

CONTENTS	SHEET NO.	ISSUE NO.																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
SHEET INDEX SUPPORTING INFORMATION	A1A	1	2	3	4																					
SHEET INDEX CONTINUED	A1B				4																					
LEAD INDEX																										
OPTION INDEX	A2	1	2	3	4																					
FS 1 CO AUDIBLE RINGING (570A OR 570B KSU)	B1	1	1	3	4																					
FS 2 CO OR PBX LINE PICK-UPS SQUARE LINES OR PERSONAL LINES (570A OR 570B KSU)	B2	1	1	3	4																					
FS 3 MUSIC ON HOLD (570A KSU)	B3	1	1	3	4																					
FS 4 MUSIC ON HOLD (570B KSU)	B4	1	2	2	4																					
FS 5 POWER FAILURE TRANSFER (570A OR 570B KSU)	B5	1	1	3	4																					
FS 6 DIAL INTERCOM AND DSS (570A KSU)	B6			3	4																					
FS 7 DIAL INTERCOM AND DSS (570B KSU)	B7				4																					
FS 8 PAGING AND BACKGROUND MUSIC (570A OR 570B KSU)	B8				4																					
FS 9 FUSING AND LAMPING (570A OR 570B KSU)	B9				4																					
APP FIG. 1-7	C1	1	2	3	4																					
APP FIG. 8-13	C2	1	1	3	4																					

X SHEETS WITH SUFFIX A WERE FORMERLY WITHOUT A SUFFIX LETTER.

SHEET INDEX

CONTENTS	SHEET NO.	ISSUE NO.																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
PART OF CAD 4 CODES 4 THRU 10 STA SET TERMINATION (570A KSU)	G9	1	1	3	4																					
	G10	1	1	3	4																					
CAD 5 CODES 12 THRU 19 STA SET TERMINATION (570A KSU)	G11	1	1	1	4																					
	G12	1	1	1	4																					
	G13	1	1	1	4																					
	G14	1	1	3	4																					
	G15	1	1	3	4																					
CAD 6 FEATURES: PWR FAIL, TRANS, NIGHT TRANS, PAGING, AND PRESET CONF (570B KSU)	G16				4																					
	G17				4																					
CAD 7 DIODE POLARITY GUARD (570B KSU)	G18				4																					
CAD 8 CO OR PBX TERMINATION, CONSOLE TERM, AND CODE 3 STA SET TERM. (570B KSU)	G19				4																					
	G20				4																					
	G21				4																					
CAD 9 CODES 4 THRU 10 STA SET TERMINATION (570B KSU)	G22				4																					
	G23				4																					
	G24				4																					
	G25				4																					
	G26				4																					
CAD 10 CODES 12 THRU 19 STA SET TERMINATION (570B KSU)	G27				4																					
	G28				4																					
	G29				4																					
	G30				4																					
	G31				4																					
													</													

COMKEY 718

SHEET INDEX NOTES

1. WHEN CHANGES ARE MADE IN THIS DRAWING, ONLY THOSE SHEETS AFFECTED WILL BE REISSUED.
2. 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.
3. THE ISSUE NUMBER ASSIGNED TO A CHANGED OR NEW SHEET WILL BE THE SAME ISSUE NUMBER AS THAT OF THE SHEET INDEX.
4. SHEETS THAT ARE NOT CHANGED WILL RETAIN THEIR EXISTING ISSUE NUMBER.
5. 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.
832A & 2832A TELEPHONE SET SCHEMATIC DRAWING	SD-69654-01
6A1 & 6B1 SELECTOR CONSOLE SCHEMATIC DRAWING	SD-69656-01
570A KEY SERVICE UNIT APPARATUS DRAWING	A-315656
7A COMM SYSTEM SUMMARIZING SPECIFICATION	BSP 518-450-100

STATION SYSTEMS
7A COMMUNICATION SYSTEM
570A OR 570B KEY SERVICE UNIT
CIRCUIT

1K01

AT&T
STANDARDSD-69652-01-A1A
85 SHEETSBELL TELEPHONE LABORATORIES
INCORPORATED2
6S

PRINTED IN U.S.A.

		SHEET INDEX (CONT)																									
	CONTENTS	SHEET NO.	ISSUE NO.																								
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
A	CPS KTU 400D CO DR PBX LINE CKT	J1				4																					
	CPS KTU 400H CO DR PBX LINE CKT	J2				4																					
	CPS KTU 415A	J3				4																					
	CPS KTU 415B	J4				4																					
B	CPS KTU 424B DIAL SELECTIVE INTERCOMMUNICATING LINE CKT	J5A				4																					
		J5B				4																					
		J5C				4																					
		J6A				4																					
CPS KTU 424C SELECTIVE CKT	J6B				4																						
	J6C				4																						
	J7A				4																						
	J7B				4																						
C	CPS KTU 440A TOUCH-TONE ADAPTER CKT	J8				4																					
	CPS KTU 451A MUSIC ON HOLD	J9				4																					
	CPS KTU 451B MUSIC ON HOLD	J10				4																					
	CPS KTU 452A PWR FAILURE CKT	J11				4																					
D	CPS KTU 455A TONE RINGING SIGNAL GENERATOR	J12				4																					
	CPS KTU 456A VOICE & TONE ALERTING CKT	J13				4																					
	CPS KTU 456B VOICE & TONE ALERTING CKT	J14				4																					
	CPS KTU 457B PAGING AMPLIFIER	J15				4																					
E	CPS KTU 457C PAGING AMPLIFIER	J16A				4																					
	CPS KTU 460A TWO PATH ACCESS CKT	J16B				4																					
	CPS KTU 460C TWO PATH ACCESS CKT	J17A				4																					
	J17B				4																						
F	CPS KTU 468B VOICE &TONE CKT WITH STATION BUSY DETECT	J18				4																					
	CPS KTU 478B TOUCH-TONE ADAPTER CKT	J19A				4																					
	J19B				4																						
	J20A				4																						
G	CPS KTU 494A TOUCH-TONE SELECTOR CKT	J20B				4																					
	J20C				4																						
	CPS KTU 498A & 116A1 CM MUSIC ON HOLD	J21A				4																					
	J21B				4																						
H	CPS KTU 494B ROTARY AND TOUCH-TONE SELECTOR CKT	J22A				4																					
	J22B				4																						
	CMS CM 120A Y-LEAD CKT	J23				4																					

7A COMMUNICATION SYSTEM

DWG SIZE

6S

ISSUE

4D1

BELL LABORATORIES

SD-69652-01

SHEET

A1B

	0	1	2	3	4	5	6	7	8	9
A										
B										
C										
D										
E										
F										
G										
H										

LEAD INDEX

DESIG	LOCATION	
	FS	CAD
6A1 SELECTOR CONSOLE		
CG0	6F1,7F2	3,8
CG1	6F1,7F2	3,8
DO	6H1,7H2	3,8
D1	8F3	
	6H1,7H2	3,8
	8F3	
LK	6G1,7G2	3,8
LT2	6G1,7G2	3,8
TTG	6E1,7E2	3,8
Y1,Y2	6G1,7G2	3,8
Y3-Y5	6H1,7H2	3,8

DESIG	LOCATION	
	FS	CAD
POWER FAILURE RINGER 1-7		
RC1-7	5D5	1
TC1-7	5D5	1

POWER SUPPLY		
10VAC	9E7	
18VAC	9A2	
-24B	9F7	

CODE 19 KEY TEL SET		
VS19	6F9,7G9	1,5

SPEAKERS		
P0-P3	8C9	1
SP1-7		1
SPG1-7		1

CO OR PBX LINE		
R1-7(CO)	2B0,3B0,5B0	3,4,5
T1-7(CO)	2B0,3B0,5B0	3,4,5

TELEPHONE SETS		
-24C	9F7	3,4,5
1A-7A		3,4,5
C00		3
C03		3
C04-C011		4
C012-C019		5
IL1	9E7	3,4,5
IL2	9E7	3,4,5
IR1	6B0,7B0	3,4,5
IR2	6C0,7D0	3,4,5
IT1	6A0,7B0,8C0	3,4,5
IT2	6C0,7D0,8C0	3,4,5
L1-7	9A7	3,4,5
R1-7		3,4,5
T1-7		3,4,5
V50	6D9,7D9	3
VS3	6D9,7D9	3
VS4	6D9,7D9	4
VS5,6	6D9,7D9	4
VS7	6B9,7C8	4
VS8,9	6D9,7D9	
VS10	6D9,7D9	
VS11	6D9,7D9	4
VS12	6D9,7D9	
VS13	6D9,7D9	5
VS14	6D9,7D9	4
VS15	6D9,7D9	
VS16	6D9,7D9	3
VS17	6D9,7D9	
VS18	6D9,7D9	

CUSTOMER PROVIDED EQUIPMENT		
CR	5D0,4B0,8B1	
CT	5D0,4B0,8B1	

KEY TELEPHONE STATIONS INCLUDED IN PRESET CONFERENCE		
VS-	6E9,7F9	3,5

OPTION INDEX

APP OR WRG	LOCATION		
	FS	APP FIG.	CAD
2	2A2	2	
3	3C4	3	
4	5C3	4	
5	8B8	5	
6	8B7	6	
7	6D2	7	
9	1C3,1C5,2A2,2B1,2B3,2C4,3A1	9	
10	4A6	10	
11	7E3	11	
12	1C3,1C6,2B1,2B4,2E2,2C4,3B1	12	
13	1A0,7B3,7A6,7A0	13	
Z	6F2,7F3		
V	6F9,7G9		
T	6F9,7G9		
S	1B6		
Q	6G1,7F2,8E3		
M	6F1,6H1,7F2,7H2,8E3		
K	1E6		
J	1C6		
B	3C1		
AA	9F6,9G4,9G5		
AB	9G6,9F4,9G5		

LEAD INDEX
OPTION INDEX

7A COMMUNICATION SYSTEM

BELL TELEPHONE LABORATORIES
INCORPORATED

SD-69652-OI-A2

PRINTED IN U.S.A.

ISSUE

4D1

HO

OR

H 10

SD-69652-OI-A2

FSI
CO AUDIBLE RINGING
(570A KSU OR 570B KSU)

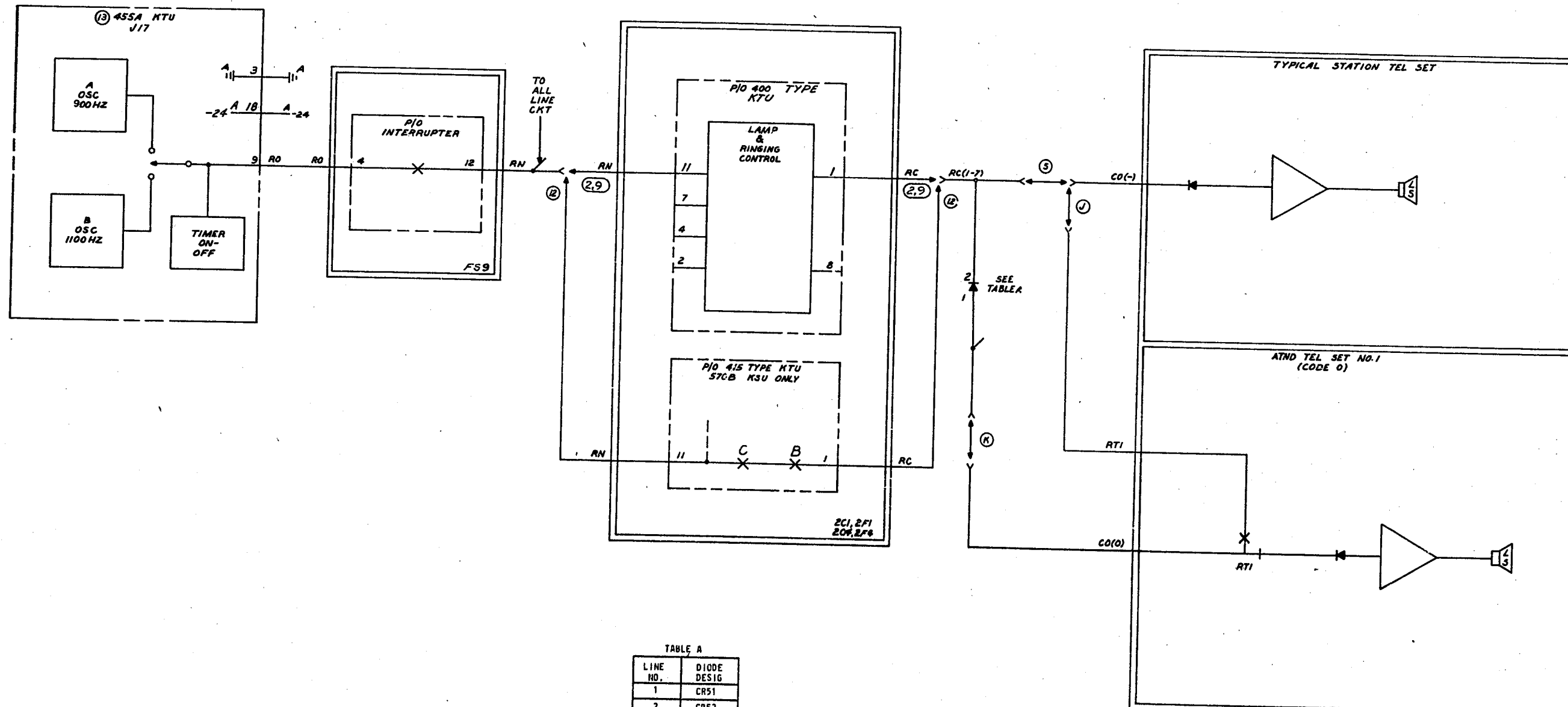


TABLE A

LINE NO.	DIODE DESIG
1	CR51
2	CR52
3	CR53
4	CR54
5	CR55
6	CR56
7	CR57

FS2 CO OR PBX LINE PICK-UPS SQUARE LINES OR PERSONAL LINES (570A KSU OR 570B KSU)

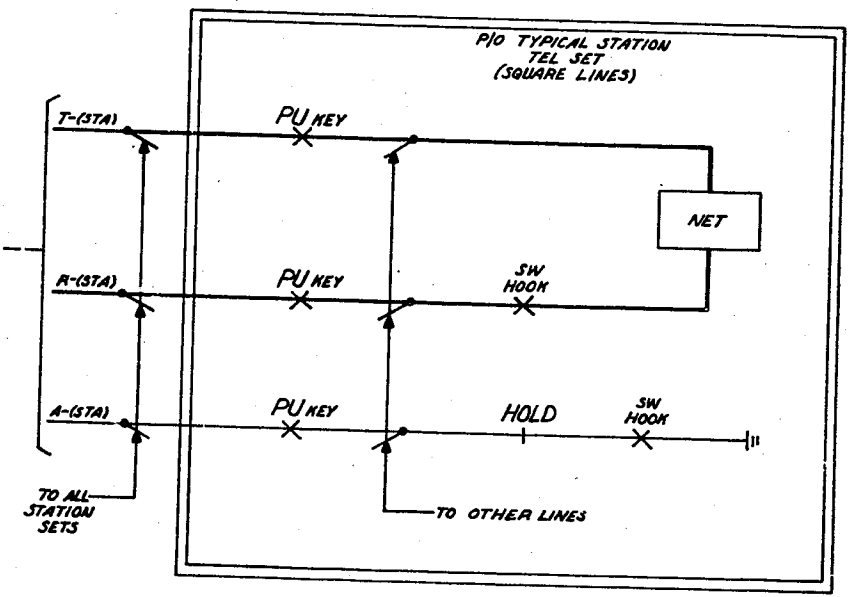
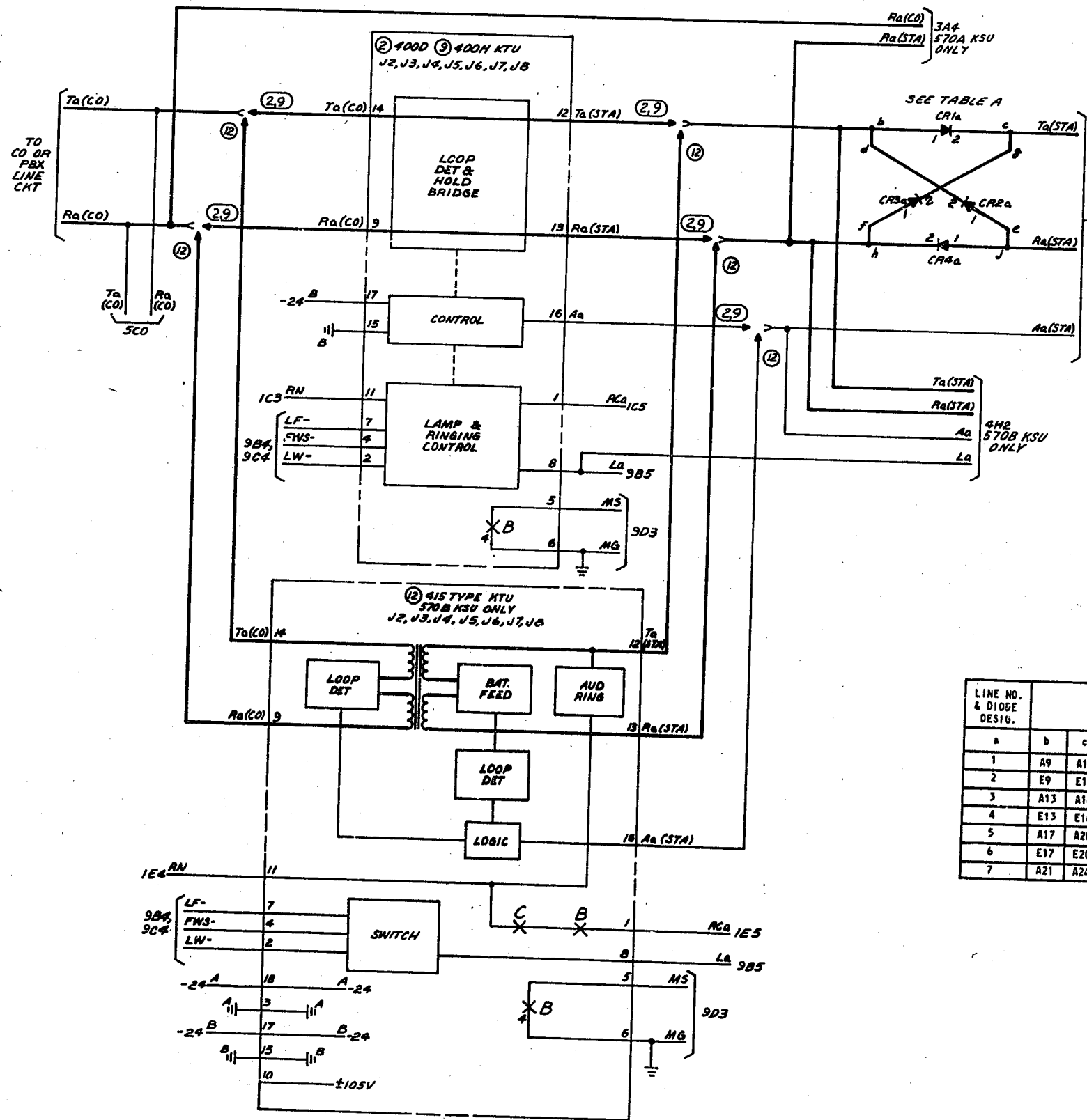
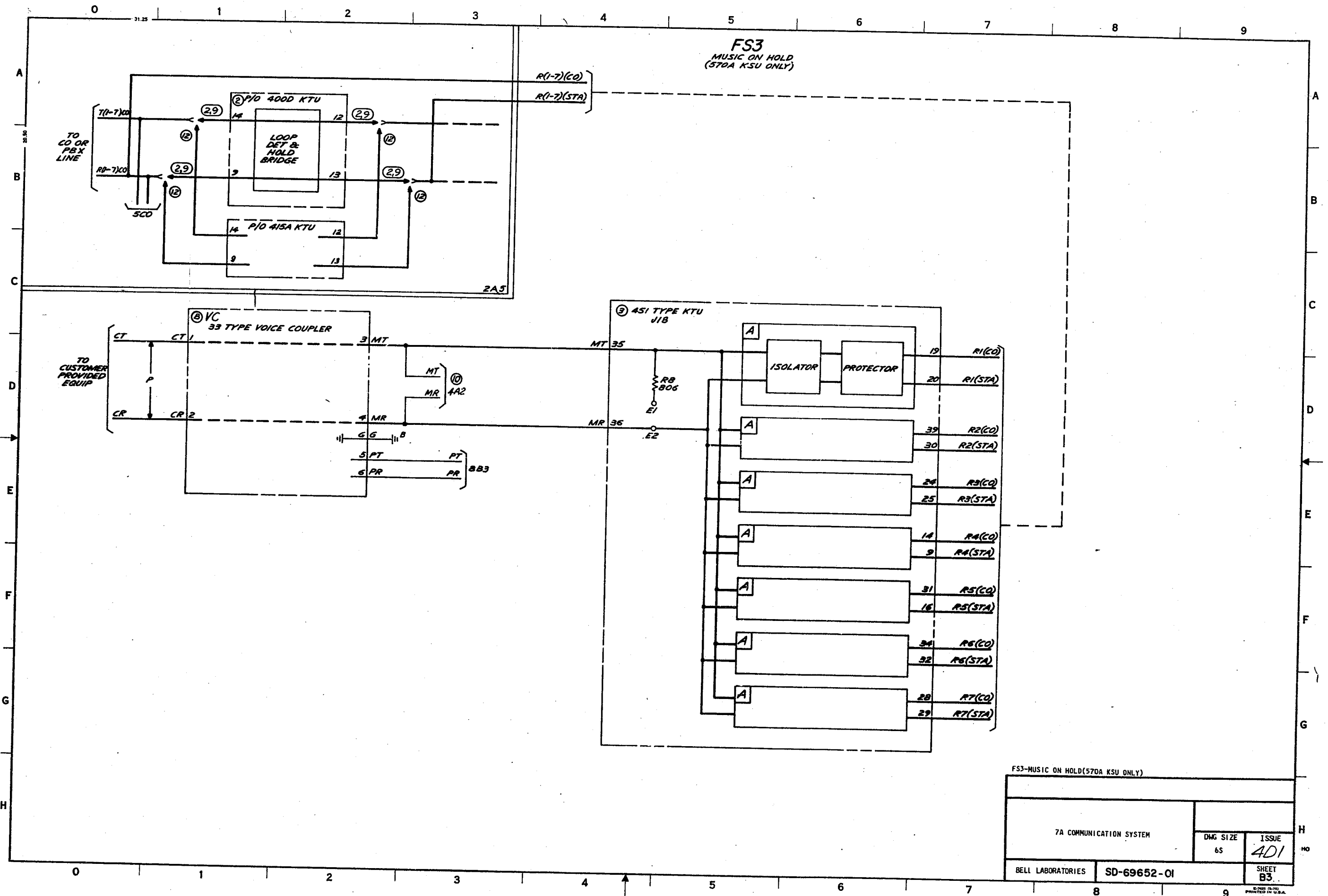
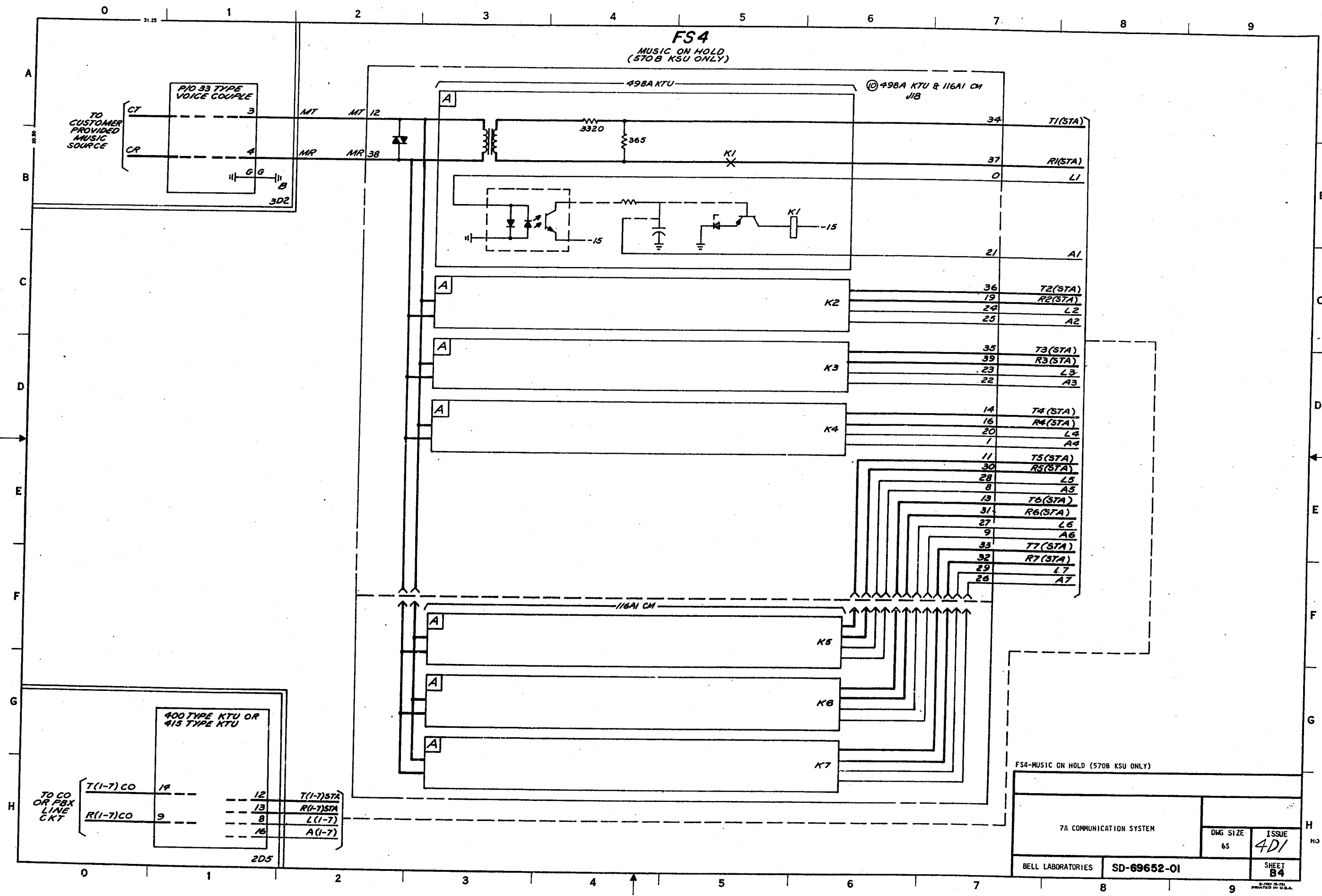


TABLE A

LINE NO. & DIODE DESIG.	BLOCK 2 TERMINAL NUMBER							
a	b	c	d	e	f	g	h	j
1	A9	A12	B9	B12	C9	C12	D9	D12
2	E9	E12	F9	F12	G9	G12	H9	H12
3	A13	A16	B13	B16	C13	C16	D13	D16
4	E13	E16	F13	F16	G13	G16	H13	H16
5	A17	A20	B17	B20	C17	C20	D17	D20
6	E17	E20	F17	F20	G17	G20	H17	H20
7	A21	A24	B21	B24	C21	C24	D21	D24





FS4
MUSIC ON HOLD
(570B KSU ONLY)

TO CUSTOMER PROVIDED MUSIC SOURCE

P10 33 TYPE VOICE COUPLE

CT 3 MT 12

CR 4 MR 38

GG 3D2

498A KTU

3320 365

K1

15

34 T1(STA)

37 R1(STA)

0 L1

21 A1

K2

36 T2(STA)

19 R2(STA)

24 L2

25 A2

K3

35 T3(STA)

39 R3(STA)

23 L3

22 A3

K4

14 T4(STA)

16 R4(STA)

20 L4

1 A4

11 T5(STA)

30 R5(STA)

28 L5

8 A5

13 T6(STA)

31 R6(STA)

27 L6

9 A6

33 T7(STA)

32 R7(STA)

29 L7

26 A7

116A1 CM

K5

K6

K7

400 TYPE KTU OR 415 TYPE KTU

TO CO OR PBX LINE CKT

T(1-7) CO 18 12 T(1-7) STA

R(1-7) CO 9 13 R(1-7) STA

8 L(1-7)

16 A(1-7)

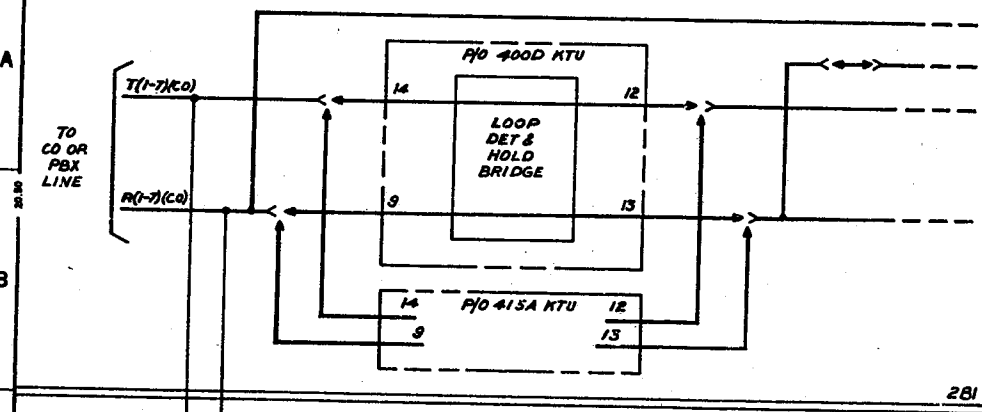
2D5

FS4-MUSIC ON HOLD (570B KSU ONLY)

7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		6S	4D1
BELL LABORATORIES	SD-69652-01	SHEET 54	

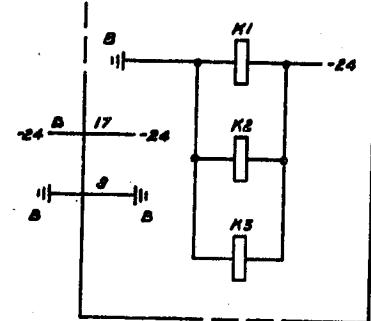
PRINTED IN U.S.A.

FS5 POWER FAILURE TRANSFER (570A KSU OR 570B KSU)

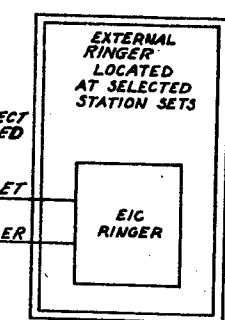


④ 452A KTU
J1

T1(CO)	0	K1	1	EXT1
R1(CO)	19	K2	31	EXR1
T2(CO)	20	K1	16	EXT2
R2(CO)	21	K1	26	EXR2
T3(CO)	24	K2	28	3
R3(CO)	25	K2	29	3
T4(CO)	38	K3	37	4
R4(CO)	34	K3	33	4
T5(CO)	32	K2	27	5
R5(CO)	23	K1	22	5
T6(CO)	12	K3	35	6
R6(CO)	13	K3	36	6
T7(CO)	39	K2	8	7
R7(CO)	30	K2	14	7



CROSS CONNECT
AS REQUIRED

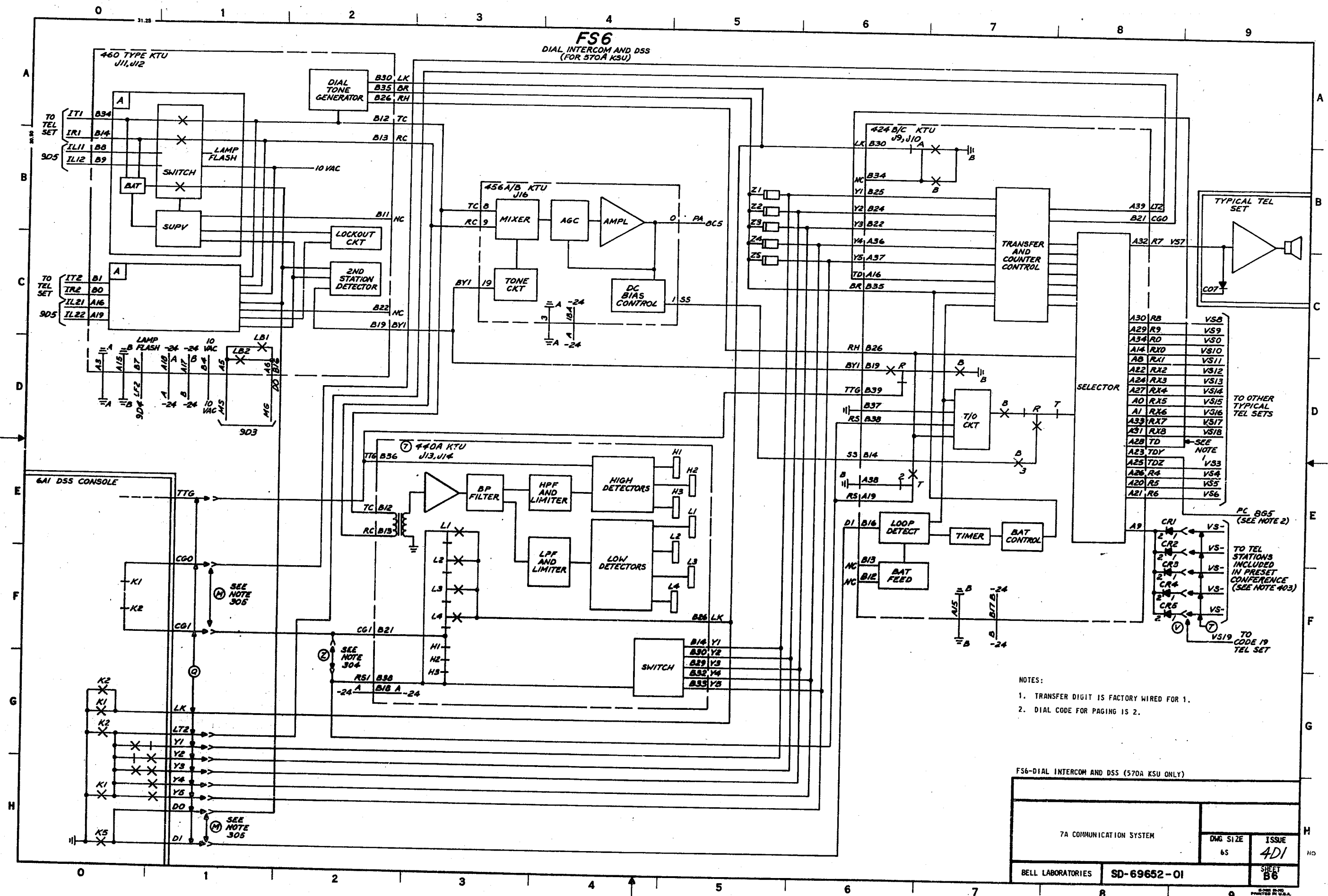


TO OTHER
POWER FAILURE
RINGING LINES
AS REQUIRED
SEE
NOTE
405

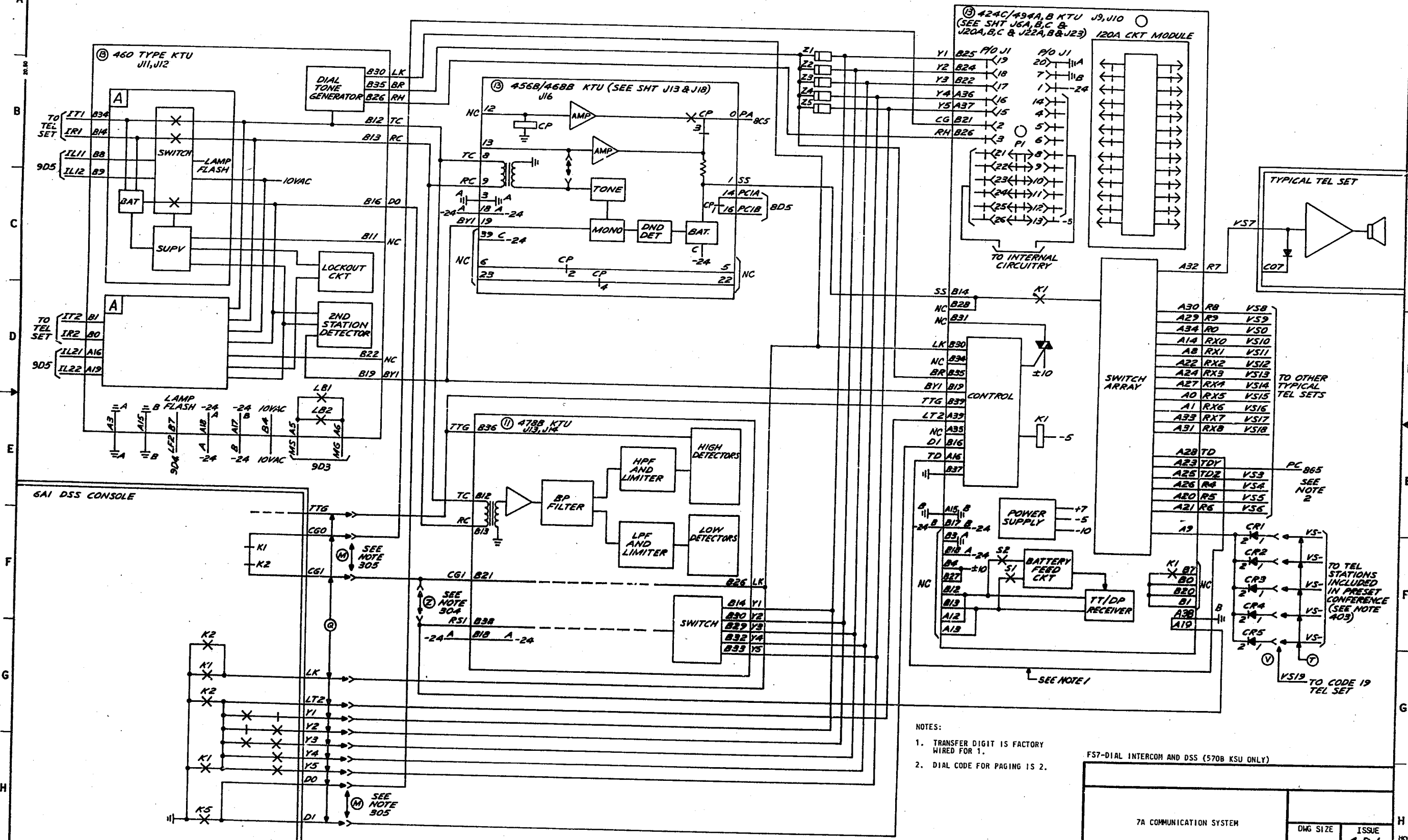
FS5-POWER FAILURE TRANSFER

7A COMMUNICATION SYSTEM		DWG SIZE 6S	ISSUE 4D1
BELL LABORATORIES	SD-69652-01	SHEET B5	

PRINTED IN U.S.A.

