES INCORPORATED  
6S

EQUIPMENT NOTES:

- 201. ABAM CABLE IS THE PREFERRED ARRANGEMENT. HOWEVER IT IS PERMISSIBLE TO USE 750-TYPE CABLE WHERE APPLICABLE.
- (NO) 202. WHEN TRIPLE 7 FOOT ARRANGEMENT (J98718C) IS USED THE -4BABS A & ABSG A LEADS SHALL BE RUN FROM THE POWER DISTRIBUTION PANEL TO BANK 3, 7 & 11 ONLY AND MULT TO OTHER ODD BANKS IN SAME BAY. WHEN -4R 2S B & ABSG B IS USED LEADS SHALL BE RUN FROM THE POWER DISTRIBUTION PANEL TO BANKS 4, 10 AND NOT SPARE AND MAINTENANCE ONLY AND THEN MULT TO OTHER EVEN BANKS IN SAME BAY.
- 203. CAD FIGURE ASSIGNMENTS FOR CONNECTIONS TO OFFICE TRUNK CIRCUITS.

BATTERY AND GROUND DESIGNATIONS

DESIG	EXPLANATION
-4BV	UNFILTERED -48V FOR PWR CONVERTER
VG	GROUND RETURN FOR -48V
-4BS	UNFILTERED -48V SUPPLY
SG	GROUND RETURN FOR -48S
-4BABS	-48 VOLT SUPPLY FOR ALARM CIRCUITS
ABSG	GROUND RETURN FOR -48 ABS
-4BF	FILTERED -48 VOLT SUPPLY
FG	GROUND RETURN FOR -48F
+4V	REGULATED +4 VOLTS SUPPLY FOR DIGITAL CIRCUITS
-12V	REGULATED -12 VOLTS SUPPLY FOR ANALOG CIRCUITS
+12V	REGULATED +12 VOLTS SUPPLY FOR ANALOG CIRCUITS
12G	GROUND RETURN FOR +12V AND -12V
4G	GROUND RETURN FOR +4V

OPTION INDEX

APP OR WRG	RATED ON ISSUE	REF NOTES	LOCATION
Z			FIG. 2
Y			CAD 24, 26, 43, 44
W			CAD 13, 15, 19, 20, 21, 22, 23, 40
V			CAD 15, 19, 20, 21, 22, 23, 40, 41, 42
T			CAD 15, 19, 20, 21, 22, 23, 40
S			FIG. 2, 4
R			FIG. 13
Q			FIG. 13
N			FIG. 1, 5
II			FIG. 1, 5
K			FIG. 1
ZA			FIG. 12
ZB			FIG. 12
ZK			FIG. 2, CAD 7, 14, 15, 16, 19, 40
ZL			FIG. 2, CAD 14, 15, 19, 40, 47
ZR			FIG. 2, CAD 52
ZS			CAD 49
ZT			CAD 49
ZU			CAD 49
ZW			FIG. 2, CAD 52
ZX			CAD 46
ZY			FIG. 1, 2
ZZ			CAD 48

CHANNEL UNIT	STEP-BY-STEP	PANEL TANDEM NO. 4A OR 4M	NO. 1 CROSSBAR TANDEM	NO. 5 CROSSBAR	ESS
* DPO					
* DPT					
* RPD					
* RPT					
FXO					
FXS					
* SDPO					
2W DX	1, 8, 17, 21	1, 8, 18, 20	1, 8, 18, 20	1, 8, 18, 20	1, 8
2W TO					
2W RD					
2W PLAR					
FXS-LOOP ST.					
FXO-LOOP ST.					
4W E & M	1, 2, 4, 6, 8, 9, 11, 13, 17, 21	1, 2, 4, 6, 8, 9, 11, 13, 18, 20	1, 2, 4, 6, 8, 9, 11, 13, 18, 20	1, 2, 4, 6, 8, 9, 11, 13, 18, 20	1, 2, 3, 5, 8, 9, 10, 12
4W E & M ER					
4W FXS					
4W FXC					
4W DX					
4W IDM					
4W TO	1, 2, 8, 9, 17, 21	1, 2, 8, 9, 18, 20	1, 2, 8, 9, 18, 20	1, 2, 8, 9, 18, 20	1, 2, 8, 9
4W PLR					
4W RD					
4W PLAR					
4W ETD					
2W E & M					
2W E & M 900 ER	1, 4, 6, 8, 11, 13, 17, 21	1, 4, 6, 8, 11, 13, 18, 20	1, 4, 6, 8, 11, 13, 18, 20	1, 4, 6, 8, 11, 13, 18, 20	1, 3, 5, 8, 10, 12
2W E & M 600 ER					
ANY WITH PN LEADS	1, 2, 4, 6, 17, 19, 47	1, 2, 4, 6, 15, 18, 47	1, 2, 4, 6, 15, 18, 47	1, 2, 4, 6, 15, 18, 47	1, 2, 3, 5, 14, 47
ANY WITHOUT PN LEADS	1, 2, 4, 6, 17, 23	1, 2, 4, 6, 18, 22	1, 2, 4, 6, 18, 22	1, 2, 4, 6, 18, 22	1, 2, 3, 5, 33
PGCU-ST, PGCU-SR, PGCU-BT, PGCU-BR	1, 8	1, 8	1, 8	1, 8	1, 8
ES20 ES2T	-	-	-	-	** 1, 2, 3 OR 4, 5 OR 6, 51 52

- \* NOT APPLICABLE IN NO. 4 ESS OFFICES
- \*\* APPLIES ONLY TO NO. 2 ESS OFFICES
- 204. WHEN 20 HERTZ TRANSFORMER PER FIG. 10 IS REQUIRED, IT SHALL BE MOUNTED IN A MISCELLANEOUS BAY ON A JOB BASIS.
- 205. TO PREVENT INTRODUCTION OF IMPULSE NOISE INTO OTHER TYPE CARRIER SYSTEMS, T1 CARRIER CABLES SHOULD BE SEPARATED AT LEAST 3 INCHES FROM OTHER CARRIER CABLES. INPUT AND OUTPUT CABLES FOR T1 CARRIER DO NOT NEED SEPARATION AND MAY BE RUN IN PROXIMITY TO OTHER CABLES SERVING VOICE FREQUENCY AND SWITCHING CIRCUITS.
- 206. ALL PAIRS TO BE 22 GAUGE. (CAD 17 ONLY).
- 207. ALL TRIPLES AND PAIRS TO BE 26 GA. WIRE. (CAD 18 ONLY).
- 208. ALL THE WIRES ON THE BANK SIDE IN CADS (1, 2, 3, 4, 5, 6, 7, 17, 18, 30 & 31) SHALL BE 26 GAUGE-24 GAUGE.
- 209. THESE LEADS WERE ORIGINALLY RUN AS PART OF LOCAL CABLE.

INFORMATION NOTES:

- 301. LEADS DESIGNATED T, R, T1, R1, E, M, EA, EB, MA OR MB FROM D3 CHANNEL BANKS TO TRUNK CIRCUITS MAY BE RUN VIA VF PATCH BAY AS REQUIRED. LEADS EA, EB AND MA, MB WHEN USED ARE RUN AS PAIRS. EB AND MB DO NOT TERMINATE ON THE PATCH BAY.
- 302. WIRING THAT IS DESIGNATED EU IS 24 GA SHIELD EXCEPT WHERE ABAM CABLE IS SPECIFIED. WIRES NOT OTHERWISE DESIGNATED SHALL BE 26 GAUGE.
- 303. IN FIG. 1, 2, 3, 4, 5, 8 & 9 TERMINALS OF THE JACKS FOR PLUG-IN UNITS ARE INDICATED ----O ASSOCIATED WITH EACH TERMINAL IS A JACK CONTACT WHICH ENGAGES WITH A CORRESPONDING PLUG CONTACT ON THE PLUG IN UNIT. COMPLETE SYMBOLIC REPRESENTATION WOULD BE ----O<---
- 304. WHEN MAKING TESTS OF THE FA, BA, & RA RELAYS PER THE CIRCUIT REQUIREMENTS TABLE, THE 35 TYPE TEST SET SHALL BE ISOLATED FROM FRAME GROUND OF THE CIRCUIT.
- 305. THE D3 CHANNEL BANK, FOR CHANNELS EQUIPPED WITH E & M CHANNEL UNITS, PROVIDES THE FOLLOWING TYPES OF E & M INTERFACES:
  1. A TYPE I, II, OR III INTERFACE TO A TRUNK CIRCUIT. SEE FIGS. 104, 105 & 106.
  2. A TYPE I INTERFACE TO AN EXTERNAL PULSE-LINK REPEATER IN ORDER TO DERIVE A TYPE I INTERFACE TO ANOTHER SIGNALING CIRCUIT (e.g. D1, E SIGNALING). SEE FIG. 107
  3. A TYPE II INTERFACE DIRECT TO ANOTHER SIGNALING CIRCUIT (e.g. D3, F SIGNALING). SEE FIG. 108
- 306. INDISCRIMINATE ARRANGEMENTS OF TANDEM T1 CARRIER LINKS CAN RESULT IN SIGNALING INCOMPATIBILITY WHEN THE END-TO-END LINK IS ARRANGED FOR PROVIDING FOREIGN EXCHANGE SERVICE AND WHEN ONE END OF THE LINK IS A D1A BANK. FIG. 109 SHOWS THE THREE RECOMMENDED TANDEM ARRANGEMENTS FOR PROVIDING END-TO-END FOREIGN EXCHANGE SERVICE WHEN ONE END OF THE LINK IS A D1A BANK. HOWEVER, THESE RECOMMENDED ARRANGEMENTS ARE COMPATIBLE ONLY WHEN THE PROPER OPTIONS, AS INDICATED BELOW, ARE SELECTED FOR THE J98711AE (FXS) AND J98711AF (FXO) CHANNEL UNITS WHEN EITHER OR BOTH OF THESE UNITS ARE USED IN THE TANDEM LINK. THERE ARE NO RESTRICTIONS ON THE USE OF OPTIONS IN THE J98711S (FXS) AND J98711U (FXO) CHANNEL UNITS. FURTHERMORE, THESE UNITS ARE END-TO-END COMPATIBLE WITH THE J98711AF (FXO) AND J98711AE (FXS) UNITS, RESPECTIVELY, WHEN THE PROPER OPTIONS ARE SELECTED AS INDICATED BELOW. SELECTING THESE OPTIONS WILL AUTOMATICALLY RESULT IN THE LOSS OF THE FORWARD DISCONNECT FEATURE AND THE ABILITY TO TOLERATE REVERSE BATTERY.

OPTION REQUIRED

CHANNEL UNIT	W1	W2	P	M
J98711AE	-	-	NO	YES
J98711AF	NO	NO	-	-

77 FRAME GROUND

EQUIPMENT NOTES CONTINUED ON SHEET 2C.

ISSUE  
**5B**

24 CHANNEL PCM BANK TYPE D3 APPLICATION SCHEMATIC	SD-3C104-01-2B
BELL TELEPHONE LABORATORIES INCORPORATED	6S

CIRCUIT NOTES: (CONTINUED)

- 117. WHEN AN E & M CHANNEL UNIT IS CONNECTED TO A TRUNK CIRCUIT REQUIRING GROUND ON THE E LEAD AT ALL TIMES DURING A CARRIER FAILURE (FOR EXAMPLE, TO PREVENT CONTINUOUS RINGING BY A STATION END DIAL LONG LINES CIRCUIT), PROVIDE (1) AND (2) OPTIONS.
- 118. LEAD CONNECTIONS TO THE E-TYPE STATUS REPORTING AND CONTROL SYSTEMS SHALL BE ASSIGNED IN ACCORDANCE WITH THE FOLLOWING, AS REQUIRED:
  - A. ED-2C189-01 SYSTEM APPLICATION AND INTERCONNECTING INFORMATION, T-CARRIER ADMINISTRATION SYSTEM.
- 119. THE (5) OPTION IS OMITTED FOR UNITIZED D3 CHANNEL BANK.
- 120. TRANSIENT NOISE SUPPRESSING DEVICES ARE NOT PROVIDED IN THE ALARM LEADS OF THE POWER DISTRIBUTION CIRCUIT. THESE DEVICES SHALL BE PROVIDED ACROSS THE WINDINGS OF THE ALARM RELAYS IN THE OFFICE ALARM CIRCUITS AS SPECIFIED IN THE BELL TELEPHONE LABORATORIES DESIGN STANDARDS HANDBOOK IN THE ALARM REQUIREMENTS SECTION 2.10 PAGE C-41d DATED APRIL 1969.
- 121. PROVIDE OPTION (9) FOR GROUND RETURN RINGING. PROVIDE OPTION (8) FOR SIGNAL RINGING.
- 122. FUSE ACCORDING TO DEMAND. THE BUSY HOUR/BUSY SEASON RINGING DEMAND SHOULD BE LESS THAN 1/4 AMPERES PER 2500 CHANNELS EQUIPPED FOR REPEATED RINGING (FRS,SAS). REFER TO BSP 802-004-152.
- 123. THE DESIGNATION OF THE OFFICE CLOCK LEADS, OCL1 AND OCL2, THAT ARE SHOWN ON THE MFR DISC CAD FIGS. 25, 27 AND 35 ARE CHANGED TO L( ) X (A) AND L( ) Y(A) RESPECTIVELY IN FIGS. 1 AND 5.
- 124. PROVIDE OPTION (27) WHEN TRANSMITTING PROGRAM CHANNEL UNITS ARE USED ON THE D3 BANK. THE INSTALLER WILL CONNECT A 24 GA WIRE BETWEEN TERM NO. 34 ON THE ACM(J103) AND TERM NO. 10 OF THE 940A CONN ASSOCIATED WITH THE CHANNEL BEING INITIALLY INSTALLED. FOR ADDITIONAL TRANSMITTING PROGRAM CHANNELS ON THE SAME BANK, THE INSTALLER WILL CONNECT TERM NO. 10 OF ALL TRANSMITTING PROGRAM CHAN UNITS IN MULTIPLE. SEE NOTES 126 AND 127.
- 125. PROVIDE OPTIONS (2R) AND (2W) WHEN THE D3 BANK IS CONNECTED TO THE DIRECT INTERFACE NO. 2 ESS FRAME. SEE CAD 52 FOR THE RECOMMENDED INSTALLER WIRING FOR THESE OPTIONS. REFER TO CIRCUIT NOTE 127 FOR RESTRICTIONS IN THE USE OF OPTIONS (2R) AND (2W) WHEN TRANSMITTING PROGRAM CHANNEL UNITS ARE ALSO USED IN THE SAME D3 BANK.

- 126. PROGRAM CHANNEL UNIT INSTALLATION REQUIREMENTS (A) TO PREVENT ELECTRICAL INTERFERENCE, PROG CHAN UNITS MUST BE INSTALLED IN CHAN UNIT SLOTS AS INDICATED BELOW:

	EQUIP ANY OR ALL OF CHAN SLOT NUMBERS	FOR EACH CHAN EQUIPPED, CHAN(S) N SLOTS GREATER IN NUMBER MUST BE VACANT. USE BLANK UNITS PROVIDED.
PGCU-ST AND/OR PGCU-SR	2-11	N = +12
PGCU-BT AND/OR PGCU-BR	2-7	N = +6 AND N = +16

CAUTION - AVOID PLACING PGCU-ST AND PGCU-BT FOUR SLOTS APART IN SAME BANK.

- (b) TRMR AND RCVR ATTENUATORS ARE PROVIDED TO SET PROG. LEVELS. ATTENUATION VALUE IS INDICATED BY THE SUM OF EXPOSED DIGITS .POM OPERATION OF SLIDERS. FOR PGCU-ST OR PGCU-BT, THE SETTING IS DETERMINED BY ADDING 6 TO THE VU LEVEL EXPECTED AT THE T AND R TERMINALS. EXAMPLE-FOR A +8VU EXPECTED LEVEL, ADD +8 AND +6 = 14dB ON ATTEN. NORMAL INPUT LEVEL RANGE IS +9VU TO -6VU. FOR PGCU-SR OR PGCU-BR, THE SETTING IS DETERMINED BY ADDING 6 TO THE VU LEVEL DESIRED AT THE T AND R TERMINALS. EXAMPLE-FOR A -6VU EXPECTED LEVEL, ADD -6 AND +6 = 0dB ON ATTEN. THE NORMAL OUTPUT LEVEL RANGE IS -6VU TO -21VU.