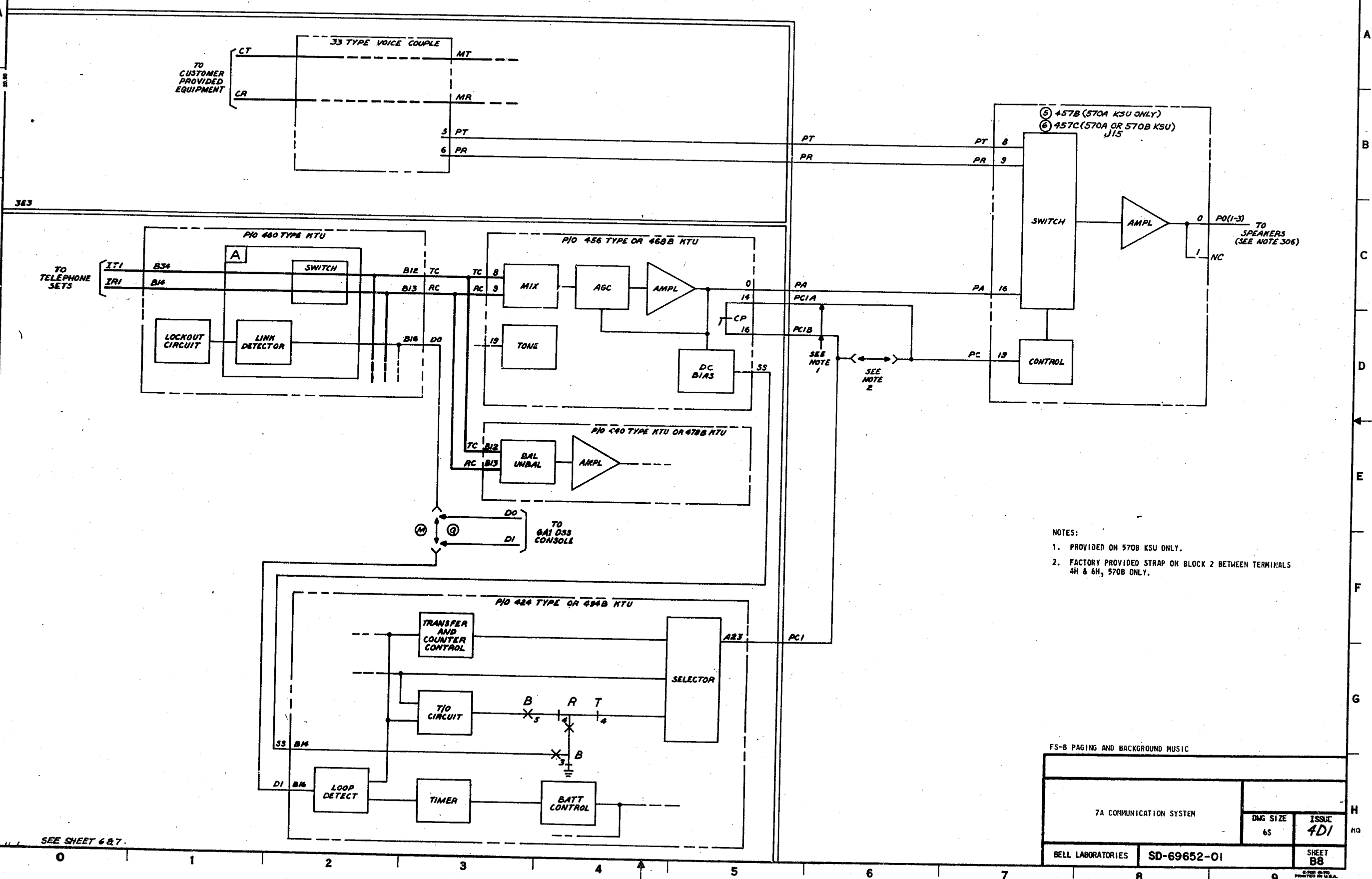


FS 7 DIAL INTERCOM AND DSS (FOR 570B K-SU)



- NOTES:
1. TRANSFER DIGIT IS FACTORY WIRED FOR 1.
 2. DIAL CODE FOR PAGING IS 2.

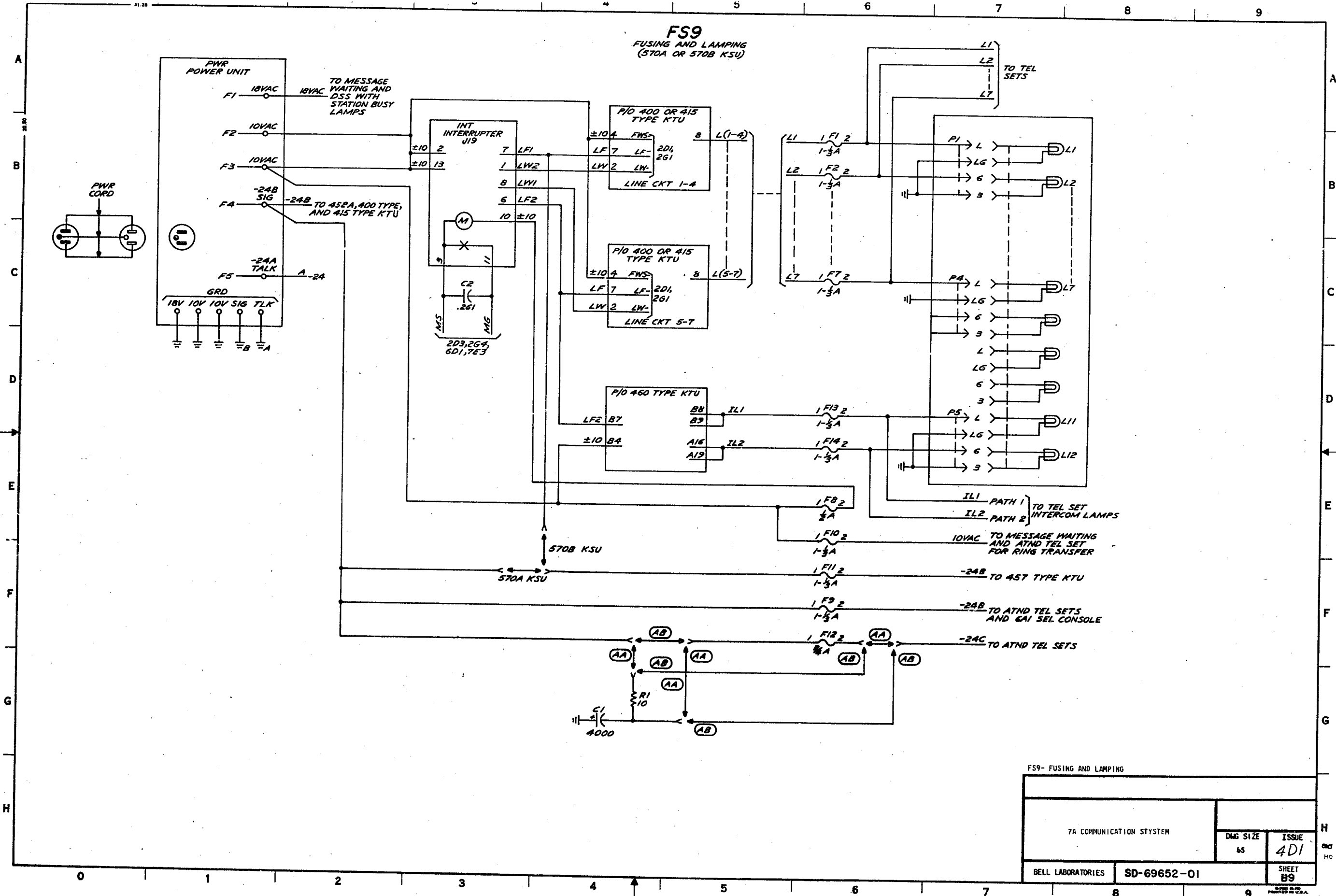
FS8
PAGING AND BACKGROUND MUSIC
(570A KSU OR 570B KSU)



- NOTES:
1. PROVIDED ON 570B KSU ONLY.
 2. FACTORY PROVIDED STRAP ON BLOCK 2 BETWEEN TERMINALS 4H & 6H, 570B ONLY.

FS-8 PAGING AND BACKGROUND MUSIC			
7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		6S	4DI
BELL LABORATORIES	SD-69652-01	SHEET 88	

SEE SHEET 687.



FS9- FUSING AND LAMPING			
7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		65	4D1
BELL LABORATORIES		SD-69652-01	
		SHEET 89	

APP FIG. 1
570A KSU EQUIPPED WITH

CAPACITOR

DESIG	LOC	CODE
C1	9G4	KS-149029
C2	9C3	702C, .261

CONNECTOR

DESIG	LOC	CODE
J1	5C4	914A
[7]J2-J8	2A2	913A
[2]J9, J10	6A6	914A
J11	6A0	913A
J12	6A0	914A
J13	6E3	913A
J14	6E3	914A
J15	8B8	914A
J16	6B3	913A
J17	1A1	913A
J18	3C5	914A
J19	9B3	907B

CONNECTOR (PLUG)

DESIG	LOC	CODE
[5]P1-P5	9B7	508L

DIODE

DESIG	LOC	CODE
[5]CR1-CR5	6E8	446F
[7]CR11-CR17	2B5	446F
[2]CR21-CR27		446F
[7]CR31-CR37		446F
[7]CR41-CR47	1F4	446F
[7]CR51-CR57		446F

FUSE

DESIG	LOC	CODE
[7]F1-F7	9B6	70A
F8	9E6	70G
F9	9F6	70A
F10	9E6	70A
F11	9F6	70G
F12	9F6	70H
F13	9D6	70A
F14	9D6	70A
F15	70A	70A
F16		70A

INTERRUPTER

DESIG	LOC	CODE
INT	9B3	KS-19175, L1

KEY TELEPHONE UNIT

DESIG	LOC	CODE
	6A6	424B/424C
	1A1	455A
	6B3	456A/456B
	6A0	460A/460B

LAMP

DESIG	LOC	CODE
[7]L1-L7	9B8	53A
[2]L11, L12	9D8	53A

NETWORK

DESIG	LOC	CODE
[5]Z1-Z5	6B5	186A

POWER CORD

DESIG	LOC	CODE
PWR	9B0	P-40J326 1-4 FT.
		P-40J327 2 FT.
		P-40J328 4 FT.
		P-40J329 6 FT. OR
		P-40J099 12 FT. AS REQD.

POWER UNIT

DESIG	LOC	CODE
PWR	9A1	19C2

RESISTOR

DESIG	LOC	CODE
R1	9G4	18R
R2		KS-14603, L3, 8.06

② APP FIG. 2

KTU	LOC	CODE
DESIG	2A2	400D

③ APP FIG. 3

KTU	LOC	CODE
DESIG	3C4	451A

④ APP FIG. 4

KTU	LOC	CODE
DESIG	5C4	452A

⑤ APP FIG. 5

KTU	LOC	CODE
DESIG	8B8	457B

⑥ APP FIG. 6

KTU	LOC	CODE
DESIG	8B8	457C

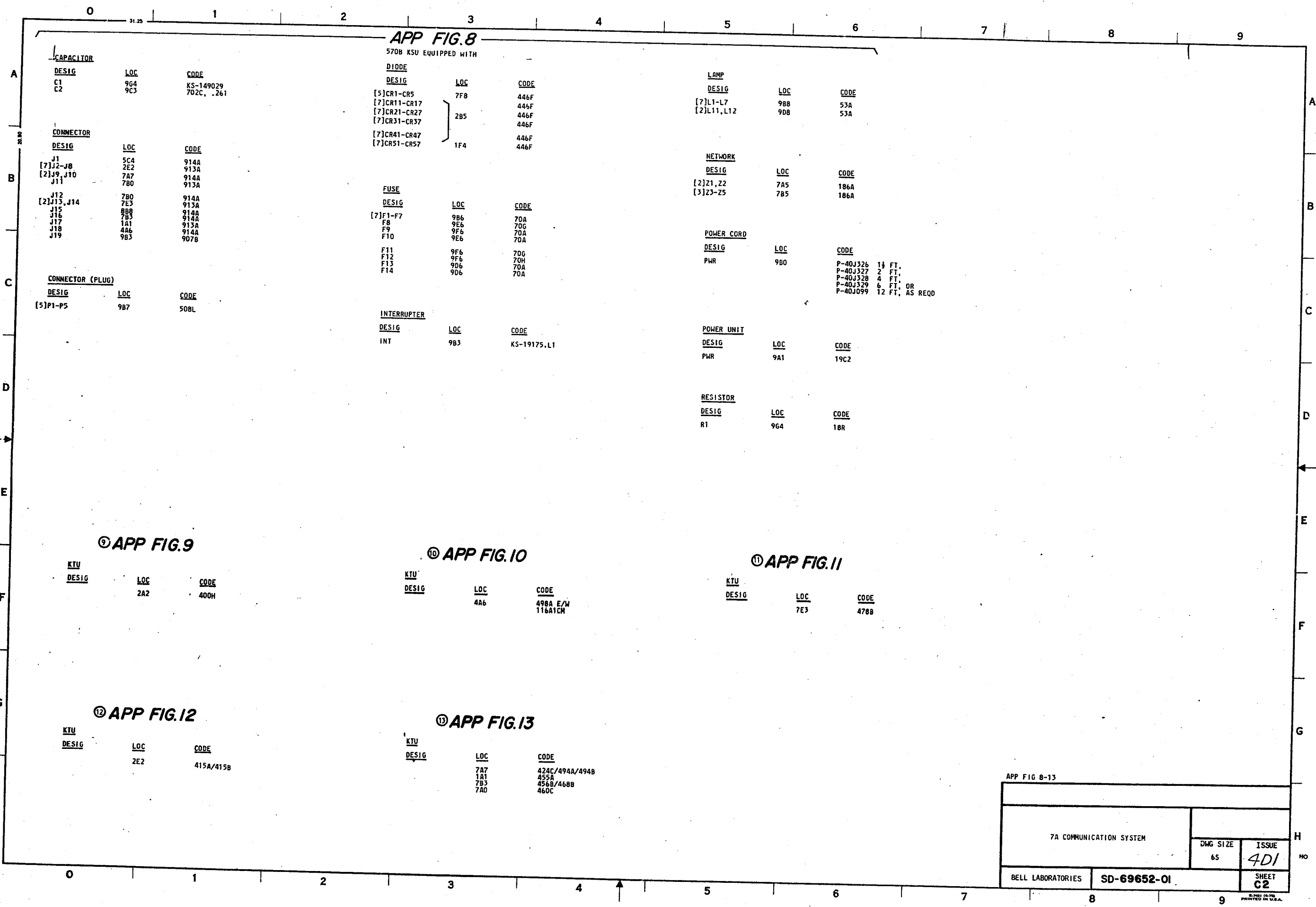
⑦ APP FIG. 7

KTU	LOC	CODE
DESIG	6E3	440A

APP FIG 1-7

7A COMMUNICATION SYSTEM		DWG SIZE 6S	ISSUE 4D1
BELL LABORATORIES	SD-69652-01	SHEET CI	

6-2001 (2-75)
PRINTED IN U.S.A.



APP FIG. 8

5708 KSU EQUIPPED WITH

CAPACITOR

DESIG	LOC	CODE
C1	9G4	KS-149029
C2	9C3	702C, .261

DIODE

DESIG	LOC	CODE
[5]CR1-CR5	7F8	446F
[7]CR11-CR17	2B5	446F
[7]CR21-CR27		446F
[7]CR31-CR37		446F
[7]CR41-CR47	1F4	446F
[7]CR51-CR57		446F

LAMP

DESIG	LOC	CODE
[7]L1-L7	9B8	53A
[2]L11, L12	9D8	53A

CONNECTOR

DESIG	LOC	CODE
J1	5C4	914A
[7]J2-J8	2E2	913A
[2]J9, J10	7A7	914A
J11	7B0	913A
J12	7B0	914A
[2]J13, J14	7E3	913A
J15	8B8	914A
J16	7B3	914A
J17	1A1	913A
J18	4A6	914A
J19	9B3	907B

FUSE

DESIG	LOC	CODE
[7]F1-F7	9B6	70A
F8	9E6	70G
F9	9F6	70A
F10	9E6	70A
F11	9F6	70G
F12	9F6	70H
F13	9D6	70A
F14	9D6	70A

NETWORK

DESIG	LOC	CODE
[2]Z1, Z2	7A5	186A
[3]Z3-Z5	7B5	186A

POWER CORD

DESIG	LOC	CODE
PWR	9B0	P-40J326 1 1/2 FT. P-40J327 2 FT. P-40J328 4 FT. P-40J329 6 FT. OR P-40J099 12 FT. AS REQD

CONNECTOR (PLUG)

DESIG	LOC	CODE
[5]P1-P5	9B7	508L

INTERRUPTER

DESIG	LOC	CODE
INT	9B3	KS-19175, L1

POWER UNIT

DESIG	LOC	CODE
PWR	9A1	19C2

RESISTOR

DESIG	LOC	CODE
R1	9G4	18R

APP FIG. 9

<u>KTU</u>		
<u>DESIG</u>	<u>LOC</u>	<u>CODE</u>
	2A2	400H

APP FIG. 10

<u>KTU</u>		
<u>DESIG</u>	<u>LOC</u>	<u>CODE</u>
	4A6	498A E/W 116A1CH

APP FIG. 11

<u>KTU</u>		
<u>DESIG</u>	<u>LOC</u>	<u>CODE</u>
	7E3	478B

APP FIG. 12

<u>KTU</u>		
<u>DESIG</u>	<u>LOC</u>	<u>CODE</u>
	2E2	415A/415B

APP FIG. 13

<u>KTU</u>		
<u>DESIG</u>	<u>LOC</u>	<u>CODE</u>
	7A7	424C/494A/494B
	1A1	455A
	7B3	456B/468B
	7A0	460C

APP FIG 8-13		
7A COMMUNICATION SYSTEM		DWG SIZE 6S
BELL LABORATORIES		ISSUE 4DI
SD-69652-01		SHEET C2

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CIRCUIT NOTES:

DESIG	FUSE AMP	POTENTIAL	ONE PER
F1	1-1/3	±10	FIRST CO/PBX LINE LAMPS
F2	1-1/3	±10	SECOND CO/PBX LINE LAMPS
F3	1-1/3	±10	THIRD CO/PBX LINE LAMPS
F4	1-1/3	±10	FOURTH CO/PBX LINE LAMPS
F5	1-1/3	±10	FIFTH CO/PBX LINE LAMPS
F6	1-1/3	±10	SIXTH CO/PBX LINE LAMPS
F7	1-1/3	±10	SEVENTH CO/PBX LINE LAMPS
F8	1/2	±10	INTERRUPTOR MOTOR
F9	1-1/3	-24 SIG	SYS PRIVACY & 6A1 CONSOLE
F10	1-1/3	±10	NIGHT TR & 6B1 CONSOLE
F11	1/2	-24 SIG	PAGING AMPLIFIER
F12	3/4	-24 SIG	C BATTERY
F13	1-1/3	±10	FIRST INTERCOM PATH LAMP
F14	1-1/3	±10	SEC INTERCOM PATH LAMP
		-24 SIG (B)	FUSE ON POWER SUPPLY
		-24 TALK(A)	FUSE ON POWER SUPPLY
BATTERY SYMBOL		VOLTAGE RANGE	
-24A		18-26	
-24B		20-26	

FEATURE OR OPTION	APP FIG.	APP OR WRG	QUANTITY
INTERCOM AND SIGNALING			
CO RINGING	SEE NOTE 402	1	S
PRESET CONFERENCE	CODE 19	SEE NOTE 403	T
EIGHTEENTH STATION			V
TOUCH-TONE	NOT PROV	SEE NOTE 304	Z
	PROV		N
SELECTOR CONSOLE	DSS PROV	SEE NOTE 305	Q
	DSS NOT PROV		M
LINE CIRCUIT			
ATTENDANT COMMON AUDIBLE	SEE NOTE 401		K
SHORT TIME DELAY			ZZ
INTERRUPTED RINGING			W
WINK HOLD			Y
MUSIC ON HOLD	SEE NOTE 306	3	1 PER SYS
POWER FAILURE	SEE NOTE 405	4	1 PER SYS
RING TRANSFER	SEE NOTE 404	J	1 PER SYS
PAGING	AMPLIFIER 457B	SEE NOTE 307	5
	AMPLIFIER 457C	SEE NOTE 307	6
DO NOT DISTURB (SEE NOTE 201)			

CIRCUIT NOTES:(CONT)

FEATURE OR OPTION	APP FIG.	APP OR WRG	QUANTITY
INTERCOM AND SIGNALING			
CO RINGING	SEE NOTE 402	8	S
PRESET CONFERENCE	CODE 19	SEE NOTE 403	T
EIGHTEENTH STATION			V
TOUCH-TONE	NOT PROV	SEE NOTE 304	Z
	PROV		N
SELECTOR CONSOLE	DSS PROV	SEE NOTE 305	Q
	DSS NOT PROV		M
LINE CIRCUIT			
ATTENDANT COMMON AUDIBLE	SEE NOTE 401		K
SHORT TIME DELAY			ZZ
INTERRUPTED RINGING			W
WINK HOLD			Y
MUSIC ON HOLD	SEE NOTE 306	10	1 PER SYS
POWER FAILURE	SEE NOTE 405	4	1 PER SYS
RING TRANSFER	SEE NOTE 404	J	1 PER SYS
PAGING AMPLIFIER	SEE NOTE 307	6	1 PER SYS
DO NOT DISTURB (SEE NOTE 202)			
TIE LINE CKT		12	

CHANGED ON ISS	IF JOB RECORDS DO NOT SPECIFY	THIS OPTION WAS FURN	SEE NOTE	USE IN CIRCUIT		
				STD	A&M	HD
2AR	5,6	5		6		5
3B	B,D	D		8		D
3B	WM,XX	WM		XX		WM
4D1	AA,AB	AA		AB		AA

CIRCUIT NOTES:(CONT)

DESIG	FUNCTION
L1	FIRST CO/PBX LINE LAMP
L2	SECOND CO/PBX LINE LAMP
L3	THIRD CO/PBX LINE LAMP
L4	FOURTH CO/PBX LINE LAMP
L5	FIFTH CO/PBX LINE LAMP
L6	SIXTH CO/PBX LINE LAMP
L7	SEVENTH CO/PBX LINE LAMP
L11	FIRST INTERCOM PATH LAMP
L12	SECOND INTERCOM PATH LAMP

EQUIPMENT NOTES:

201. USE A MODIFIED 468B KTU. CONNECT A WIRE STRAP BETWEEN THE -24A AND -24C PRINTED WIRING PATHS ON THE BOARD.
202. REPLACE 456B KTU WITH 468B KTU.

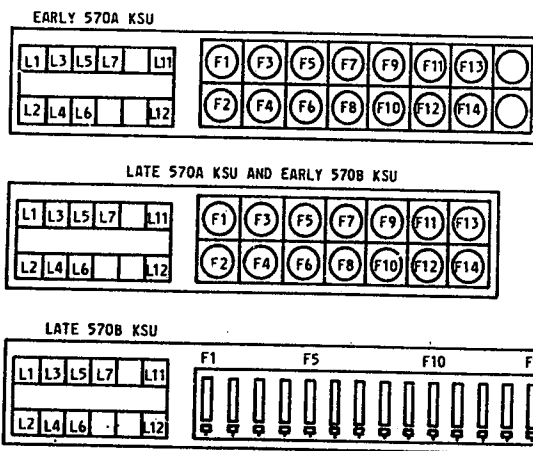
CIRCUIT NOTES
EQUIPMENT NOTES

7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		6S	4DI
BELL LABORATORIES	SD-69652-01	SHEET DIA	

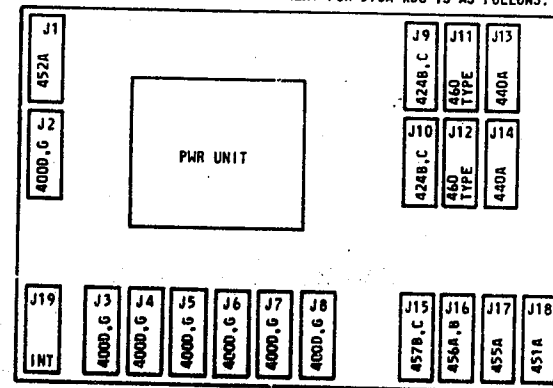
INFORMATION NOTES:

301. UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS.
CAPACITANCE VALUES ARE IN MICROFARADS.
VALUES PRECEDED BY THE SYMBOL + (PLUS)
OR - (MINUS) ARE IN VOLTS.

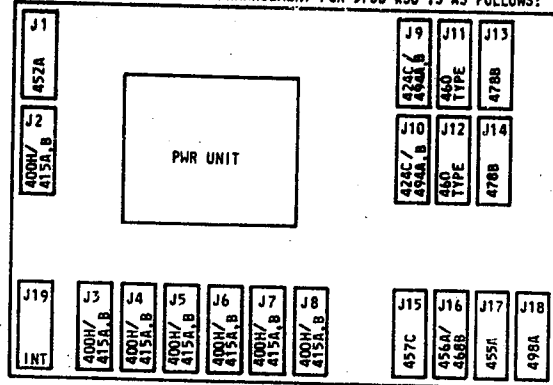
302. LAMPS AND FUSES ON THE 570 TYPE KSU ARE LOCATED AS FOLLOWS:



303. CIRCUIT PACK CONNECTOR ARRANGEMENT FOR 570A KSU IS AS FOLLOWS:



CIRCUIT PACK CONNECTOR ARRANGEMENT FOR 570B KSU IS AS FOLLOWS:



304. WHEN INSTALLING TOUCH-TONE, N OPTION, THE FACTORY PROVIDED STRAP ON TERMINAL BLOCK ONE (1) BETWEEN TERMINALS 423 AND 424 MUST BE REMOVED. SHOULD THE TOUCH-TONE ADAPTER BE REMOVED, THIS STRAP MUST BE REPLACED.

INFORMATION NOTES: (CONT)

305. WHEN INSTALLING THE 6A1 SELECTOR CONSOLE (DSS) 9 OPTION, THE FACTORY PROVIDED STRAPS ON TERMINAL BLOCK THREE (3) BETWEEN TERMINALS E26 AND E27, AND BETWEEN TERMINALS E40 AND E41 MUST BE REMOVED. SHOULD THE DSS CONSOLE BE REMOVED OR UNPLUGGED, THESE STRAPS MUST BE REPLACED.

306. ALIGNMENT PROCEDURE FOR MUSIC-ON-HOLD, PAGING LEVEL, AND BACKGROUND MUSIC THROUGH PAGING SPEAKERS IS AS FOLLOWS:

- TURN POTENTIOMETER ON 33A VOICE COUPLER TO FULL CCW POSITION.
- PLACE A CALL TO A 7A LINE.
- ANSWER CALL AT 7A STATION AND PLACE IT ON HOLD.
- HAVE CUSTOMER ADJUST HIS MUSIC SOURCE LEVEL FOR A COMFORTABLE LISTENING LEVEL AT THE HELD STATION.
- DISCONNECT CALL.
- DIAL PAGING CODE AND ADJUST POTENTIOMETER ON EACH PAGING LOUDSPEAKER FOR PROPER LOUDNESS WHILE PAGING IN A NORMAL VOICE.
- DISCONNECT.
- HAVE CUSTOMER ADJUST POTENTIOMETER ON 33A VOICE COUPLER FOR DESIRED BACKGROUND MUSIC OVER PAGING SYSTEM.

307. PAGING SPEAKERS AND PLACEMENT:

THE UTAH PAGING SPEAKERS USED WITH THE 7A PAGING SYSTEM EMIT A SOUND LEVEL OF 65dB AT 30 FT. ON THE SPEAKER AXIS AND UP TO 30° TO EITHER SIDE OF THIS AXIS. THIS ASSUMES THAT THE SPEAKER IS USED IN A SYSTEM WITH SIX OTHER SPEAKERS ALL AT MAXIMUM VOLUME DRIVEN BY A 457C PAGING AMPLIFIER. THE SOUND LEVEL GOES UP OR DOWN BY 6dB AS THIS 30 FT. RADIUS IS HALVED OR DOUBLED. FOR A GIVEN AMBIENT NOISE LEVEL, SPEAKERS SHOULD BE PLACED SO THAT THE PAGING SIGNAL LEVEL EXCEEDS NOISE BY AT LEAST 10dB.

THE 7A PAGING SYSTEMS LACK POWER FOR COVERING LARGE AREAS OUT-OF-DOORS. IN GENERAL OUT-DOOR AREAS GREATER THAN 3000 SQUARE FEET SHOULD NOT BE ATTEMPTED. THIS COVERAGE ASSUMES A FAIRLY QUIET LOCATION.

308. CONNECTION OF LOUDSPEAKER SET 107A - "SPOKESMAN" REFER TO BSP 463-221-100.

THE FOLLOWING IS A RECOMMENDED WIRING DIAGRAM:

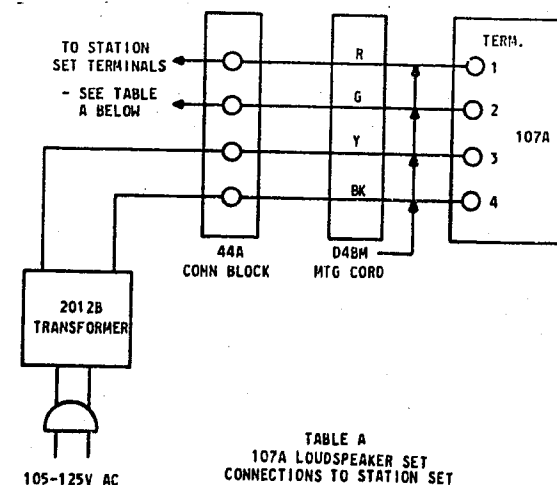


TABLE A
107A LOUDSPEAKER SET
CONNECTIONS TO STATION SET

STATION SET	TERMINALS
832 TYPE (ROTARY DIAL)	TEL SET NETWORK TERMINALS R AND GN
2832 TYPE (TOUCH-TONE DIAL)	TEL SET NETWORK TERMINALS S AND R

INFORMATION NOTES: (CONT)

309. CONNECTION OF 4-TYPE SPEAKERPHONE REFER TO BSP 512-700-100 THE LOUDSPEAKER SET, TRANSMITTER, AND TRANSFORMER ARE CONNECTED VIA 223A-49 ADAPTER. AC POWER IS CONNECTED FROM THE TRANSFORMER VIA M2FG CORD OR TO THE R-G PAIR IN THE M16C CORD (PART OF THE 223A-49 ADAPTER).

LEADS FROM M16C CORD	LEAD DESIGNATION	CONNECT TO TEL SET TERMINALS
G-W	P4 - 832A (ROT. DIAL) IR - 2832A (T.T. DIAL)	24
W-G	P3 - 832A (ROT. DIAL) IT - 2832A (T.T. DIAL)	30
W-BL	T1	RR - 832A (ROT. DIAL, LOC ON NETWORK) 25 - 2832A (T.T. DIAL)
BL-W	R1	6
O-W	LK	29
W-O	AG	8
W-BR	A1	10

SPARE LEADS FROM THE M16C CORD SHOULD BE INSULATED AND STORED.

TO PROVIDE REDUCED LEVEL ON INCOMING INTERCOM CALLS AND CO RINGING WHILE ON SPEAKERPHONE THE FOLLOWING WIRING CHANGES SHALL BE MADE:

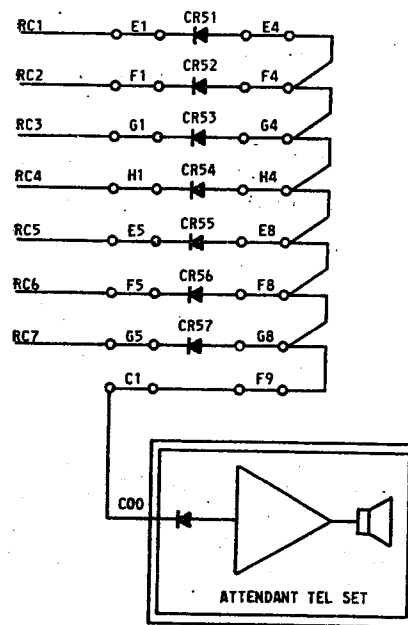
- REMOVE W-S WIRE FROM AMPLIFIER SCREW TERMINAL 1 AND CONNECT IT TO S-W WIRE OF M16C CORD AT SCREW TERMINAL 19 OF TEL SET TERMINAL BOARD ASSY. (D161488 CONNECTOR MUST BE USED IN SETS WITH D50AL CORD - TERMINAL 19 IS USED.)
- CONNECT BL-R WIRE OF M16C CORD TO AMPLIFIER SCREW TERMINAL 1.

INFORMATION NOTES

7A COMMUNICATION SYSTEM		DWG SIZE 65	ISSUE 4D1
BELL LABORATORIES	SD-69652-01	SHEET D1B	

CROSS CONNECTION INFORMATION AND NOTES:

401. ATTENDANT COMMON AUDIBLE. OPTION K, IS PROVIDED BY THE SEVEN DIODES, CR51 THROUGH CR57 ON TERMINAL BLOCK ONE (1) AS SHOWN. TO REMOVE A PARTICULAR LINE FROM THE COMMON AUDIBLE GROUP, REMOVE THE CORRESPONDING CR5-DIODE. IF THERE IS TO BE NO ATTENDANT, REMOVE THE FACTORY PROVIDED STRAP FROM TERMINALS F9 AND C1. SEE NOTE 402.



402.a. TO PROGRAM A SPECIFIC STATION TO RECEIVE CO RINGING ON A PARTICULAR LINE, OPTION S IS PROVIDED. CROSS CONNECT STATION TO LINE AS FOLLOWS ON TERMINAL BLOCK ONE (1):

STATION		LINE	
CODE	TERMINAL	NO.	TERMINAL
0	C1X	1	A21
3	C2	2	B21
4	C3	3	C21
5	C4	4	D21
6	C5	5	E21
7	C6	6	F21
8	C7	7	G21
9	C8		
10	C9		
11	C10		
12	C11		
13	C12		
14	C13		
15	C14		
16	C15		
17	C16		
18	C17		
19	C18		

402.b.x CODE 0 IS FACTORY WIRED TO RING ON ALL LINES. SEE NOTE 401.

402.c. ONE STATION ONLY IN ADDITION TO THE ATTENDANT MAY RING ON A GIVEN LINE.

CROSS CONNECTION INFORMATION AND NOTES (CONT):

403. PRESET CONFERENCE. OPTION T, REQUIRES THE USE OF DIAL CODE 19. CODE 19 MAY NOT THEN BE USED FOR AN INDIVIDUAL STATION. REMOVE THE FACTORY PROVIDED STRAP, OPTION V, FROM TERMINAL D18 TO A22 ON TERMINAL BLOCK ONE (1). CROSS CONNECT AS FOLLOWS ON TERMINAL BLOCK ONE (1):

STATION		PRESET CONFERENCE	
CODE	TERMINAL	TERMINALS	
0	D1	A22	
3	D2	B22	
4	D3	C22	
5	D4	D22	
6	D5	E22	
7	D6		
8	D7		
9	D8		
10	D9		
11	D10		
12	D11		
13	D12		
14	D13		
15	D14		
16	D15		
17	D16		
18	D17		

404. NIGHT TRANSFER IS PROGRAMED FROM THE NT TERMINAL, TERM. #24, TO THE APPROPRIATE STATION RINGING TERMINAL ON TERMINAL BLOCK ONE (1). THE STATION TERMINALS ARE LISTED IN NOTE 402. a.

405. POWER FAILURE RINGING MAY BE FED OUT TO A STATION LOCATION USING THE S-V, V-S PAIR IN THE STATION CABLE. TO CONNECT TO THIS PAIR ON A PARTICULAR STATION, TO GIVE POWER FAILURE RINGING ON A PARTICULAR LINE, CONNECT AS FOLLOWS ON TERMINAL BLOCK ONE (1). IT IS NECESSARY TO CONNECT AN EXTERNAL RINGER TO THE PAIR USING AN AUXILIARY CORD AT THE TELEPHONE SET. ONE PAIR OR ONE EXTERNAL RINGER MAY CONNECT TO ONLY ONE POWER FAILURE LINE.

STATION		LINE	
CODE	TERMINALS (T,R)	NO.	TERMINALS (T,R)
0	A1,B1	1	A19,A20
3	A2,B2	2	B19,B20
4	A3,B3	3	C19,C20
5	A4,B4	4	D19,D20
6	A5,B5	5	E19,E20
7	A6,B6	6	F19,F20
8	A7,B7	7	G19,G20
9	A8,B8		
10	A9,B9		
11	A10,B10		
12	A11,B11		
13	A12,B12		
14	A13,B13		
15	A14,B14		
16	A15,B15		
17	A16,B16		
18	A17,B17		
19	A18,B18		

WORKING LIMITS: FOR SATELLITE WIRING INSTALLATIONS:
THE FOLLOWING LIMITS APPLY:

(A) USE FIVE PARALLEL A1 LEAD CONNECTIONS OF 24GA. WIRE BETWEEN THE KSU AND THE SATELLITE CUTOFF TERMINAL BLOCK

(B) GIVEN THE LENGTH OF WIRE BETWEEN A KSU AND A SATELLITE CUTOFF TERMINAL BLOCK, AND THE NUMBER OF STATION SETS TO BE WIRED TO SUCH A TERMINAL BLOCK, WE CAN FIND THE MAXIMUM ALLOWABLE DISTANCE FROM THE SATELLITE CUTOFF TO THE STATION SETS FOR ANY GIVEN NUMBER OF PARALLEL LAMP LEAD CONNECTIONS BETWEEN THE KSU AND THE SATELLITE:

$$\text{MAX. DISTANCE SATELLITE TO PHONE SETS IN FEET} = \left[\frac{667 - (\text{WIRE LENGTH, KSU TO SATELLITE IN FEET})}{(\text{NUMBER OF SATELLITE SETS}) \times (\text{NUMBER OF PARALLEL LAMP CONNECTIONS})} \right]$$

OTHER GUIDELINES:

(1) NO SATELLITE STATION SHOULD BE LOCATED FARTHER THAN 100 FT. FROM A SATELLITE LOCATION

(2) NO MORE THAN 17 STATIONS SHOULD BE CONNECTED TO A GIVEN SATELLITE

IF THESE LAST TWO GUIDELINES ARE FOLLOWED, THE ABOVE "MAXIMUM DISTANCE" FORMULA GIVEN IN (B) REDUCES TO THE FOLLOWING RULE:

FOR EACH 100 FT OF SEPARATION BETWEEN SATELLITE AND KSU, USE THREE PARALLEL RUNS FOR LAMP (L AND IL) AND LAMP GROUND (LG) LEADS OF 24GA WIRE BETWEEN THE KSU AND THE SATELLITE CUTOFF TERMINAL BLOCK.

RANGE LIMITS FOR PAGING SPEAKER PLACEMENT:

THE MAXIMUM CABLE LENGTH BETWEEN THE PAGING AMPLIFIER AND PAGING SPEAKERS IS 320 FEET. THIS IS BASED ON USE OF QUADED 24GA CABLE AND AN ALLOWABLE LOSS OF 1.5dB IN TRANSMISSION.

CROSS CONNECTION INFORMATION AND NOTES
WORKING LIMITS

7A COMMUNICATION SYSTEM

BELL TELEPHONE LABORATORIES
INCORPORATED

6S

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ISSUE

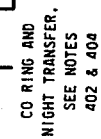
401

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POWER FAIL TRANS, NIGH TRANS, PAGING : AND
PRESET CONF
(570A KSU)



**PRESET CONFERENCE,
SEE NOTE 403**

7A COMMUNICATION SYSTEM

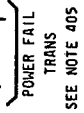
BELL TELEPHONE LABORATORIES
INCORPORATED

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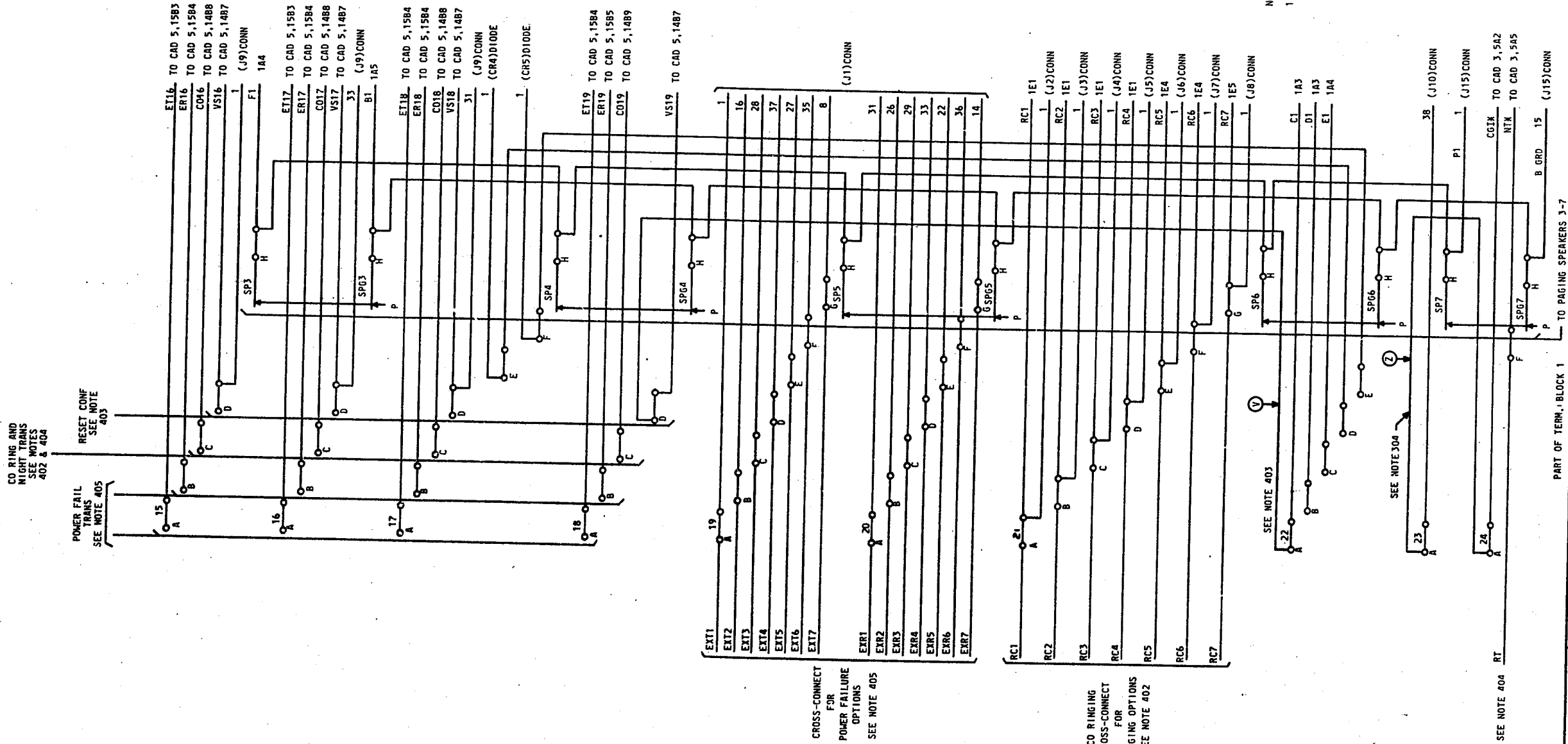
CO RING AND
NIGHT TRANS
SEE NOTES
402 & 404

PART OF TERM. BLOCK 1

TO PAGING SPEAKERS
1 AND 2

PART OF TERM. BLOCK 1

PART OF CAD 1
(570A KSU)



NOTES:
1. REMOVE COMMON AUDIBLE DIODES
PER NOTE 401.

PART OF CAD 1 (570A KSU)

7A COMMUNICATION SYSTEM

BELL TELEPHONE LABORATORIES
INCORPORATED

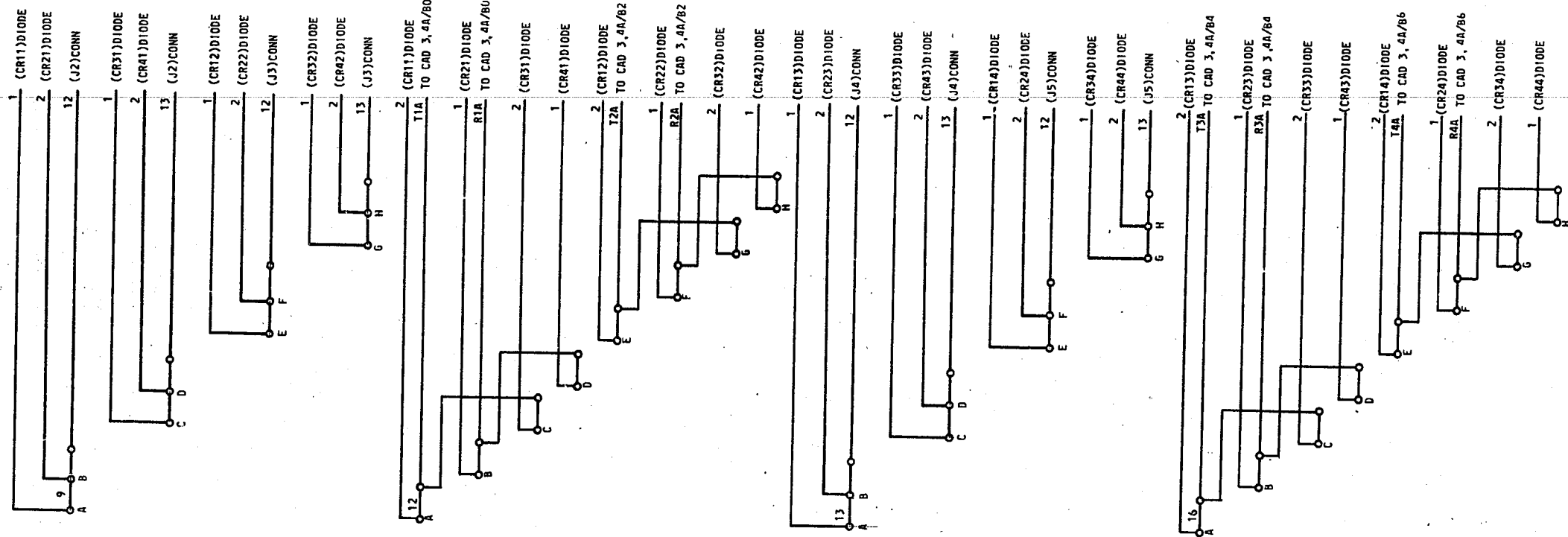
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ISSUE
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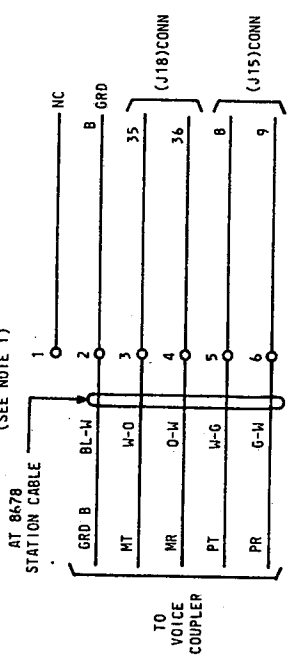
CAD 2 DIODE POLARITY GUARD (570A KSU)



PART OF TERM. BLOCK 2

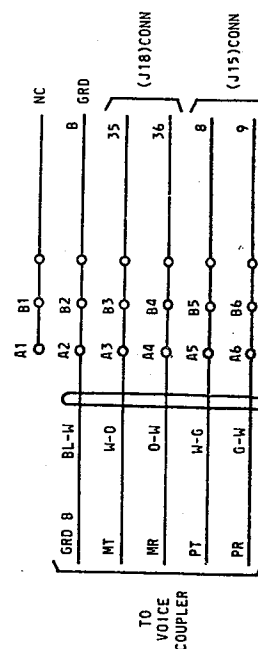
- NOTES:
1. IF THE 570A KSU CONTAINS CONNECTOR TS(1), USE CAD 3A; IF NOT, USE CAD 3B.

CAD 3A (SEE NOTE 1)



PART OF TERM. BLOCK 2

CAD 3B (SEE NOTE 1)



PART OF TERM. BLOCK 3

CAD 2
CAD 3A
CAD 3B (570A KSU)

7A COMMUNICATION SYSTEM
BELL TELEPHONE LABORATORIES
INCORPORATED

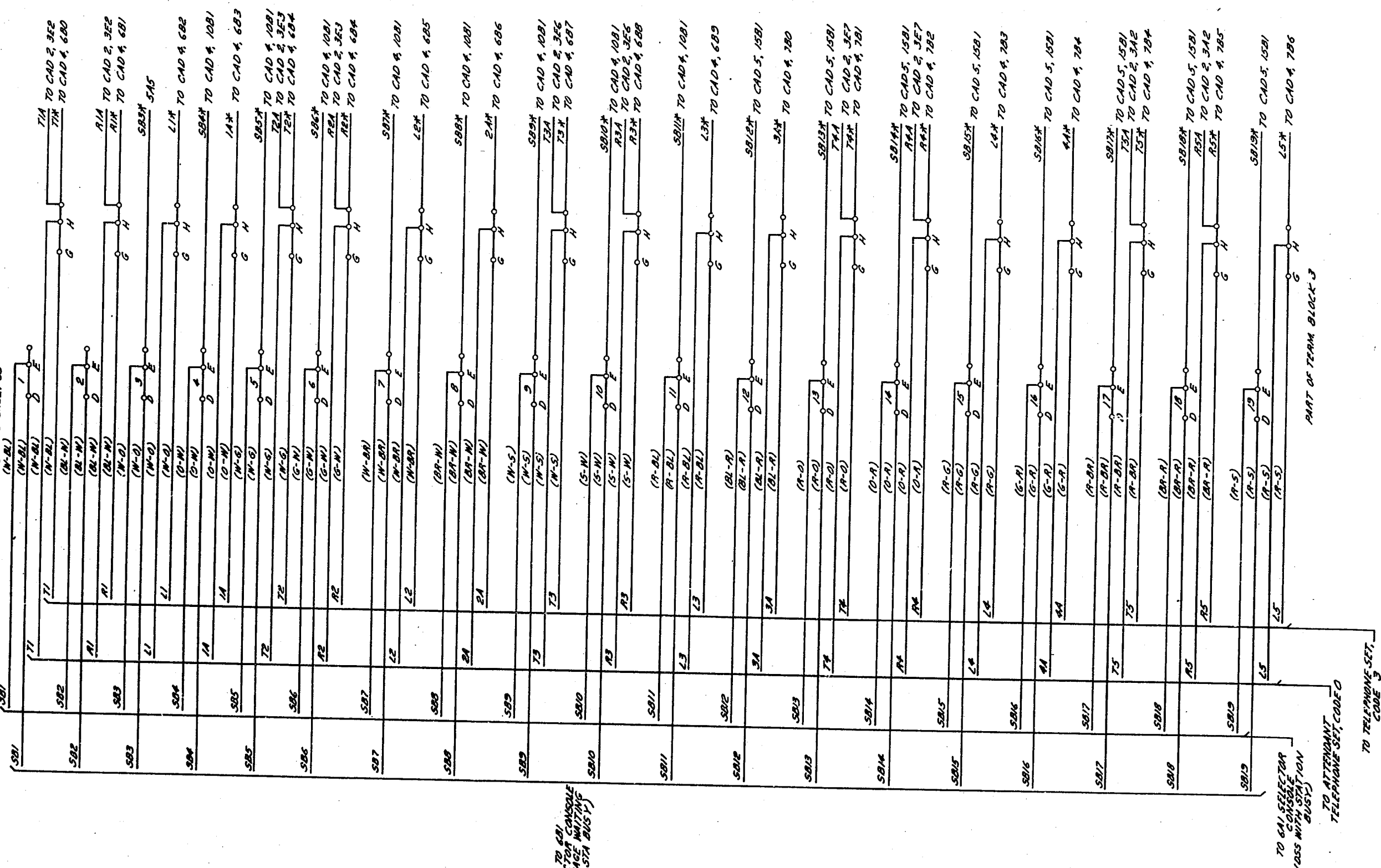
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PART OF CAD 3
CO OR PAY TERMINATION CONSOLE TERM.,
AND CODE 3 STA SET TERM.
(570A KSU)

NOTE: FOR TERM A1-A6 SEE CAD 3B SHEET 63

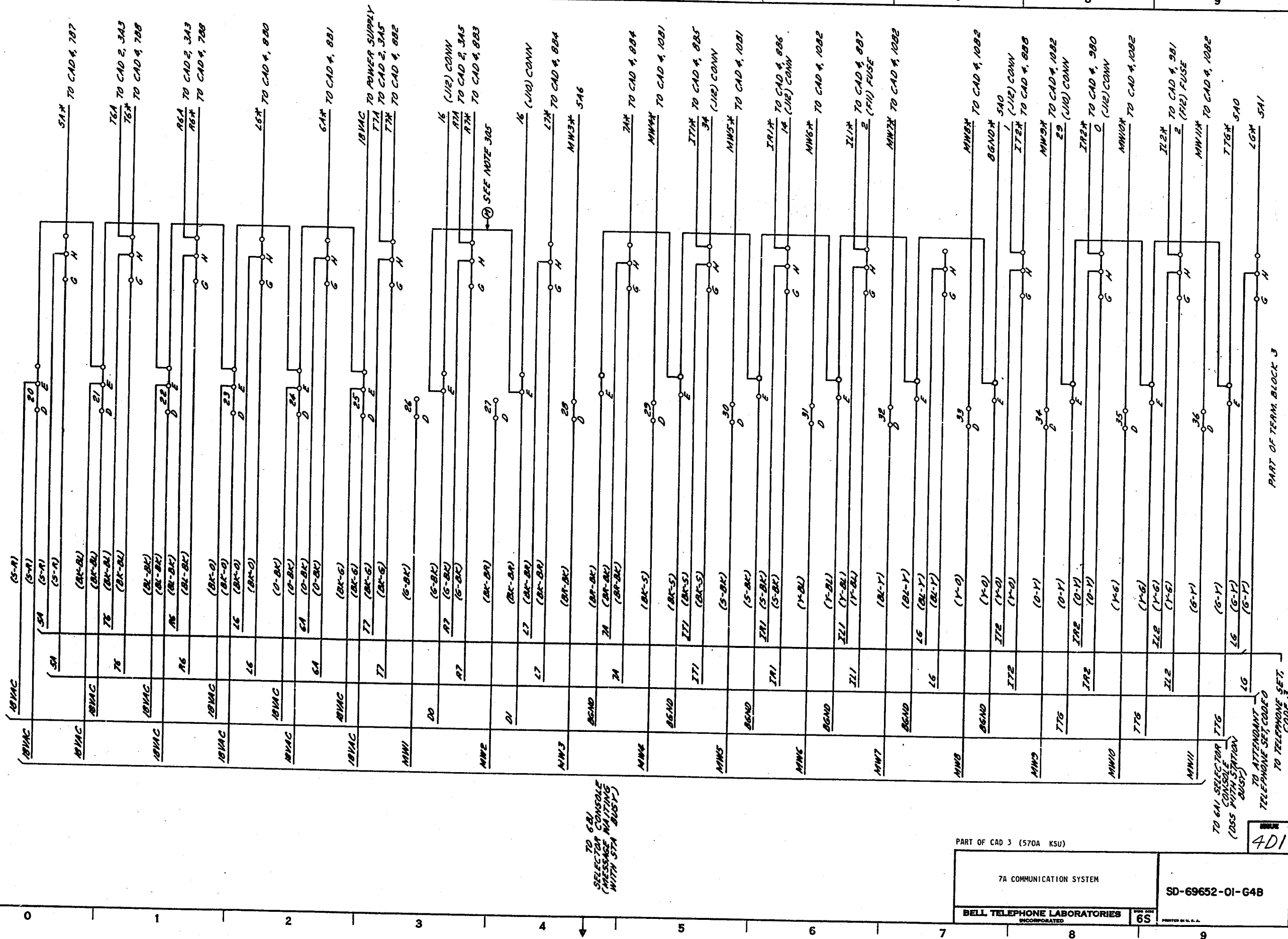


TO GAI SELECTOR
CONSOLE
(MESSAGE WAITING
WITH STA BUSY)

NOTES:
1. FOR TERM A1-A6
SEE CAD 3B SHEET 63

CO OR PBA TERMINATION CONSOLE TERM.,
AND CODE 3 SET TERM.
(570A KSU)

PART OF CAD 3



4D1

PART OF CAD 3 (570A KSU)

7A COMMUNICATION SYSTEM

BELL TELEPHONE LABORATORIES
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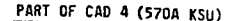
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7A COMMUNICATION SYSTEM

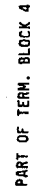
BELL TELEPHONE LABORATORIES
INCORPORATED

SD-69652-01-G7

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(570A KSU)



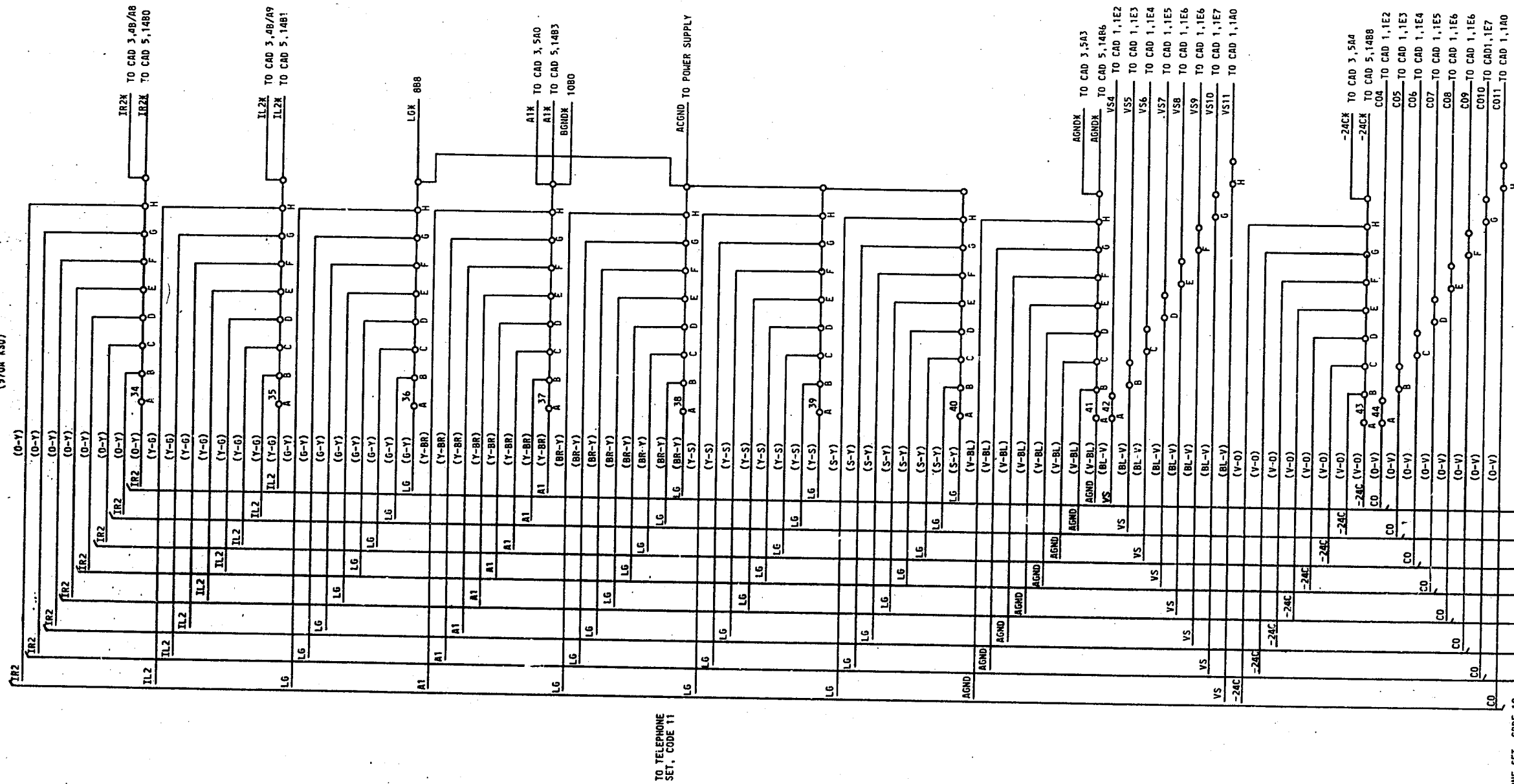
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PART OF CAD 4

(570A KSU)



PART OF TERM. BLOCK 4

PART OF CAD 4 (570A KSU)

7A COMMUNICATION SYSTEM

BELL TELEPHONE LABORATORIES
INCORPORATED

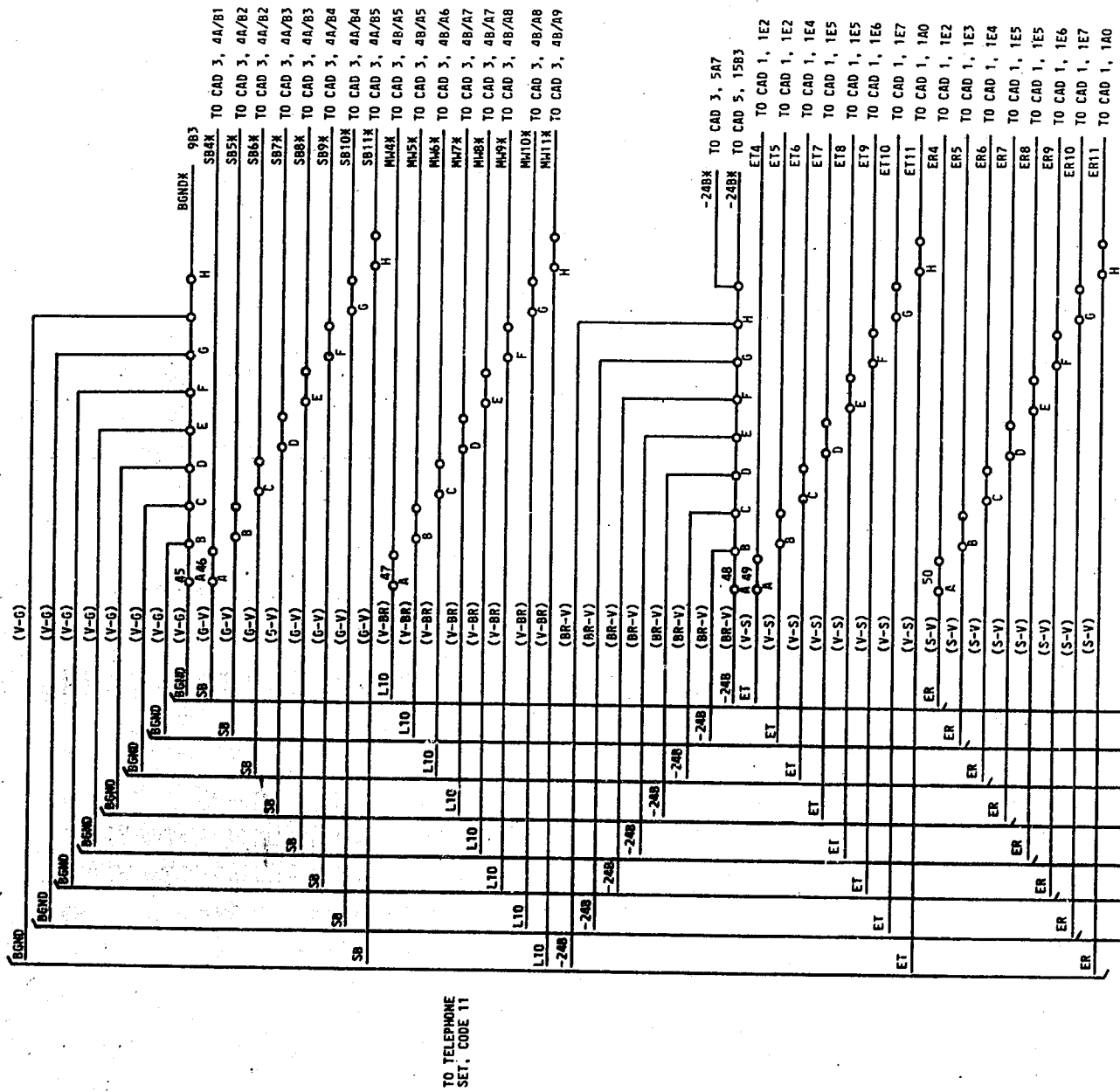
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SD-69652-01-G9

ISSUE
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PART OF CAD 4

(570A KSU)



PART OF CAD 4 (570A KSU)

7A COMMUNICATION SYSTEM

BELL TELEPHONE LABORATORIES
INCORPORATED

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(570A KSU)



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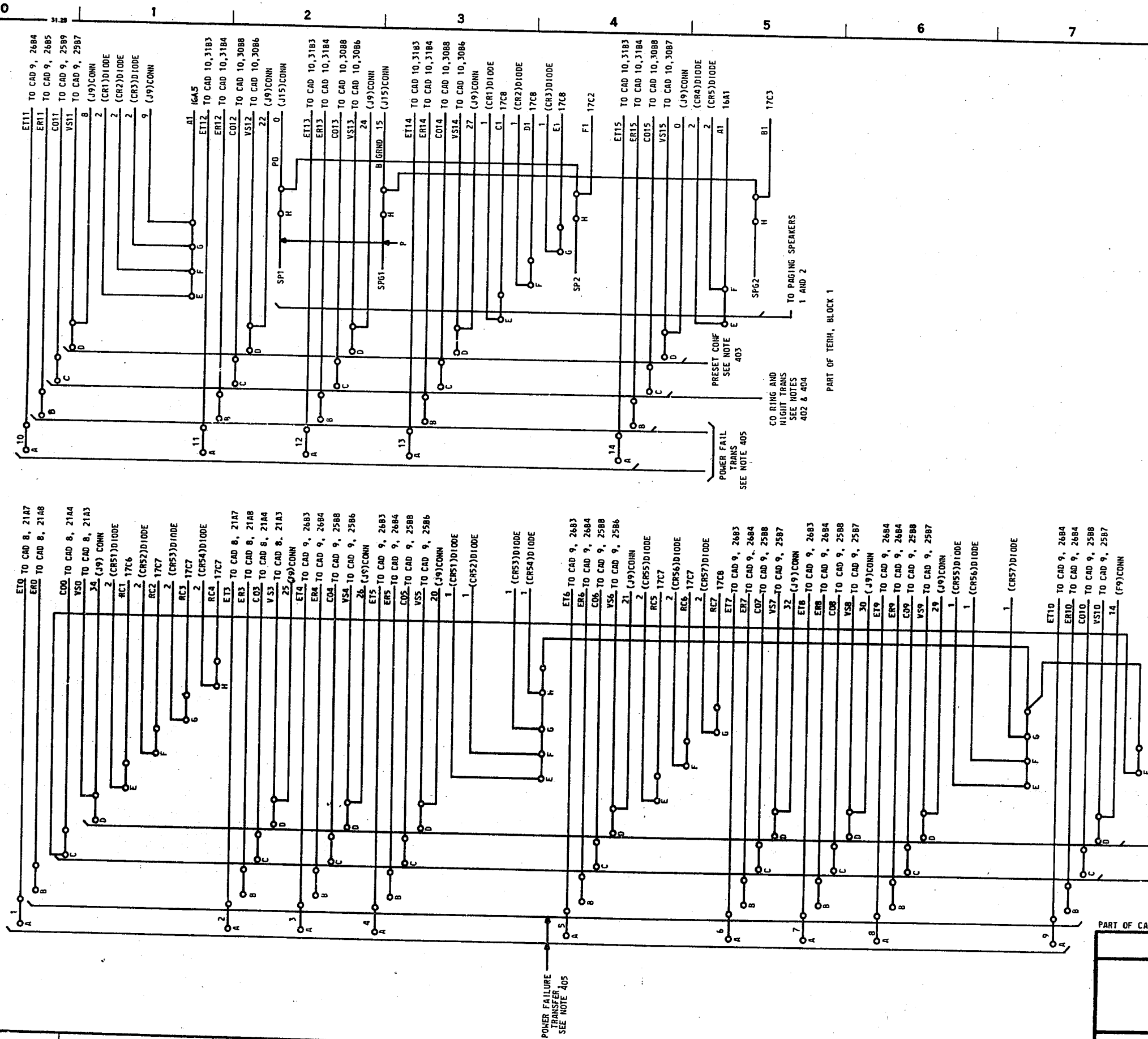
(570A KSU)



65

ISSUE
4D1

PART OF CAD 6 POWER FAIL TRANSFER, NIGHT TRANS, PAGING AND PRESET CONF (570B KSU)



7A COMMUNICATION SYSTEM		DWG SIZE 6S	ISSUE 4DI
BELL LABORATORIES		SD- 69652-01	SHEET G16

CO RING AND
NIGHT TRANS
SEE NOTES
402 & 404

POWER FAIL
TRANS
SEE NOTE 405

PRESET CONF
SEE NOTE
403

**CROSS CONNECT
FOR
POWER FAILURE
OPTIONS
SEE NOTE 405**

CO RINGING
CROSS-CONNECT
FOR
RINGING OPTIONS
SEE NOTE 402

7A. COMMUNICATION SYSTEM:

DWG SIZE
65

**SHEET
G17**

BELL LABORATORIES

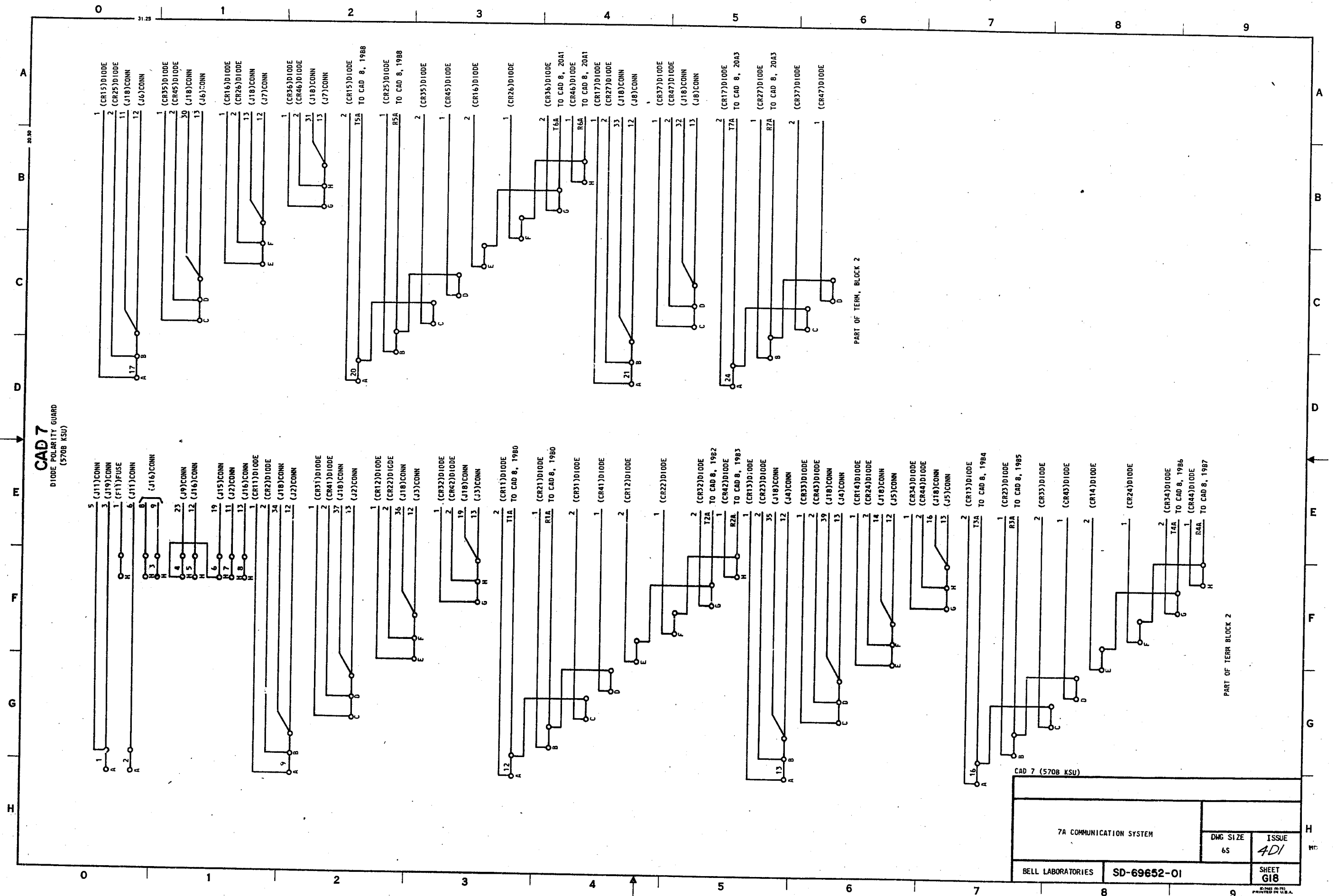
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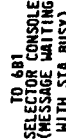
NOTES:

1. REMOVE COMMON AUDIBLE DIODES
PER NOTE 401.

PART OF TERM, BLOCK 1

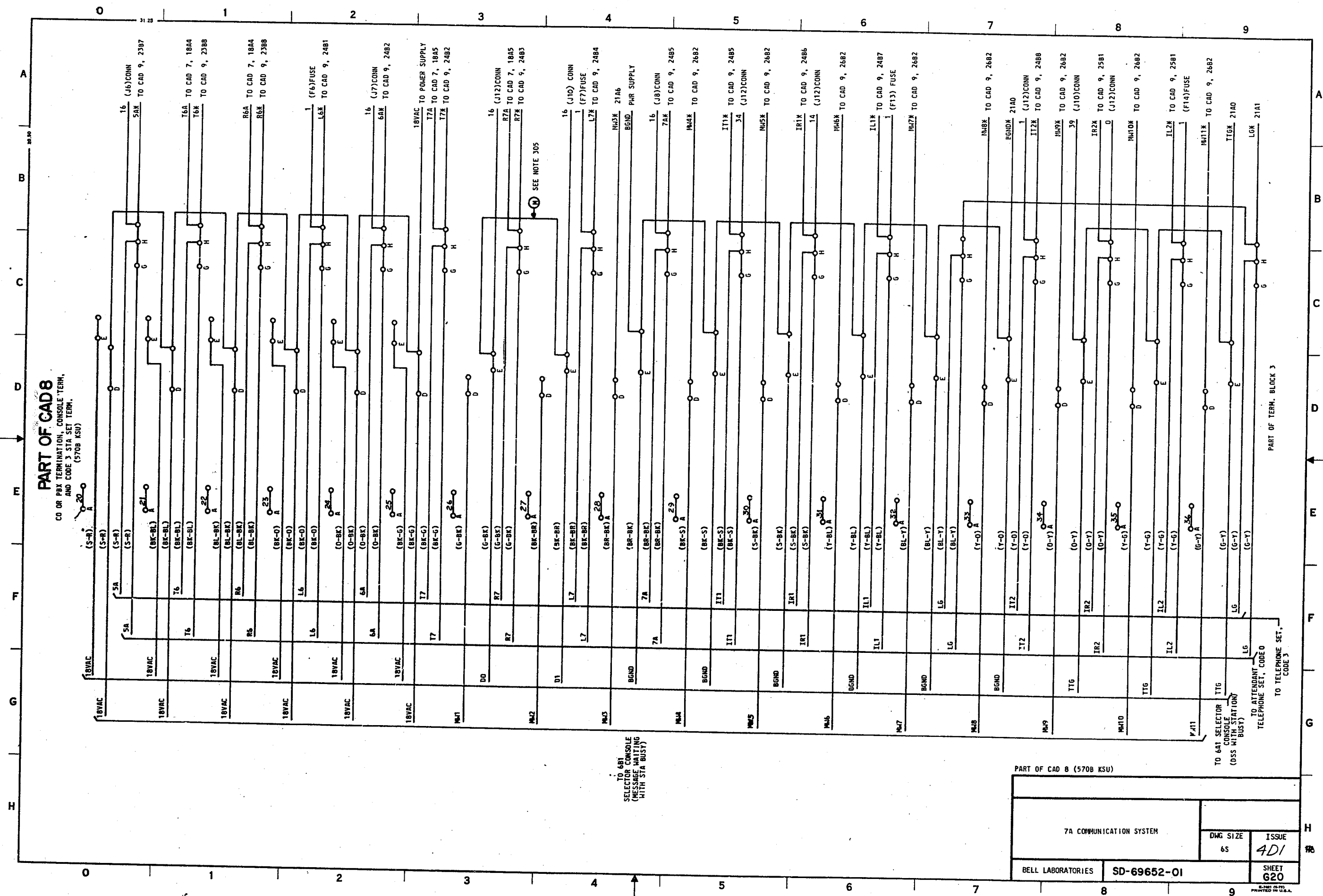


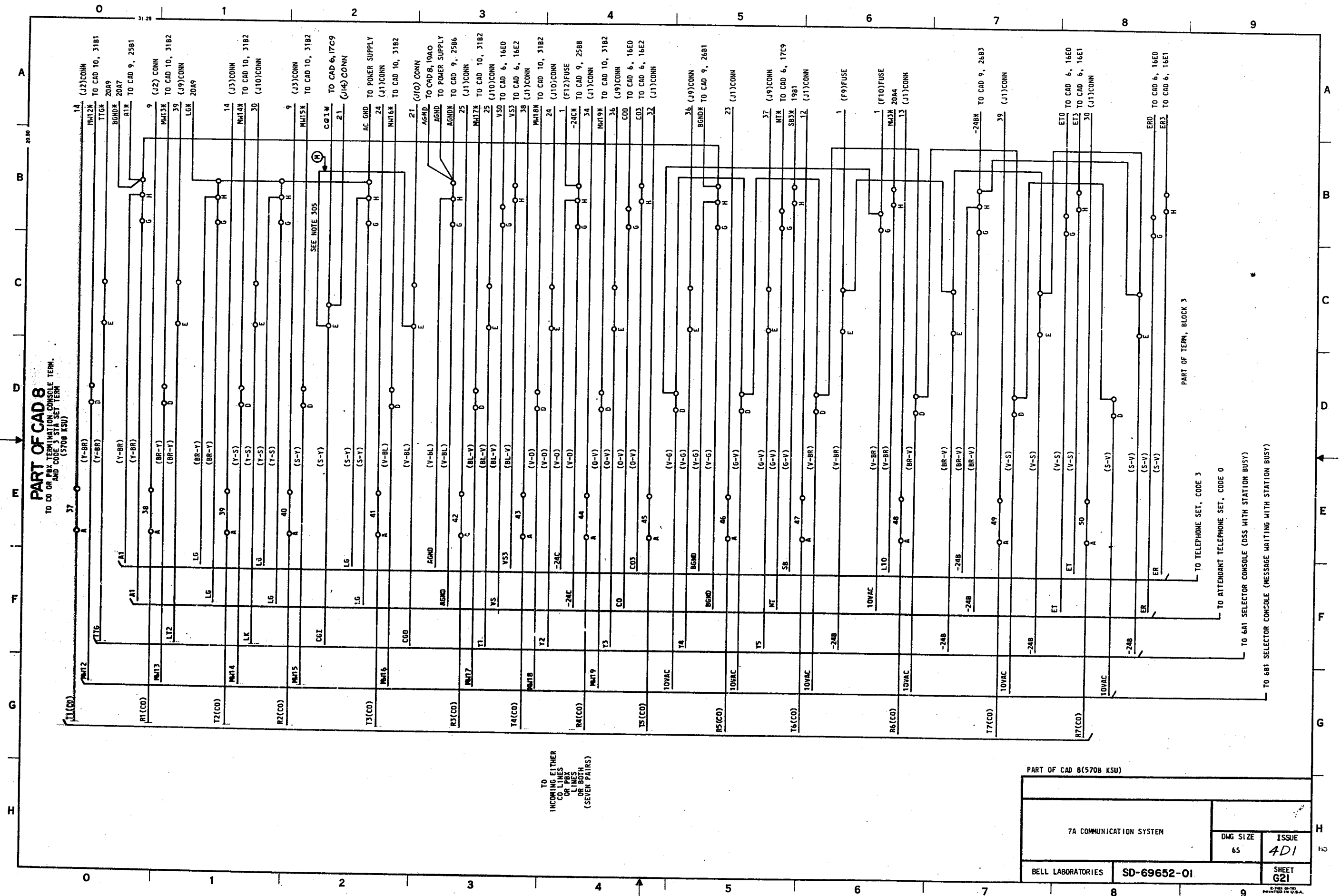
27

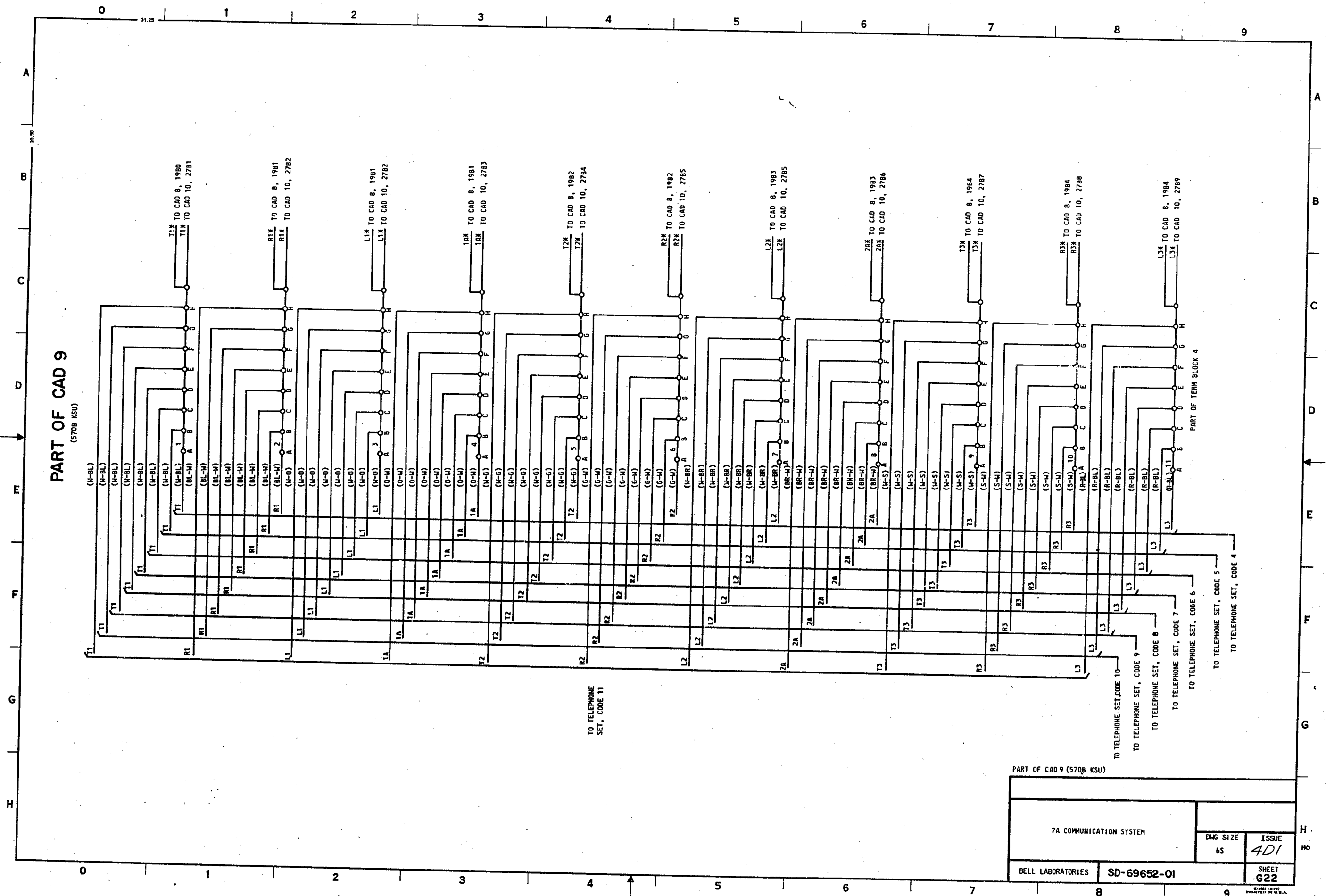


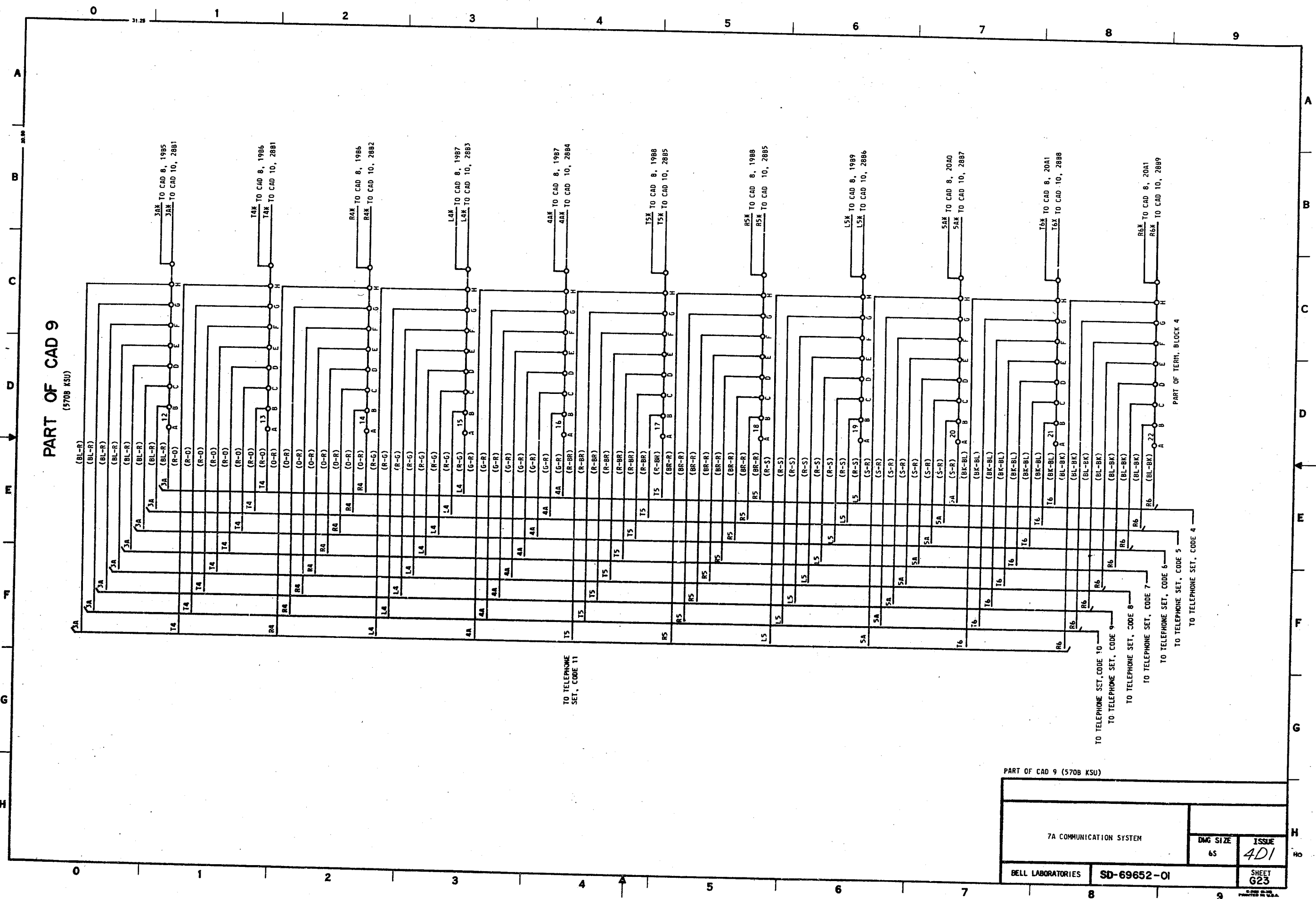
PART OF TERM. BLOCK 3

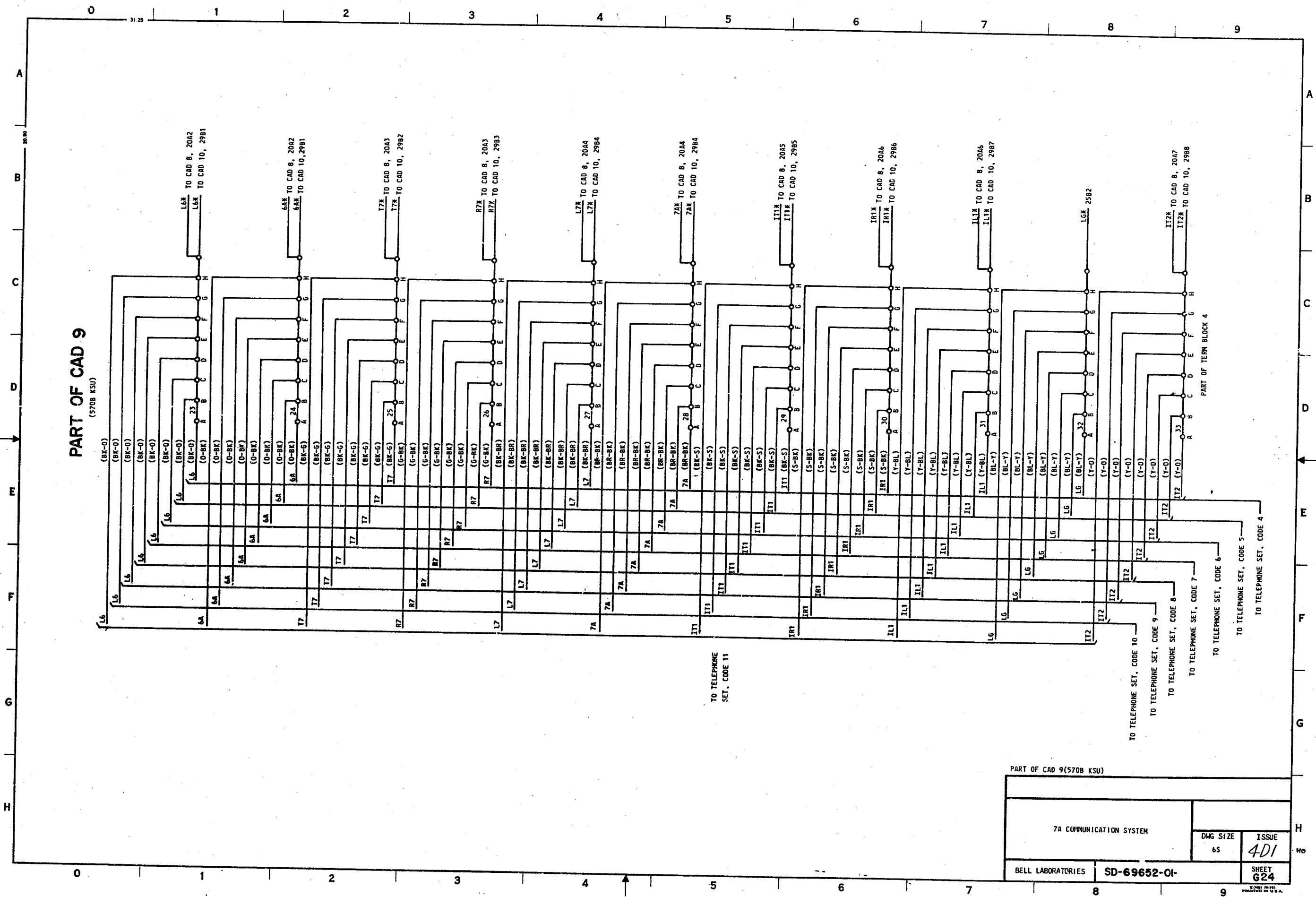
E-7421 (6-73)

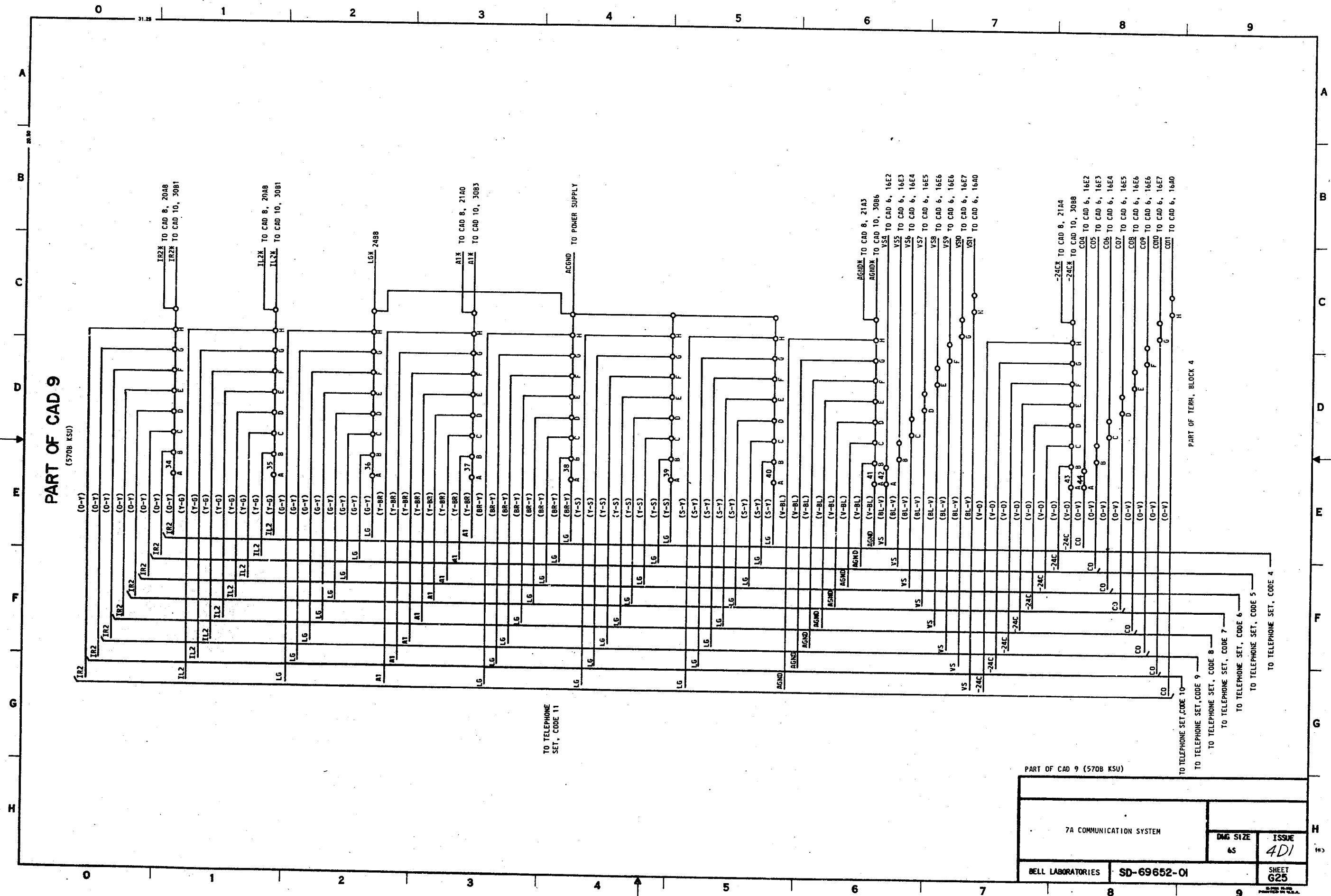




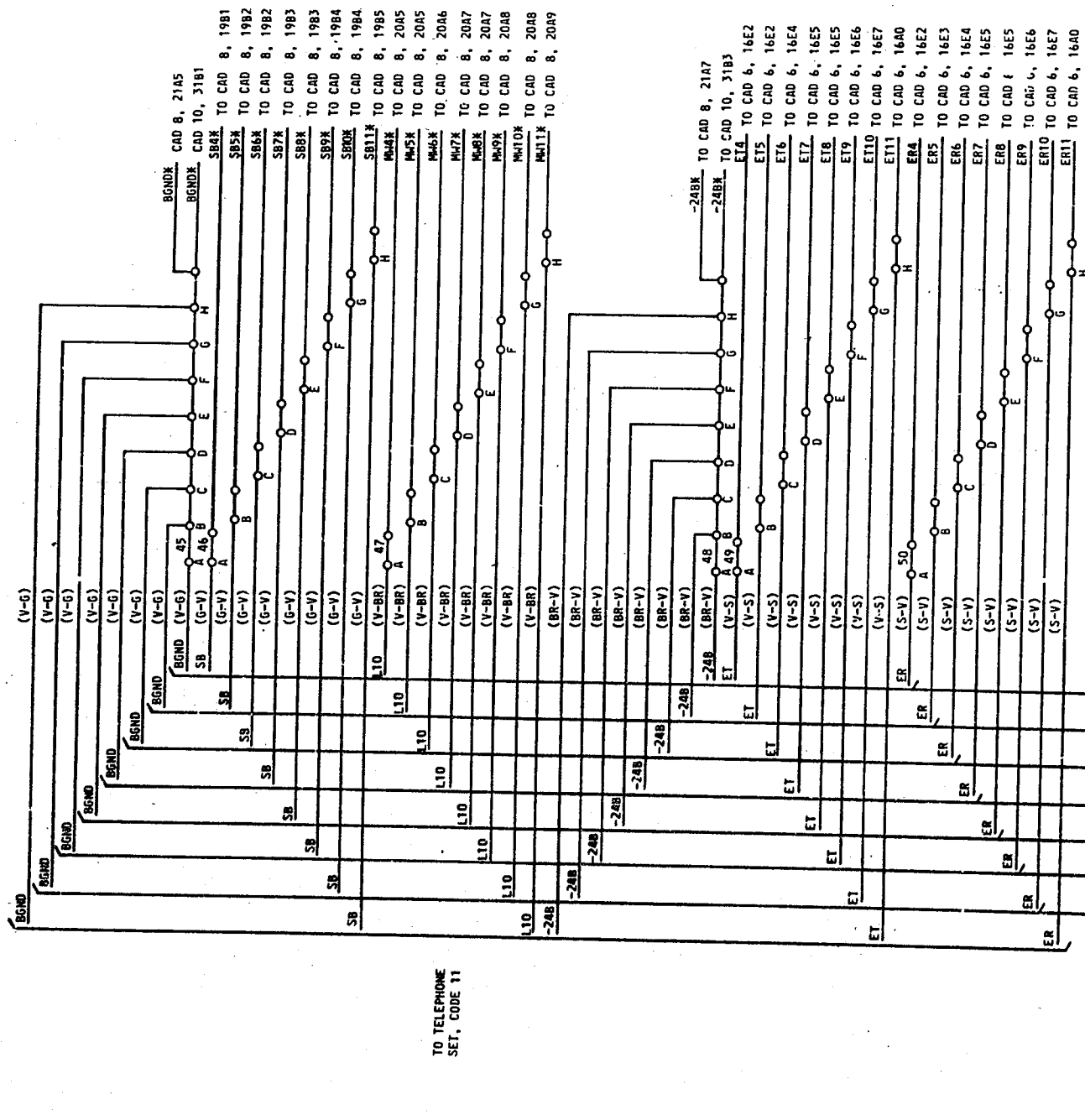




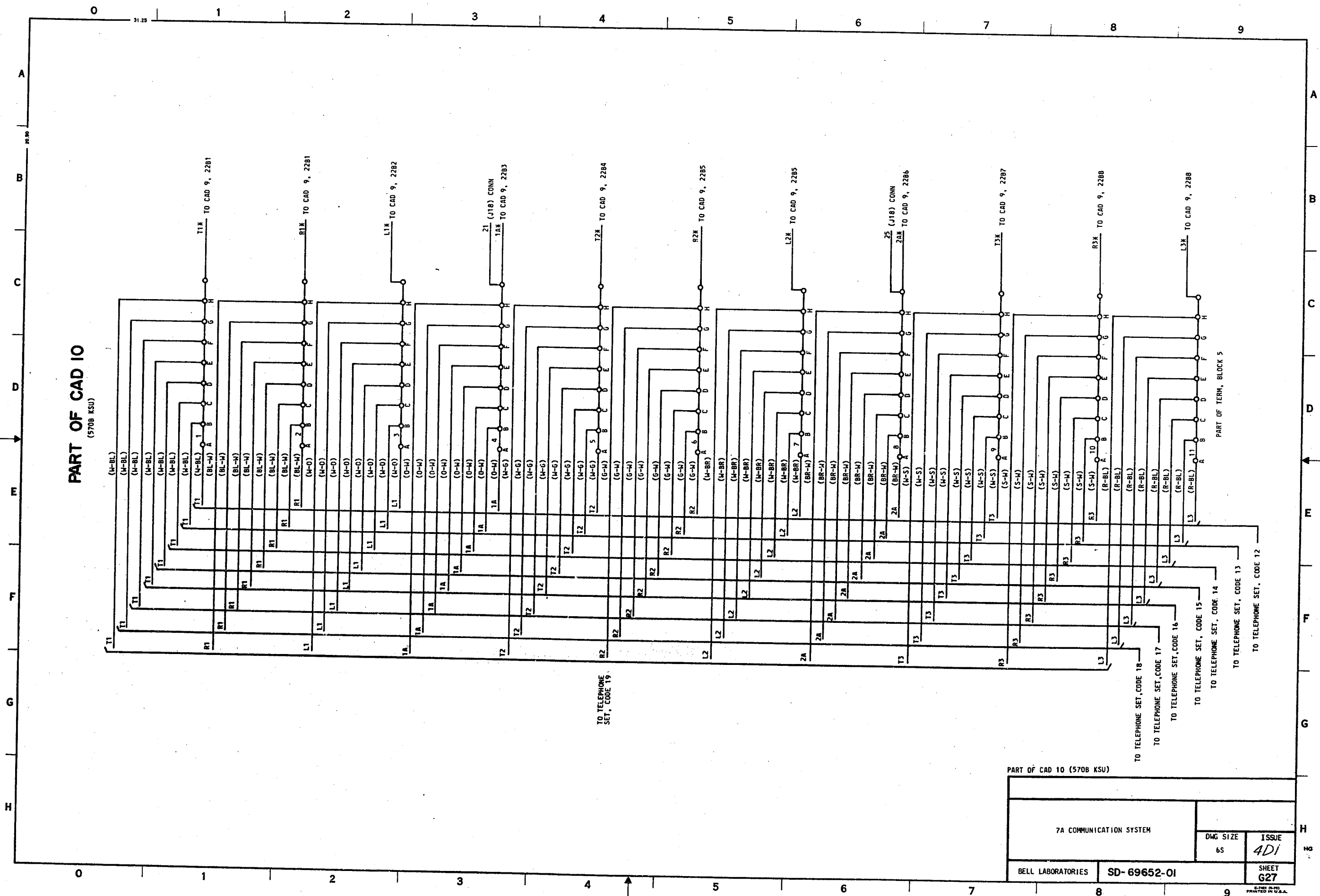




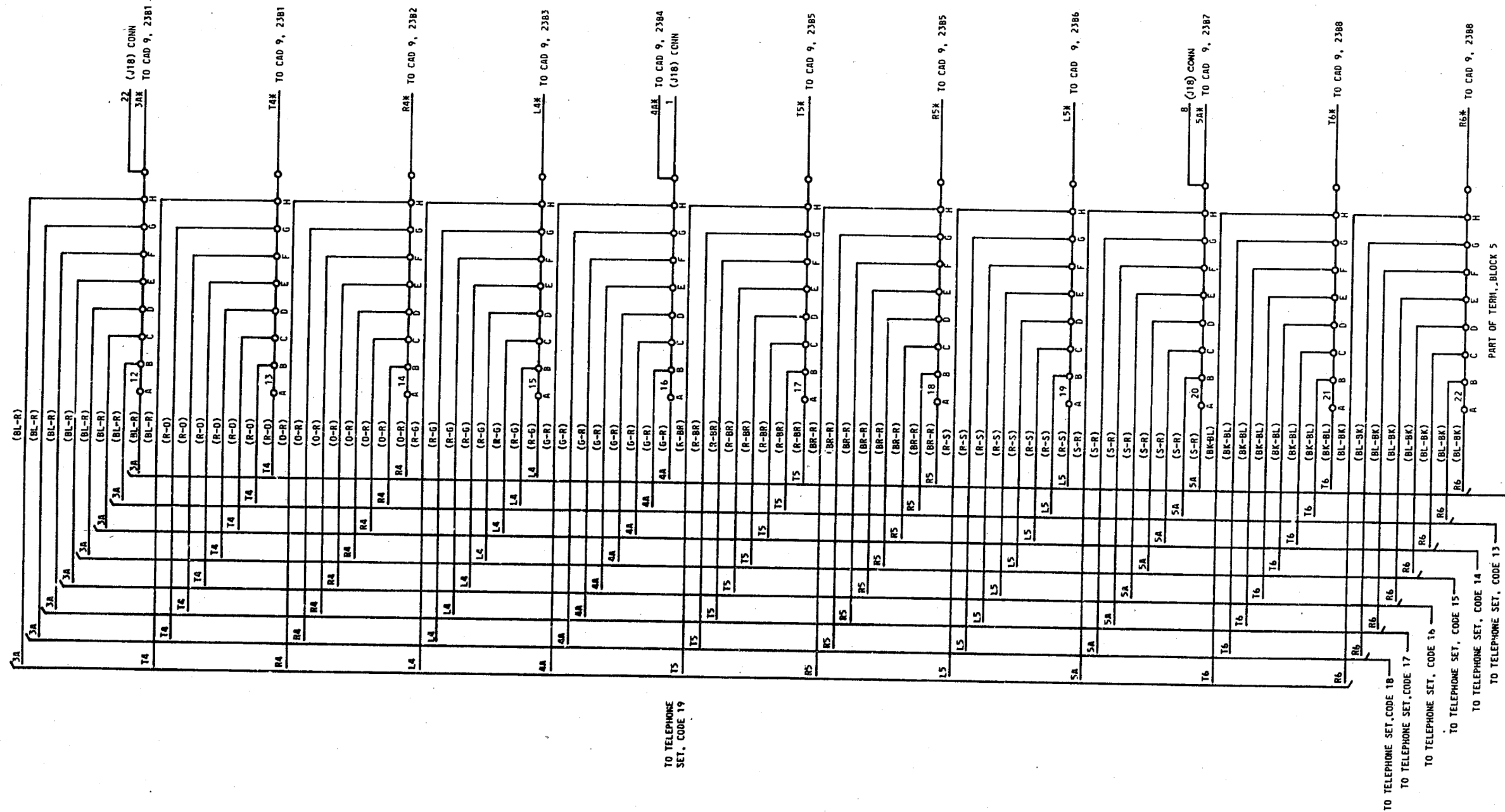
PART OF CAD 9 (5708 KSU)



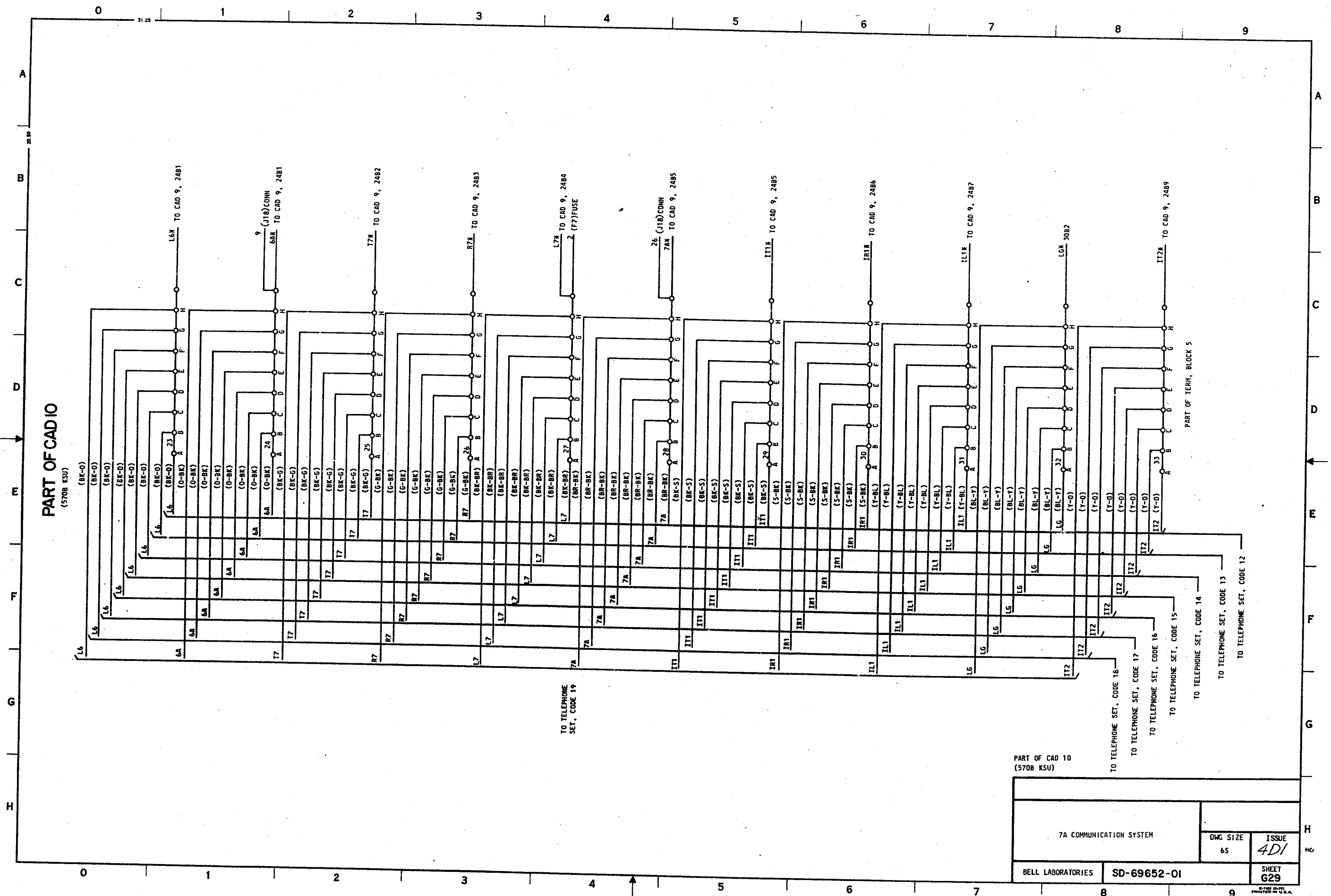
PART OF CAD 9 (5708 KSU)		
7A COMMUNICATION SYSTEM		DWG SIZE 65
ISSUE 4D1		SHEET G26
BELL LABORATORIES	SD-69652-01	PRINTED IN U.S.A.