- 127. THE FOLLOWING RESTRICTIONS ARE REQUIRED FOR IMPLEMENTING A COMBINATION OF OPTIONS (2B), (2R), AND (27) WITHIN A GIVEN BANK
  1. OPTION (2B) MAY BE ADDED (OR REMAIN CONNECTED) TO CHANNEL UNIT CONNECTOR PIN 35 FOR ANY CHANNEL UNIT POSITION FOR WHICH OPTION (27) IS REQUIRED.
  2. ON CHANNEL UNIT CONNECTOR PIN 10, EITHER OPTION (2R) OR (27) BUT NOT BOTH, MAY BE APPLIED TO THE SAME CHANNEL UNIT POSITION.

CIRCUIT NOTES: (CONTINUED)

- 128. THE (1) OPTION IS INSTALLER WIRING FOR THE HOT SPARE AND MAINTENANCE SHELF WHICH IS PROVIDED ACCORDING TO THE REQUIREMENTS SPECIFIED IN THE TCAS APPLICATION SCHEMATIC SD-96607-01.
- 129. THE PN LEADS WERE PREVIOUSLY PROVIDED VIA A CONNECTORIZED LABEL WHICH IS SPECIFIED AS OPTION (2K) AND IS RATED MD. THEREFORE THE PN LEADS ARE NO LONGER PROVIDED AS A SHOP WIRE FEATURE. IF PN LEADS ARE REQUIRED, THEY SHALL BE DIRECT WIRED BY THE INSTALLER PER CAD 47, (2L) OPTION.

RECORD OF FIGURES, WIRING AND APPARATUS CHANGES					
CHANGED ON ISS.	IF JOB RECORDS DO NOT SPECIFY	THIS OPTION WAS FURN.	SEE NOTE	USE IN CIRCUIT	
				STD	MD
2A	W	NONE	117	W	
	V	T	116 & 117	V	T
3B	Z	NONE	Z		
	FIG. 11 OR 12	FIG. 6 OR 9		FIG. 11 & 12	FIG. 6 & 9
3B	S	S	119	S	
4B	CAD 41	CAD 36		CAD 41	CAD 36
	CAD 42	CAD 37		CAD 42	CAD 39
	CAD 43	CAD 24	123	CAD 43	CAD 24
	CAD 44	CAD 25		CAD 44	CAD 25
	CAD 44	CAD 26		CAD 44	CAD 26
	CAD 45	CAD 35	123	CAD 45	CAD 35
	NONE	M	123	NONE	M
5B	NONE	N		NONE	M
	NONE	K		NONE	K
	CAD 46	NONE	123	CAD 46	
	NONE	CAD 7, CAD 16		CAD 7, CAD 16	
	ZA OR ZB	ZA	212	ZA OR ZB	NONE
	NONE	ZK		NONE	ZK
	CAD 48	CAD 46		CAD 48	CAD 46
	NONE	ZK	129	ZL	ZK
	NONE	NONE	124	ZY	NONE
	NONE	NONE	125	ZW & ZL	NONE
NONE	ZX		NONE	ZX	
NONE	NONE	128	Y	NONE	
CAD 49	CAD 35 OR NONE		CAD 49	NONE	
CAD 50	NONE		CAD 50	NONE	
CAD 51	NONE	125	CAD 51	NONE	
CAD 52	NONE	127	CAD 52	NONE	

EQUIPMENT NOTES: (CONTINUED)

- 210. THE NO. 6 WIRE SHALL BE SECURED BY TAPE IN CLOSE PROXIMITY TO THE TERMINAL BLOCK. WRAP AND SOLDER A NO. 14 WIRE AT THE END AND TERMINATE AT THE TERMINAL BLOCK OR USE A KS-5537, L272 CONNECTOR OR EQUIVALENT APPROVED METHOD OF CONNECTING A NO. 14 AND NO. 6 WIRE TOGETHER.
- 211. CAD 40 SHOWS TYPICAL TERMINAL ASSIGNMENT FOR UNIVERSAL WIRING INCLUDING ALL 13 LEADS REQUIRED FOR CROSS CONNECTION TO ANY TRUNK CIRCUIT IN ANY OFFICE. WHERE FEWER THAN THE 13 LEADS ARE REQUIRED IN ANY PARTICULAR OFFICE, VARIATIONS OF THIS CAD ARE PERMISSIBLE FOR MORE EFFICIENT USE OF DISTRIBUTING FRAME SPACE. EXAMPLE: 12 LEADS ASSIGNED SUCH THAT TWO CIRCUITS OCCUPY THREE ROWS OF 8-PT BLOCK RATHER THAN FOUR ROWS PER CAD 40 (8 UNUSED TERMINALS).
- 212. WHEN TRIPLE 7 FOOT ARRANGEMENT (J98718C) IS USED, THE -4BABS A AND ABSG A LEADS SHALL BE RUN FROM THE POWER DIST PNL TO BANK 3, 7 AND 11 ONLY AND MULT TO OTHER ODD BANKS IN SAME BAY. WHEN -4BABS B AND ABSG B IS USED, THE LEADS SHALL BE RUN FROM THE POWER DIST PNL TO BANK 2, 6 AND 10 AND THEN MULT TO OTHER EVEN NUMBERED BANKS OR HOT SPARE AND HTCE SHELF IN SAME BAY.
- 213. ONE INCOMING SHIELDED PAIR AND ASSOC. RESISTOR, CAPACITOR AND FRAME GROUND PROVIDES THE OFFICE TIMING SUPPLY TO THE BAY, REGARDLESS OF THE NUMBER OF BANKS ON THE BAY WHICH REQUIRE THIS SUPPLY. ONE SHIELDED PAIR IS USED TO MAKE CONNECTIONS FROM THE TERM STRIP (TSD OR TSE) TO TERMS NO. 10 AND NO. 35 OF J108 PREFERABLY TO THE UPPERMOST BANK IN THE BAY. THIS BANK IS THE MULT POINT FOR THE SECOND BANK WHICH BECOMES THE MULT POINT FOR THE THIRD BANK ETC. THE SHIELDS ARE CONNECTED TOGETHER AND INSULATED AT THE MULT POINT OF EACH BANK BUT THE SHIELDS DO NOT CONNECT TO A TERMINAL AT THE MULT POINTS.

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DRAWING ISSUE

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24 CHANNEL PCM BANK TYPE D3 APPLICATION SCHEMATIC

(2)

SD-3C104-01-2C

BELL TELEPHONE LABORATORIES

6S



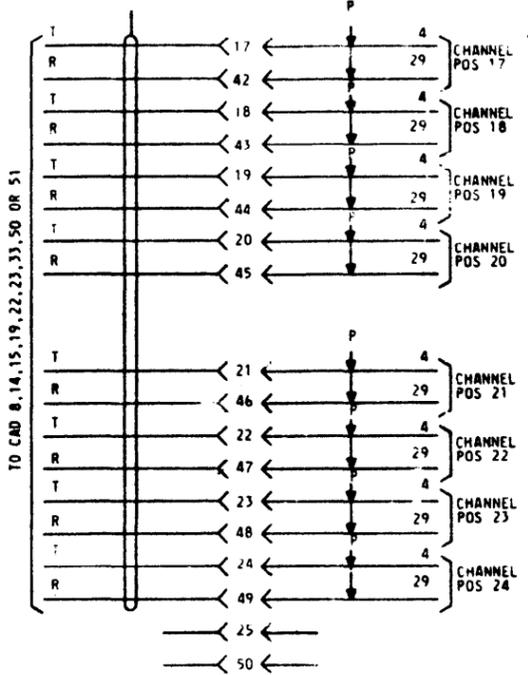
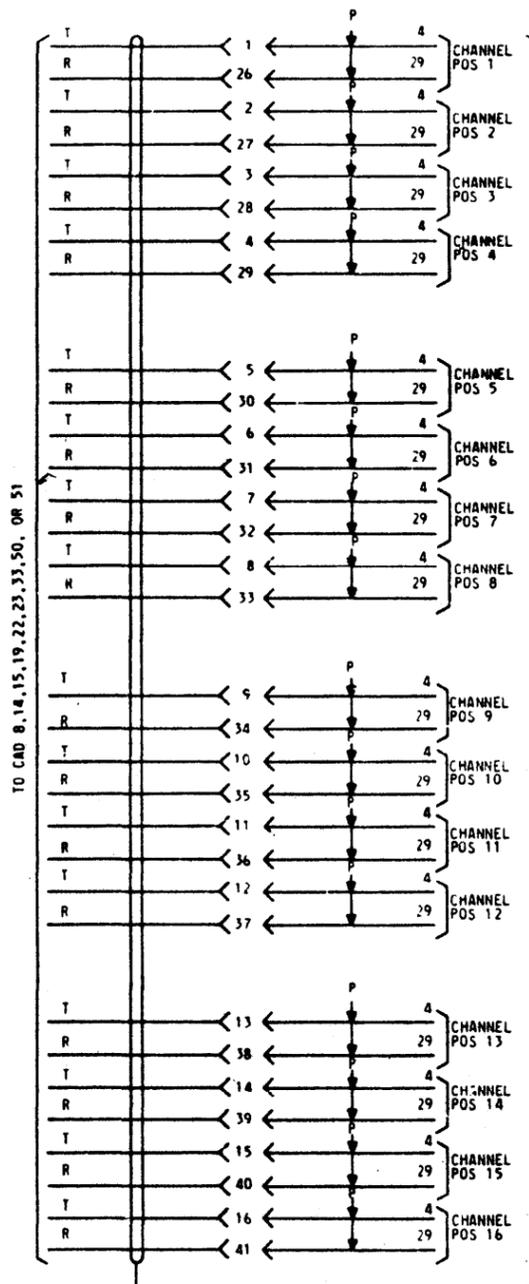
0 1 2 3 4 5 6 7 8 9

**CAD 1**  
T & R LEADS  
(FOR FIG 2)

**CAD 2**  
T1 & R1 LEADS  
(FOR FIG 2)

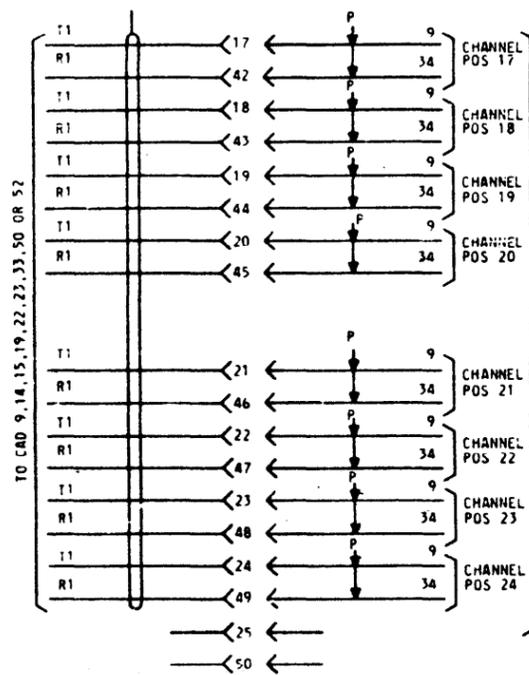
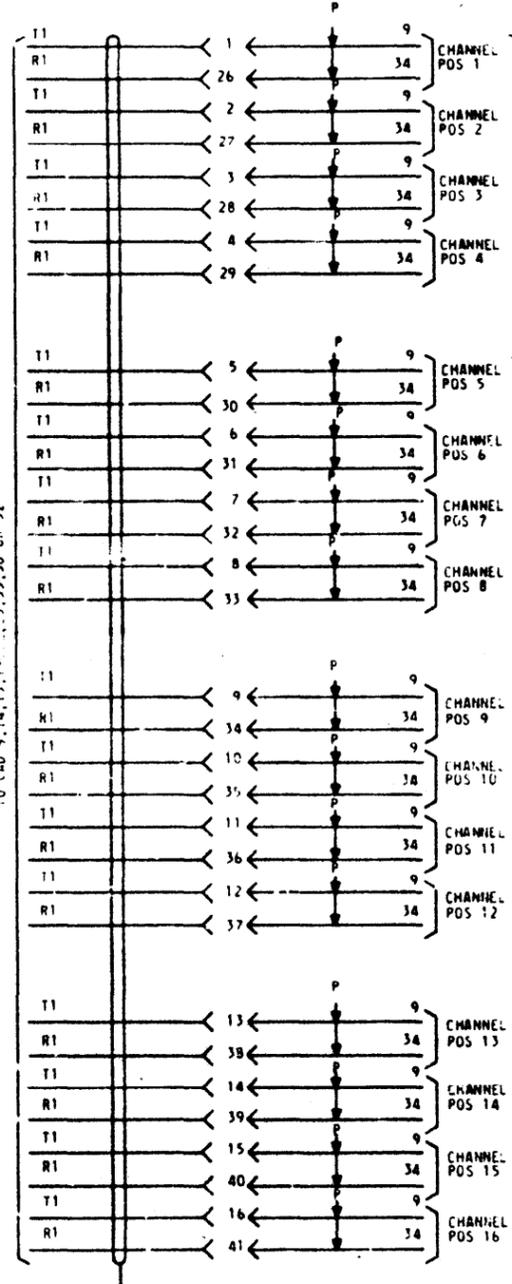
A  
B  
C  
D  
E  
F  
G  
H