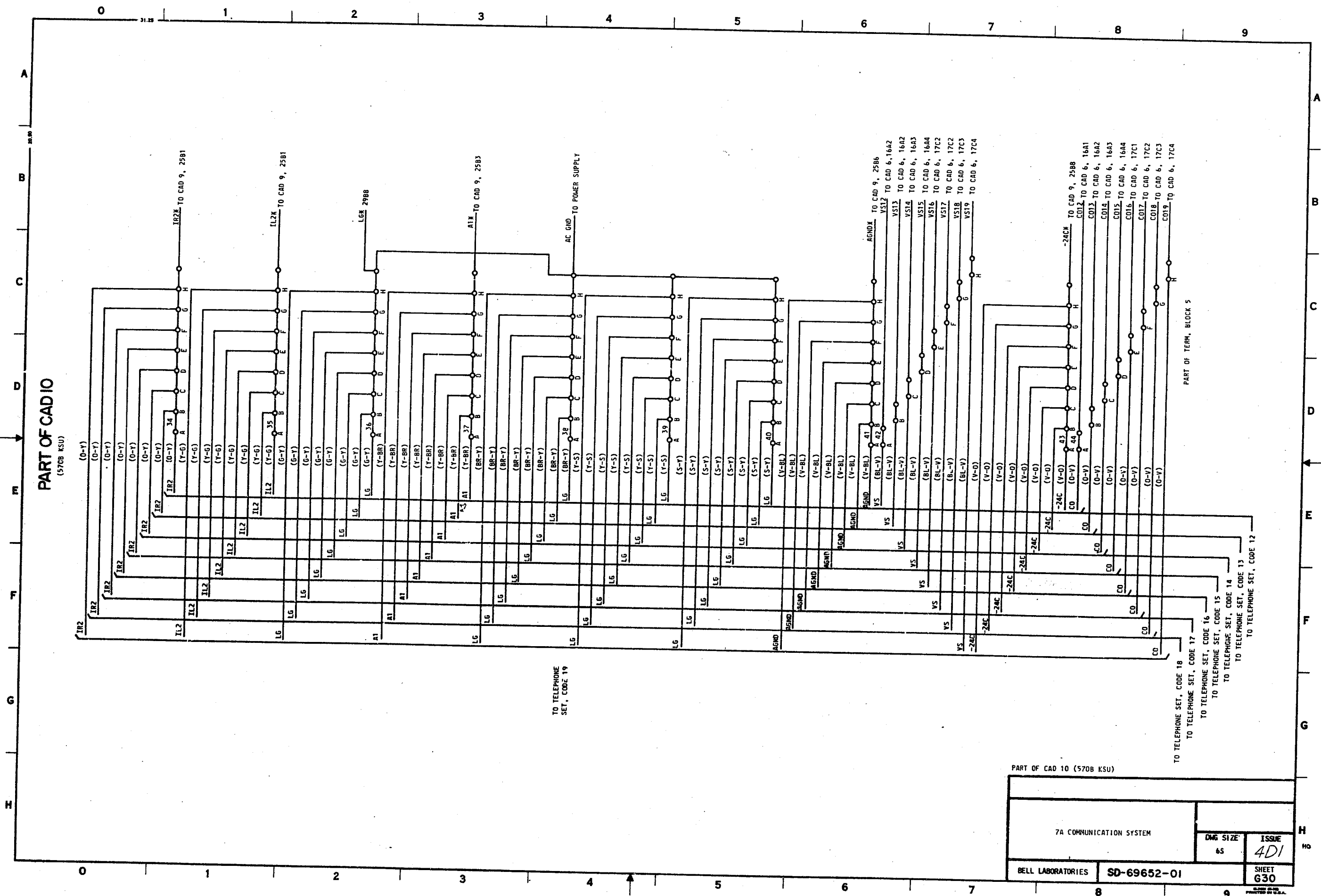


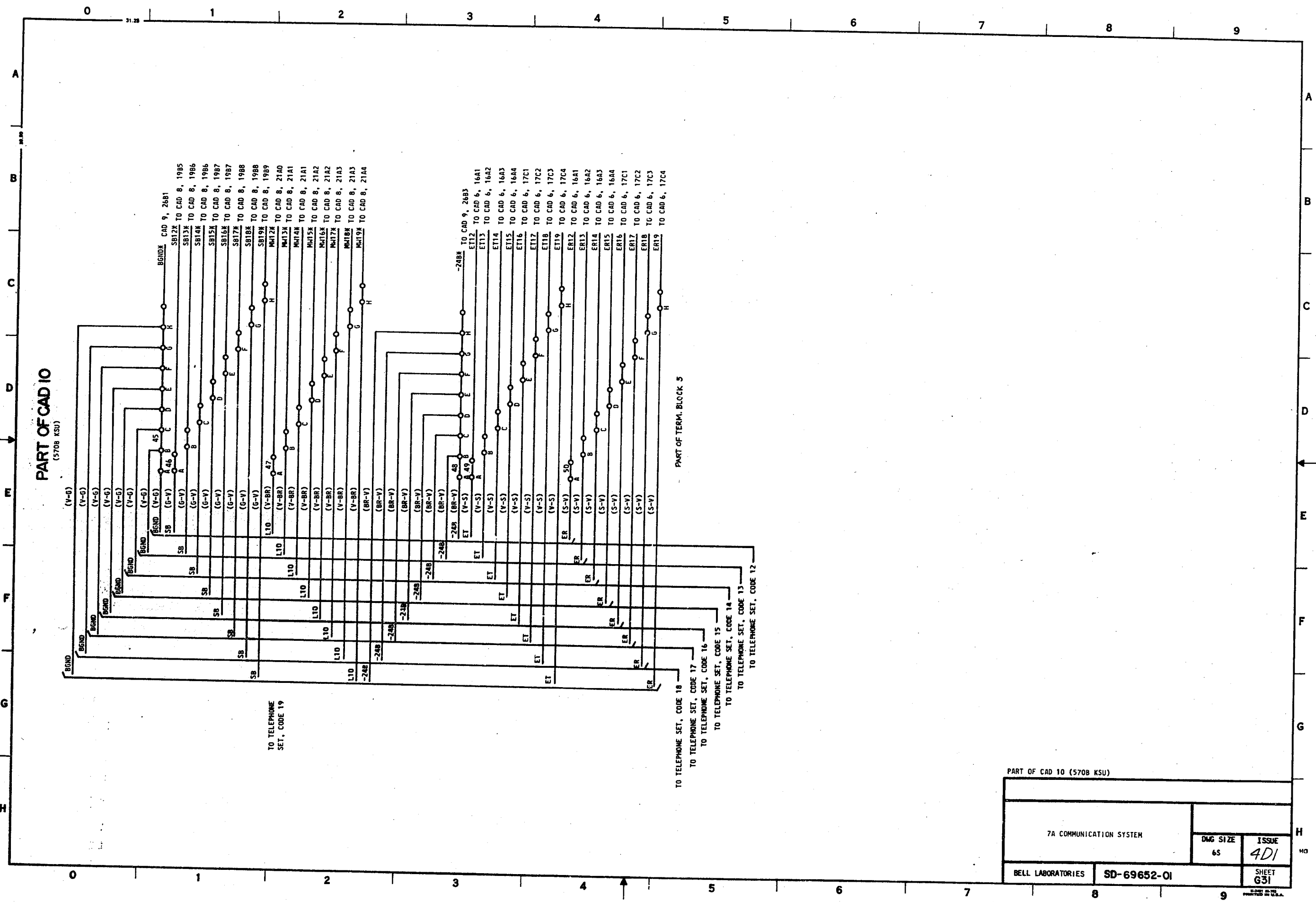
PART OF CAD 10 (5708 KSU)



PART OF CAD 10 (5708 KSU)		7A COMMUNICATION SYSTEM	
		DWG SIZE 6S	ISSUE 4DI
BELL LABORATORIES		SD-69652-01	
		SHEET G28	



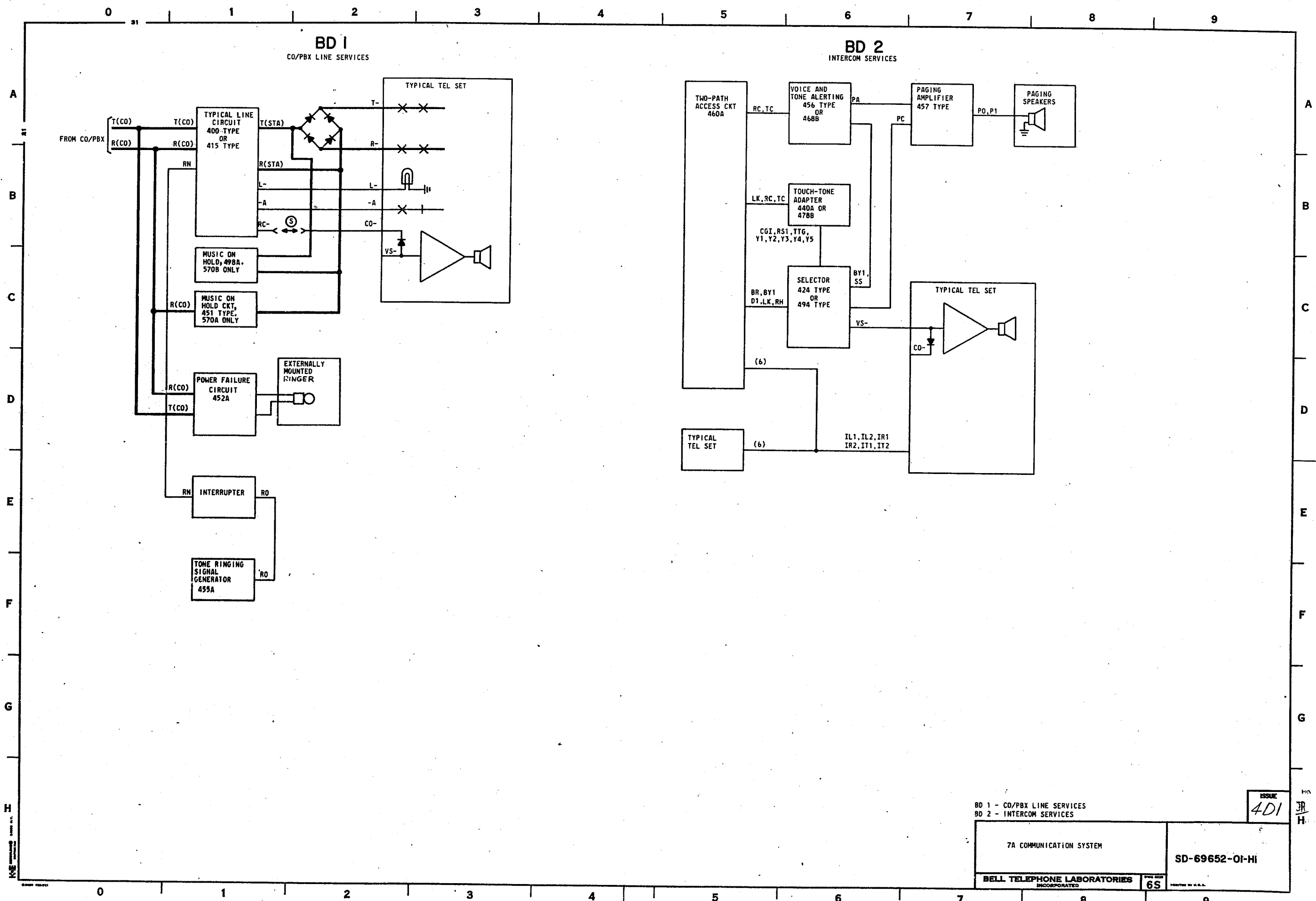




PART OF CAD 10
(570B KSU)

PART OF TERM. BLOCK 5

PART OF CAD 10 (570B KSU)	
7A COMMUNICATION SYSTEM	
DWG SIZE 6S	ISSUE 4D1
BELL LABORATORIES	SD-69652-01
SHEET G31	



SD-69652-01-HI

BD 1 - CO/PBX LINE SERVICES
BD 2 - INTERCOM SERVICES

7A COMMUNICATION SYSTEM

BELL TELEPHONE LABORATORIES
INCORPORATED

6S

SD-69652-01-HI

PRINTED IN U.S.A.

KTU 400D (MFR DISC.)
CO OR PBX LINE CIRCUIT

MANUFACTURING REFERENCES	
CATEGORY	NO.
CONTROLLING DRAWING	SD-69513-01
KTU CODE	400D
CONNECTOR ON FRAME	

SYMBOL

NOTES:

- UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS,
CAPACITANCE VALUES ARE IN MICROFARADS,
VALUES PRECEDED BY THE SYMBOL + (PLUS)
OR (MINUS) ARE IN VOLTS.
- $\perp$ GROUND RETURN.

7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		65	4D1
BELL LABORATORIES	SD-69652 - 01	SHEET	
		J1	

SYMBOL

The diagram illustrates the following connections:

- LOOP DET & HOLD BRIDGE**
 - Inputs: $T(CO)$ 14, $R(CO)$ 9
 - Outputs: $T(STA)$ 12, $R(STA)$ 13
- CONTROL**
 - Inputs: $-24B$ 17, $BGRD$ 15
 - Output: A 16
- LAMP & RISING CONTROL**
 - Inputs: RN 11, LF 7, FWS 4, LW 2
 - Outputs: RC 1, L 8, MG 6, MS 5

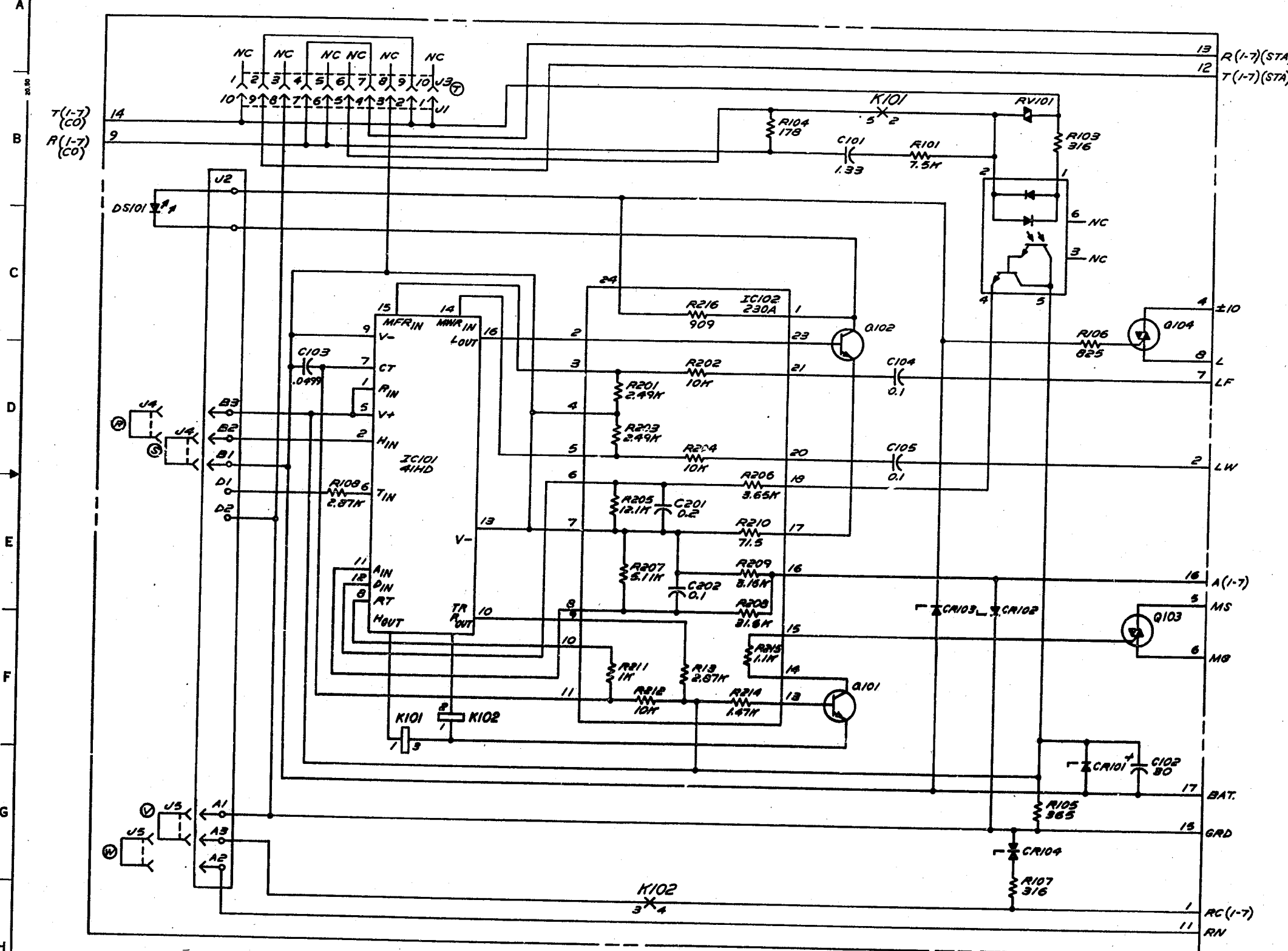
A small box labeled $\times B$ is connected to the MG and MS outputs.

- NOTES:
1. UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS,
CAPACITANCE VALUES ARE IN MICROFARADS,
VALUES PRECEDED BY THE SYMBOL + (PLUS)
OR (MINUS) ARE IN VOLTS.
 2. $\perp$ GROUND RETURN.

KTU 400H

CO OR PBX LINE CIRCUIT

MANUFACTURING REFERENCES	
CATEGORY	NO.
CONTROLLING DRAWING	SD-69942-01
KTU CODE	400H

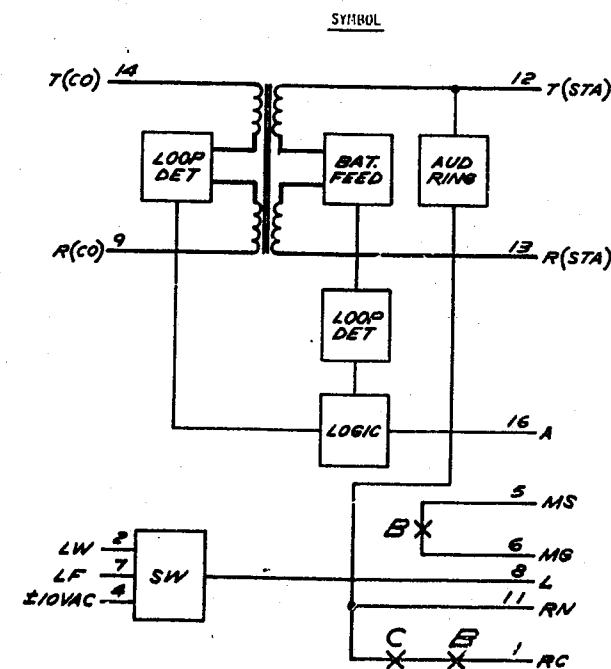
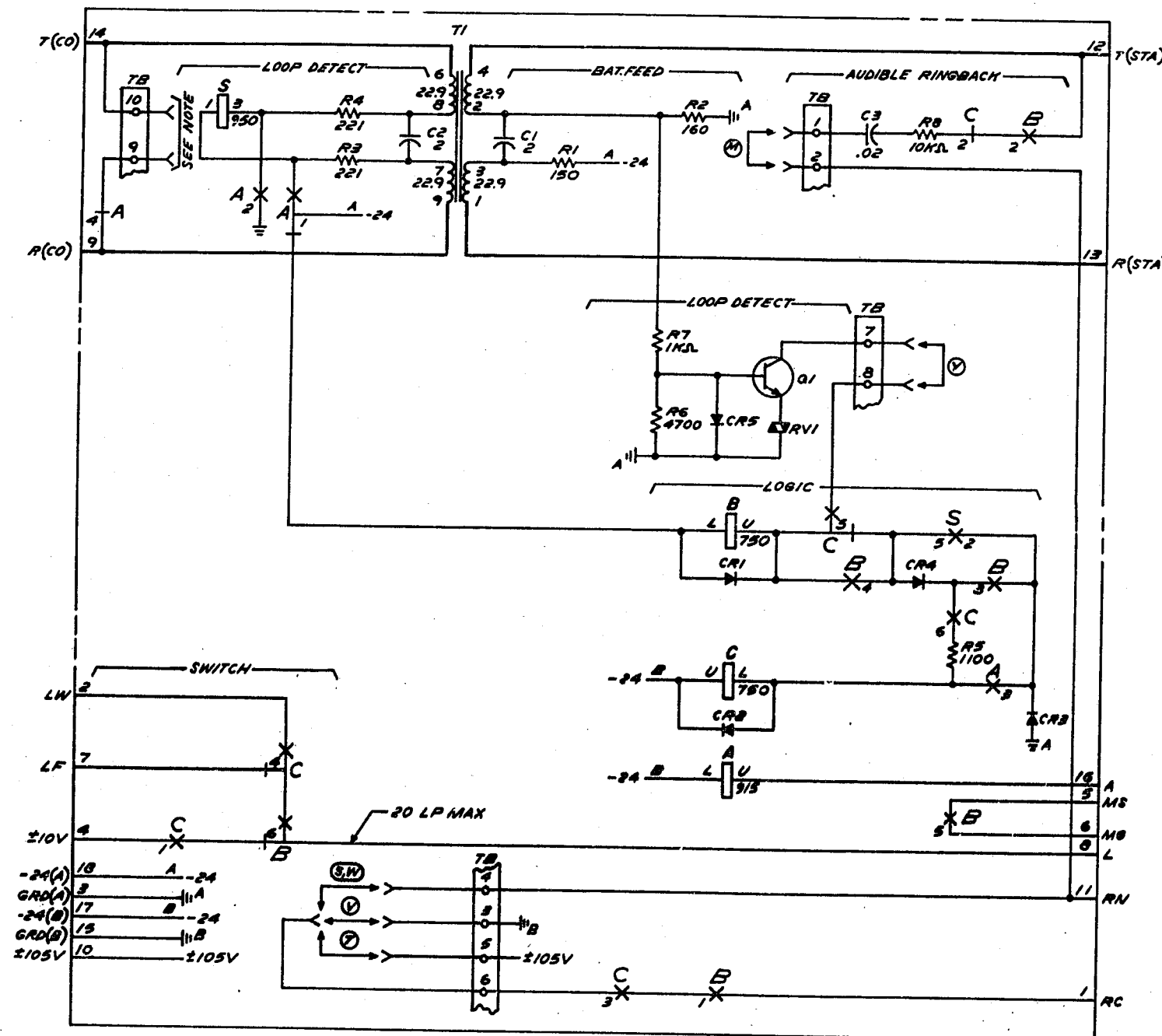


7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		65	4DI
BELL LABORATORIES	SD-69652-01	SHEET J2	

KTU 415A

MANUFACTURING REFERENCES

CATEGORY	NO.
CONTROLLING DRAWING	SD-69559-01
KTU CODE	415A



7A COMMUNICATION SYSTEM

DWG SIZE
65

ISSUE
401

BELL LABORATORIES

SD-69652-01

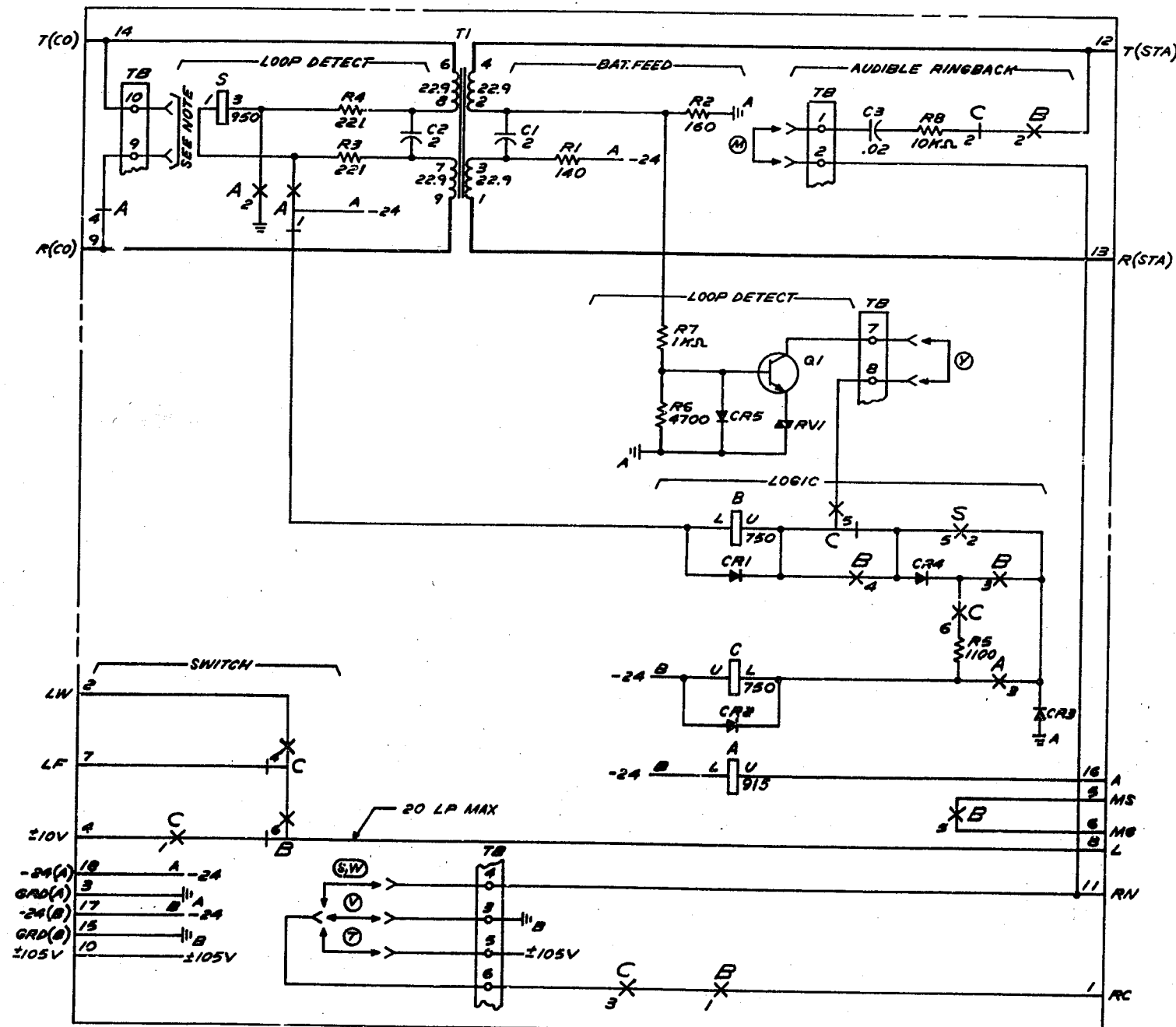
SHEET
J3

PRINTED IN U.S.A.

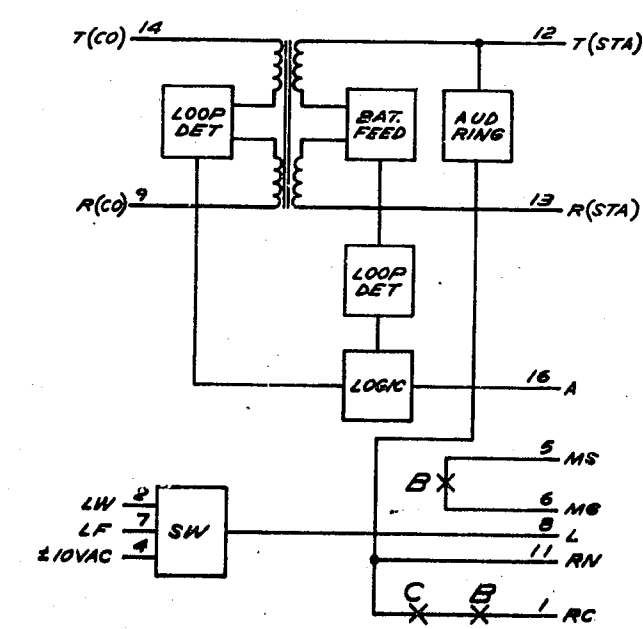
KTU 415B

MANUFACTURING REFERENCES

CATEGORY	NO.
CONTROLLING DRAWING	SD-69559-01
KTU CODE	415B
CONNECTOR ON FRAME	



SYMBOL



7A COMMUNICATION SYSTEM

DWG SIZE
6S

ISSUE
4D1

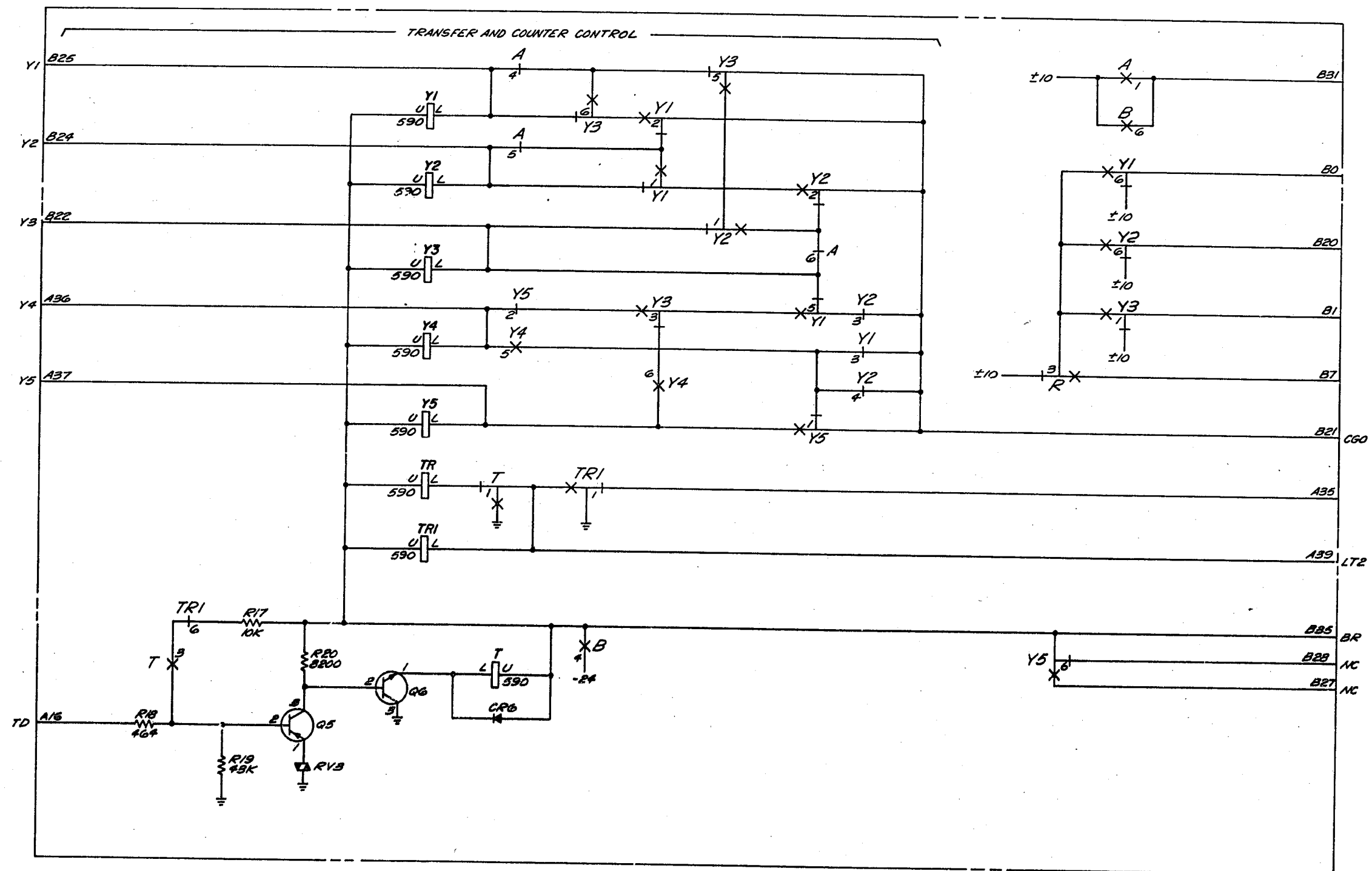
BELL LABORATORIES

SD-69652-01

SHEET
J4

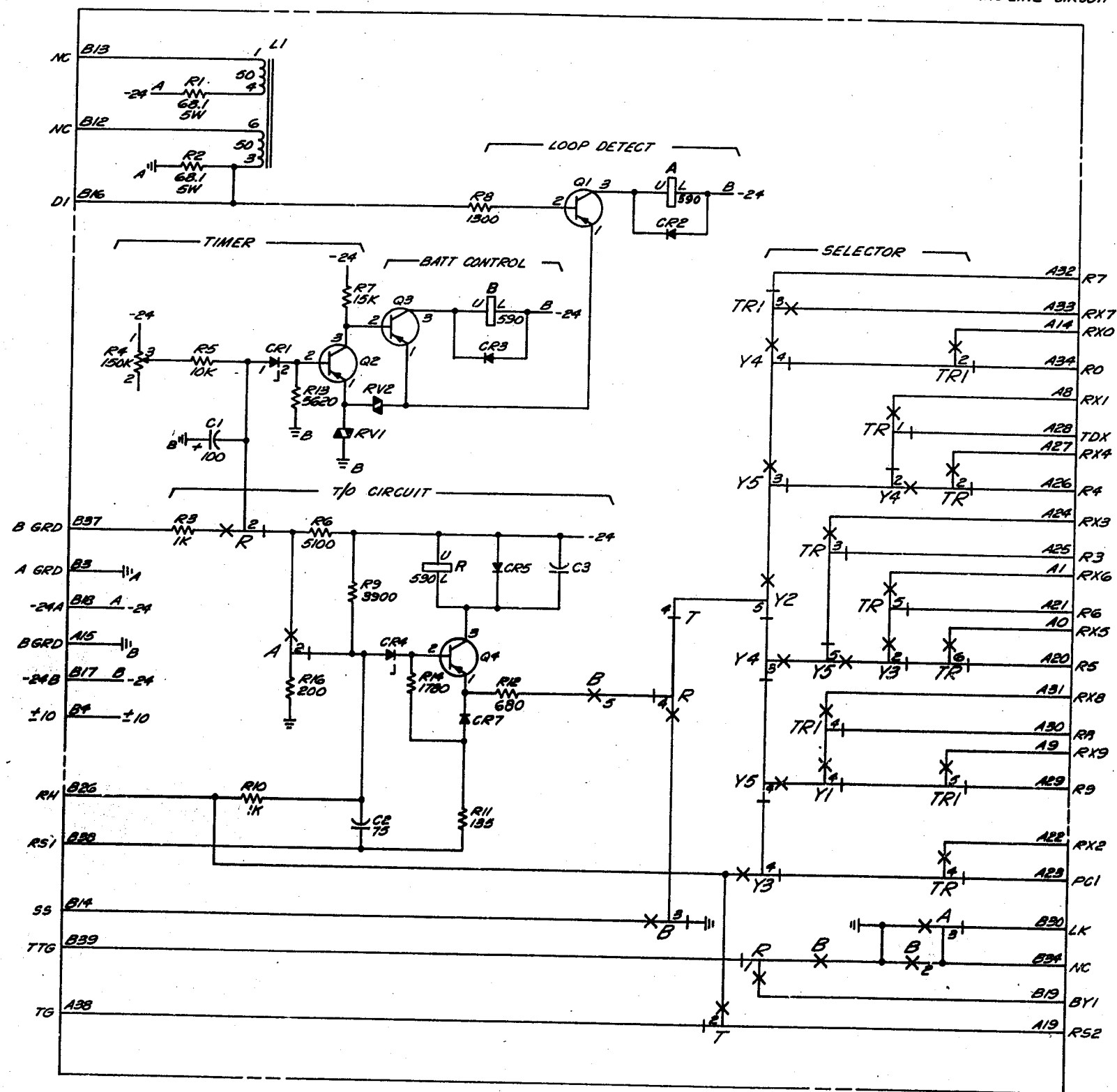
PRINTED IN U.S.A.

31.25 PART OF KTU 424B DIAL SELECTIVE INTERCOMMUNICATING LINE CIRCUIT



7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		6S	4D1
BELL LABORATORIES	SD- 69652-01	SHEET	
		J5A	

PART OF KTU 424B DIAL SELECTIVE INTERCOMMUNICATING LINE CIRCUIT



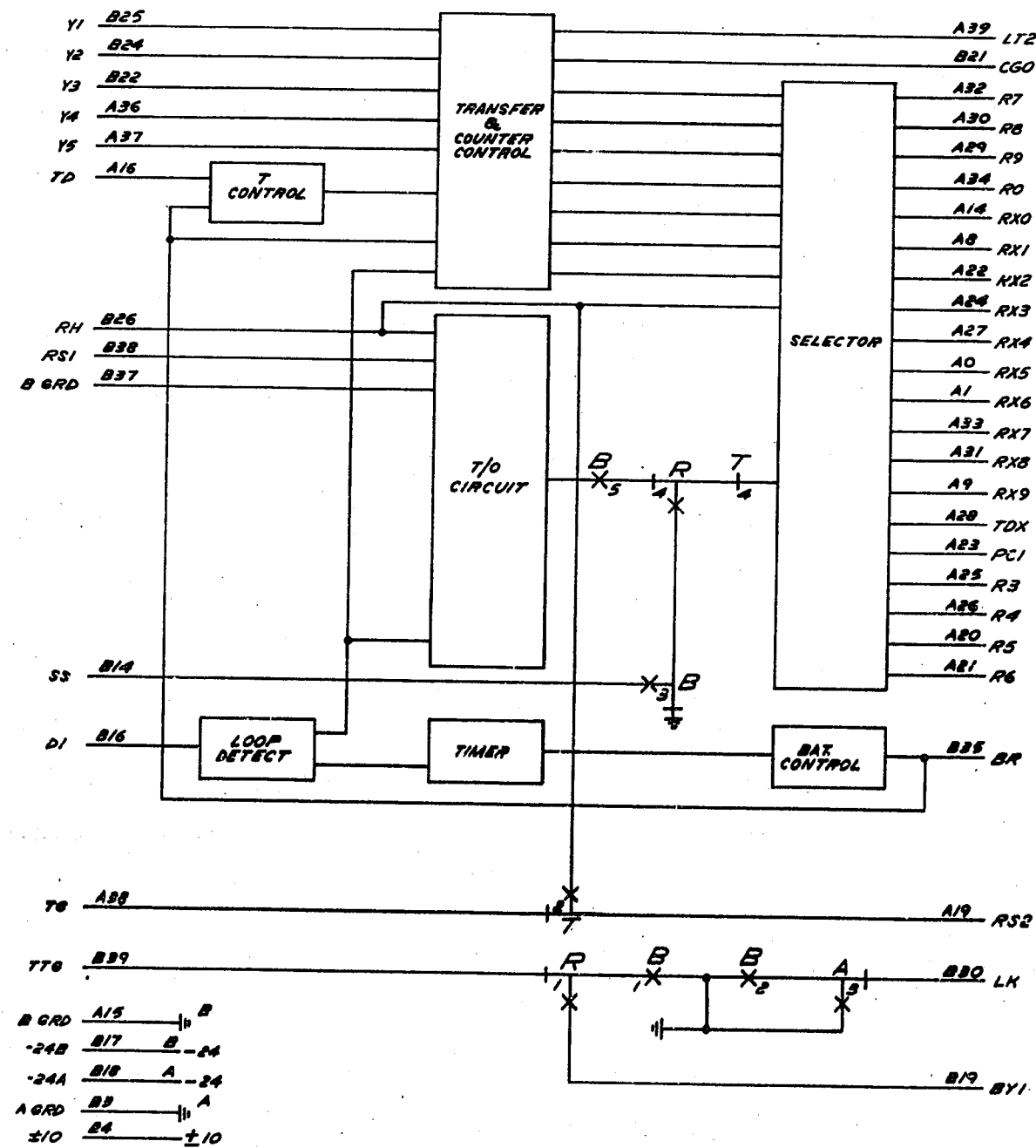
7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		6S	4D1
BELL LABORATORIES		SD-69652-01	SHEET
			J5B

PART OF KTU 424B DIAL SELECTIVE INTERCOMMUNICATING LINE CIRCUIT

SYMBOL

MANUFACTURING REFERENCES

CATEGORY	NO.
CONTROLLING DRAWING	SD-69567-01
KTU CODE	424B
CONNECTOR ON FRAME	



NOTES:

- UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS,
CAPACITANCE VALUES ARE IN MICROFARADS,
VALUES PRECEDED BY THE SYMBOL + (PLUS)
OR - (MINUS) ARE IN VOLTS.
- GROUND RETURN.