A  
B  
C  
D  
E  
F  
G  
H



J25  
KS-16690, L1  
OR L12 CONN

P25 (BANKS 1, 2-10 OR 11)  
KS-16689, L3 OR L18  
PLUG



J25  
KS-16690, L1  
OR L12 CONN

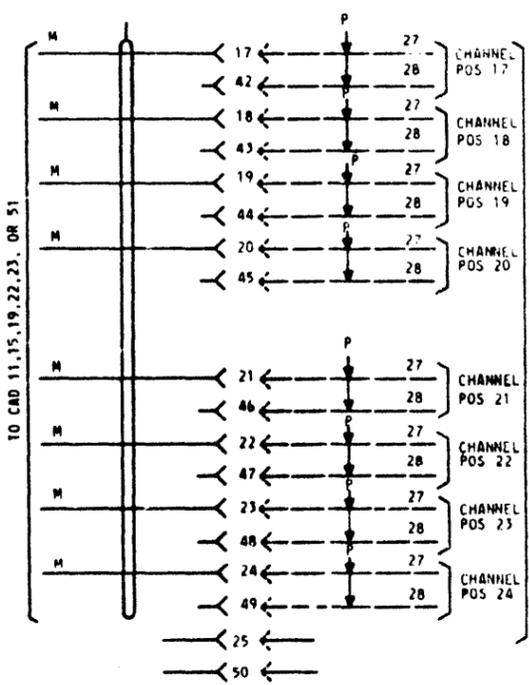
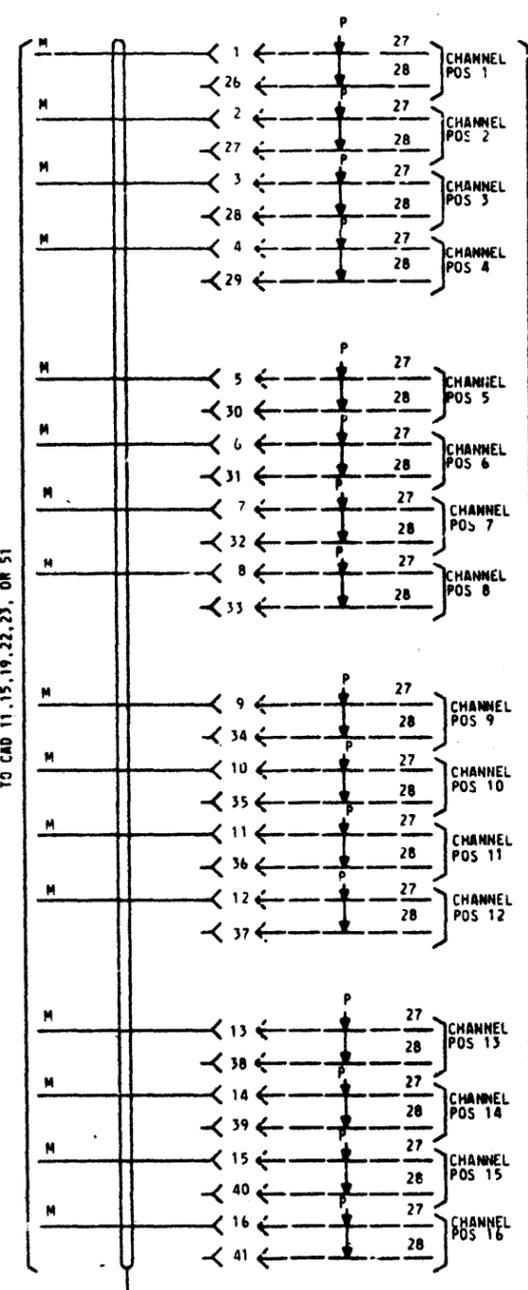
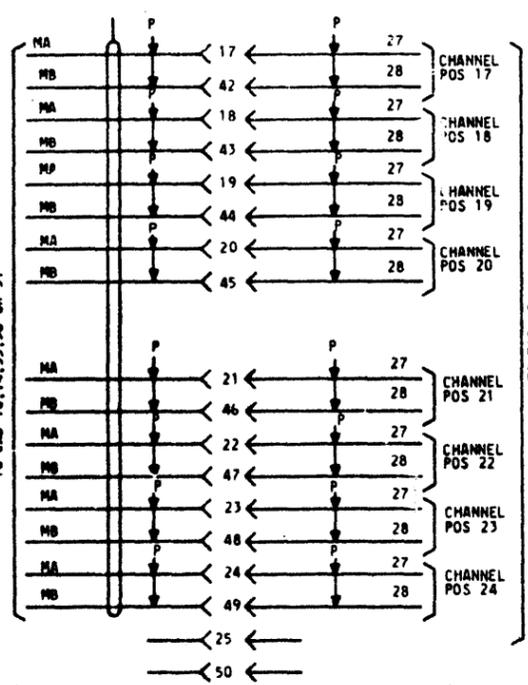
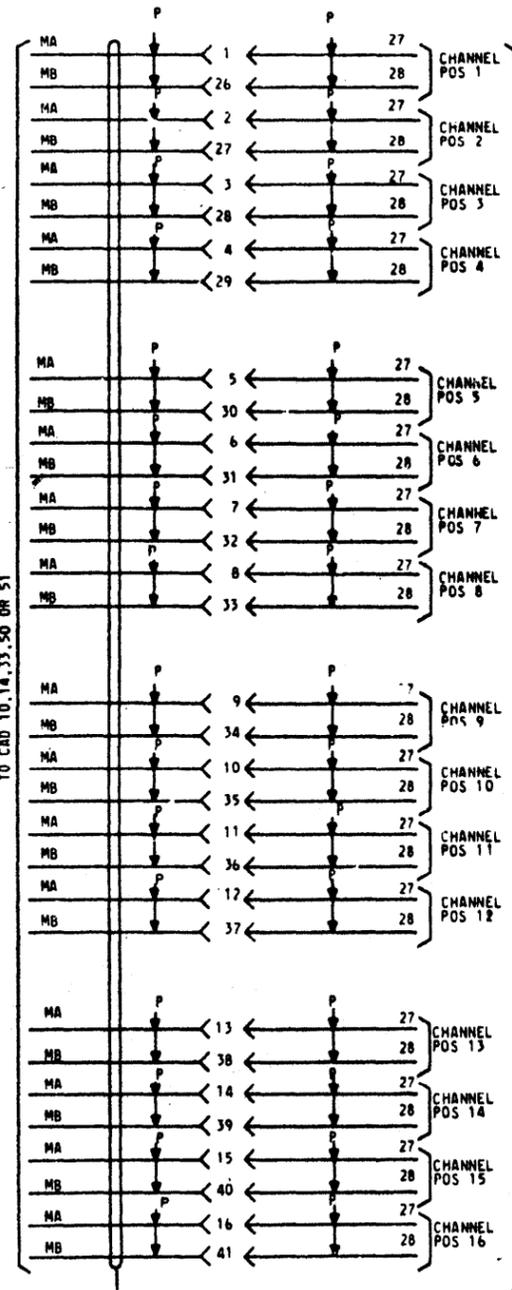
P28 (BANKS 1, 2-10 OR 11)  
KS-16689, L3 OR L18  
PLUG

DRAWING
ISSUE
5B

0 1 2 3 4 5 6 7 8 9

**CAD 3**  
MA & MB LEADS  
(FOR FIG 2)

**CAD 4**  
M LEADS  
(FOR FIG 2)

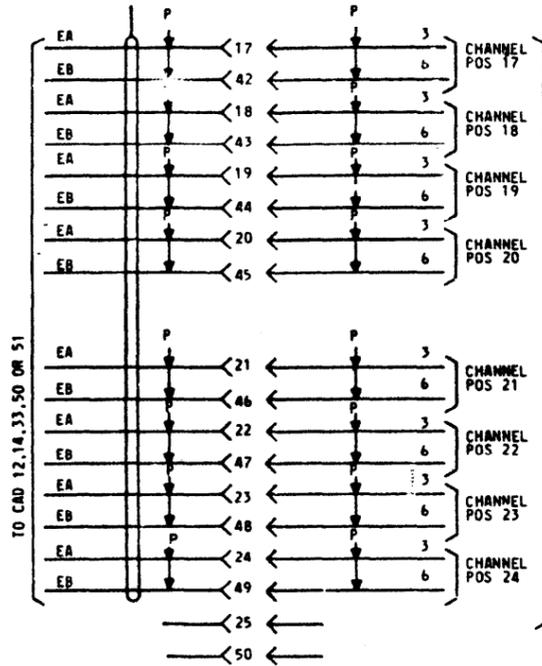
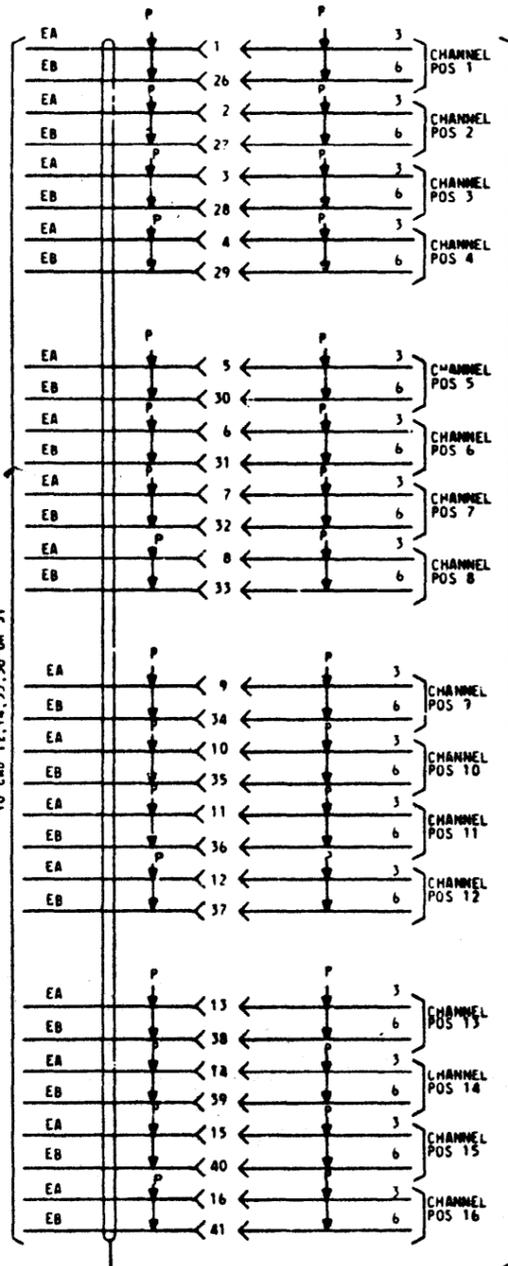


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ISSUE  
5B

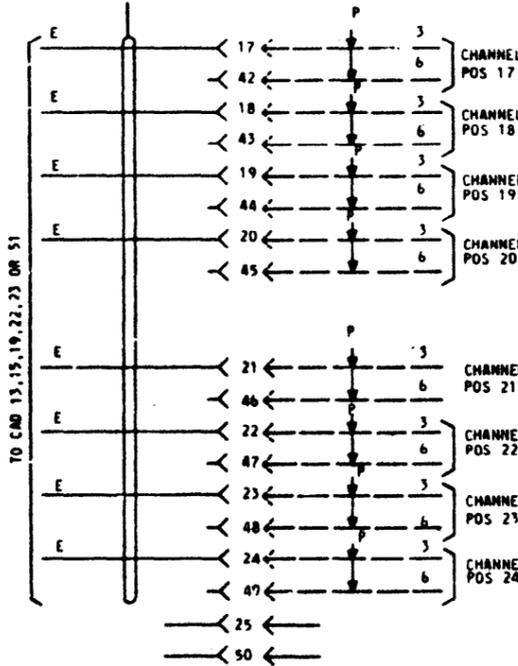
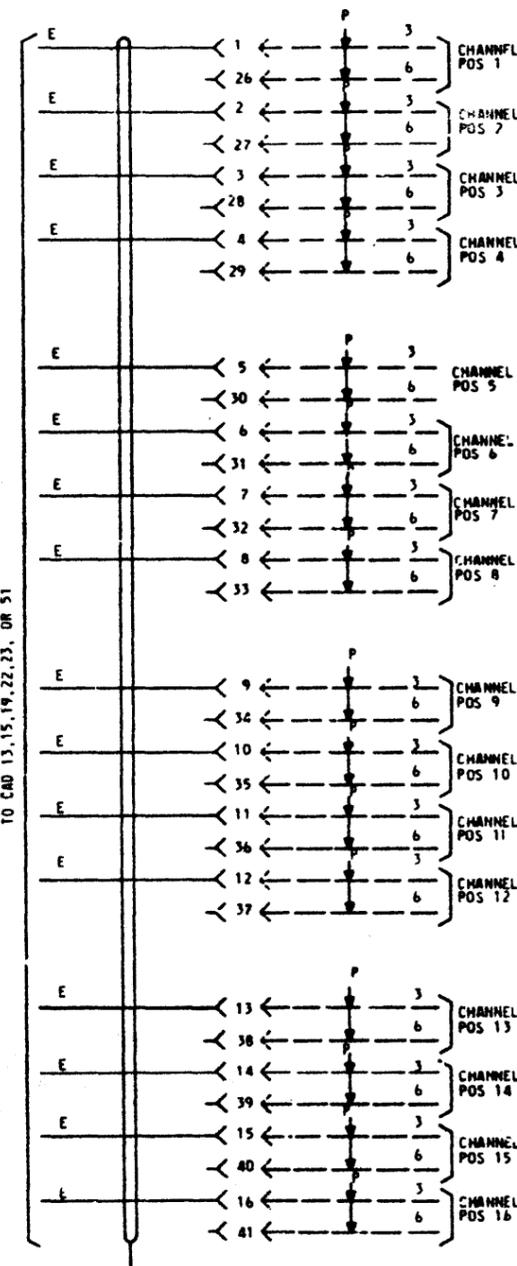
SD-3C104-01-9

**CAD 5**  
EA & EB LEADS  
(FOR FIG. 2)



J29 (BANKS 1, 2, ... 10 OR 11)  
KS-16690, L1 OR L12  
CONN PLUG

**CAD 6**  
E LEADS  
(FOR FIG. 2)



J29 (BANKS 1, 2, ... 10 OR 11)  
KS-16690, L1 OR L12  
CONN PLUG

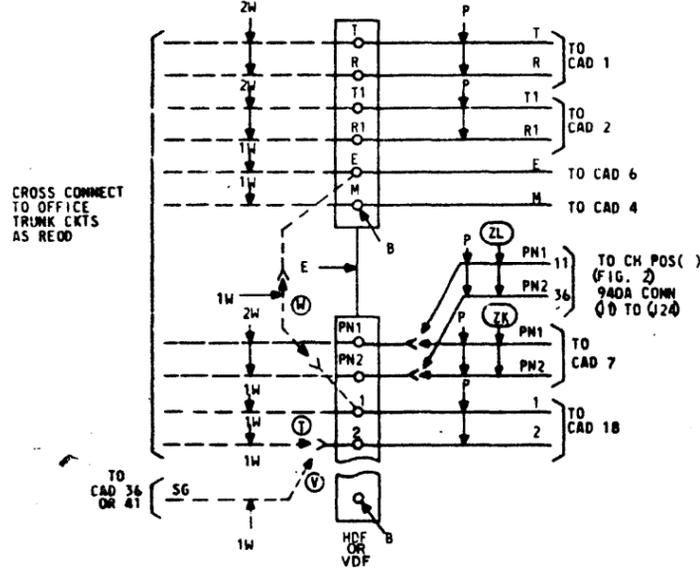
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ISSUE
5E



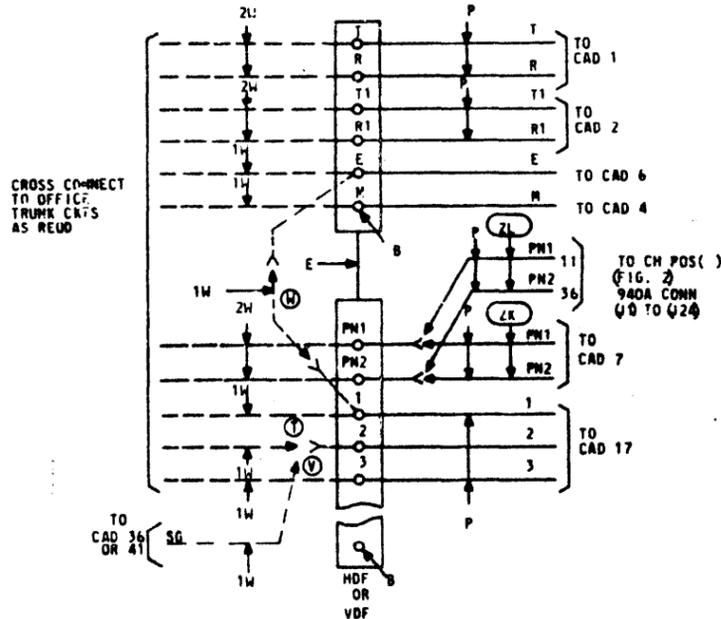
CAD 15

ANY TYPE CHANNEL WIRING IN PANEL, NO. 1 CROSSBAR, CROSSBAR TANDEM OR NO. 5 CROSSBAR OFFICE SEE NOTES 116, 117 AND 129



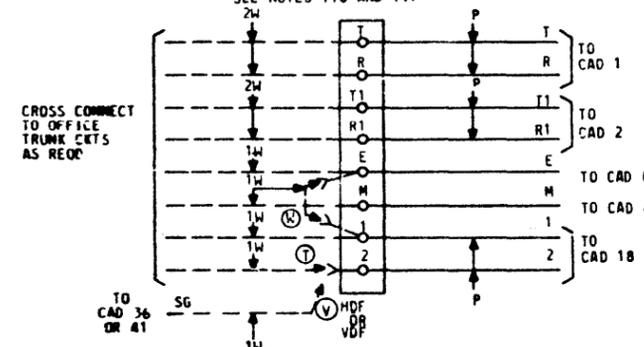
CAD 19

ANY TYPE CHANNEL WIRING IN STEP-BY-STEP OFFICE SEE NOTES 116, 117 AND 129



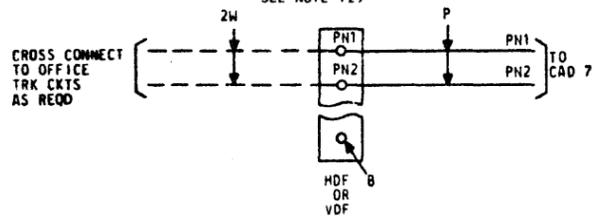
CAD 22

ANY TYPE CHANNEL WIRING WITH NO PRECISION NETWORKS IN PANEL, NO. 1 CROSSBAR, CROSSBAR TANDEM & NO. 5 CROSSBAR OFFICE SEE NOTES 116 AND 117