7A COMMUNICATION SYSTEM

DWG SIZE
6S

ISSUE
401

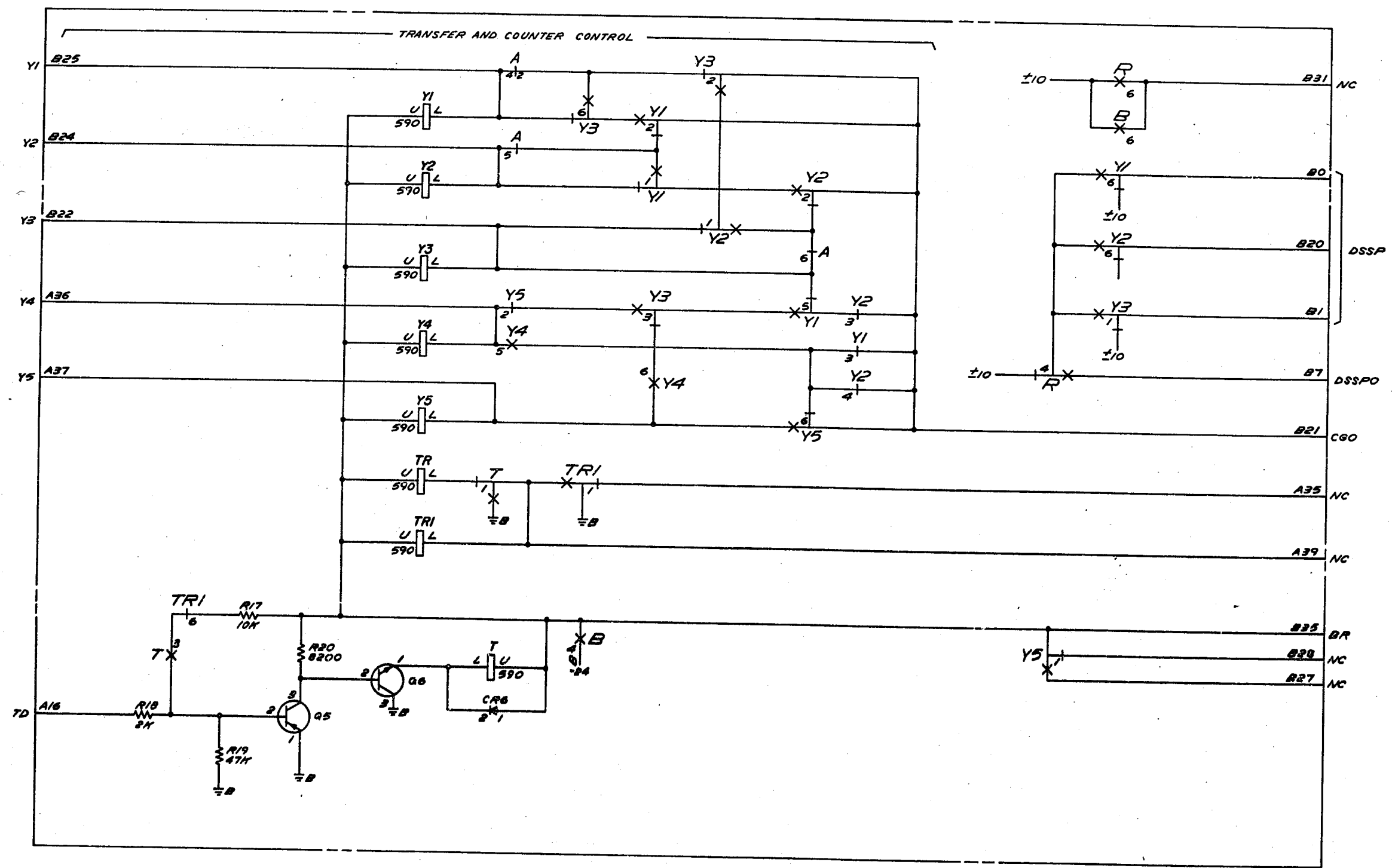
BELL LABORATORIES

SD-69652-01

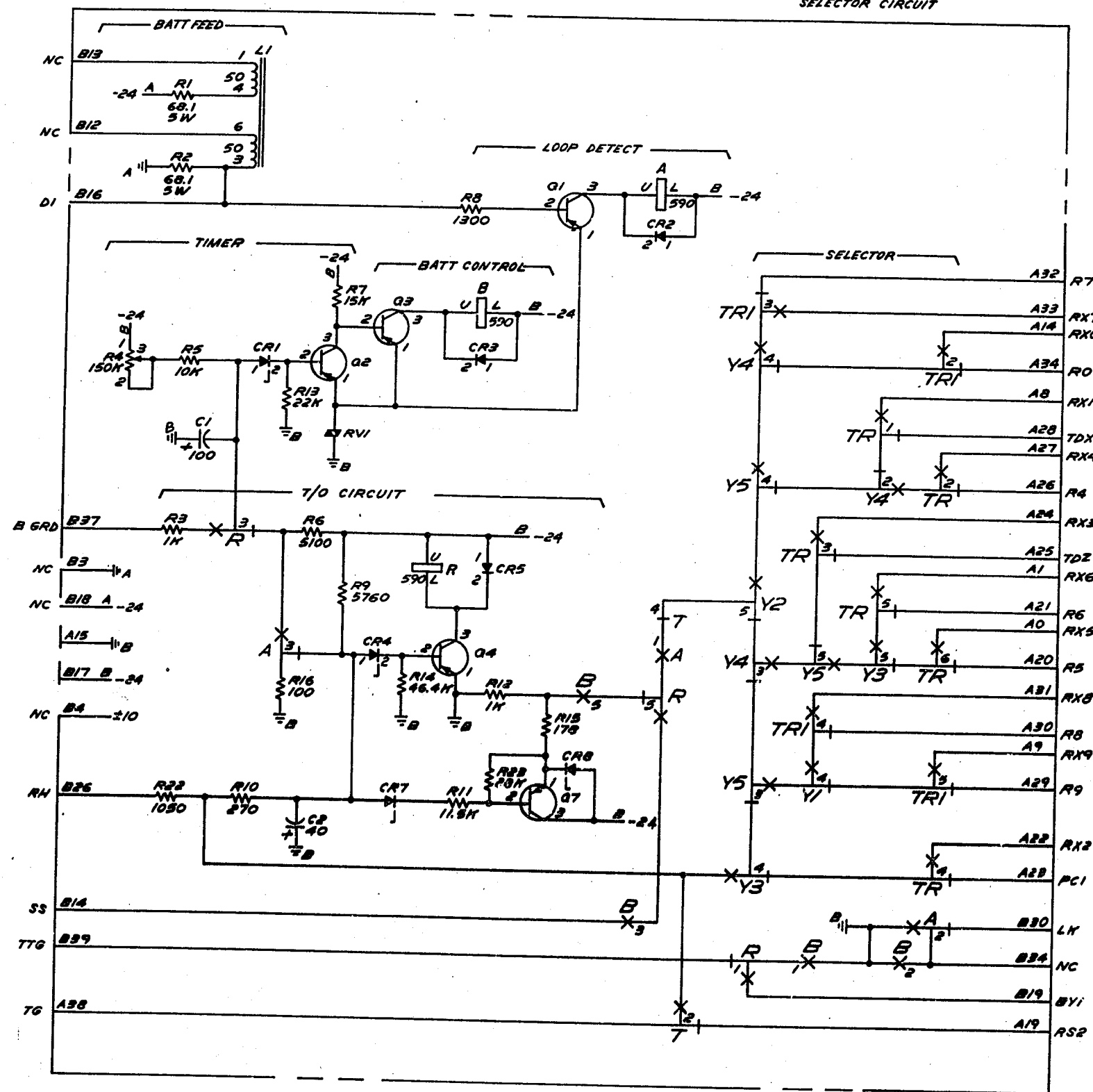
SHEET
JSC

PRINTED IN U.S.A.

PART OF KTU 424C SELECTOR CIRCUIT



PART OF KTU 424C SELECTOR CIRCUIT



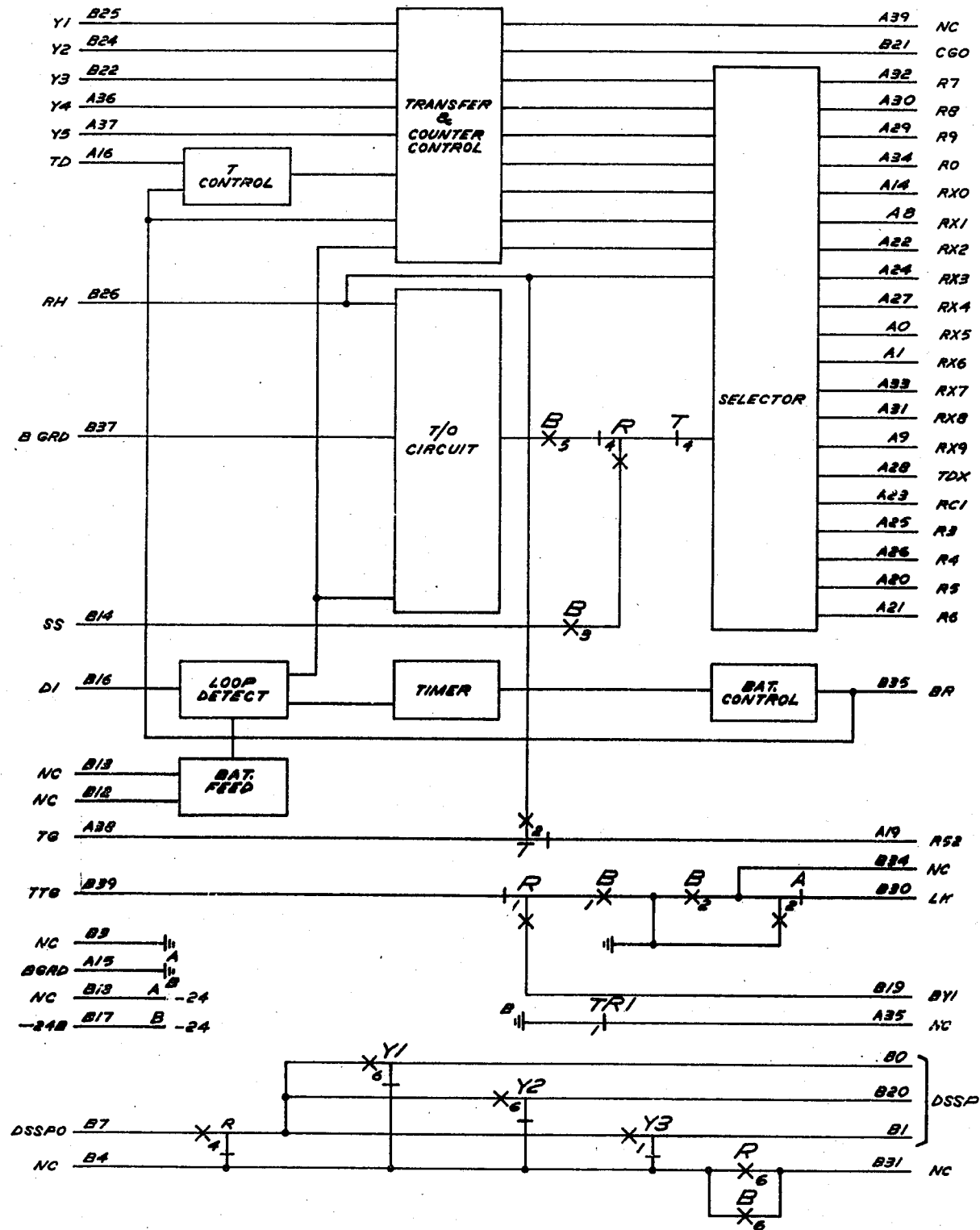
7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		6S	4D1
BELL LABORATORIES	SD-69652-01	SHEET J6B	

31.25

0 1 2 3 4 5 6 7 8 9

PART OF KTU 424C
SELECTOR CIRCUIT

SYMBOL

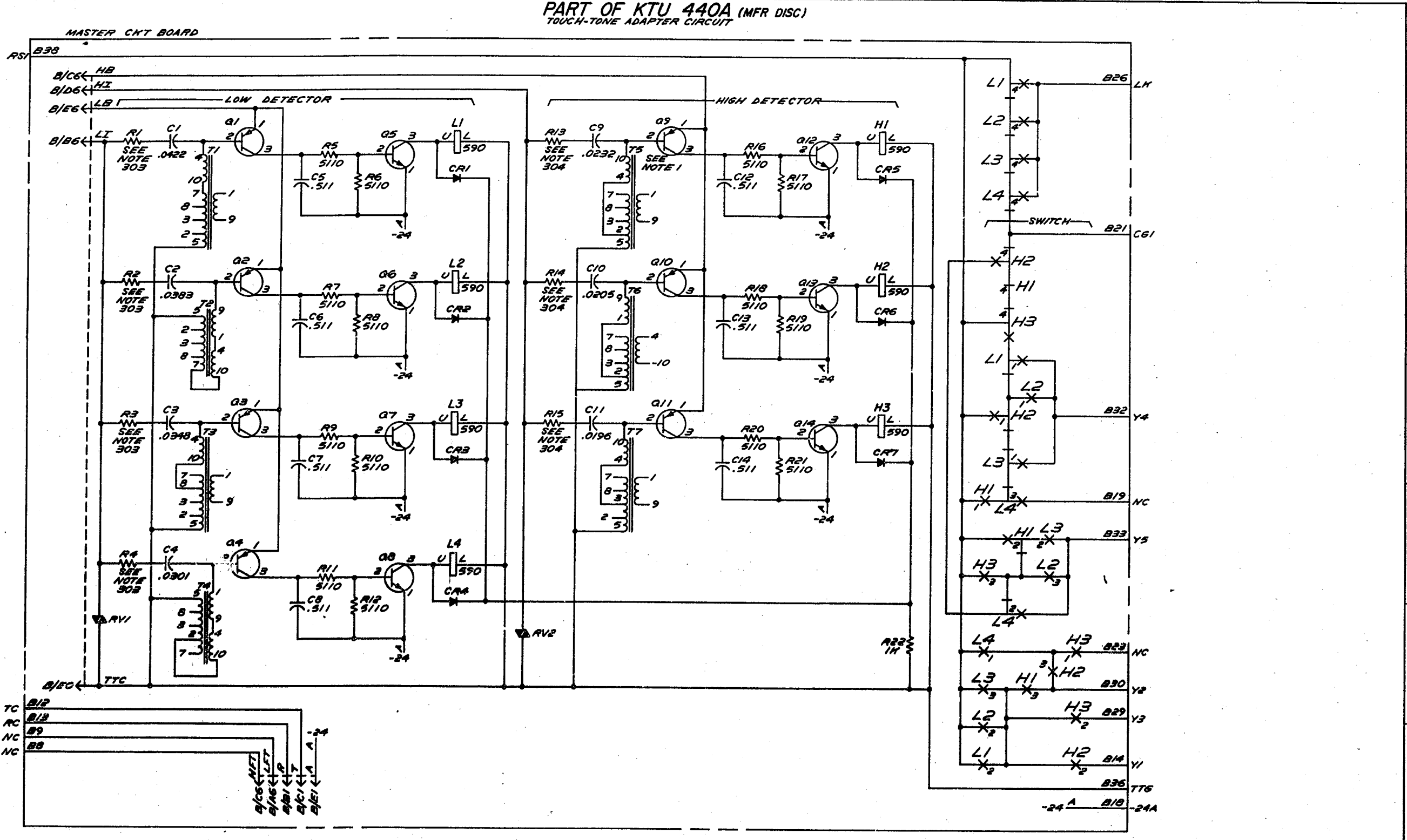


MANUFACTURING REFERENCES

CATEGORY	NO.
CONTROLLING DRAWING	SD-69567-01
KTU CODE	424C
CONNECTOR ON FRAME	

- NOTES:
- UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS.
CAPACITANCE VALUES ARE IN MICROFARADS.
VALUES PRECEDED BY THE SYMBOL + (PLUS)
OR - (MINUS) ARE IN VOLTS.
 - ⊥ GROUND RETURN.

7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		6S	4D1
BELL LABORATORIES		SD-69652-01	
		SHEET J6C	



7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		65	4D1
BELL LABORATORIES	SD-69652-01		SHEET J7A

7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		65	4D1
BELL LABORATORIES	SD-69652-01		SHEET J7A

7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		65	4D1
BELL LABORATORIES	SD-69652-01		SHEET J7A

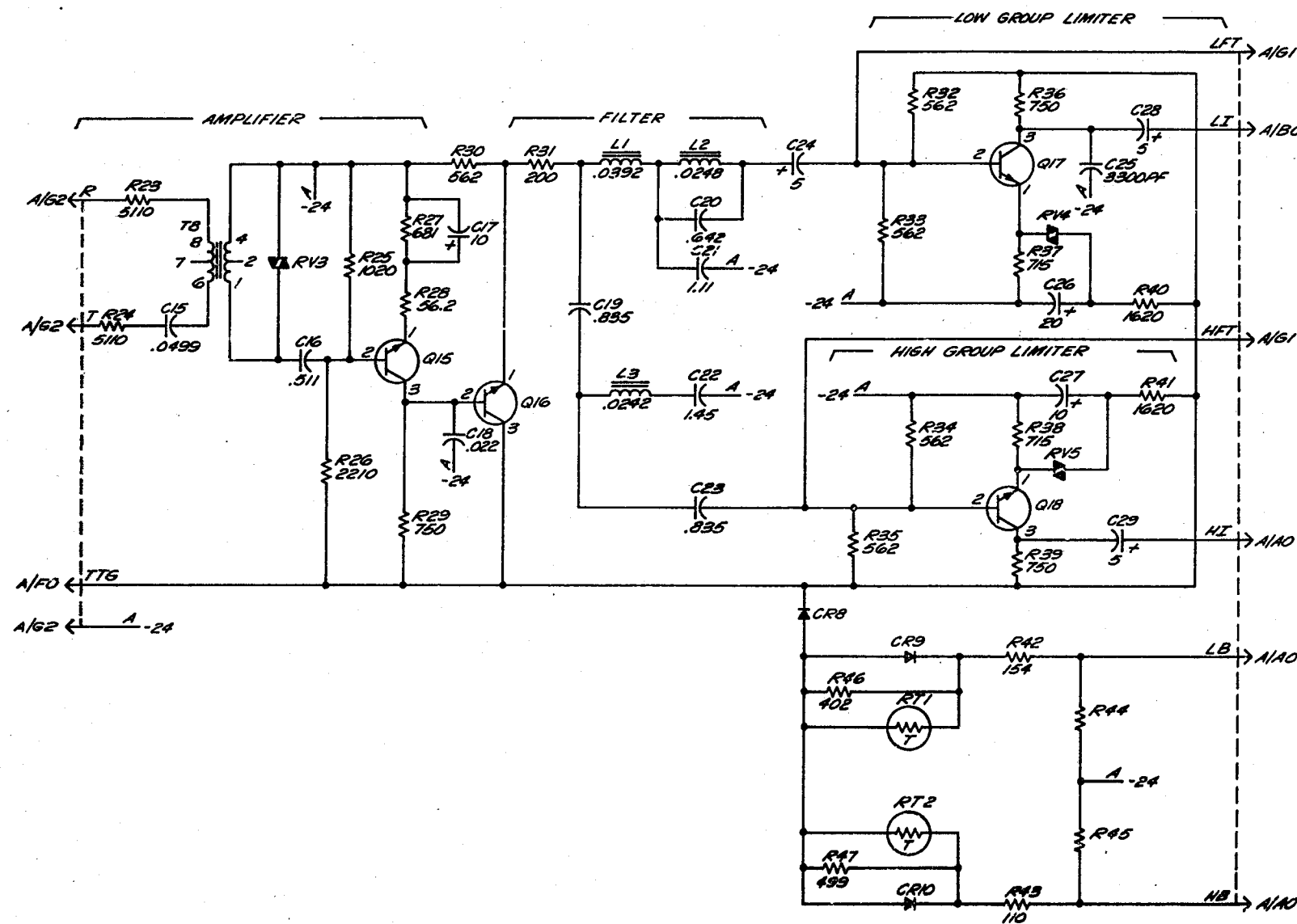
7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		65	4D1
BELL LABORATORIES	SD-69652-01		SHEET J7A

7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		65	4D1
BELL LABORATORIES	SD-69652-01		SHEET J7A

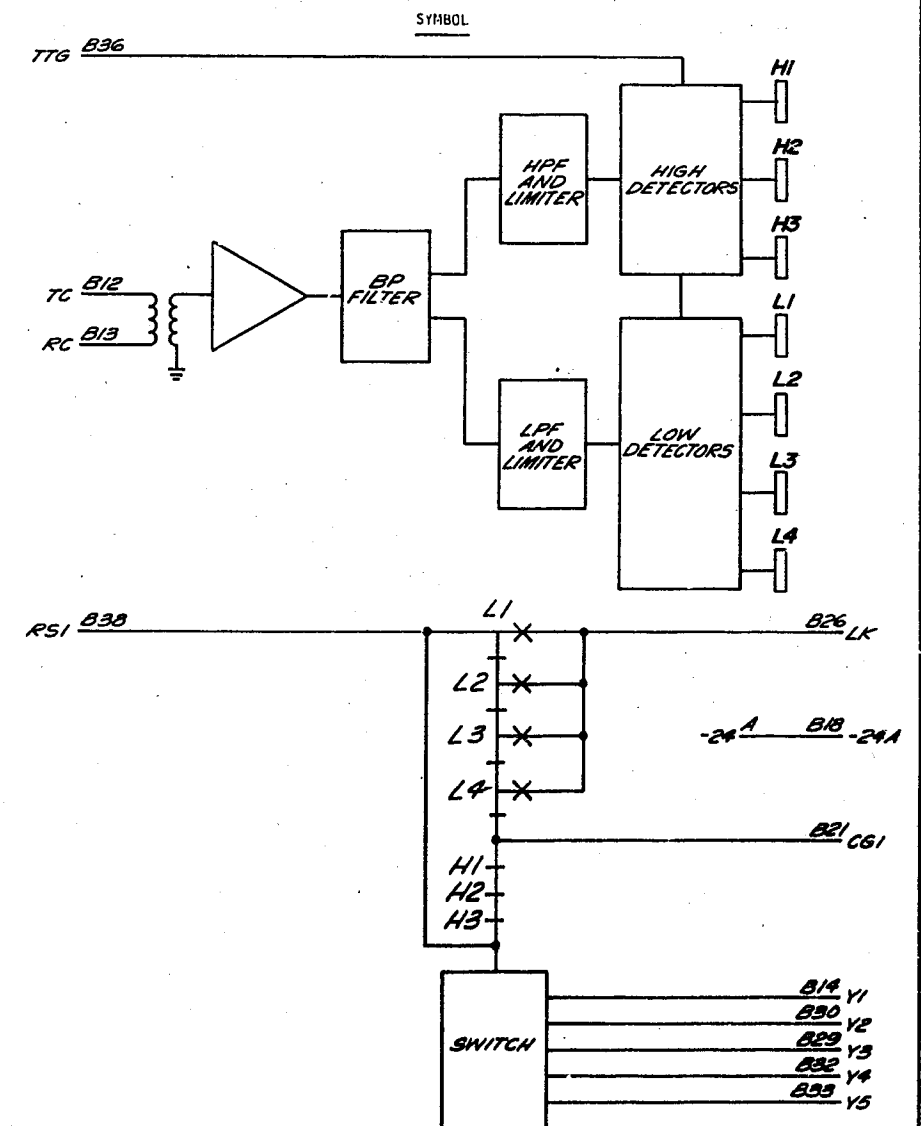
7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		65	4D1
BELL LABORATORIES	SD-69652-01		SHEET J7A

PART OF KTU 440A (MFR DISC) TOUGH-TONE ADAPTER CIRCUIT

MODULE CKT BOARD



MANUFACTURING REFERENCES	
CATEGORY	NO.
CONTROLLING DRAWING	SD-69906-01
KTU CODE	440A
CONNECTOR ON FRAME	



7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		65	4D1
BELL LABORATORIES	SD-69652-01	SHEET J7B	

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KTU 451A MUSIC ON HOLD CIRCUIT

COMPONENT LIST

CAPACITOR

DESIG	CODE
C1	5960, 1.47
C2	
C3	
C4	
C5	
C6	
C7	

RESISTOR

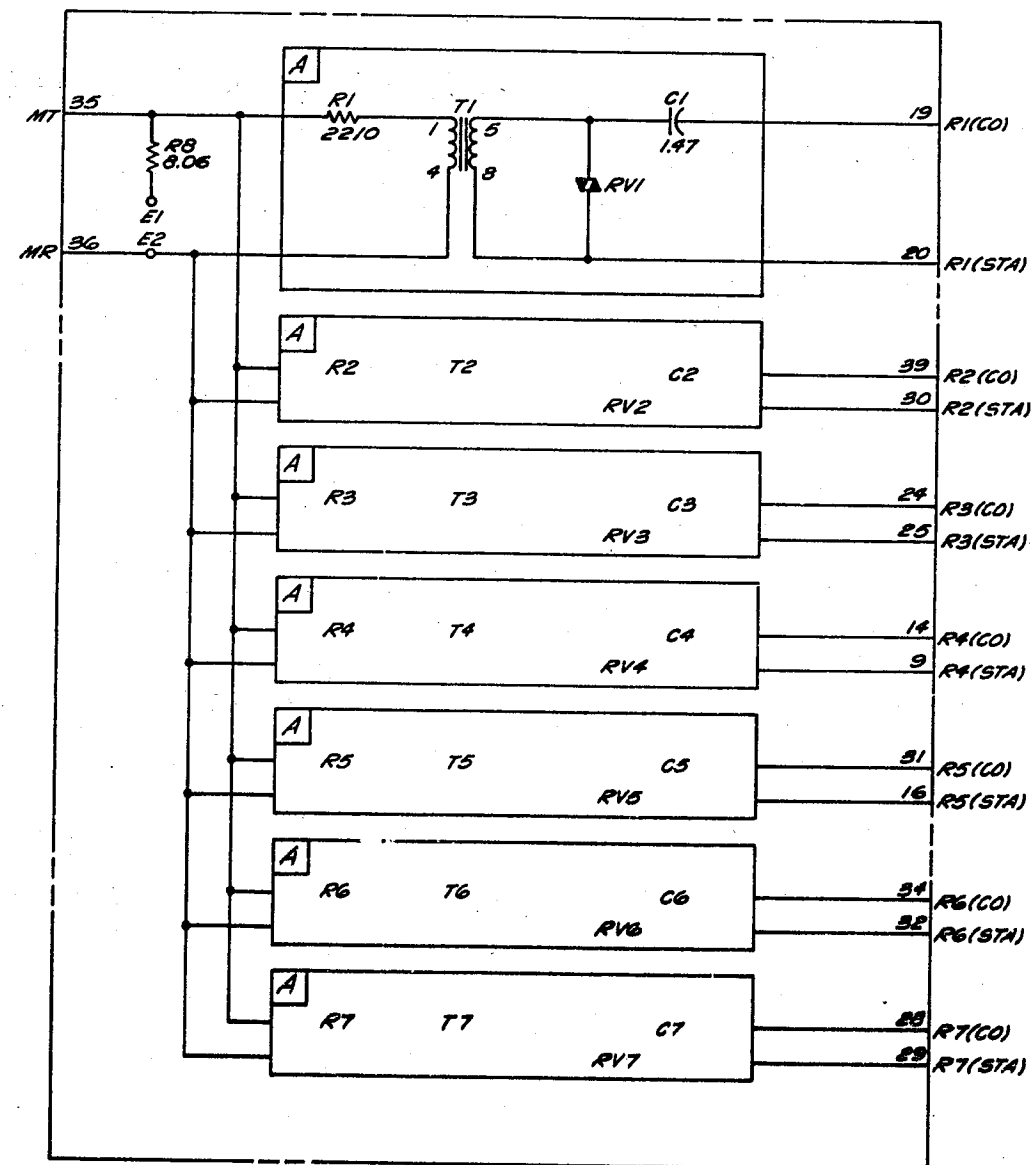
DESIG	CODE
R1	KS-20810, L1A, 2210
R2	
R3	
R4	
R5	KS-20289, L6C, 8.06
R6	
R7	
R8	

TRANSFORMER

DESIG	CODE
T1	2564N
T2	
T3	
T4	
T5	
T6	
T7	

VARISTOR

DESIG	CODE
RV1	100J
RV2	
RV3	
RV4	
RV5	
RV6	
RV7	



MANUFACTURING REFERENCES

CATEGORY	NO.
KTU CODE	451A

7A COMMUNICATION SYSTEM

DWG SIZE

65

ISSUE

4D1

BELL LABORATORIES

SD-69652-01

SHEET

J8

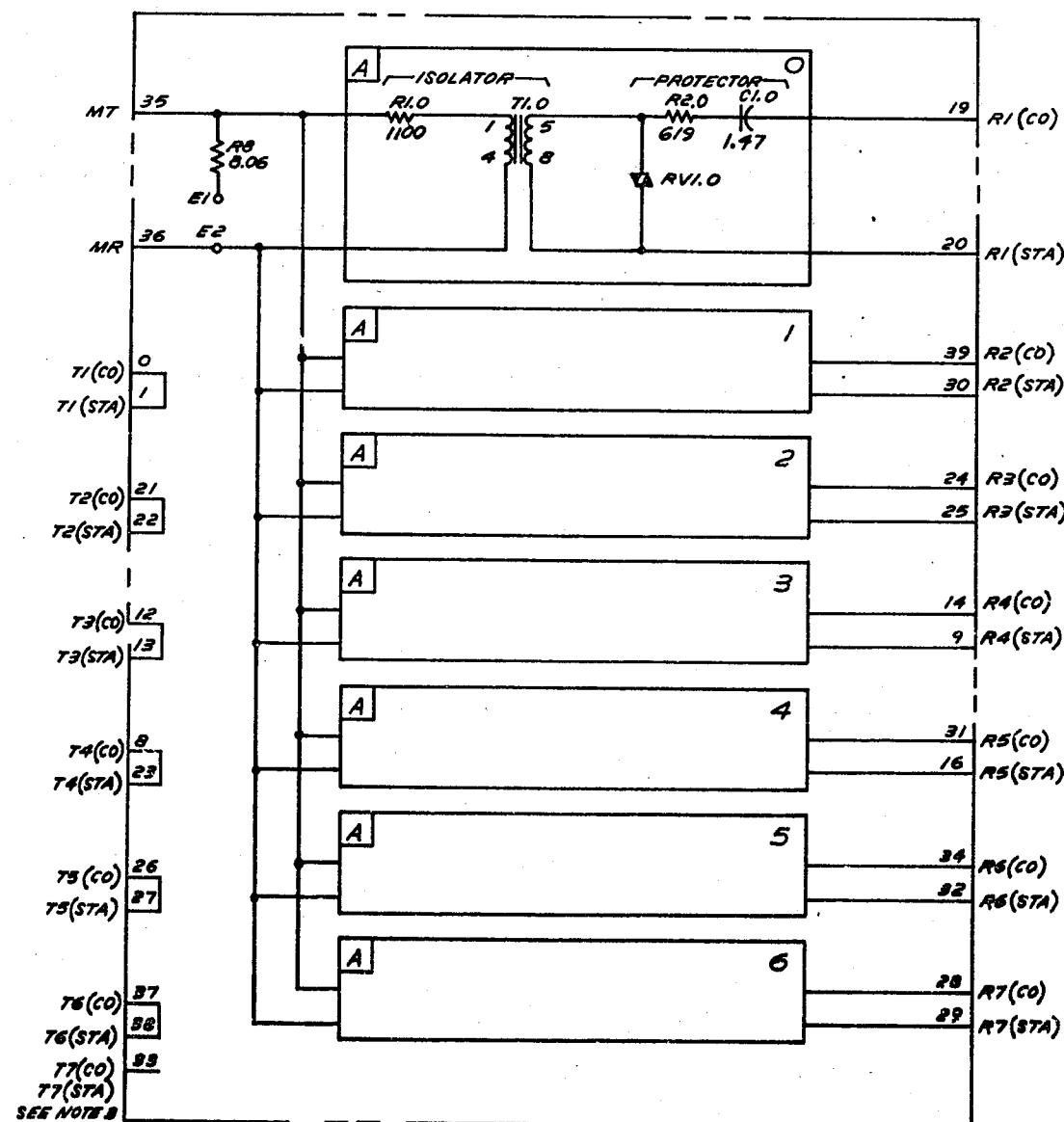
PRINTED IN U.S.A.

KTU 451B
MUSIC ON HOLD CIRCUIT

MANUFACTURING REFERENCES

CATEGORY	NO.
CONTROLLING DRAWING	SD-69922-01
KTU CODE	451B
CONNECTOR ON FRAME	

SYMBOL
SHOWN IN FS



NOTES:

- UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS,
CAPACITANCE VALUES ARE IN MICROFARADS,
VALUES PRECEDED BY THE SYMBOL + (PLUS)
OR - (MINUS) ARE IN VOLTS.
- GROUND RETURN.
- T(CO) AND T(STA) OF THE SEVENTH STATION SHOULD BE TIED
TOGETHER AS CLOSE TO THE KTU AS POSSIBLE.

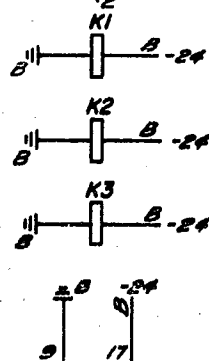
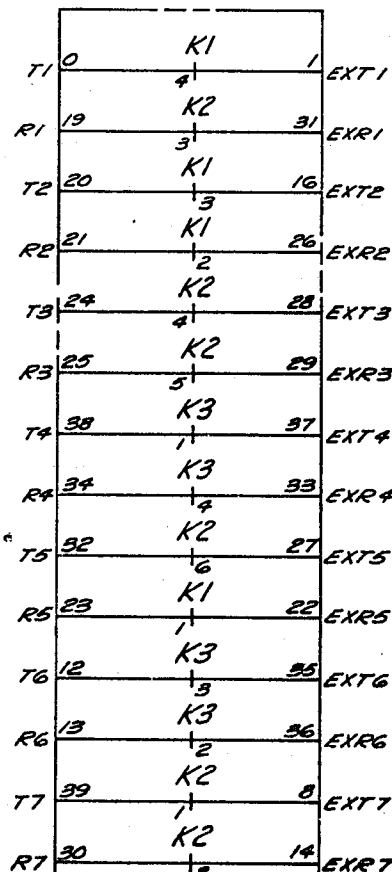
7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		6S	4D1
BELL LABORATORIES	SD-69652-01	SHEET J9	

U-388 (8-79)
PRINTED IN U.S.A.

RELAY

DESIG	K1		K2		K3					
CODE	MA1		MB5		MA1					
OPTION	CONT	LOC	CONT	LOC	CONT	LOC	CONT	LOC	CONT	LOC
	ARR		ARR		ARR		ARR		ARR	
6			EBM	C4						
5			EBM	C4						
4	EBM	A4	EBM	B4	EBM	C4				
3	EBM	B4	EBM	A4	EBM	D4				
2	EBM	B4	EBM	E4	EBM	D4				
1	EBM	D4	EBM	D4	EBM	C4				
COIL		E4		E4		F4				

KTU 452A POWER FAILURE CIRCUIT



MANUFACTURING REFERENCES

CATEGORY	NO.
KTU CODE	452A
CONNECTOR ON FRAME	

SYMBOL
AS SHOWN IN FS

NOTES:

- UNLESS OTHERWISE SPECIFIED:
VALUES PRECEDED BY THE SYMBOL + (PLUS)
OR - (MINUS) ARE IN VOLTS.

- GROUND RETURN.

7A COMMUNICATION SYSTEM

DWG SIZE
6S

ISSUE
4Di

BELL LABORATORIES

SD-69652-01

SHEET
J10

PRINTED IN U.S.A.

KTU 455A

TONE RINGING SIGNAL GENERATOR

COMPONENT LIST

CAPACITOR

DESIG	CODE
C1	575B
C2	575B
C3	KS-16048, L6, 5100PF
C6	577A, .0324

DIODE

DESIG	CODE
CR1	458C
CR2	458C
CR3	458C
CR4	458C

RESISTOR

DESIG	CODE
R1	KS-20810, L1A, 10K Ω
R2	KS-20810, L1A, 3320
R3	KS-20810, L1A, 10K Ω
R4	KS-20810, L1A, 3320
R5	KS-20810, L1A, 10K Ω
R6	KS-20810, L1A, 68.1K Ω
R7	KS-20810, L1A, 68.1K Ω
R8	KS-20810, L1A, 10K Ω
R9	KS-20810, L1A, 2210
R10	KS-20810, L1A, 511
R11	KS-20810, L1A, 511
R12	KS-20810, L1A, 46.4
R13	KS-20810, L1A, 100
R14	KS-20289, L6C, 316
R15	KS-14603, L1A, 162

TRANSFORMER

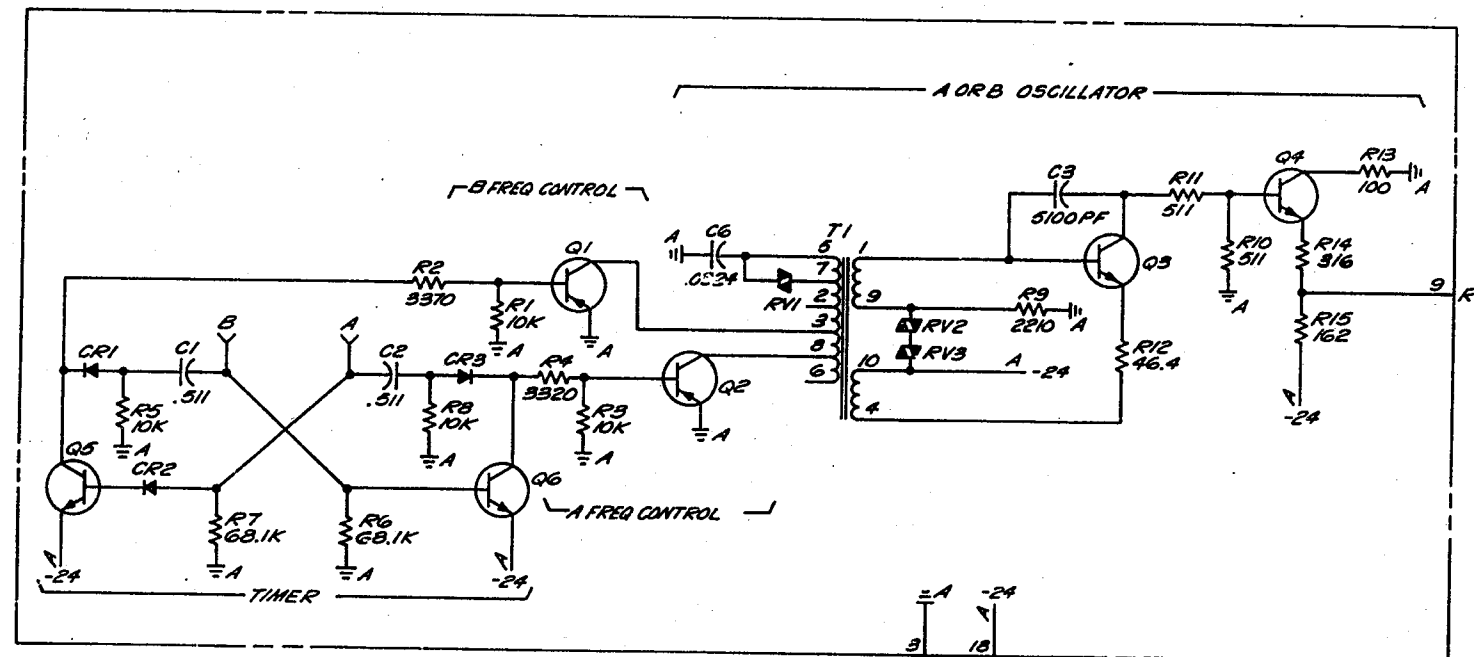
DESIG	CODE
T1	2597AB

TRANSISTOR

DESIG	CODE
Q1	51C
Q2	51C
Q3	66G
Q4	66G
Q5	66G
Q6	66G

VARIATOR

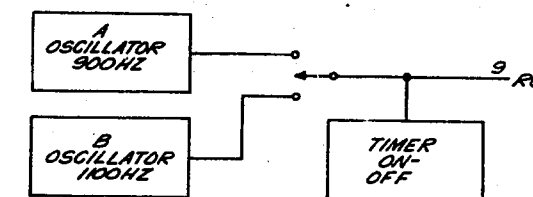
DESIG	CODE
RV1	100D
RV2	100D
RV3	100D



MANUFACTURING REFERENCES

CATEGORY	NO.
KTU CODE	455A
CONNECTOR ON FRAME	

SYMBOL



NOTES:

- UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS,
CAPACITANCE VALUES ARE IN MICROFARADS,
VALUES PRECEDED BY THE SYMBOL + (PLUS)
OR - (MINUS) ARE IN VOLTS.
- $\frac{1}{\infty}$ GROUND RETURN.