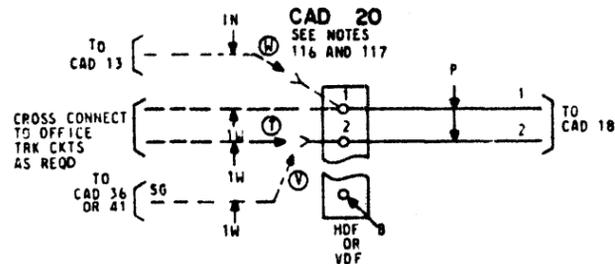
CAD 16 (MFR DISC)

FOR EACH TRUNK ASSOCIATED WITH TYPE D3 CHANNEL BANK (ZK OPTION) SEE NOTE 129



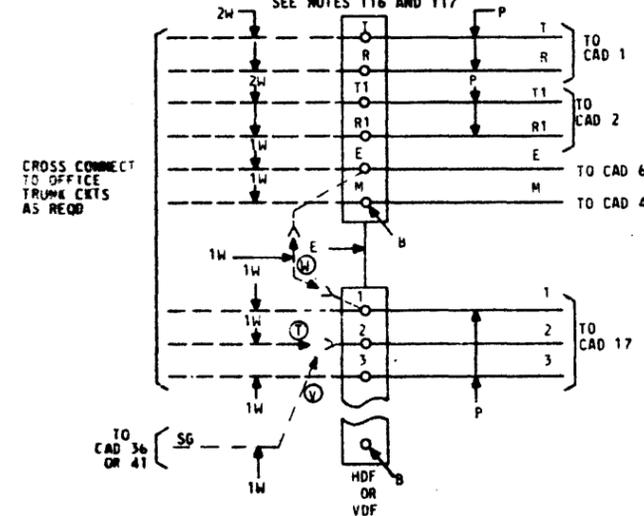
CAD 20

SEE NOTES 116 AND 117



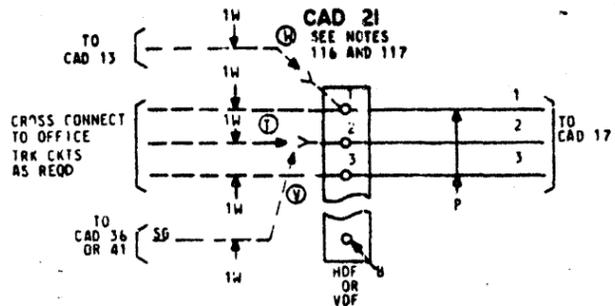
CAD 23

ANY TYPE CHANNEL WIRING WITH NO PRECISION NETWORKS IN STEP-BY-STEP OFFICE SEE NOTES 116 AND 117



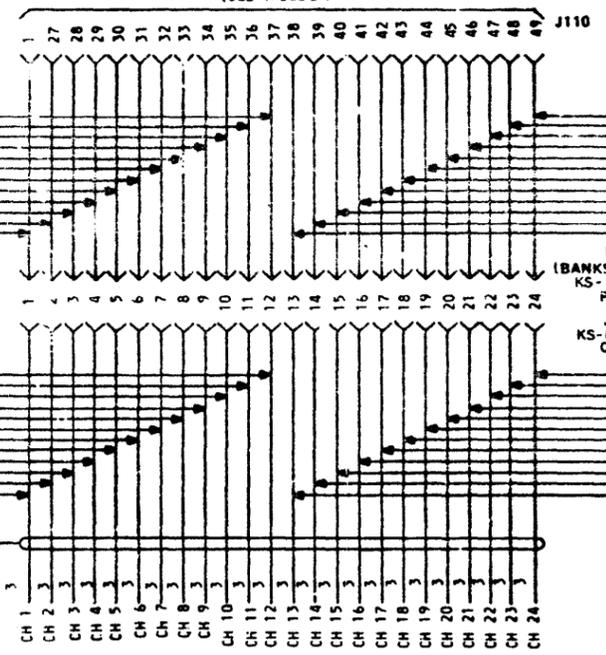
CAD 21

SEE NOTES 116 AND 117



0 1 2 3 4 5 6 7 8 9

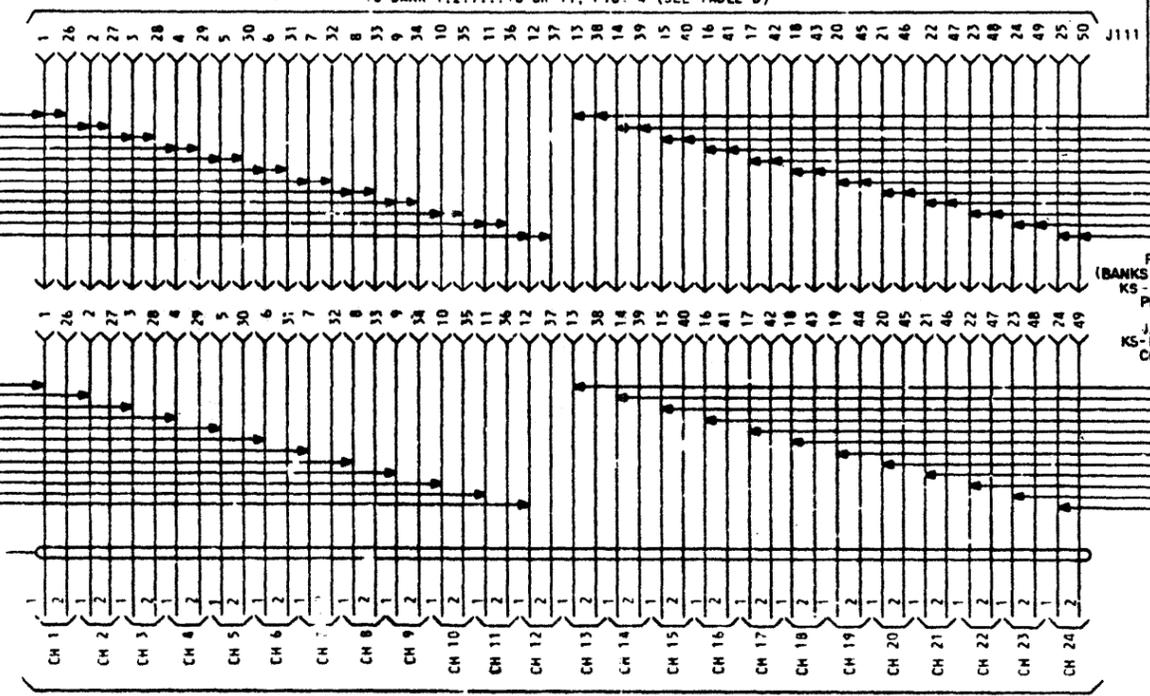
**CAD 17**  
SEE NOTES 116 AND 206  
TO BANK 1, 2---1C OR 11, FIG 4  
(SEE TABLE B)



P32  
(BANKS 1,2---10 OR 11)  
KS-16689, L3 OR L18  
PLUG  
J32  
KS-16690, L1 OR L12  
CONN

TO CAD 19, 21 OR 23

TO BANK 1, 2, ..., 10 OR 11, FIG. 4 (SEE TABLE B)



P33  
(BANKS 1,2---10 OR 11)  
KS-16689, L3 OR L18  
PLUG  
J33  
KS-16690, L1 OR L12  
CONN

TO CAD 19, 21 OR 23

DRAWING
ISSUE
5B

24 CHANNEL PCM BANK TYPE D3 APPLICATION SCHEMATIC	2	SD-3C104-01-13
BELL TELEPHONE LABORATORIES INCORPORATED	65	

SD-3C104-01-B

0 1 2 3 4 5 6 7 8 9

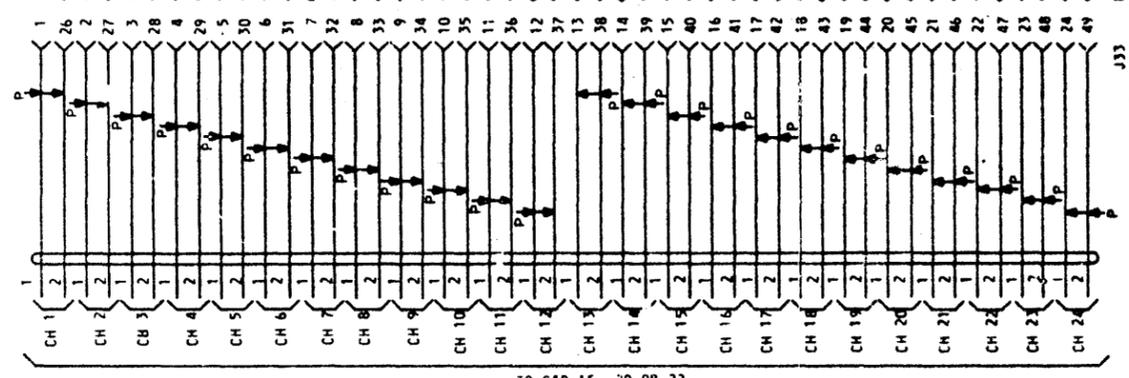
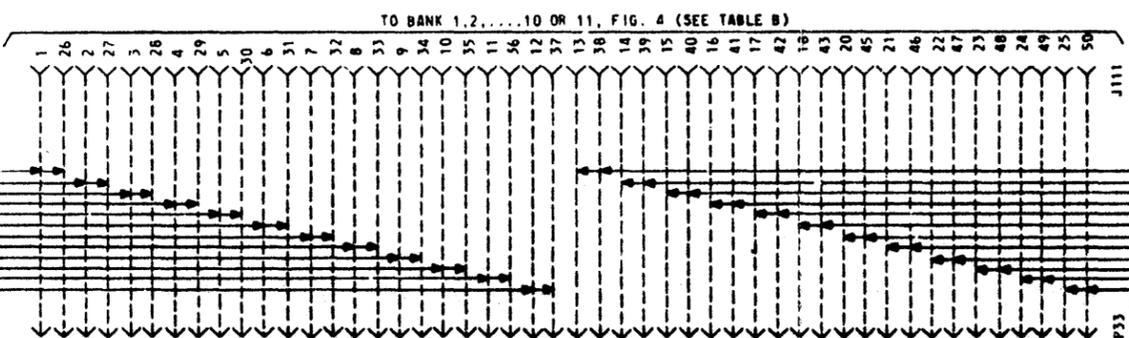
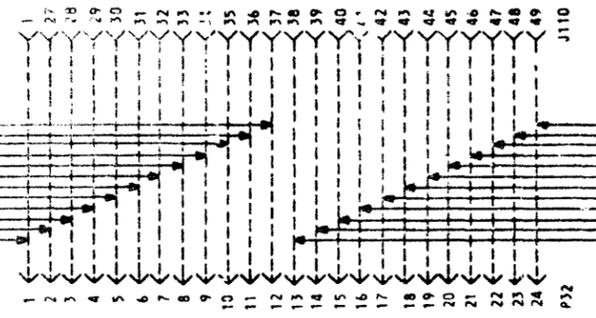
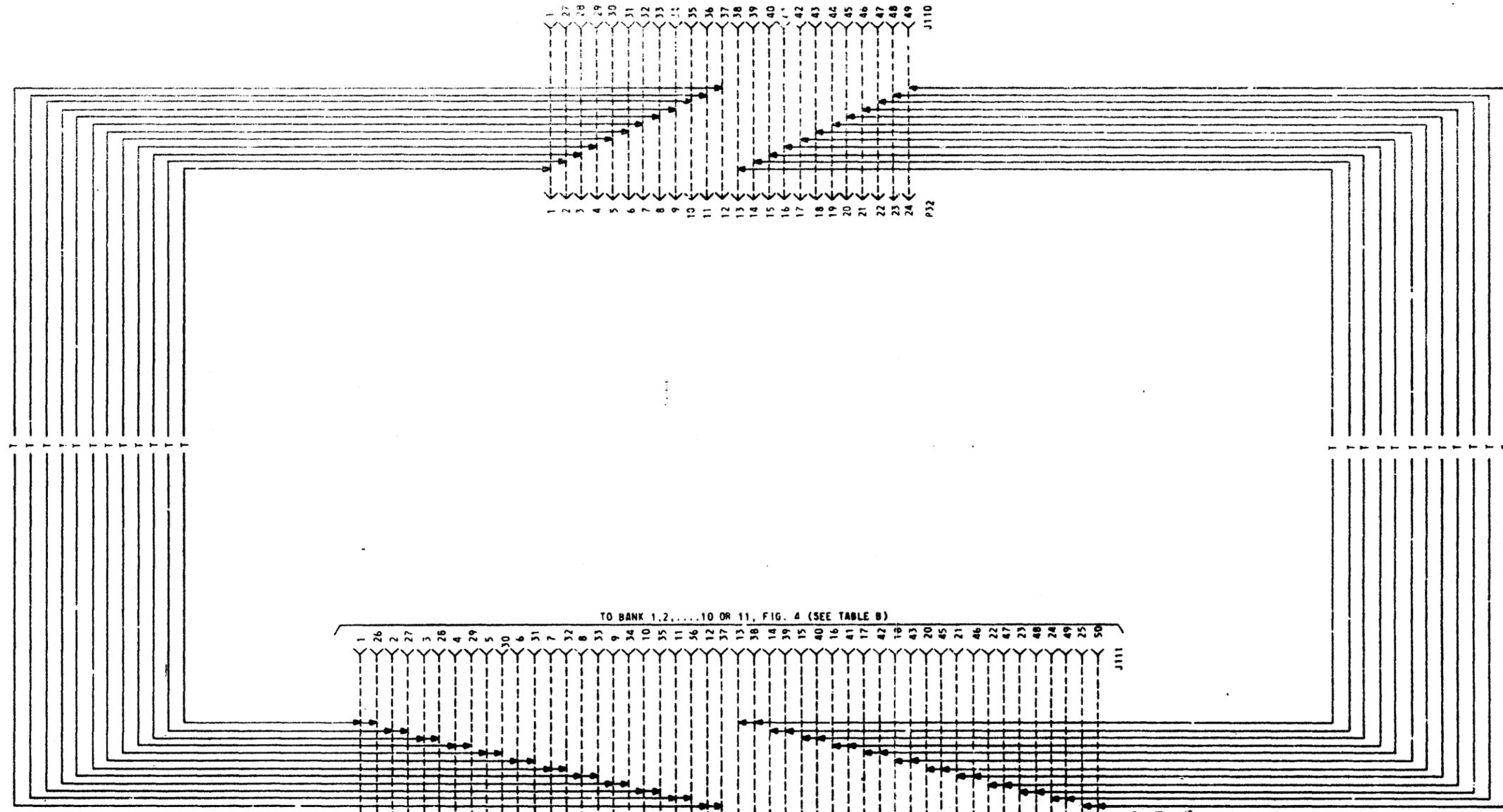
### CAD 18

SEE NOTES 116 AND 207

DRAWING  
ISSUE

A  
B  
C  
D  
E  
F  
G  
H

A  
B  
C  
D  
E  
F  
G  
H



J33 P33  
 ES-16690, L1 (BANKS  
 OR L12 1, 2, ...  
 CONN 10 OR 11  
 G-16690,  
 L3 OR L18 PLUG

TO CAD 15, 20 OR 22

24 CHANNEL PCM BANK TYPE D3 APPLICATION SCHEMATIC	②	SD-3C104-01-14
BELL TELEPHONE LABORATORIES INCORPORATED	55	MADE IN U.S.A.

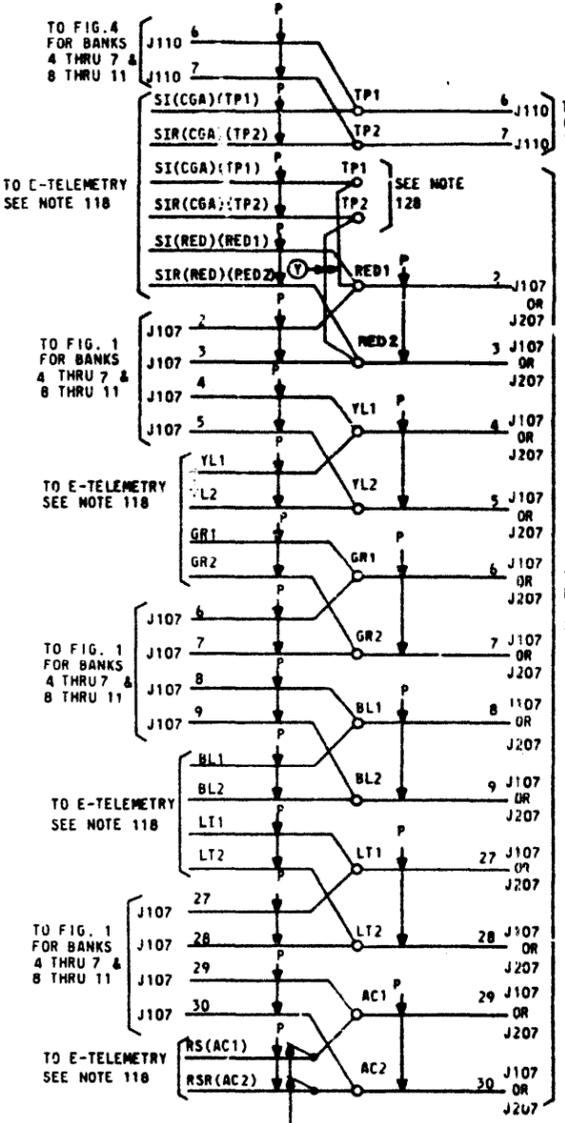
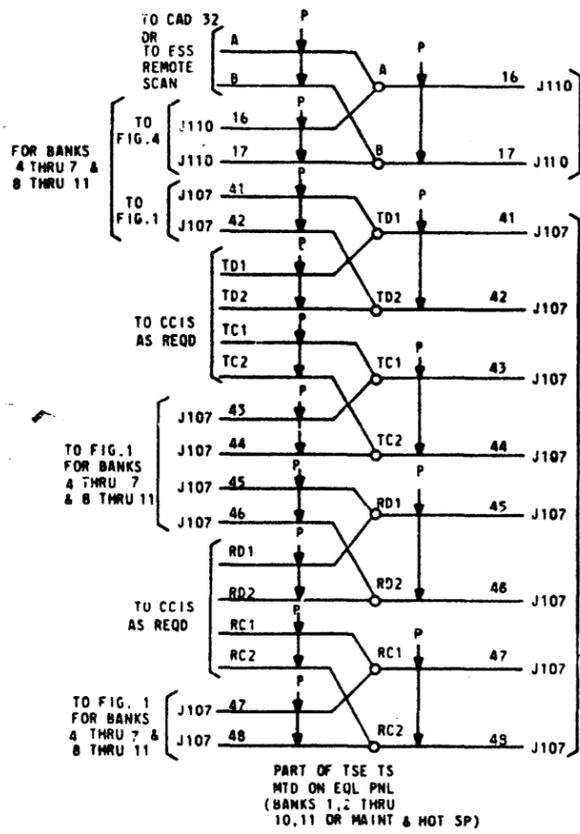
ISSUE  
5B

0 1 2 3 4 5 6 7 8 9

SD-3C104-01-14

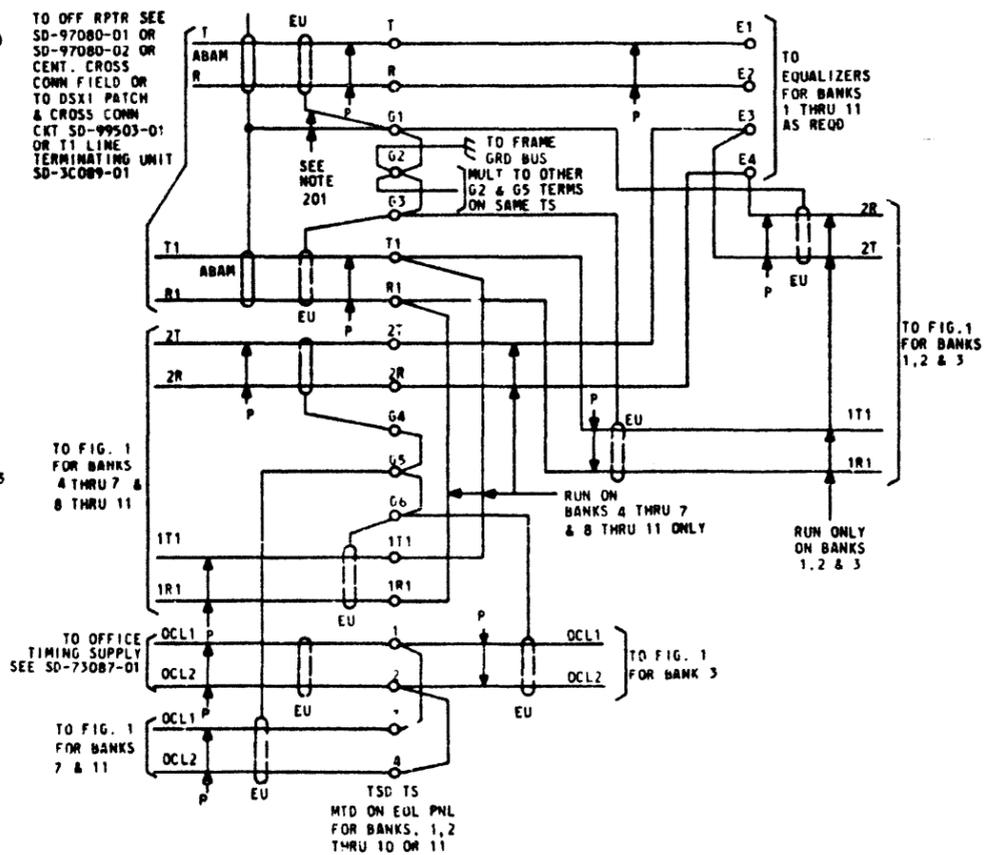


**CAD 26 MD**  
ESS REMOTE SCAN, CCIS,  
AND E-TELEMETRY CONNECTIONS  
FOR FIG. 1, 4 & 5  
(FOR TRIPLE 7' ARRANGEMENT  
SEE NOTE 128)

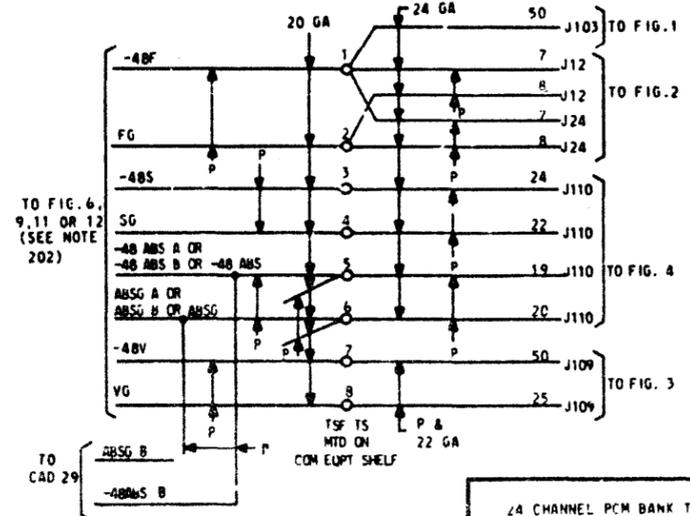


MULT TO OTHER  
AC1 AND AC2 LEADS  
FROM ALL OTHER BANKS  
OR HOT SPARE  
IN TRIPLE 7' BAY  
ARRANGEMENT  
SEE SD-96607-01

**CAD 27 (MFR DISC)**  
EQL CKT  
(FOR TRIPLE 7'  
ARRANGEMENT)  
SEE NOTE 123



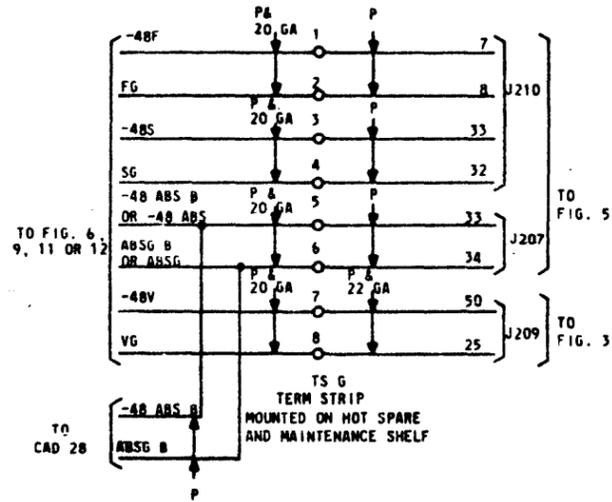
**CAD 28**  
BANK PWR CONN  
FOR FIG. 6, 9, 11 OR 12



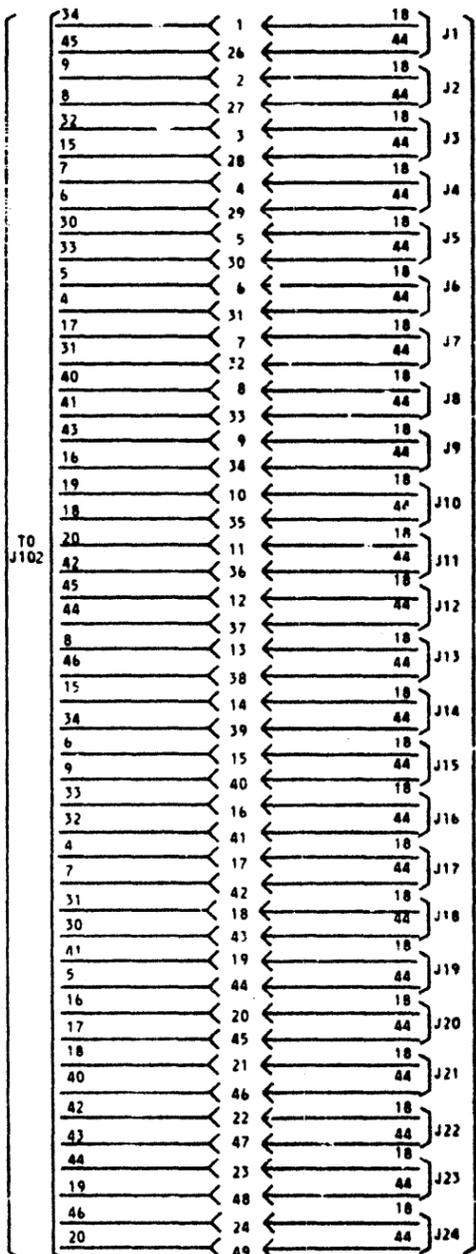
DRAWING  
ISSUE  
5B

SD-3C104-01-16

**CAD 29**  
POWER CONNECTIONS  
FOR HOT SPARE & MAINT



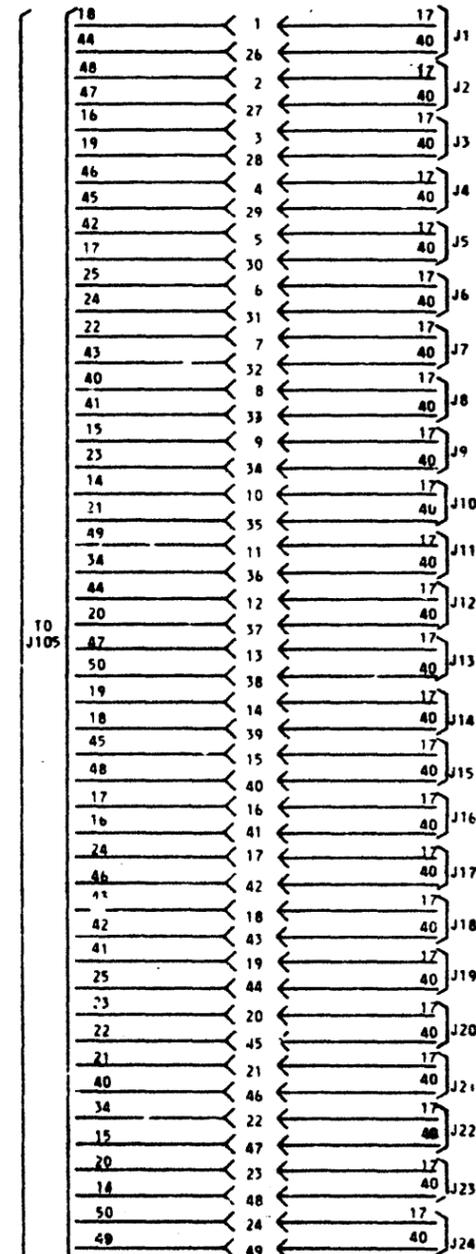
**CAD 30**  
FOR TRANSMIT SEQUENTIAL  
CHANNEL NUMBERING PLAN  
(SEE TABLE A)



J31  
KS-16690, L1 OR L12  
CONN

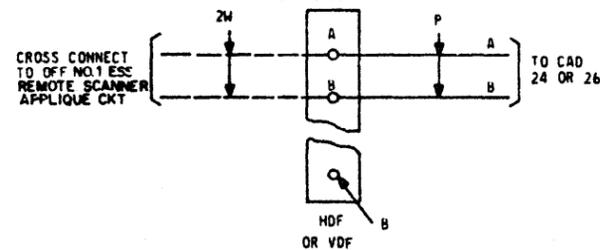
P31  
KS-16689, L3 OR L18  
PLUG  
(FOR BANKS 1, 2, ... 10 OR 11)

**CAD 31**  
FOR RECEIVE SEQUENTIAL  
CHANNEL NUMBERING PLAN  
(SEE TABLE A)

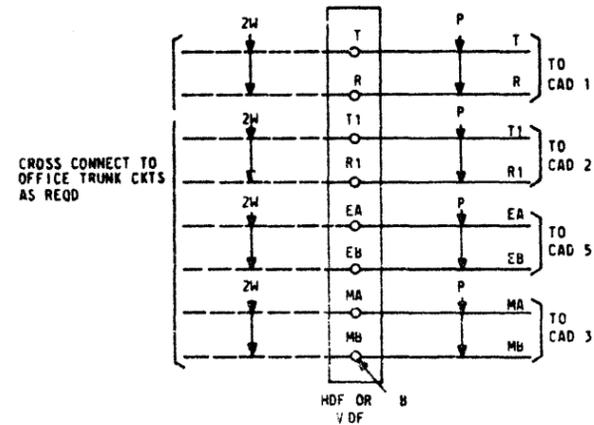


J30 P30  
KS-16690, L1 OR L12 KS-16689, L3 OR L18 PLUG  
CONN  
(FOR BANKS  
1, 2, ... 10 OR 11)