7A COMMUNICATION SYSTEM

DWG SIZE
6S

ISSUE
4D1

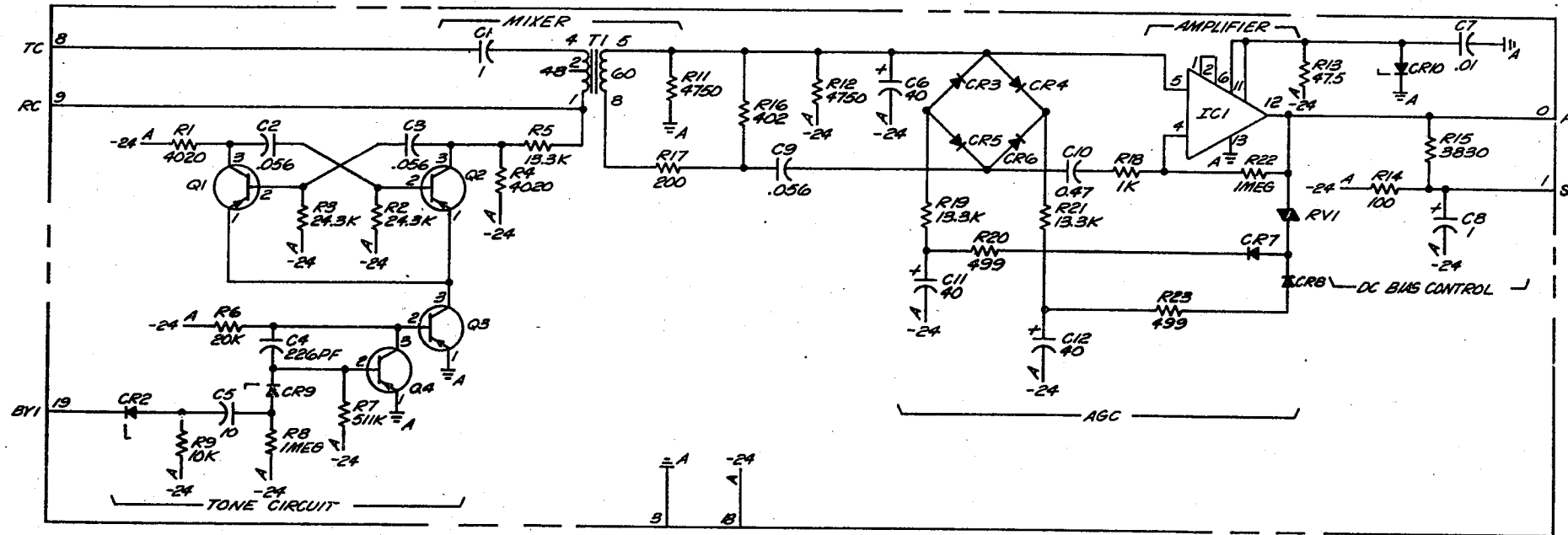
BELL LABORATORIES

SD-69652-01

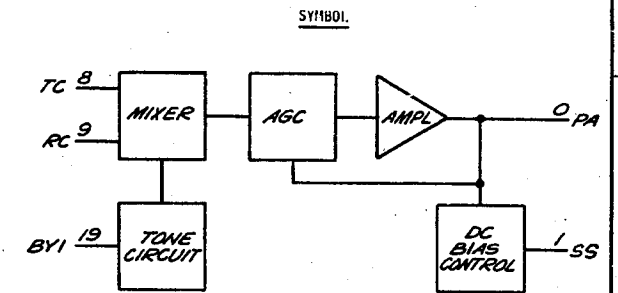
SHEET
J11

PRINTED IN U.S.A.

KTU 456A (MFR DISC) VOICE AND TONE ALERTING CIRCUIT



MANUFACTURING REFERENCES	
CATEGORY	NO.
KTU CODE	456A
CONNECTOR ON FRAME	



COMPONENT LIST

AMPLIFIER

DESIG	CODE
IC1	502A

CAPACITOR

DESIG	CODE
C1	596B, 1
C2	KS-19774, L5, .056
C3	KS-19774, L5, .056
C4	KS-16958, L34, 226PF
C5	604A
C6	602A
C7	KS-16048, L4, .01
C8	600A
C9	KS-19774, L5, .056
C10	KS-19774, L5, .470
C11	602A
C12	602A

DIODE

DESIG	CODE
CR2	459E
CR3	483A
CR4	483A
CR5	483A
CR6	483A
CR7	458C
CR8	458C
CR9	459D
CR10	446R

RESISTOR

DESIG	CODE
R1	KS-20810, L1A, 4020
R2	KS-20810, L1A, 24.3K
R3	KS-20810, L1A, 24.3K
R4	KS-20810, L1A, 4020
R5	KS-20810, L1A, 13.3K
R6	KS-20810, L1A, 20K
R7	KS-20810, L1A, 511K
R8	KS-20810, L1A, 1MEG

COMPONENT LIST (CONT)

RESISTOR (CONT)

DESIG	CODE
R9	KS-20810, L1A, 10K
R11	KS-20810, L1A, 4750
R12	KS-20810, L1A, 4750
R13	KS-20810, L1A, 47.5
R14	KS-20810, L1A, 100
R15	KS-20810, L1A, 3830
R16	KS-20810, L1A, 402
R17	KS-20810, L1A, 200
R18	KS-20810, L1A, 1K
R19	KS-20810, L1A, 13.3K
R20	KS-20810, L1A, 499
R21	KS-20810, L1A, 13.3K
R22	KS-20810, L1A, 1MEG
R23	KS-20810, L1A, 499

TRANSFORMER

DESIG	CODE
T1	2564N

TRANSISTOR

DESIG	CODE
Q1	51C
Q2	51C
Q3	51A
Q4	51C

VARISTOR

DESIG	CODE
RV1	103A

INPUT/OUTPUT INFORMATION

INPUT	PIN	OUTPUT	PIN
TC	B8	PA	B0
RC	B9	SS	B1
BY1	B19		
-24A	B18		
1AGRD	B3		

CIRCUIT DESCRIPTION

VOICE AND TONE ALERTING CIRCUIT - 456 KTU

THE VOICE AND TONE ALERTING CIRCUIT OPERATES WITH THE SELECTOR TO PROVIDE SIGNALING ON THE INTERCOM. THE CIRCUIT INCLUDES A PREAMPLIFIER WITH AUTOMATIC GAIN CONTROL AND A TONE BURST OSCILLATOR. IT ALSO PROVIDES OUTPUTS TO THE PAGING AMPLIFIER AND TO THE SELECTOR FOR GATING TO THE CALLED STATION.

A. TONE BURST

THE TC AND RC LEADS ARE CONNECTED IN THE 456 TO THE TIP AND RING OF THE INTERCOM PATH WHICH HAS SEIZED THE SELECTOR. (424). WHEN DIALING IS COMPLETED, THE SELECTOR PUTS A GROUND ON THE BY1 LEAD. THIS GROUND BREAKS DOWN DIODE CR2 AND CAUSES POTENTIAL AT THE CONNECTION OF CAPACITOR C5 AND RESISTOR R9 TO GO TO APPROXIMATELY -10 VOLTS. THIS CAUSES THE POTENTIAL AT THE ANODE OF DIODE CR9 TO GO POSITIVE, TAKING CR9 OUT OF BREAKDOWN AND FORWARD BIASING IT. AT THIS TIME A POSITIVE POTENTIAL APPEARS ON THE BASE OF TRANSISTOR Q4, TURNING IT OFF. Q4 REMAINS OFF UNTIL C5, CHARGING THROUGH RESISTORS R7 AND R9, ALLOWS THE POTENTIAL AT THE BASE OF Q4 TO GO NEGATIVE AGAIN. THE RESULT IS THAT Q4 TURNS OFF SHARPLY, REMAINS OFF FOR ABOUT ONE SECOND, AND THEN TURNS ON SHARPLY AGAIN. THIS CAUSES TRANSISTOR Q3 TO TURN ON FOR A ONE-SECOND BURST. Q3 SUPPLIES GROUND TO THE MULTIVIBRATOR COMPOSED OF TRANSISTORS Q1 AND Q2 AND ASSOCIATED CIRCUITRY. THIS CAUSES THE MULTIVIBRATOR TO OSCILLATE, CREATING A TONE BURST FOR ONE SECOND. THIS TONE BURST IS INTRODUCED TO THE RC LEAD BY RESISTOR R5. THE TONE BURST IS FED BOTH BACK TO THE CALLING PARTY AND INTO TRANSFORMER T1 TO THE PREAMPLIFIER. VOICE SIGNALS FROM THE CALLING PARTY ARE ALSO FED INTO THE PREAMPLIFIER. THE TC AND RC LEADS.

B. PREAMPLIFIER WITH AGC

THE INPUT TO THE PREAMPLIFIER SECTION IS THROUGH TRANSFORMER T1. RESISTORS R11 AND R12 DETERMINE THE DC LEVEL OF THE INPUT AND OUTPUT OF INTEGRATED CIRCUIT IC1 AT ONE-HALF A BATTERY. CAPACITOR C6 ESTABLISHES A BATTERY AS THE AC SIGNAL REFERENCE. THE INCOMING SIGNAL APPEARS ACROSS THE SECONDARY OF T1 WHERE IT IS MATCHED AND SLIGHTLY ATTENUATED BY RESISTORS R16 AND R17. THE SIGNAL FLOWS THROUGH CAPACITORS C9 AND C10 AND RESISTOR R18 TO THE NEGATIVE INPUT OF IC1. NEGATIVE FEEDBACK THROUGH RESISTOR R22 FIXES THE MAXIMUM OVERALL GAIN OF THE CIRCUIT.

CIRCUIT DESCRIPTION (CONT)

CAPACITORS C1, C9, AND C10 PROVIDE LOW FREQUENCY ROLL-OFF. DIODES CR3 THROUGH CR6 FORM A VARIABLE IMPEDANCE NETWORK BETWEEN THE CONNECTION OF C9 AND C10 TO THE POSITIVE INPUT TO IC1. IN THIS CONFIGURATION C9, C10, AND THE DIODE NETWORK FORM A T-TYPE ATTENUATOR. THE IMPEDANCE OF THE NETWORK IS INVERSELY PROPORTIONAL TO THE CURRENT FLOWING THROUGH RESISTOR R19, THE DIODE NETWORK, AND RESISTOR R21. THUS, THE IMPEDANCE OF THE DIODE NETWORK IS INVERSELY PROPORTIONAL TO THE DIFFERENCE IN POTENTIAL BETWEEN CAPACITORS C11 AND C12. THE DIFFERENCE IN POTENTIAL BETWEEN C11 AND C12 IS A FUNCTION OF THE OUTPUT VOLTAGE SWING OF IC1. THUS, WHEN THE OUTPUT OF IC1 IS HIGH IN AMPLITUDE (AC), C11 IS CHARGED POSITIVELY THROUGH VARISTORS RV1, DIODE CR7, AND RESISTOR R20, WHILE C12 IS CHARGED NEGATIVELY THROUGH RV1, CR8, AND R23. THIS CAUSES CURRENT TO FLOW THROUGH THE DIODE NETWORK LOWERING ITS IMPEDANCE. THIS IN TURN CAUSES THE INPUT SIGNAL TO IC1 TO BE ATTENUATED, LOWERING THE OUTPUT SIGNAL. CONVERSELY, A DECREASE IN THE OUTPUT SIGNAL CAUSES A DECREASE IN THE CURRENT FLOW THROUGH THE DIODE NETWORK AND AN INCREASE IN THE NETWORK IMPEDANCE. THIS CAUSES A DECREASE IN ATTENUATION AND HENCE AN INCREASE IN OUTPUT. BY THIS METHOD THE AMPLITUDE OF THE OUTPUT IS MADE LESS DEPENDENT ON CHANGES IN THE AMPLITUDE OF THE INPUT (AGC). RESISTORS R19, R20, R21, AND R23 WITH C11 AND C12 DETERMINE THE ATTACK AND RELEASE TIME OF THE AGC CIRCUIT. THE OUTPUT OF PA SUPPLIES THE PAGING SIGNAL TO THE PAGING AMPLIFIER. RESISTORS R14 AND R15 ATTENUATE THE OUTPUT OF IC1 TO A LEVEL THAT IS ACCEPTABLE FOR TRANSMISSION TO THE AMPLIFIERS IN THE TELEPHONE SETS. CAPACITOR C8 PROVIDES HIGH FREQUENCY ROLL-OFF. BY ATTENUATING THE SIGNAL IN THE MANNER SHOWN, THE DC LEVEL OF THE SS LEAD IS MAINTAINED AT APPROXIMATELY ONE-THIRD VOLT ABOVE A BATTERY. THE SIGNAL ON THE SS LEAD IS SWITCHED BY THE SELECTOR TO THE VS-LEAD OF THE CALLED STATION. IF A TELEPHONE SET IS RECEIVING CO/PBX RINGING ON ITS CO-LEAD AT THE SAME TIME THAT VOICE AND TONE SIGNALING APPEARS ON ITS VS-LEAD, THE VOICE AND TONE SIGNALING IS GIVEN PRECEDENCE.

NOTES:

- UNLESS OTHERWISE SPECIFIED: RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICROFARADS, VALUES PRECEDED BY THE SYMBOL + (PLUS) OR - (MINUS) ARE IN VOLTS.
- GROUND RETURN.

7A COMMUNICATION SYSTEM

DWG SIZE

65

ISSUE

4D1

BELL LABORATORIES

SD-69652-01

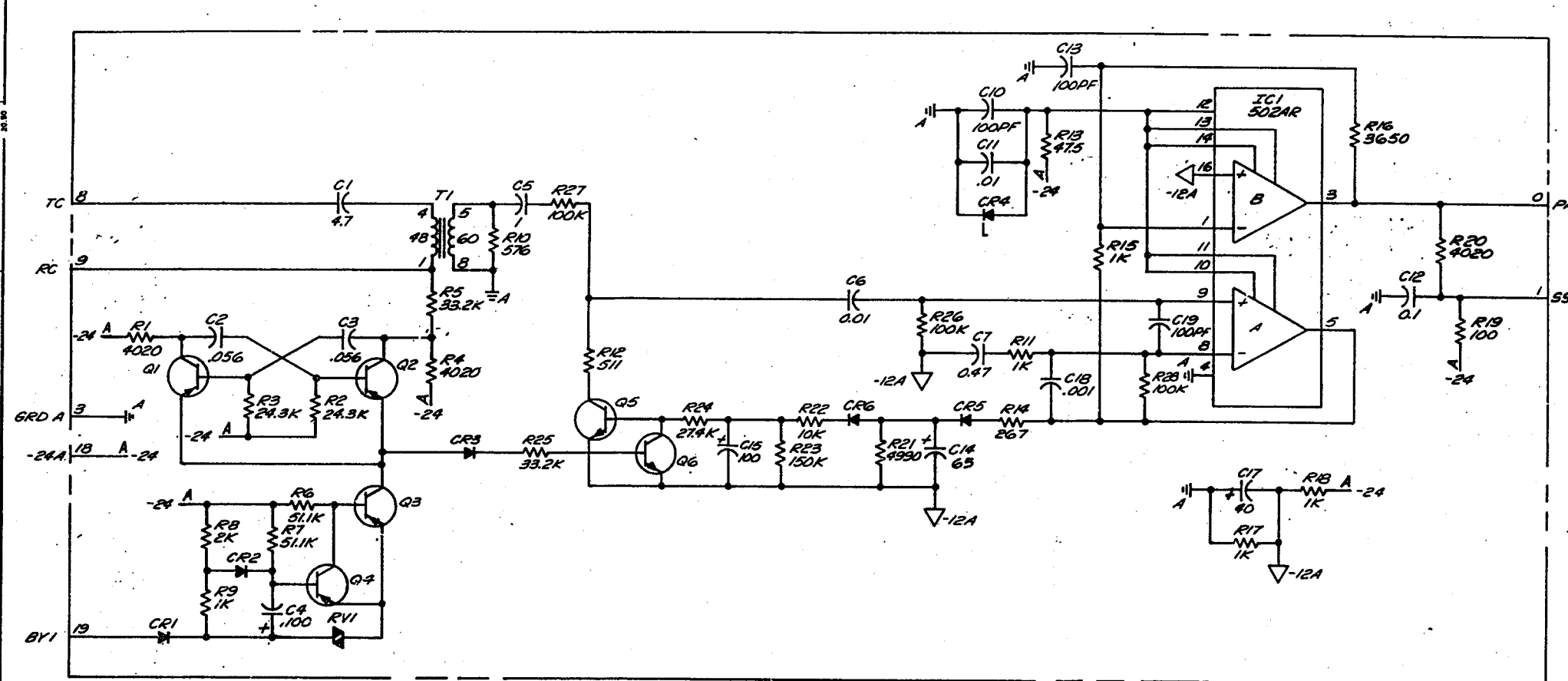
SHEET

J12

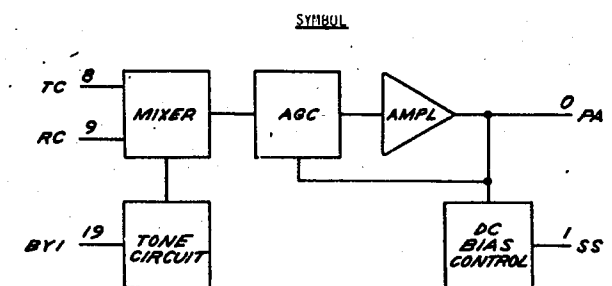
PRINTED IN U.S.A.

KTU 456B

VOICE AND TONE ALERTING CIRCUIT



MANUFACTURING REFERENCES	
CATEGORY	NO.
KTU CODE	456B
CONNECTOR ON FRAME	



COMPONENT LIST

AMPLIFIER

DESIG	CODE
IC1	502AR

CAPACITOR

DESIG	CODE
C1	KS-20736, L2, 4.7 OR EQUIVALENT
C2	KS-19774, L5, 0.056
C3	KS-19774, L5, 0.056
C4	602B, 100
C5	KS-19774, L9, 1
C6	KS-19774, L1, 0.01
C7	KS-19774, L5, 0.47
C10	KS-19774, L2, 100PF
C11	KS-16048, L4, 0.01
C12	KS-19774, L5, 0.1
C13	KS-19774, L2, 100PF
C14	601A, 5
C15	602B, 100
C17	602A, 40
C18	KS-19774, L1, .001
C19	KS-19774, L2, 100PF

COMPONENT LIST (CONT)

DIODE

DESIG	CODE
CR1	458C
CR2	458C
CR3	458C
CR4	446R
CR5	458C
CR6	458C

RESISTOR

DESIG	CODE
R1	KS-20616, L1A, 4020
R2	KS-20616, L1A, 24.3K
R3	KS-20616, L1A, 24.3K
R4	KS-20616, L1A, 4020
R5	KS-20616, L1A, 33.2K
R6	KS-20616, L1A, 51.1K
R7	KS-20616, L1A, 51.1K
R8	KS-20810, L1A, 2K
R9	KS-20810, L1A, 1K
R10	KS-20810, L1A, 576
R11	KS-20810, L1A, 1K
R12	KS-20810, L1A, 511

COMPONENT LIST (CONT)

RESISTOR (CONT)

DESIG	CODE
R13	KS-20810, L1A, 47.5
R14	KS-20810, L1A, 267
R15	KS-20810, L1A, 1K
R16	KS-20810, L1A, 3650
R17	KS-20810, L1A, 1K
R18	KS-20810, L1A, 1K
R19	KS-20289, L6C, 100
R20	KS-20616, L1A, 4020
R21	KS-20616, L1A, 4990
R22	KS-20616, L1A, 10K
R23	KS-20616, L1A, 150K
R24	KS-20616, L1A, 27.4K
R25	KS-20616, L1A, 33.2K
R26	KS-20616, L1A, 100K
R27	KS-20616, L1A, 100K
R28	KS-20616, L1A, 100K

TRANSFORMER

DESIG	CODE
T1	2564BP

COMPONENT LIST (CONT)

TRANSISTOR

DESIG	CODE
Q1	51C
Q2	51C
Q3	51F
Q4	51F
Q5	66G
Q6	66J

VARIATOR

DESIG	CODE
RV1	106B

NOTES:

- UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS,
CAPACITANCE VALUES ARE IN MICROFARADS,
VALUES PRECEDED BY THE SYMBOL + (PLUS)
OR - (MINUS) ARE IN VOLTS.
- GROUND RETURN.

7A COMMUNICATION SYSTEM

DWG SIZE	ISSUE
65	4D1
SHEET	J13

BELL LABORATORIES

SD-69652-01-

PRINTED IN U.S.A.

KTU 457B (MFR DISC)
PAGING AMPLIFIER

COMPONENT LIST

AMPLIFIER

DESIG	CODE
A1	502A

CAPACITOR

DESIG	CODE
C1	701C
C2	542AA
C3	KS-19774, L1, .01
C4	KS-19658, L17, 500
C5	KS-19774, L1, 1000PF
C6	601B

DIODE

DESIG	CODE
CR1	458C
CR2	458C
CR3	446R
CR4	458C
CR5	458C

POTENTIOMETER

DESIG	CODE
R13	KS-19817, 5K

RESISTOR

DESIG	CODE
R1	KS-20810, 8250
R2	KS-20810, 1470
R3	KS-20810, 1470
R4	KS-20810, 8250
R5	KS-20810, 5110
R6	KS-20810, 5110
R7	KS-20810, 5110
R8	KS-20810, 5110
R9	KS-20810, 5110
R10	KS-20810, 5110
R11	KS-20810, 10K
R12	KS-20810, 46.4
R14	KS-20810, 1100

TRANSFORMER

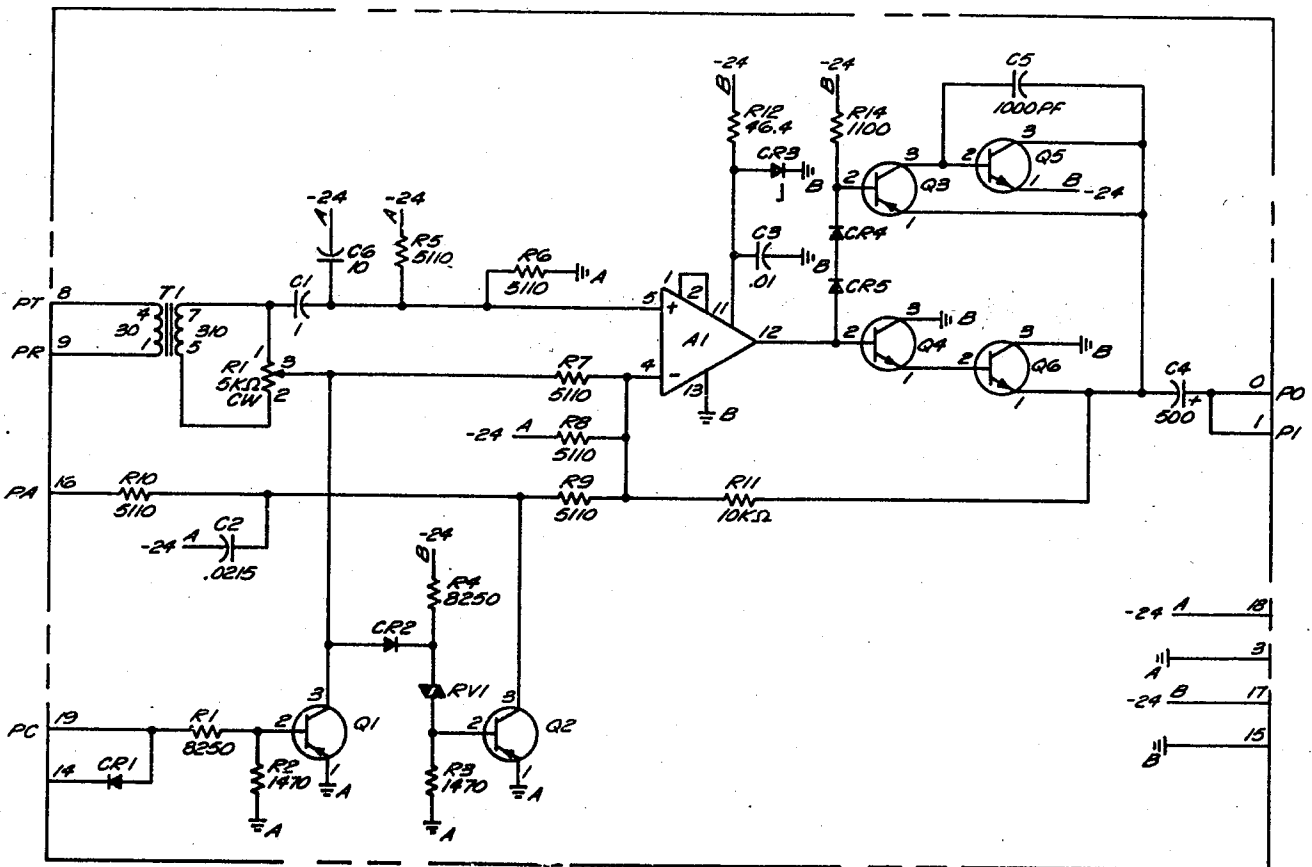
DESIG	CODE
T1	2564C

TRANSISTOR

DESIG	CODE
Q1	51C
Q2	51C
Q3	51B
Q4	66L
Q5	20L
Q6	20L

VARIATOR

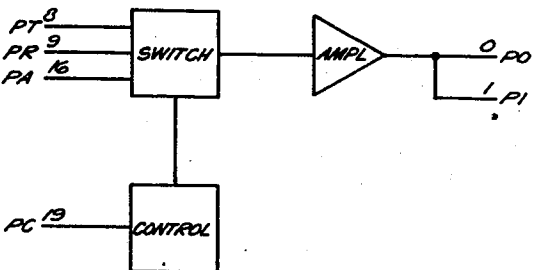
DESIG	CODE
RV1	100A



MANUFACTURING REFERENCES

CATEGORY	NO.
KTU CODE	457B
CONNECTOR ON FRAME	

SYMBOL



NOTES:

- UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS,
CAPACITANCE VALUES ARE IN MICROFARADS,
VALUES PRECEDED BY THE SYMBOL + (PLUS)
OR - (MINUS) ARE IN VOLTS.
- GROUND RETURN.

7A COMMUNICATION SYSTEM		DWG SIZE 6S	ISSUE 401
BELL LABORATORIES		SD-69652-01	SHEET J14

KTU 457C PAGING AMPLIFIER

COMPONENT LIST

RELAY

K1
337A



RELAY NOT ADJUSTABLE, REPLACE WHEN THERE IS MALFUNCTION.

AMPLIFIER

DESIG CODE
A1 502A

CAPACITOR

DESIG CODE
C2 602C
C3 542AA
C4 KS-19774, L1, .01
C5 KS-19774, L5, .1
C6 KS-19658, L17, 500

DIODE

DESIG CODE
CR1 446R
CR2 458C
CR3 458C

RESISTOR

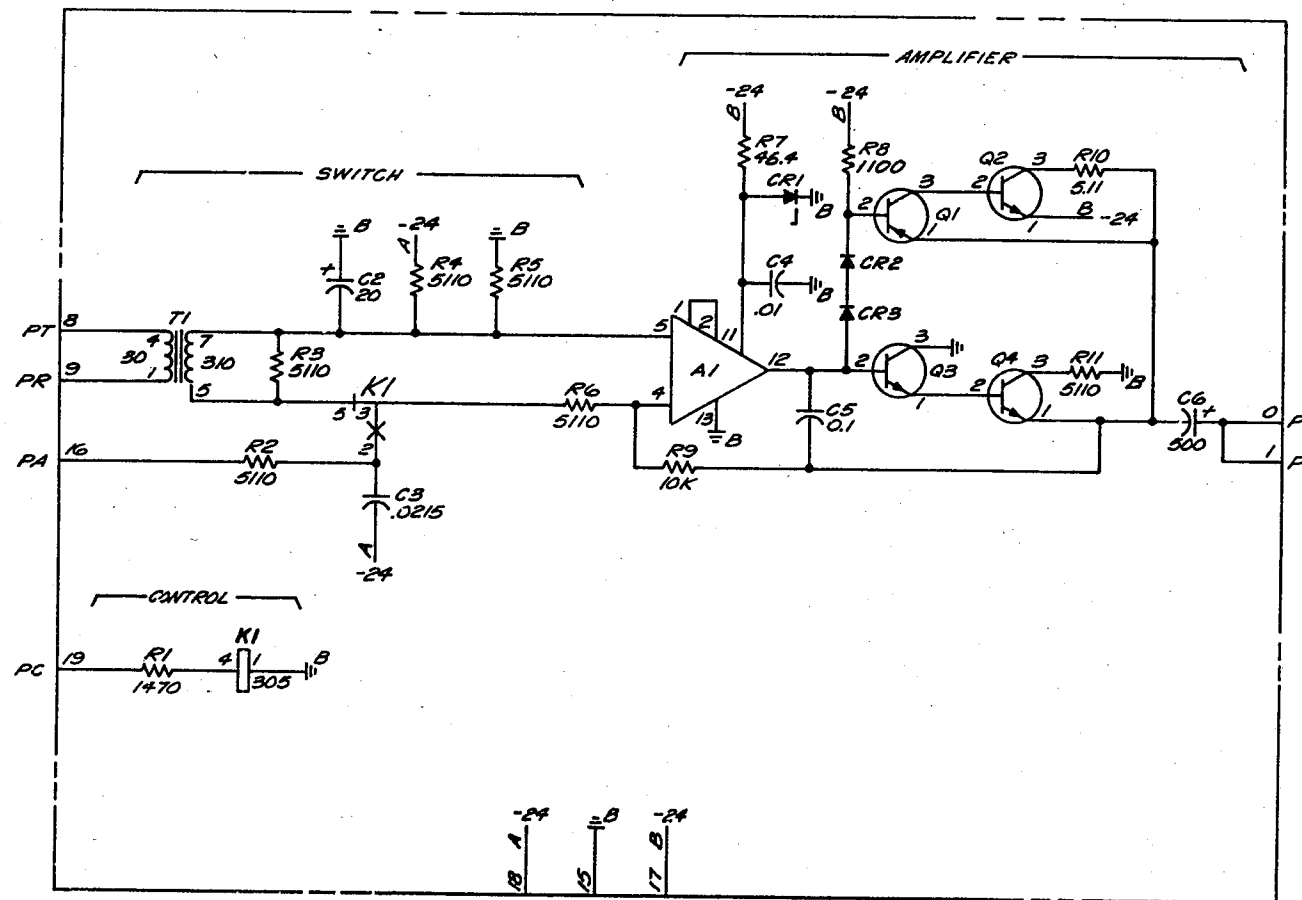
DESIG CODE
R1 KS-20810, L1, 1470
R2 KS-20810, L1, 5110
R3 KS-20810, L1, 5110
R4 KS-20810, L1, 5110
R5 KS-20810, L1, 5110
R6 KS-20810, L1, 5110
R7 KS-20810, L1, 46.4
R8 KS-20810, L1, 1100
R9 KS-20810, L1, 10K
R10 KS-14603, L1A0, 5.11
R11 KS-14603, L1A0, 5.11

TRANSFORMER

DESIG CODE
T1 2564C

TRANSISTOR

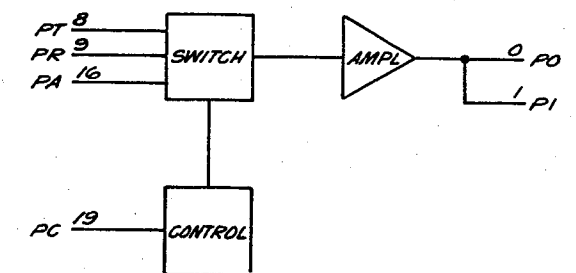
DESIG CODE
Q1 51B
Q2 20L
Q3 66L
Q4 20L



MANUFACTURING REFERENCES

CATEGORY	NO.
KTU CODE	457C
CONNECTOR ON FRAME	

SYMBOL

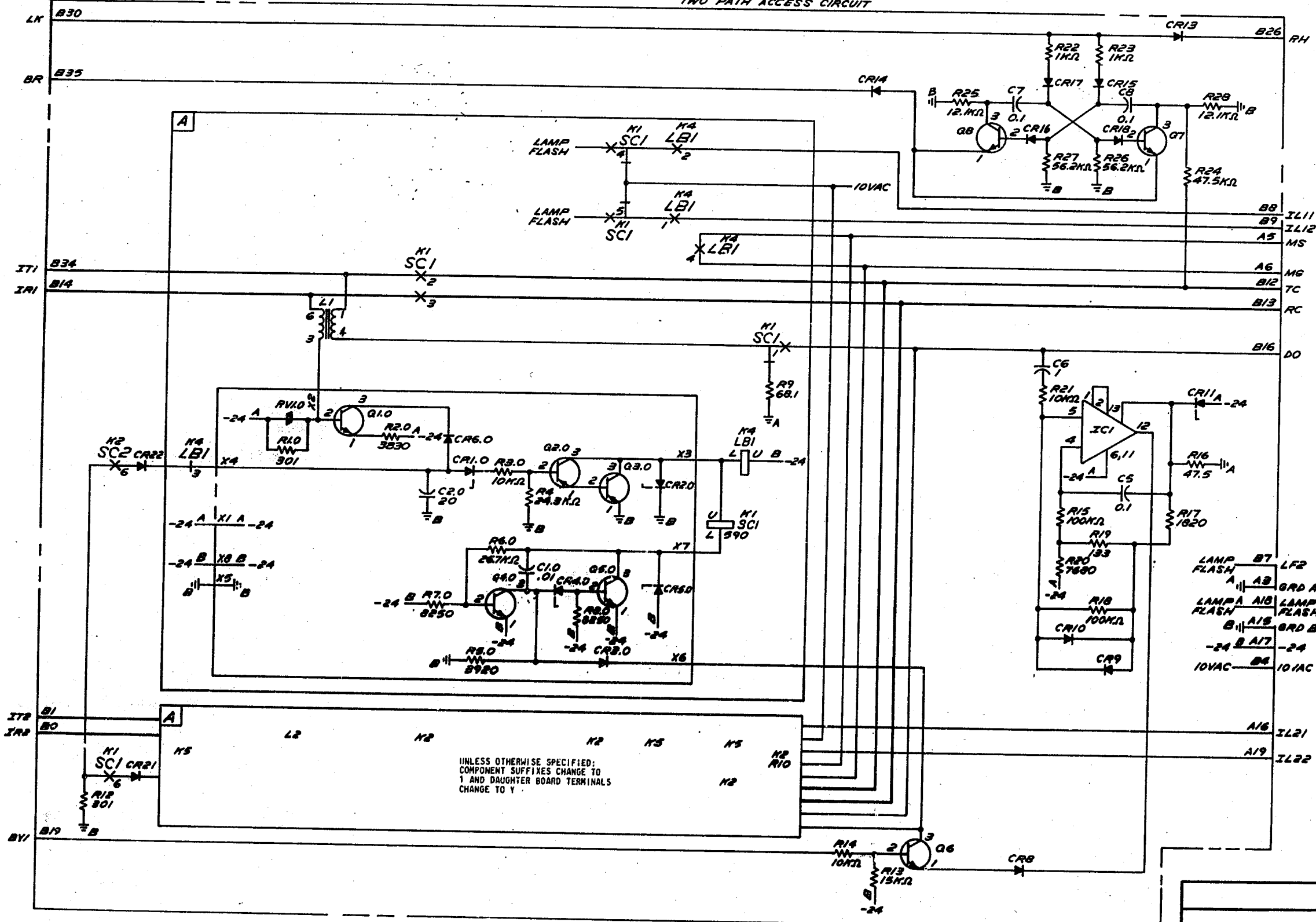


NOTES:

- UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS,
CAPACITANCE VALUES ARE IN MICROFARADS,
VALUES PRECEDED BY THE SYMBOL + (PLUS)
OR - (MINUS) ARE IN VOLTS.
- ⊥ GROUND RETURN.

7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		6S	4D1
BELL LABORATORIES	SD-69652-01	SHEET	
		J15	

PART OF KTU 460A (MFR DISC) TWO PATH ACCESS CIRCUIT



7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		6S	4D1
BELL LABORATORIES	SD-69652-01	SHEET	
		J16A	

COMPONENT LIST

RELAY

DESIG	K1	K2	K4	K5	
CODE	MB5	MB5	MA4	MA4	
OPTION					
CONT	LOC	CONT	LOC	CONT	LOC
ARR		ARR		ARR	
6	EMB A/G0	EMB A/D0			
5	EBM A/B4	EBM A/F4			
4	EBM A/B4	EBM A/F4	EMB A/C4	EMB A/F4	
3	EBM A/C2	EBM A/F2	EBM A/D1	EBM A/G1	
2	EBM A/C2	EBM A/F2	EBM A/B4	EBM A/F4	
1	EMB A/C5	EMB A/F5	EMB A/B4	EMB A/F4	
COIL	EMB A/E4	EMB A/G4	EMB A/D4	EMB A/G4	

RELAYS NOT ADJUSTABLE. REPLACE WHEN THERE IS A MALFUNCTION.