**CAD 32 (MFR DISC)**  
FRAME CONNECTION FOR ESS  
REMOTE SCAN



**CAD 33**  
CHANNEL WIRING WITH  
NO PRECISION NETWORKS FOR ESS OFFICES  
SEE NOTE 117



DRAWING  
ISSUE

58

24 CHANNEL PCM BANK TYPE D3  
APPLICATION SCHEMATIC

2

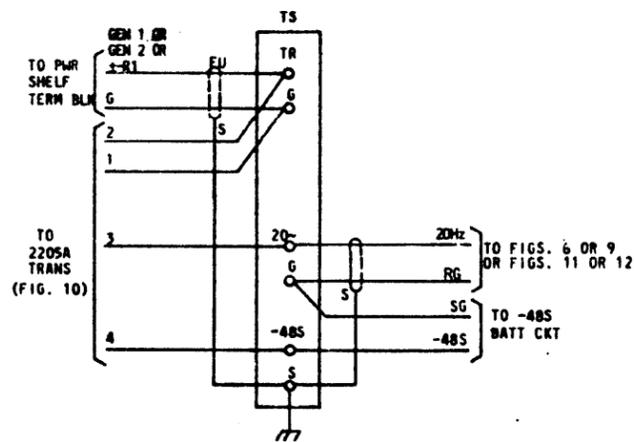
SU-3C104-01-17

BELL TELEPHONE LABORATORIES  
INCORPORATED

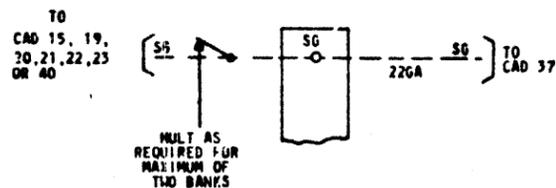
65

SD-3004-01-17

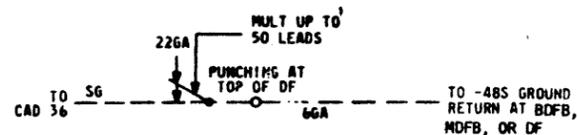
**CAD 34 (SPECIAL)**  
20 CYCLE RINGING SUPPLY TRANSFORMER CKT  
FOR AUTOMATIC ELECTRIC CO. 35E97  
STEP-BY-STEP OFFICES (FOR FIG. 10)



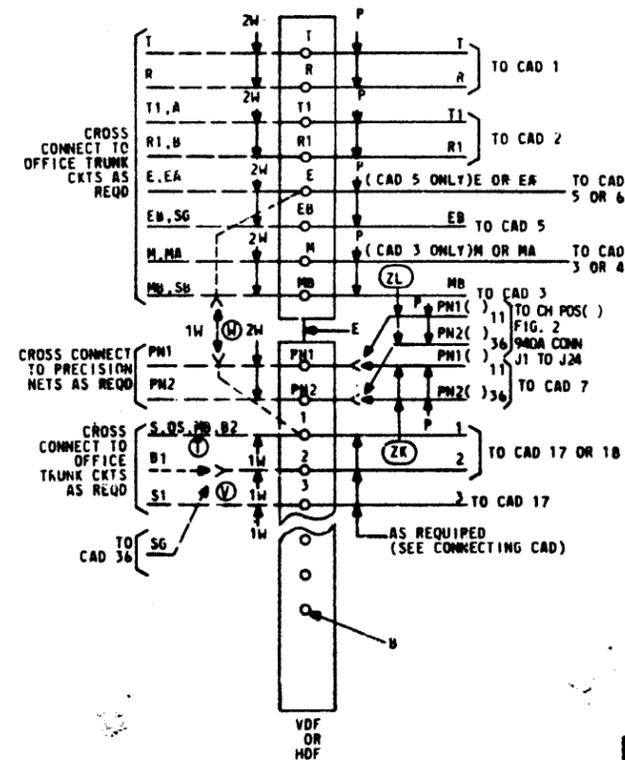
**CAD 36 MD**  
FOR PROVIDING (V) OPTION



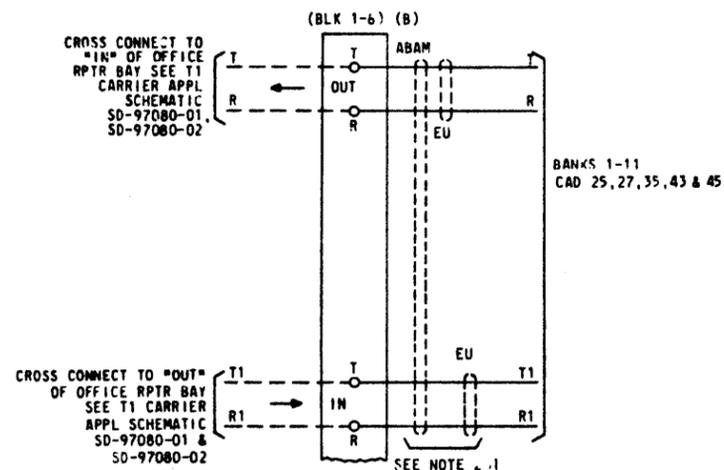
**CAD 37 MD**  
FOR PROVIDING -48S GROUND  
TO FRAME



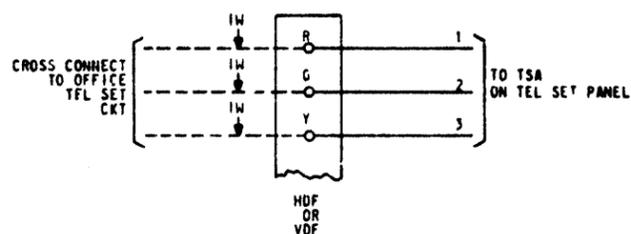
**CAD 40**  
UNIVERSAL CHANNEL  
WIRING  
SEE NOTES 116, 129 & 211



**CAD 38**  
FOR T1 CARRIER  
CENTRALIZED CROSS-CONNECT  
FIELD (FIG. 1 & 7)



**CAD 39**  
TEL SET CONNECTION  
FOR FIG. 13



24 CHANNEL PCM BANK TYPE D3  
APPLICATION SCHEMATIC

SD-30104-01-18

BELL TELEPHONE LABORATORIES  
INCORPORATED

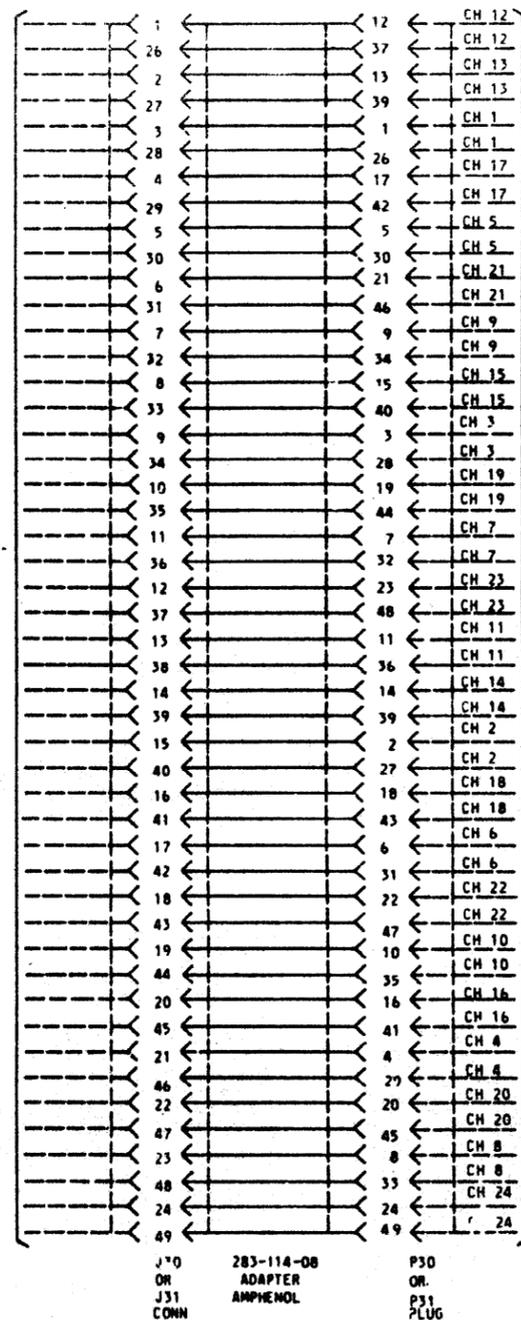
2

6S

SD-30104-01-18

ISSUE  
5B

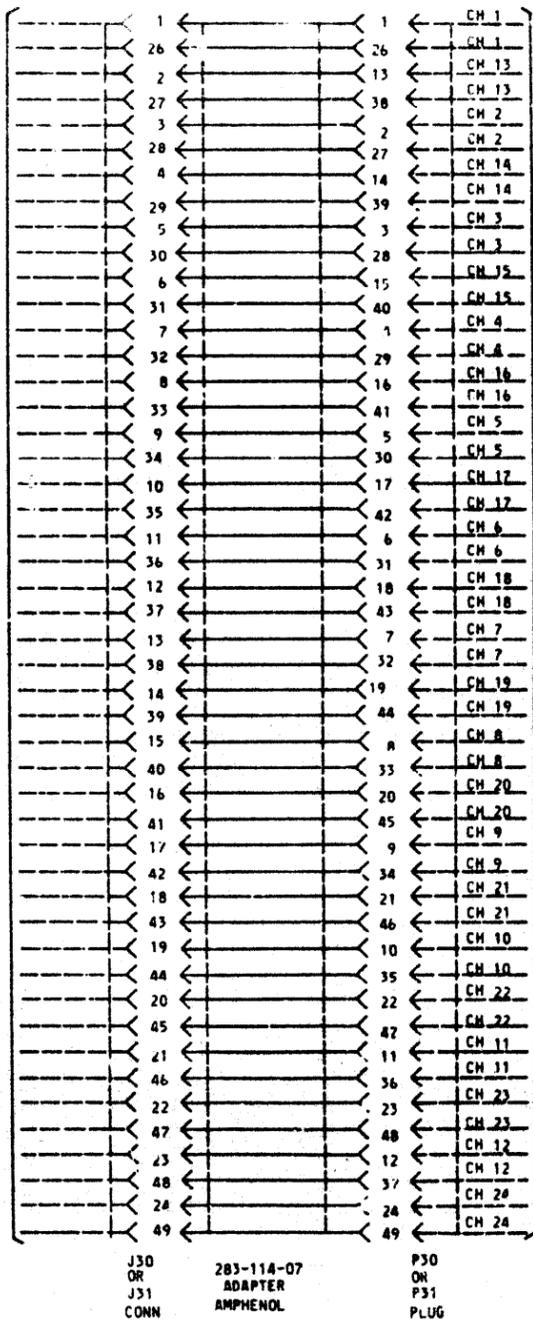
**FIG. 101**  
TRANSMIT OR RECEIVE  
CHANNEL NUMBERING PLAN FOR USE WITH D2  
(SEE CAD 30 & 31)



SEE CAD 30  
FOR TRANSMIT  
& CAD 31  
FOR RECEIVE

SEE CAD 30  
FOR TRANSMIT  
& CAD 31  
FOR RECEIVE

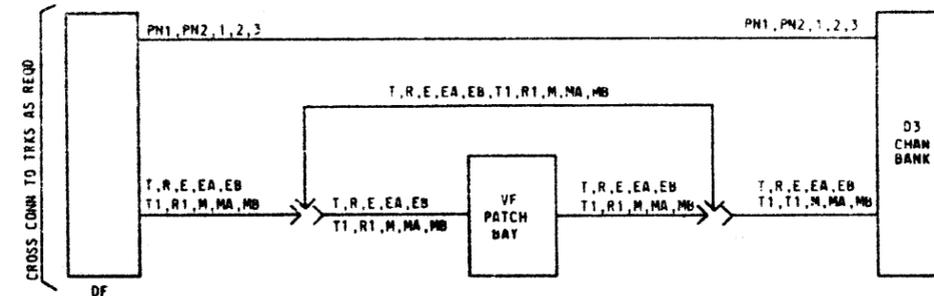
**FIG. 102**  
TRANSMIT OR RECEIVE  
ALTERNATE SEQUENTIAL  
CHANNEL NUMBERING PLAN FOR USE WITH D1D  
(SEE CAD 30 & 31)



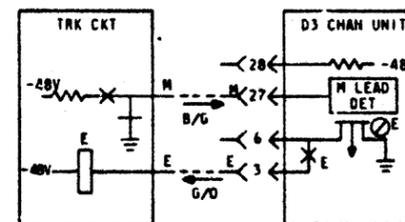
SEE CAD 30  
FOR TRANSMIT  
& CAD 31  
FOR RECEIVE

SEE CAD 30  
FOR TRANSMIT  
& CAD 31  
FOR RECEIVE

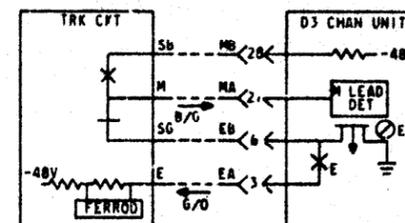
**FIG. 103**  
SEE NOTES 301 & 203



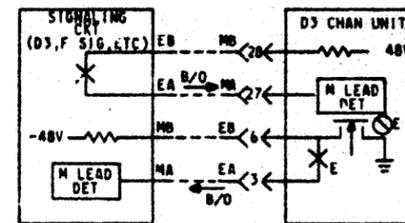
**FIG. 104**  
TYPE I E & M INTERFACE  
TO A TRUNK CIRCUIT  
SEE NOTE 305



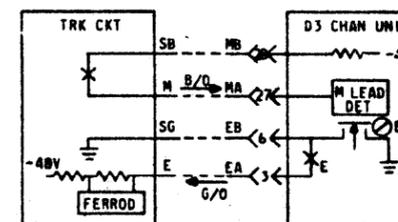
**FIG. 106**  
TYPE III E & M INTERFACE  
TO A TRUNK CIRCUIT  
SEE NOTE 305



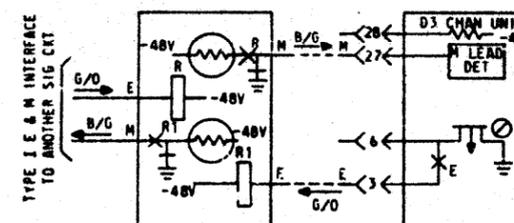
**FIG. 108**  
TYPE II E & M INTERFACE  
TO A SIG CKT (D3, F SIG, ETC)  
SEE NOTE 305



**FIG. 105**  
TYPE II E & M INTERFACE  
TO A TRUNK CIRCUIT  
SEE NOTE 305



**FIG. 107**  
USE OF EXT PULSE LINK RPTR  
TO PROVIDE TYPE I E & M INTERFACE  
TO A SIGNALING CIRCUIT  
SEE NOTE 305



DRAWING  
ISSUE  
5B

24 CHANNEL PCM BANK TYPE D3  
APPLICATION SCHEMATIC  
BELL TELEPHONE LABORATORIES  
INCORPORATED  
SD-3C104-01-19  
ES

SD-3C104-01-19

FIG. 109

COMPATIBLE TANDEM T1 CARRIER LINKS  
BETWEEN D1A AND D1A, D1B, D1D, D3, OR D4 CHANNEL BANKS  
ARRANGED FOR PROVIDING FOREIGN EXCHANGE SERVICE  
SEE NOTE 906

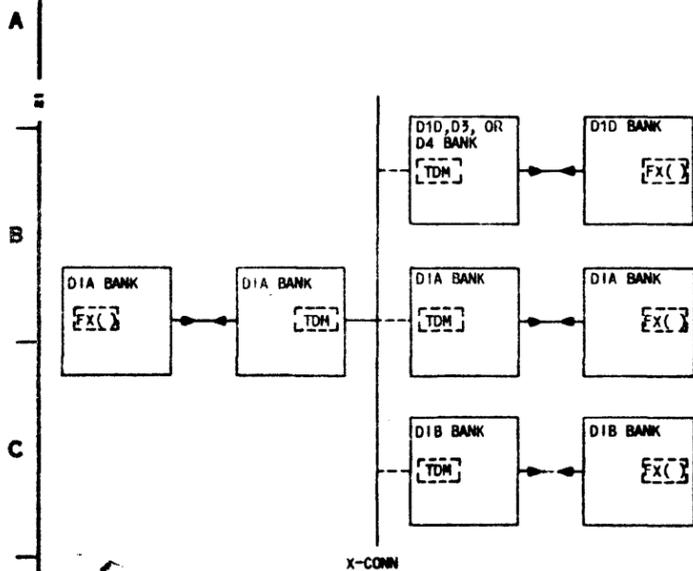


FIG. II

PMR DIST PANEL  
FOR 11'-6" & 9'-0" BAY ARRANGEMENT  
SEE NOTES 101, 108 & 122

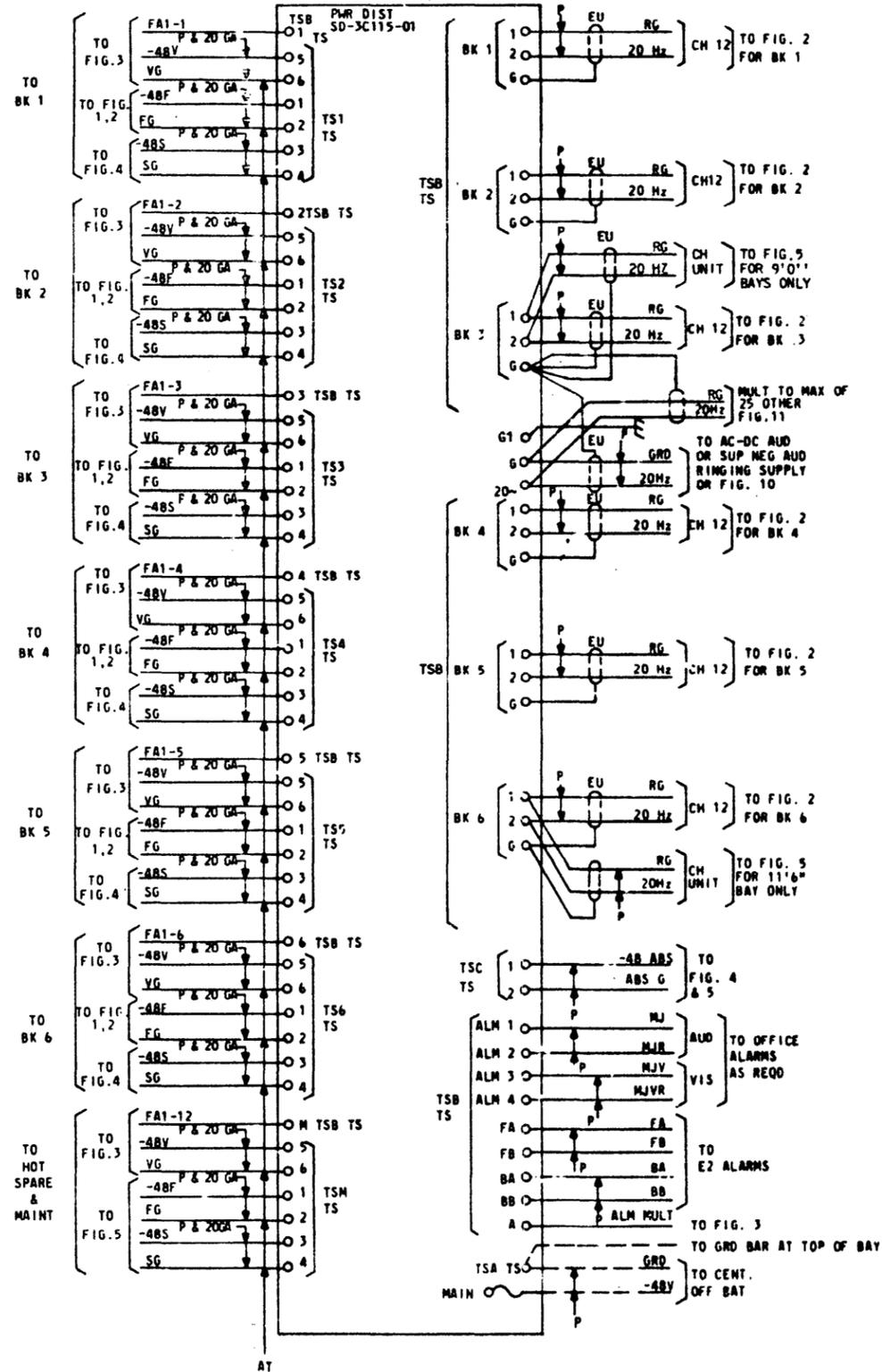
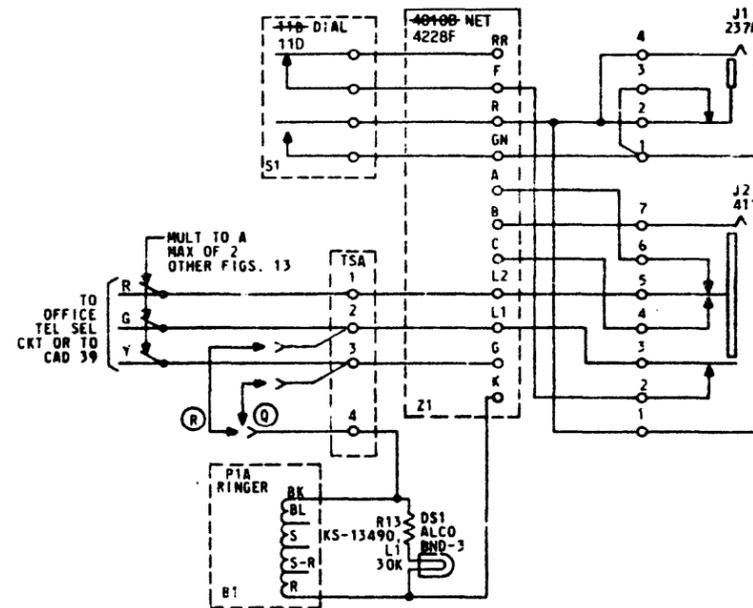


FIG. 13

TEL SET  
SEE NOTE 121



SD-3C04-01-20

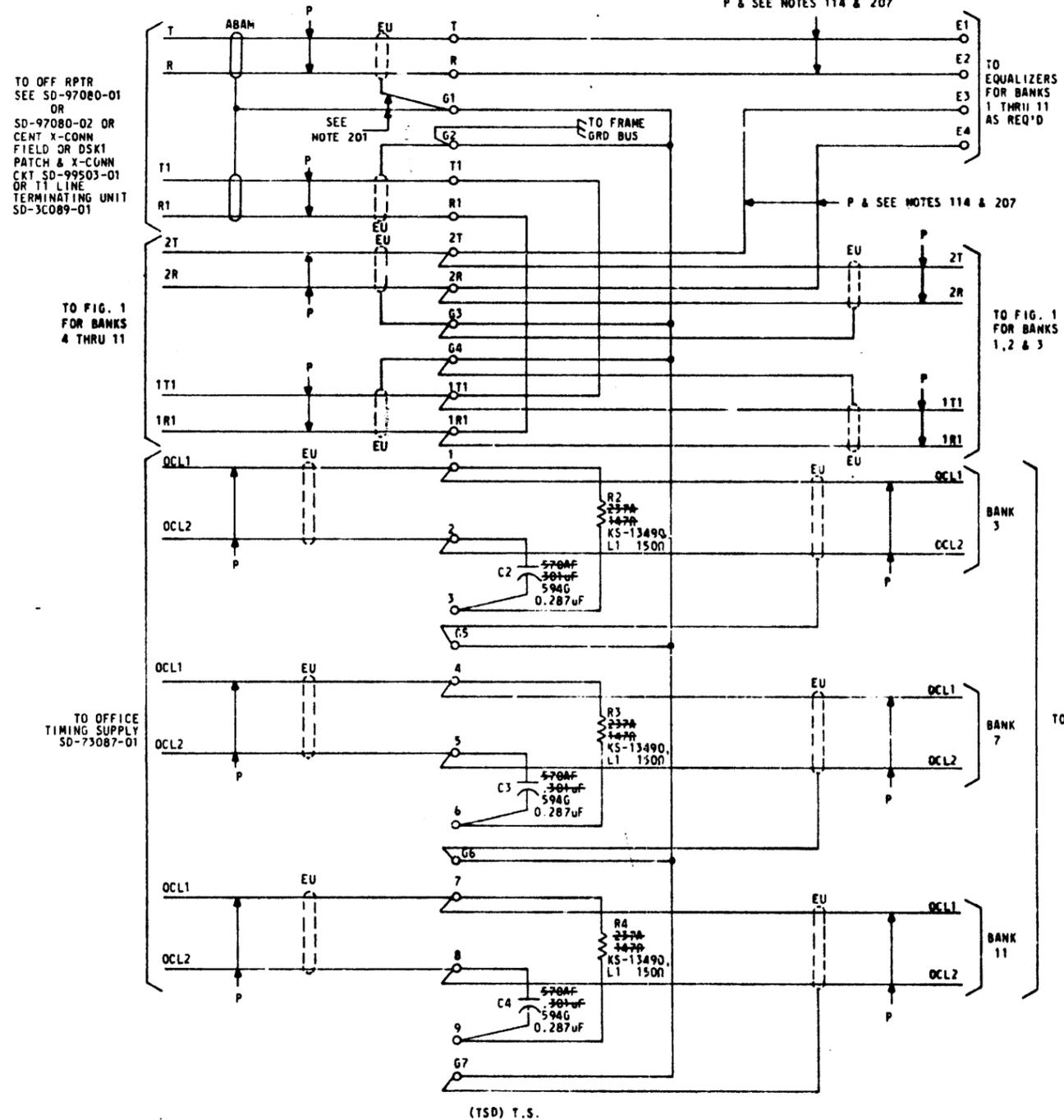
DRAWING  
ISSUE

5B

24 CHANNEL PCM BANK TYPE D3 APPLICATION SCHEMATIC		②	SD-3C104-01-20
BELL TELEPHONE LABORATORIES INCORPORATED			



CAD 35 MD  
EQL CKT  
(FOR TRIPLE 7' ARRANGEMENT)  
SEE NOTE 123



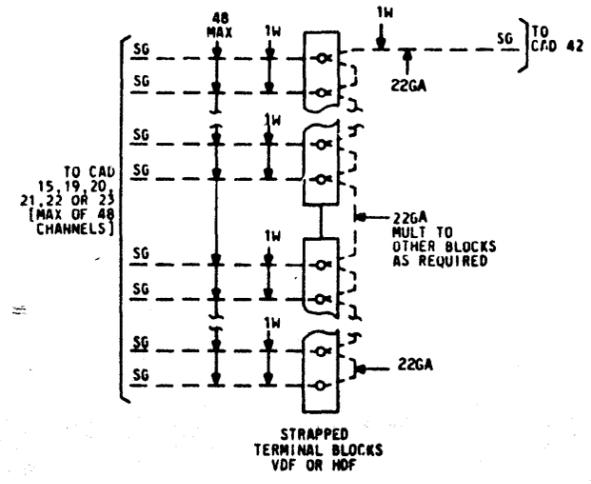
SD-3C104-01-22

DRAWING  
ISSUE  
AB

24 CHANNEL PCM BANK TYPE D3 APPLICATION SCHEMATIC	②	SD-3C104-01-22
BELL TELEPHONE LABORATORIES INCORPORATED	6S	MADE IN U.S.A.

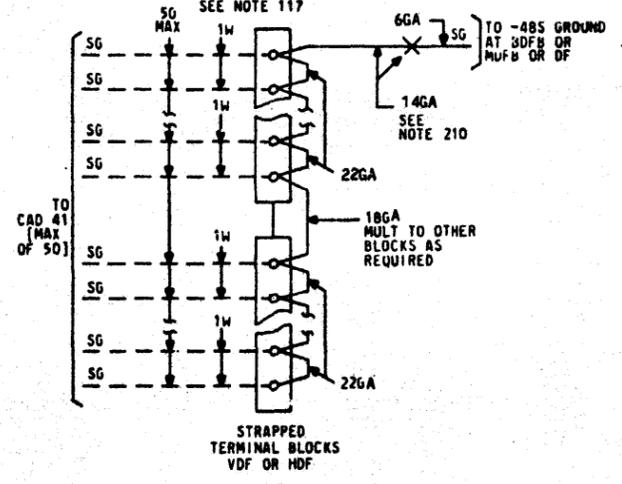
**CAD 41**

CROSS CONNECTION FOR PROVIDING  
OPTION  
SEE NOTE 117



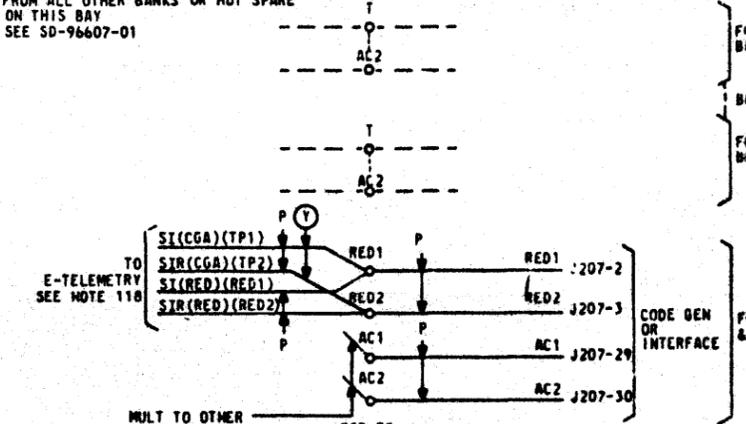
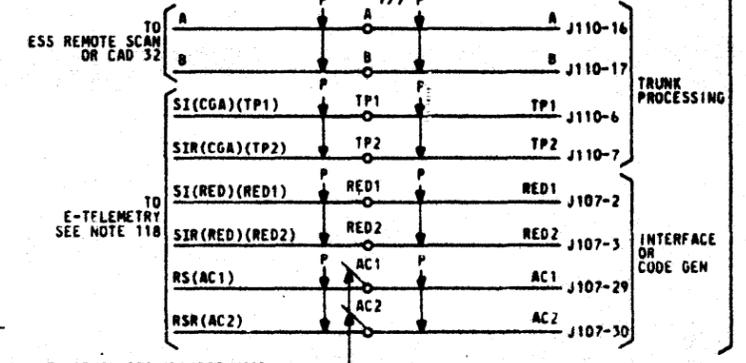
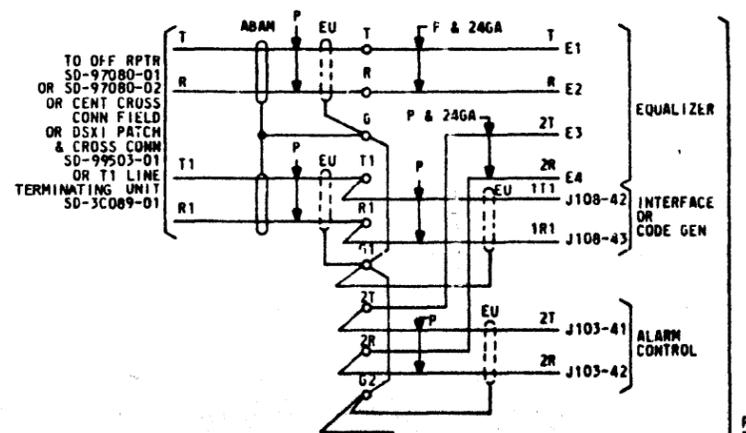
**CAD 42**

CROSS CONNECTION FOR PROVIDING -48S GROUND TO FRAME FOR  
OPTION  
SEE NOTE 117



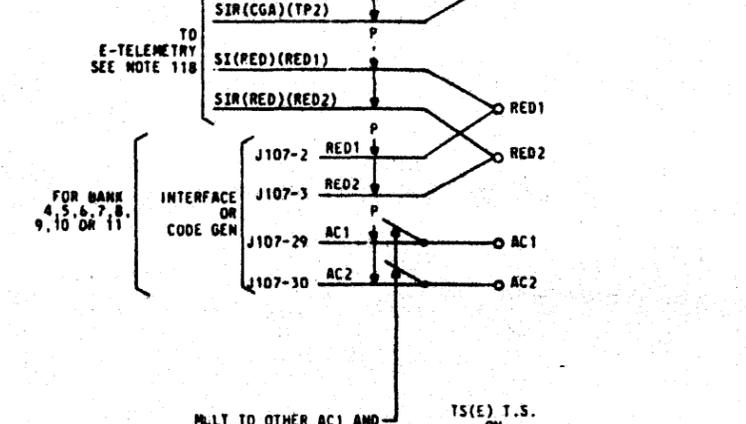
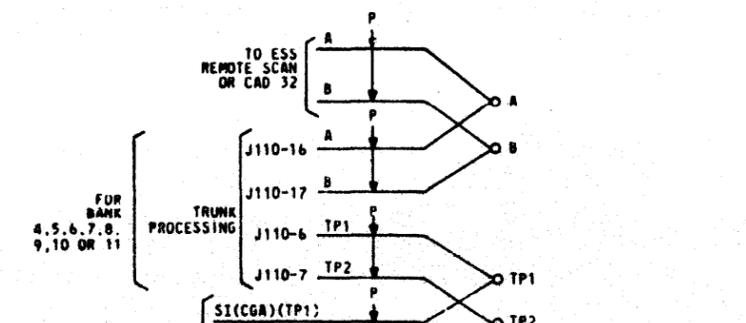
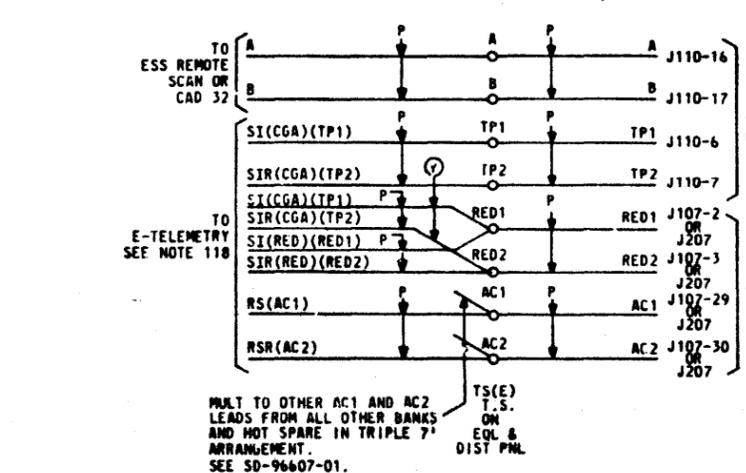
**CAD 43**

(FOR FIG. 1, 4, 5 & 7)  
ESS, E-TELEMETRY, & EQUALIZER  
(FOR 11'6" & 9'0" ARRANGEMENTS)  
SEE NOTE 128



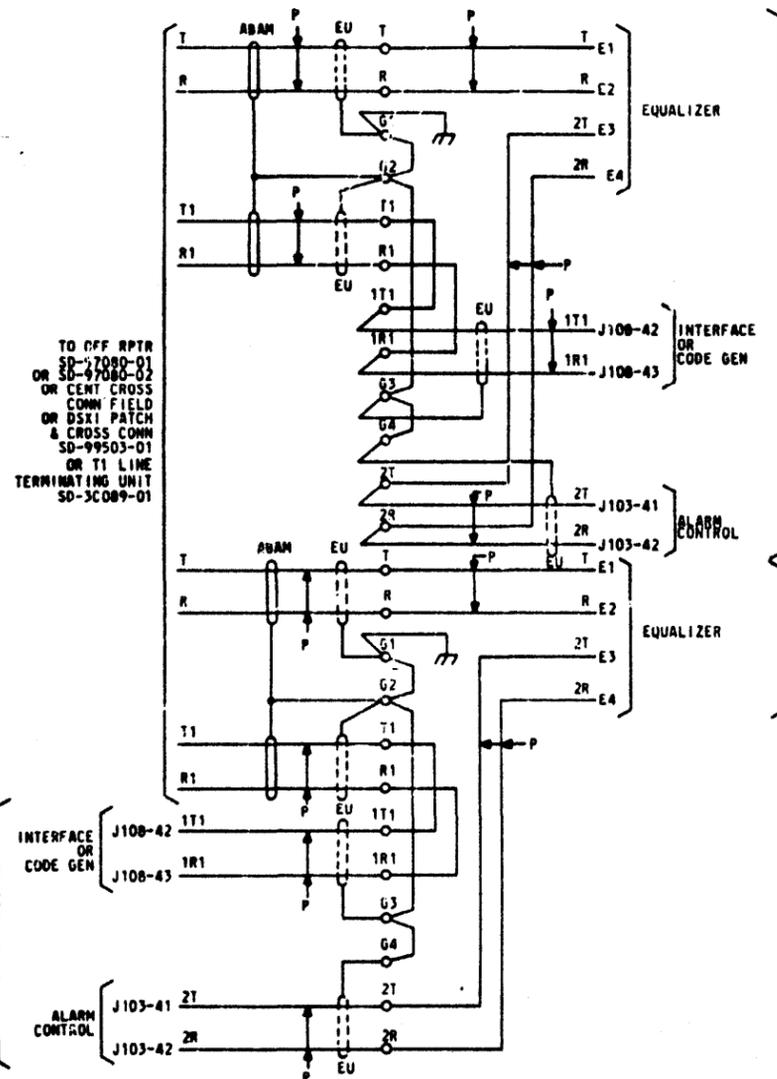
**CAD 44**

(FOR FIG. 1, 4 & 5)  
ESS AND E-TELEMETRY  
(FOR TRIPLE 7' ARRANGEMENT)  
SEE NOTE 128



NOTE:  
INTRABLOCK WIRING IS 22GA.  
INTERBLOCK WIRING IS 18GA.  
ANY COMBINATION OF PINS/BLOCK AND NUMBER OF BLOCKS MAY BE USED WITH NUMBER OF PINS NOT TO EXCEED 50.

**CAD 45**  
(FOR FIG. 1 & 7)  
EQUALIZER  
(FOR TRIPLE 7' ARRANGEMENT)

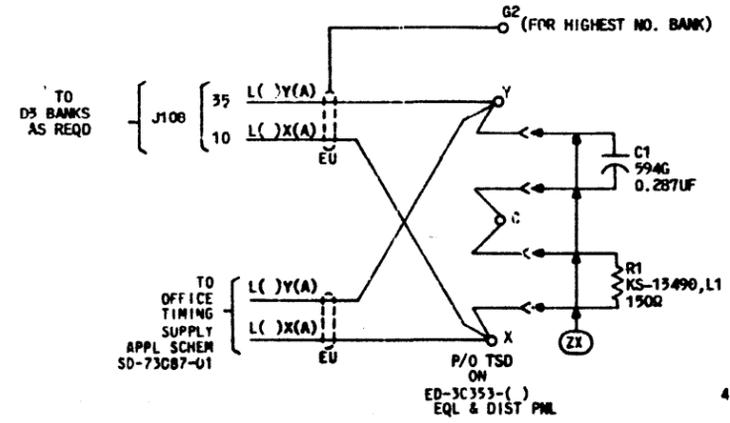


FOR BANKS  
4, 5, 6, 7, 8,  
9, 10, OR 11

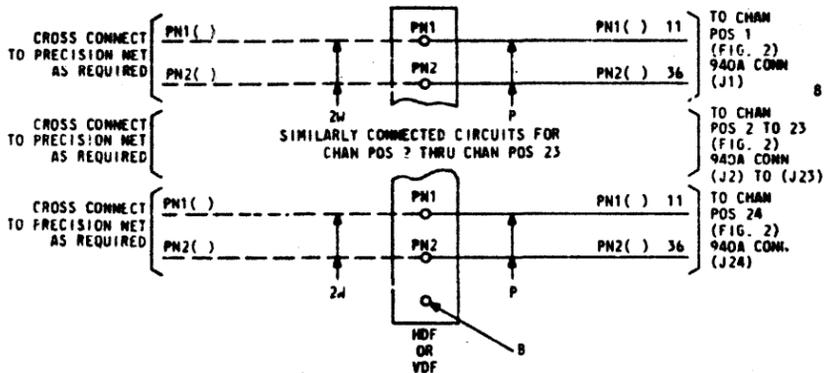
NOTES:  
1. THE SG & SB LEADS IN CAD 50  
MAY NOT ALWAYS BE REQUIRED.

TS(D) T.S.  
ON  
EQL & DIST PNL

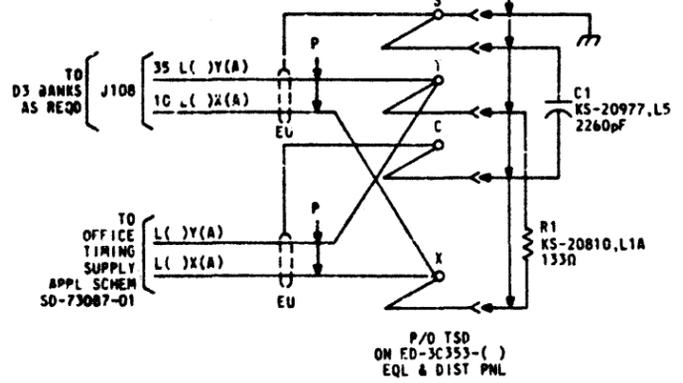
**CAD 46** (MFR DISC)  
OFFICE TIMING SUPPLY - 11'6" & 9' BAYS



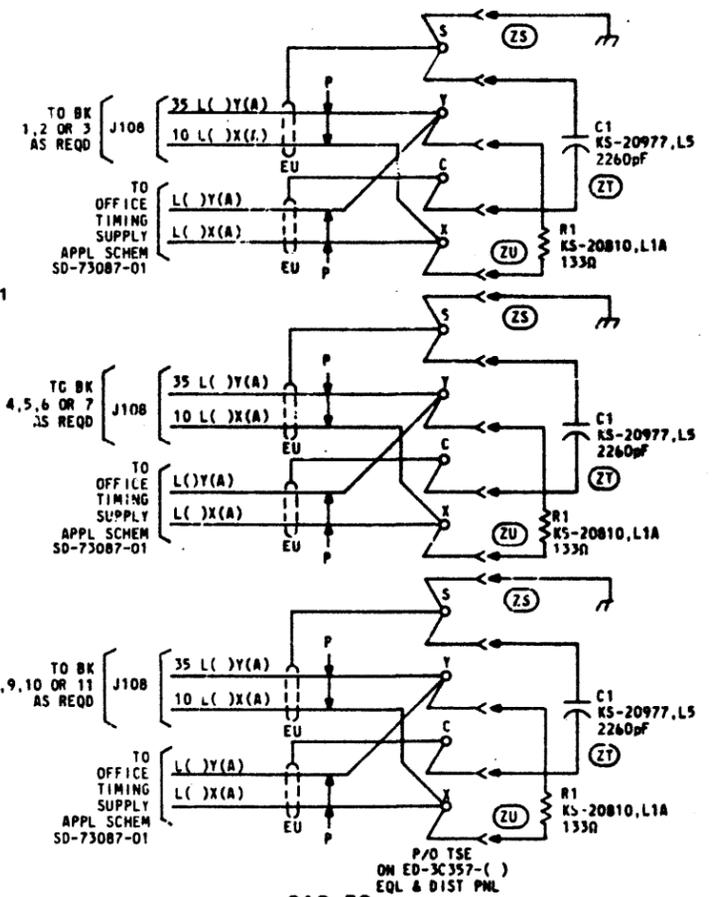
**CAD 47**  
PN1 AND PN2 LEADS (FOR FIG. 2)  
(ZL OPTION)  
FOR EACH TRUNK ASSOCIATED WITH  
TYPE D3 CHANNEL BANK  
SEE NOTE 129



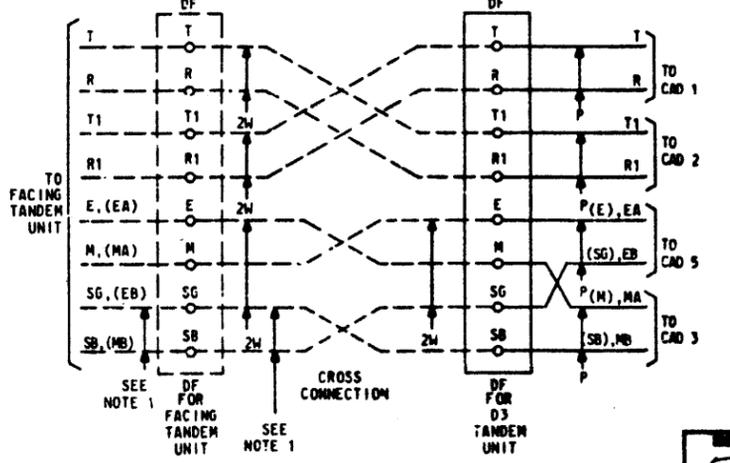
**CAD 48**  
OFFICE TIMING SUPPLY - (11'6" & 9' BAYS)  
SEE NOTE 213



**CAD 49**  
OFFICE TIMING SUPPLY  
(TRIPLE 7' BAYS)  
SEE NOTE 213



**CAD 50**  
FOR CROSS CONNECTIONS AT DISTRIBUTING  
FRAME OF D3 TANDEM UNIT TO D1, D3, OR  
OTHER COMPATIBLE TANDEM UNIT  
(FACING TANDEM UNIT)



5B

# CAD 51

CHANNEL WIRING FOR  
DIRECT INTERFACE NO. 2 ESS FRAME

# CAD 52

CHANNEL BANK WIRING FOR  
DIRECT INTERFACE NO. 2 ESS FRAME  
(SEE TABLE D)  
SEE NOTES 125, 126, & 127

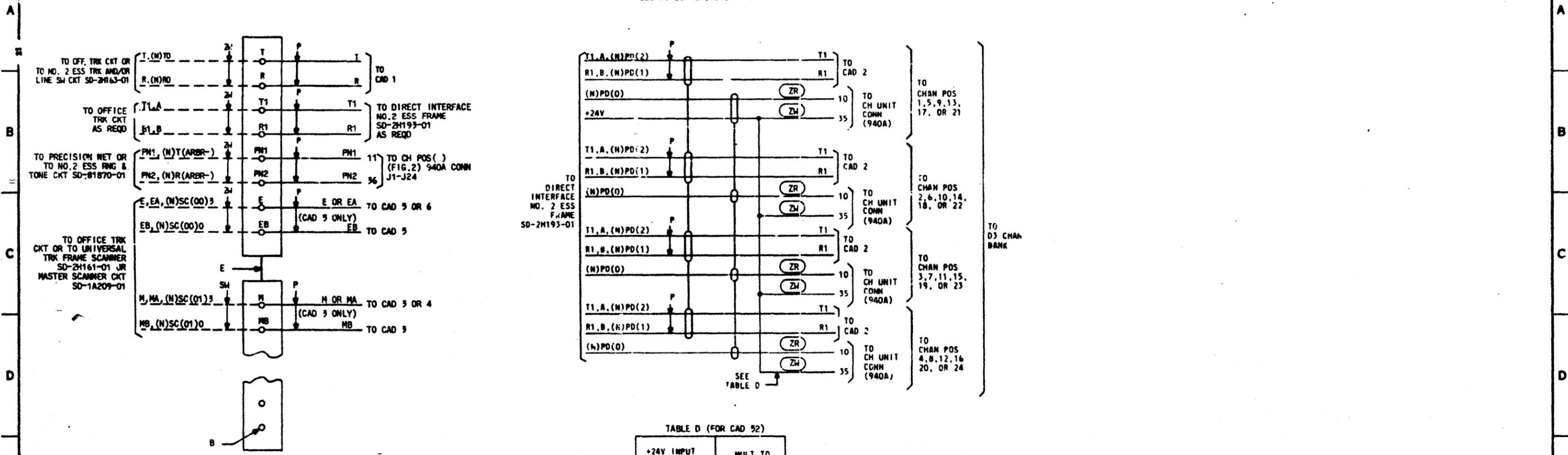


TABLE D (FOR CAD 52)

+24V INPUT FROM NO 2 ESS TO CHAN POS	MULT TO CHAN POS
1	2, 3, & 4
5	6, 7, & 8
9	10, 11, & 12
13	14, 15, & 16
17	18, 19, & 20
21	22, 23, & 24