AMPLIFIER

DESIG	LOC	CODE
IC1	A/D7	502A

CAPACITOR

DESIG	LOC	CODE
C1.0	A/E3	KS-19774, L1, .01
C1.1	A/G3	KS-19774, L1, .01
C2.0	A/E2	602C
C2.1	A/G3	602C
C5	A/D7	KS-19774, L1, 0.1
C6	A/D6	701G, 1
C7	A/A6	KS-19774, L1, 0.1
C8	A/A7	KS-19774, L1, 0.1

DIODE

DESIG	LOC	CODE
CR1.0	A/D3	459G
CR1.1	A/G3	459G
CR2.0	A/E4	459AJ
CR2.1	A/G3	459AJ
CR3.0	A/F4	458C
CR3.1	A/G3	458C
CR4.0	A/E3	459J
CR4.1	A/G3	459J
CR5.0	A/E4	459AJ
CR5.1	A/G3	459AJ
CR6.0	A/D3	458C
CR6.1	A/G3	458C
CR8	A/G6	458A
CR9	A/F7	458C
CR10	A/F7	458C
CR11	A/D7	446R
CR13	A/A8	458A
CR14	A/A5	446F
CR15	A/A7	446K
CR16	A/B6	458C
CR17	A/A6	446K
CR18	A/B7	458C
CR21	A/G1	458A
CR22	A/D1	458A

INDUCTOR

DESIG	LOC	CODE
L1	A/C2	1682A
L2	A/F2	1682A

COMPONENT LIST (CONT)

RESISTOR

DESIG	LOC	CODE
R1.0	A/D2	KS-20810, L1A, 301
R1.1	A/G3	KS-20810, L1A, 301
R2.0	A/D2	KS-20810, L1A, 3830
R2.1	A/G3	KS-20810, L1A, 3830
R3.0	A/D3	KS-20810, L1A, 10KΩ
R3.1	A/G3	KS-20810, L1A, 10KΩ
R4.0	A/E4	KS-20810, L1A, 24.3KΩ
R4.1	A/G3	KS-20810, L1A, 24.3KΩ
R5.0	A/F3	KS-20810, L1A, 3920
R5.1	A/G3	KS-20810, L1A, 3920
R6.0	A/E3	KS-20810, L1A, 26.7KΩ
R6.1	A/G3	KS-20810, L1A, 26.7KΩ
R7.0	A/E3	KS-20810, L1A, 8250
R7.1	A/G3	KS-20810, L1A, 8250
R8.0	A/F3	KS-20810, L1A, 8250
R8.1	A/G3	KS-20810, L1A, 8250
R9	A/D5	KS-20289, L6C, 68.1
R10	A/G5	KS-20289, L6C, 68.1
R12	A/G0	KS-20810, L1A, 301
R13	A/H5	KS-20810, L1A, 15KΩ
R14	A/G5	KS-20810, L1A, 10KΩ
R15	A/E6	KS-20810, L1A, 100KΩ
R16	A/D7	KS-20810, L1A, 47.5
R17	A/E7	KS-20810, L1A, 1820
R18	A/E7	KS-20810, L1A, 100KΩ
R19	A/E7	KS-20810, L1A, 133
R20	A/E6	KS-20810, L1A, 7680
R21	A/D6	KS-20810, L1A, 10KΩ
R22	A/A6	KS-20810, L1A, 1KΩ
R23	A/A7	KS-20810, L1A, 1KΩ
R24	A/E7	KS-20810, L1A, 47.5KΩ
R25	A/B6	KS-20810, L1A, 12.1KΩ
R26	A/B7	KS-20810, L1A, 56.2KΩ
R27	A/B6	KS-20810, L1A, 56.2KΩ
R28	A/A7	KS-20810, L1A, 12.1KΩ

TRANSISTOR

DESIG	LOC	CODE
Q1.0	A/D2	66L
Q1.1	A/G3	66L
Q2.0	A/D3	51A
Q2.1	A/G3	51A
Q3.0	A/D4	51A
Q3.1	A/G3	51A
Q4.0	A/E3	66G
Q4.1	A/G3	66G
Q5.0	A/E4	66G
Q5.1	A/G3	66G
Q6	A/G6	66G
Q7	A/B7	66G
Q8	A/B6	66G

VARIATOR

DESIG	LOC	CODE
RV1.0	A/D2	106A
RV1.1	A/G3	106A

MANUFACTURING REFERENCES

CATEGORY	NO.
KTU CODE	460A

7A COMMUNICATION SYSTEM

DWG SIZE
6S

ISSUE
4D1

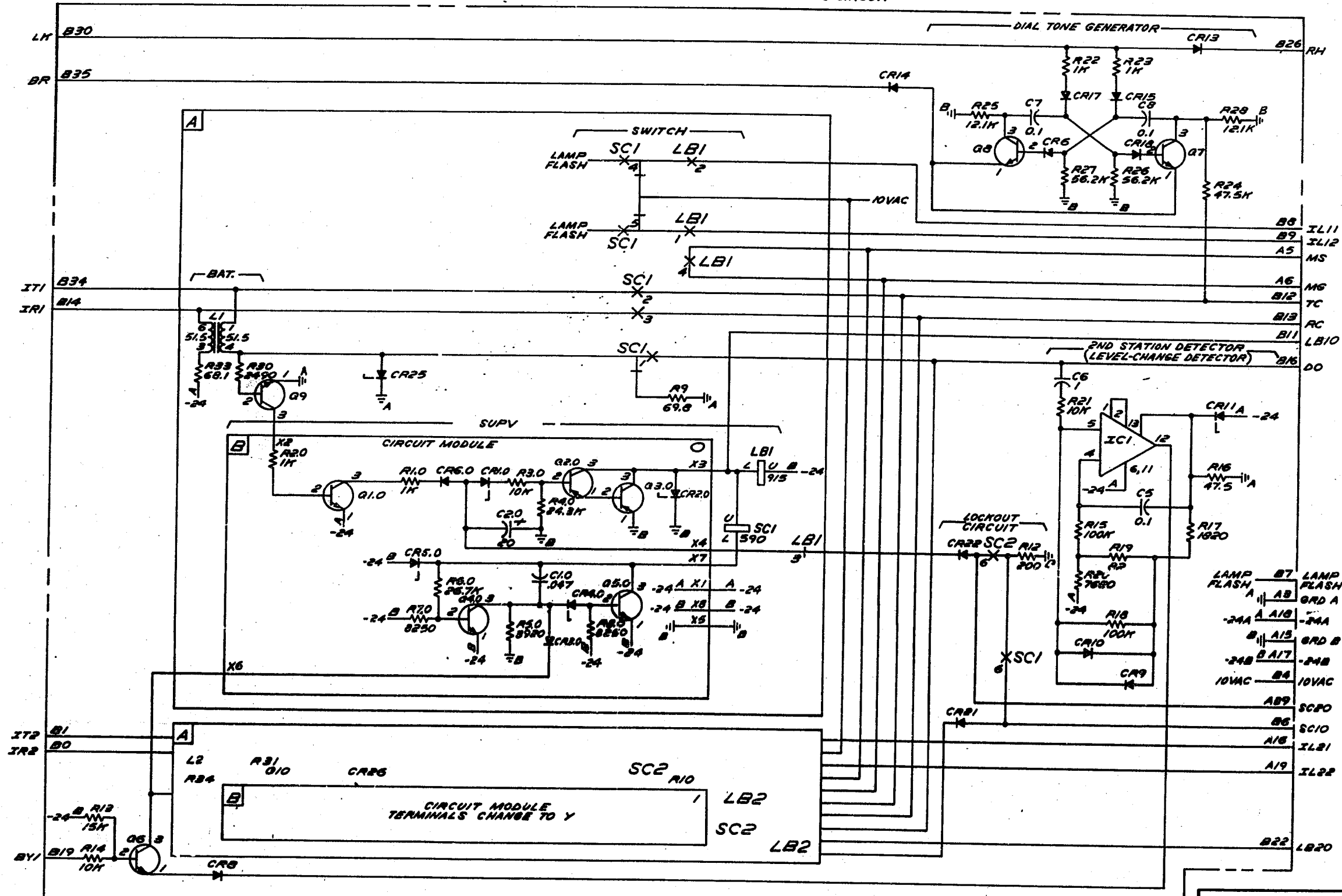
BELL LABORATORIES

SD-69652-01

SHEET
J16B

PRINTED IN U.S.A.

PART OF KTU 460C
TWO PATH ACCESS CIRCUIT



7A COMMUNICATION SYSTEM

DWG SIZE	
----------	--

ISSUE

65

401

BELL LABORATORIES

SD-69652-01

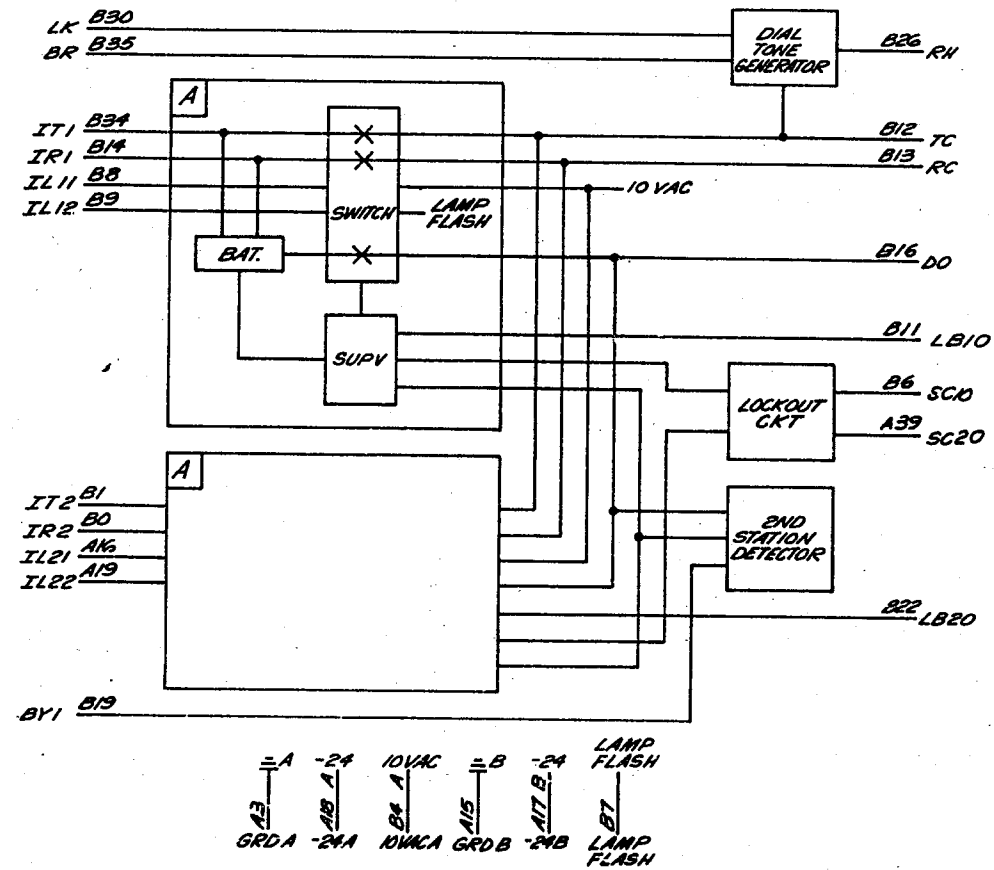
SHEET
117A

617A

MADE IN U.S.A.

PART OF KTU 460C TWO PATH ACCESS CIRCUIT

SYMBOL



MANUFACTURING REFERENCES	
CATEGORY	NO.
CONTROLLING DRAWING	SD-69930-01
KTU CODE	460C
CONNECTOR ON FRAME	

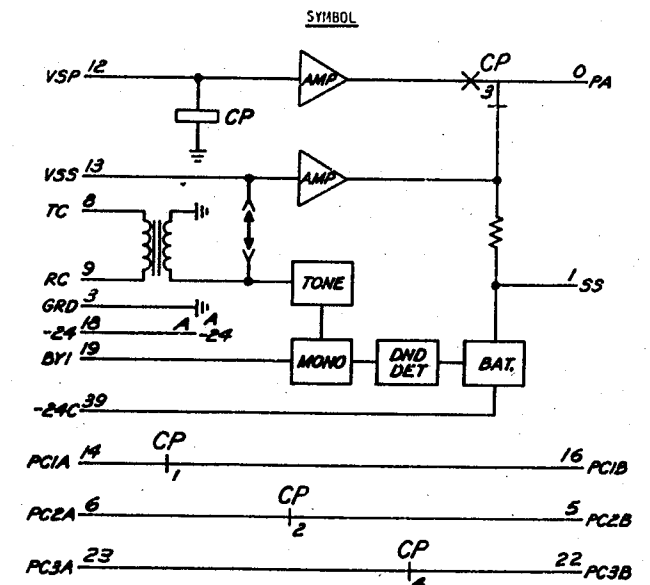
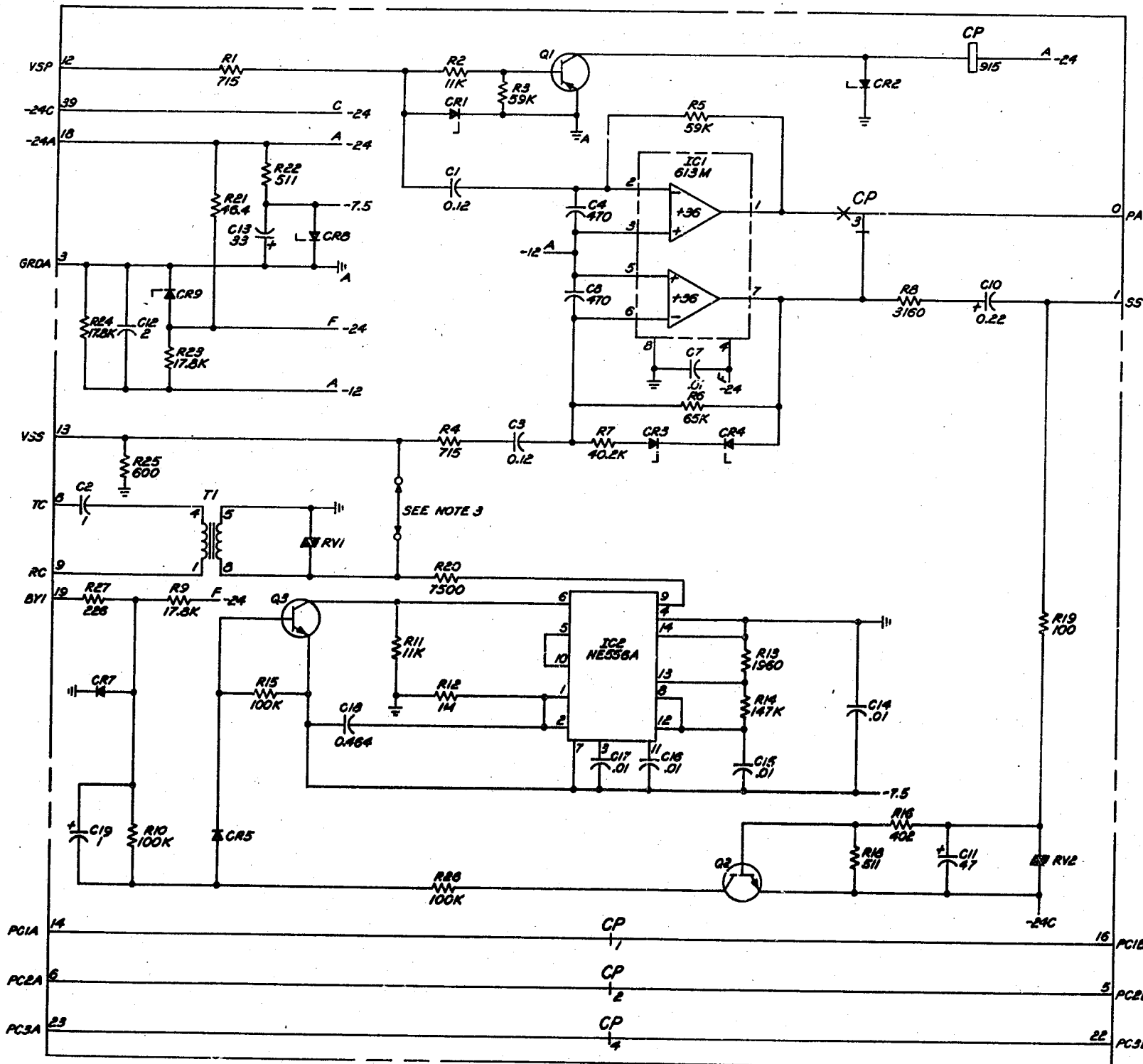
7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		6S	4D1
BELL LABORATORIES	SD-69652-01	SHEET J17B	

PRINTED IN U.S.A.

KTU 468B
VOICE AND TONE CIRCUIT
WITH STATION BUSY DETECT

MANUFACTURING REFERENCES

CATEGORY	NO.
CONTROLLING DRAWING	AP3-837236
KTU CODE	463B
CONNECTOR ON FRAME	



NOTES:

- UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS,
K IS FOR KILOHMS,
CAPACITANCE VALUES ARE IN MICROFARADS,
VALUES PRECEDED BY THE SYMBOL + (PLUS)
OR - (MINUS) ARE IN VOLTS.
- ⊥ GROUND RETURN.
- PROVIDE STRAP WHEN COMKEY SYSTEM IS NOT
EQUIPPED WITH COMMON SYSTEM VOICE SWITCH
(HFAI).

7A COMMUNICATION SYSTEM

DWG SIZE
65

ISSUE
4D1

BELL LABORATORIES

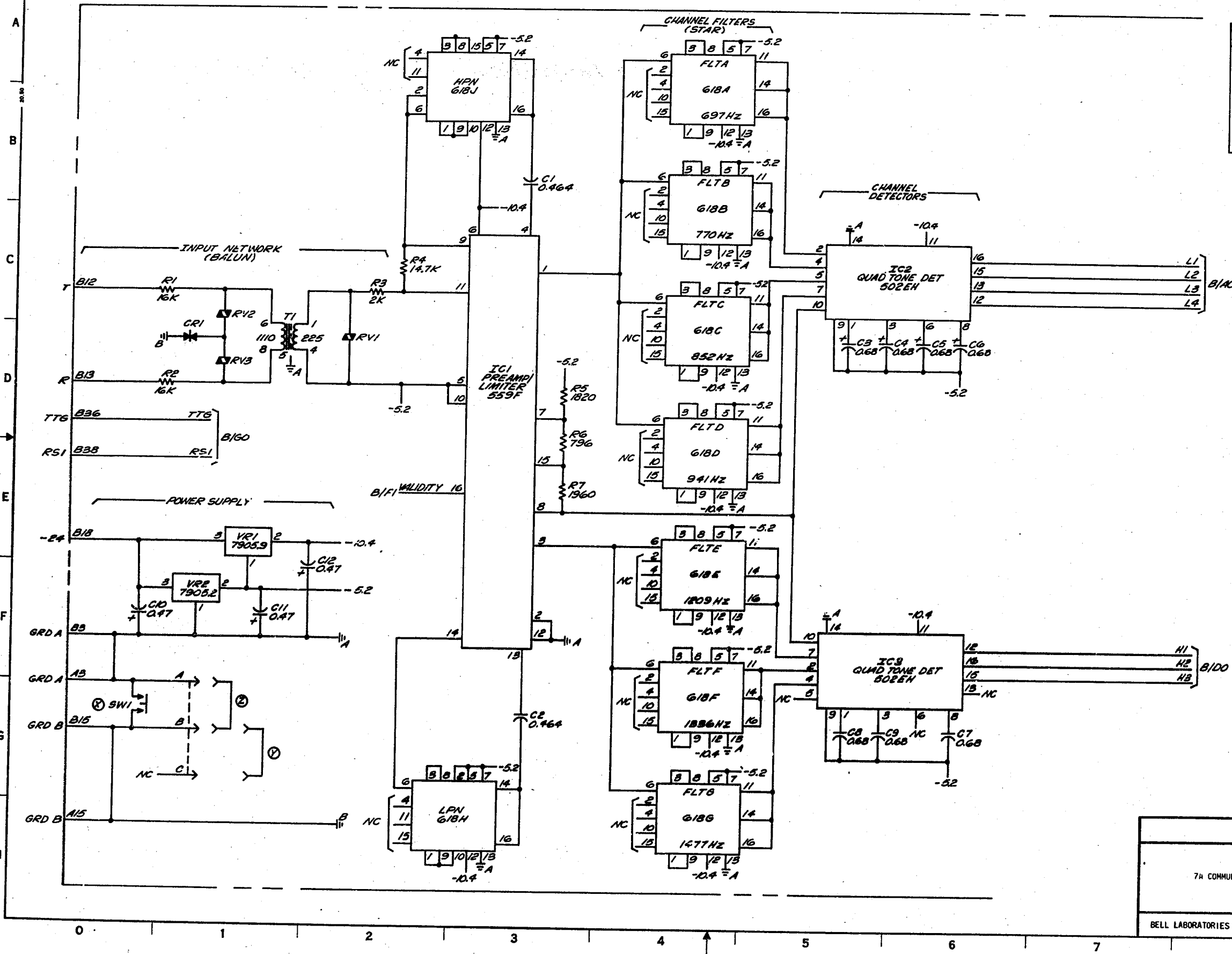
SD-69652-01

SHEET
J18

PRINTED IN U.S.A.

PART OF KTU 478B TOUCH-TONE ADAPTER CIRCUIT

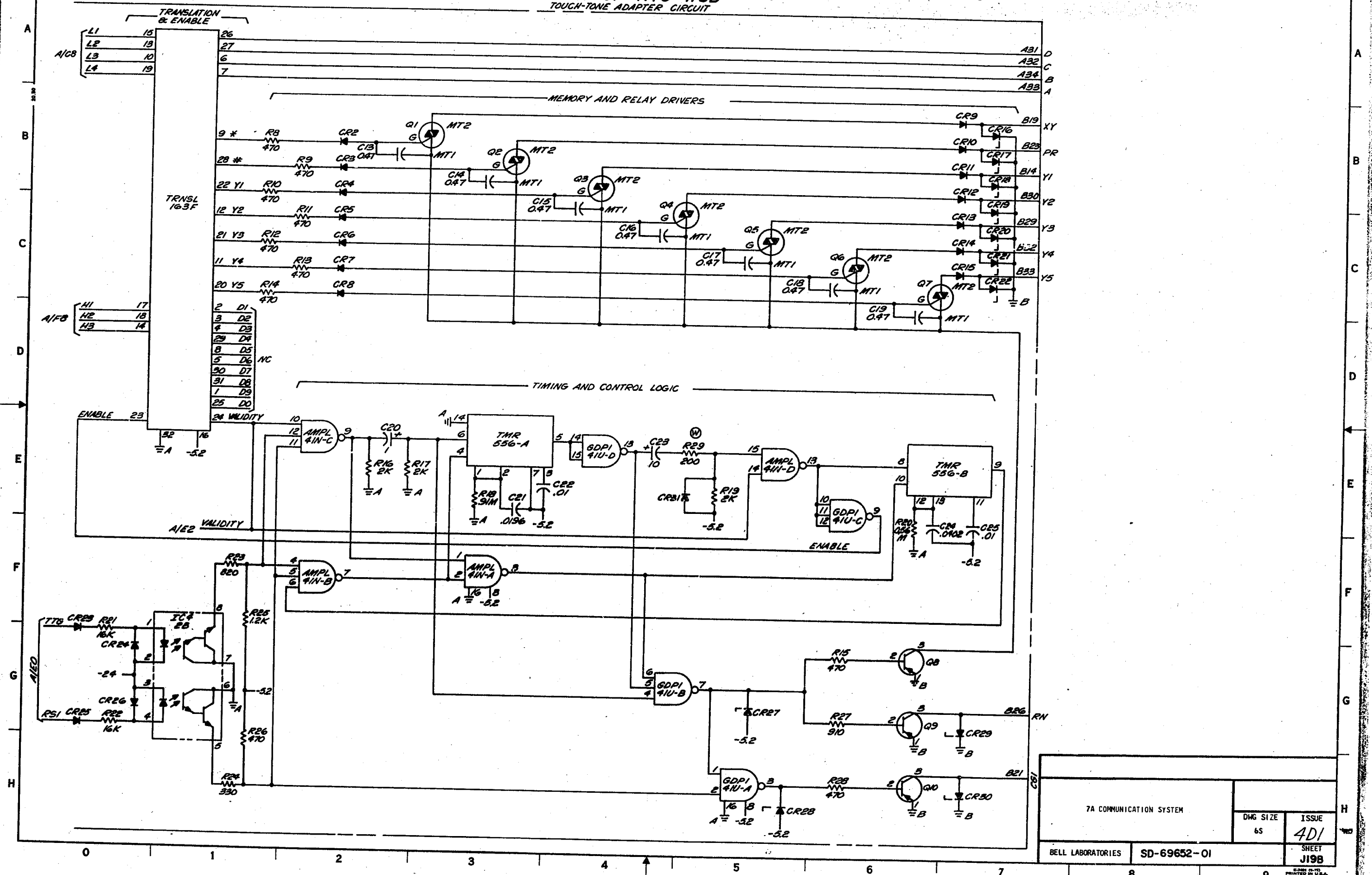
MANUFACTURING REFERENCES	
CATEGORY	NO.
CONTROLLING DRAWING	SD-69931-01
KTU CODE	478B



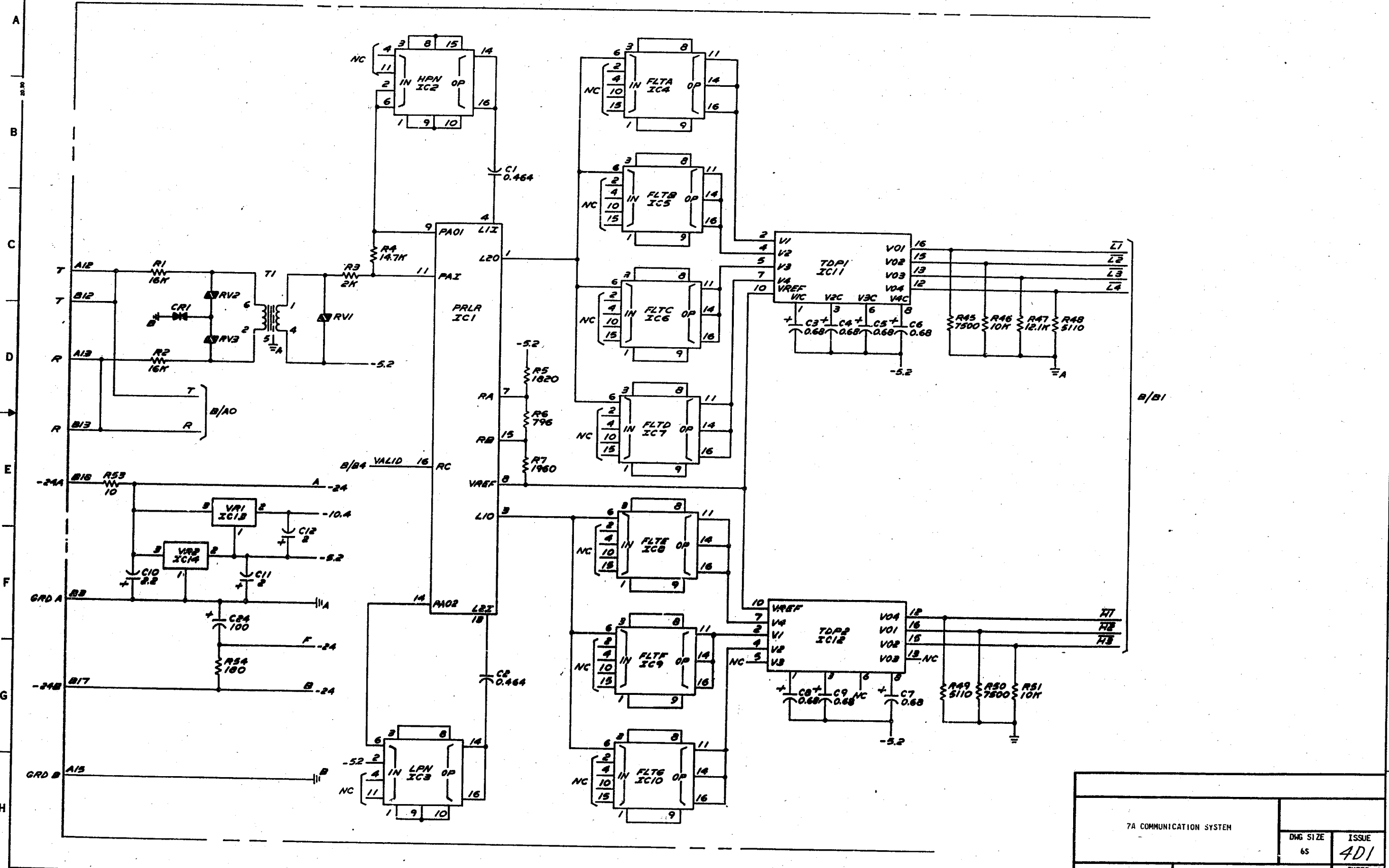
7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		6S	4DI
BELL LABORATORIES	SD-69652-01	SHEET	
		J19A	

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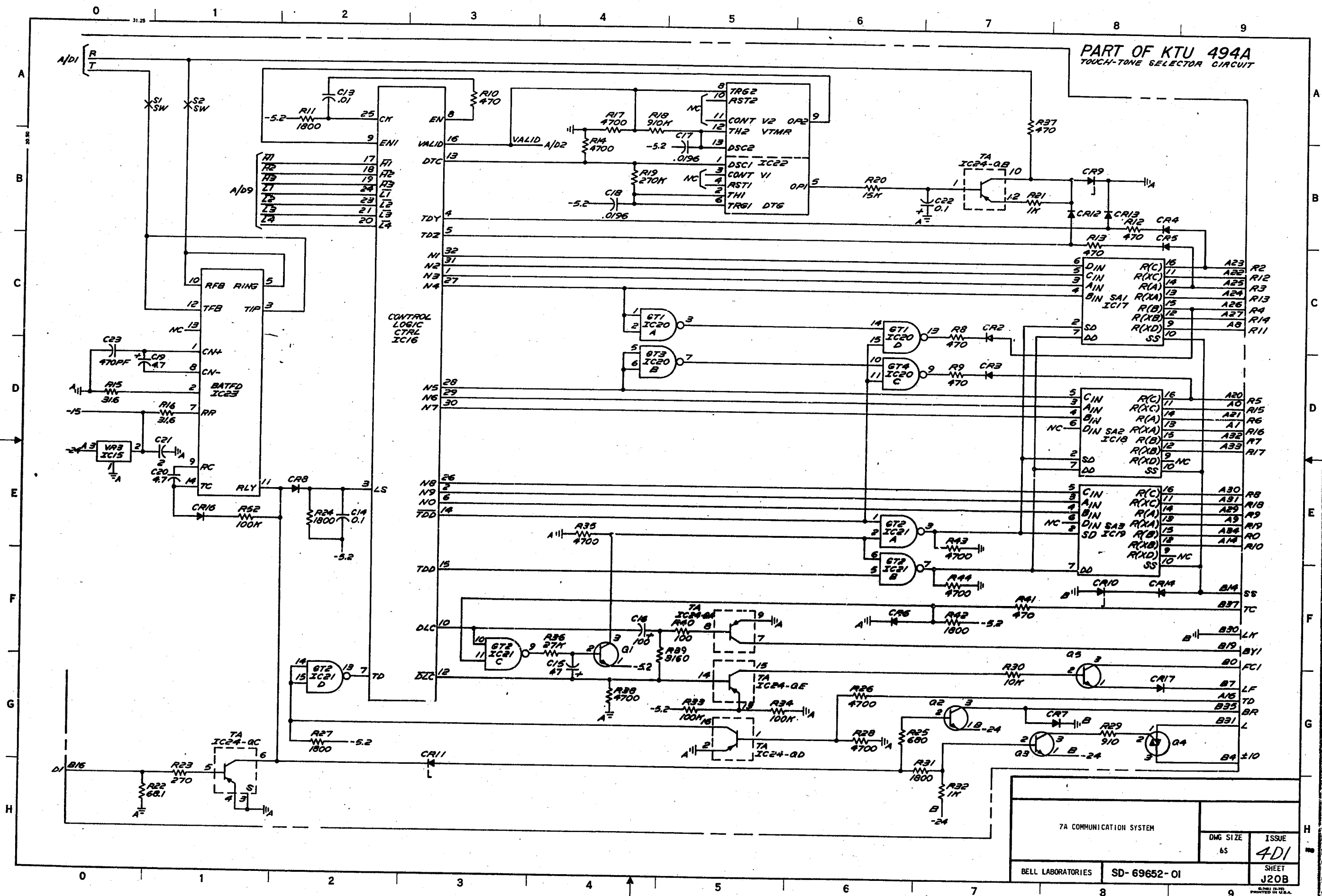
PART OF KTU 478B TOUCH-TONE ADAPTER CIRCUIT



PART OF KTU 494A TOUCH-TONE SELECTOR CIRCUIT



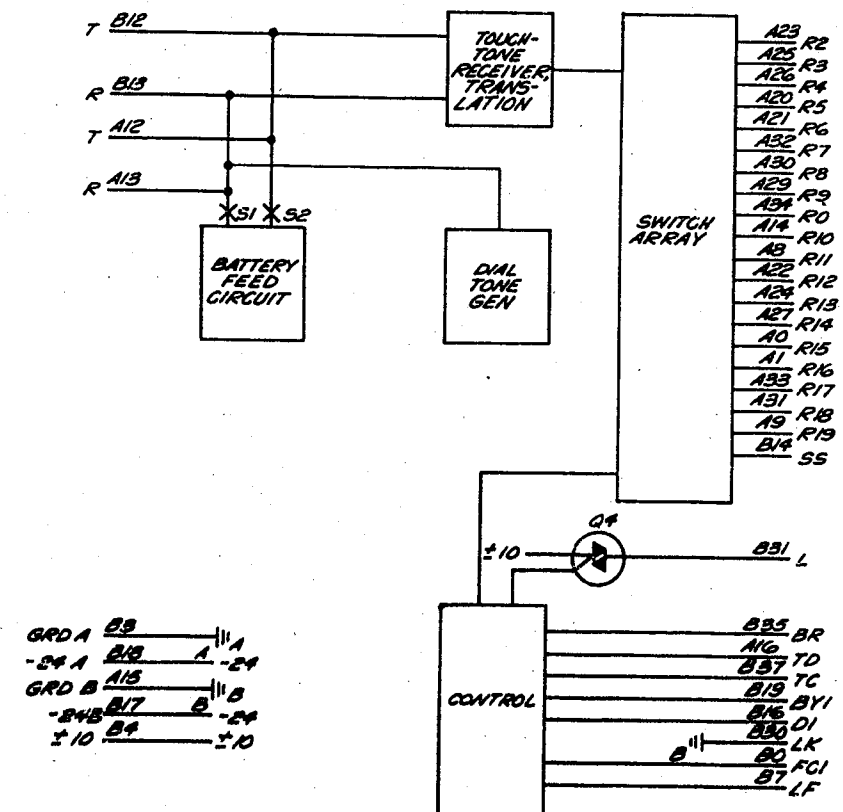
7A COMMUNICATION SYSTEM		DWG SIZE 65	ISSUE 4D1
BELL LABORATORIES		SD-69652-01	
		SHEET J20A	



PART OF KTU 494A TOUCH-TONE SELECTOR CIRCUIT

MANUFACTURING REFERENCES	
CATEGORY	NO.
CONTROLLING DRAWING	APS-837228
KTU CODE	494A

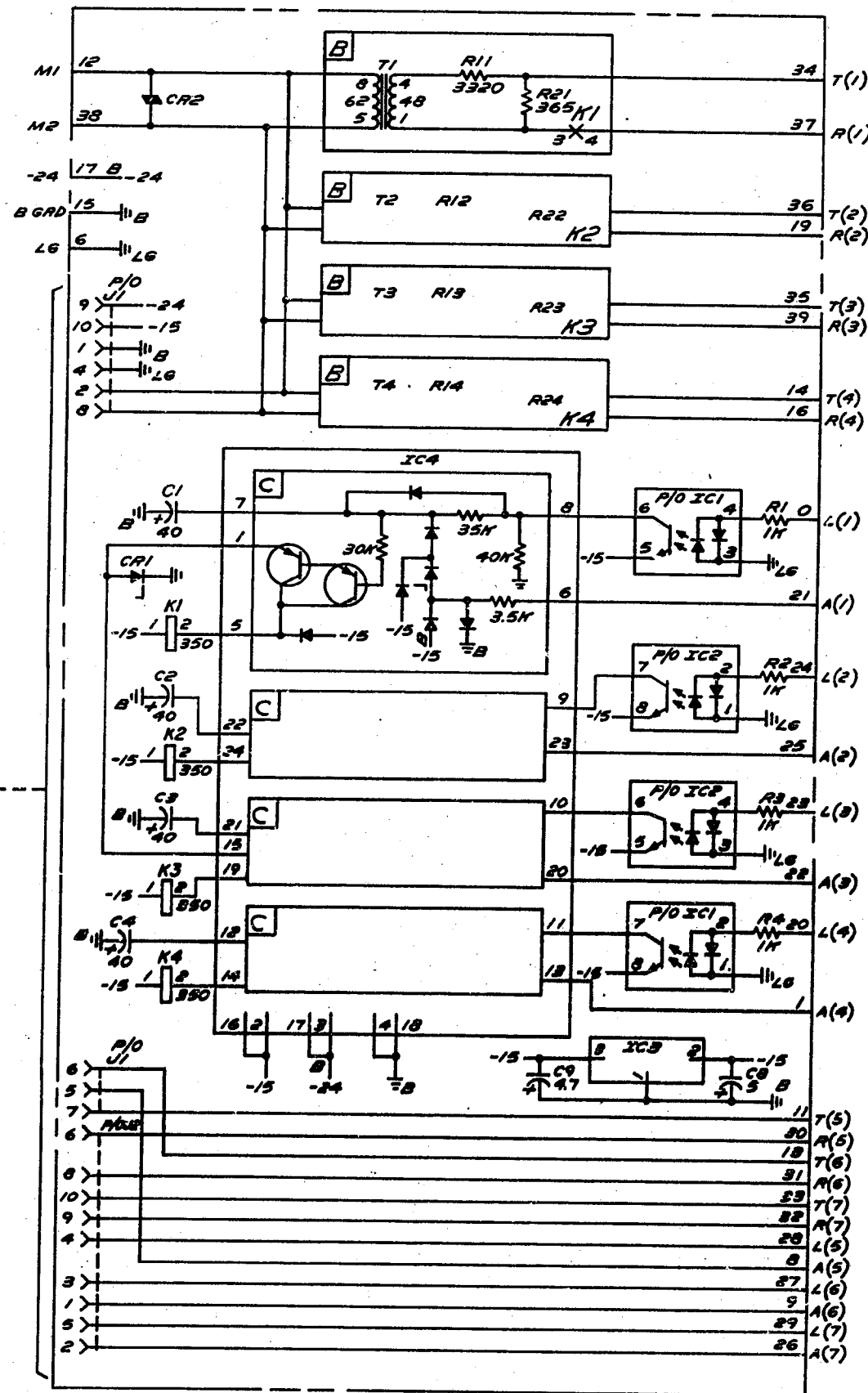
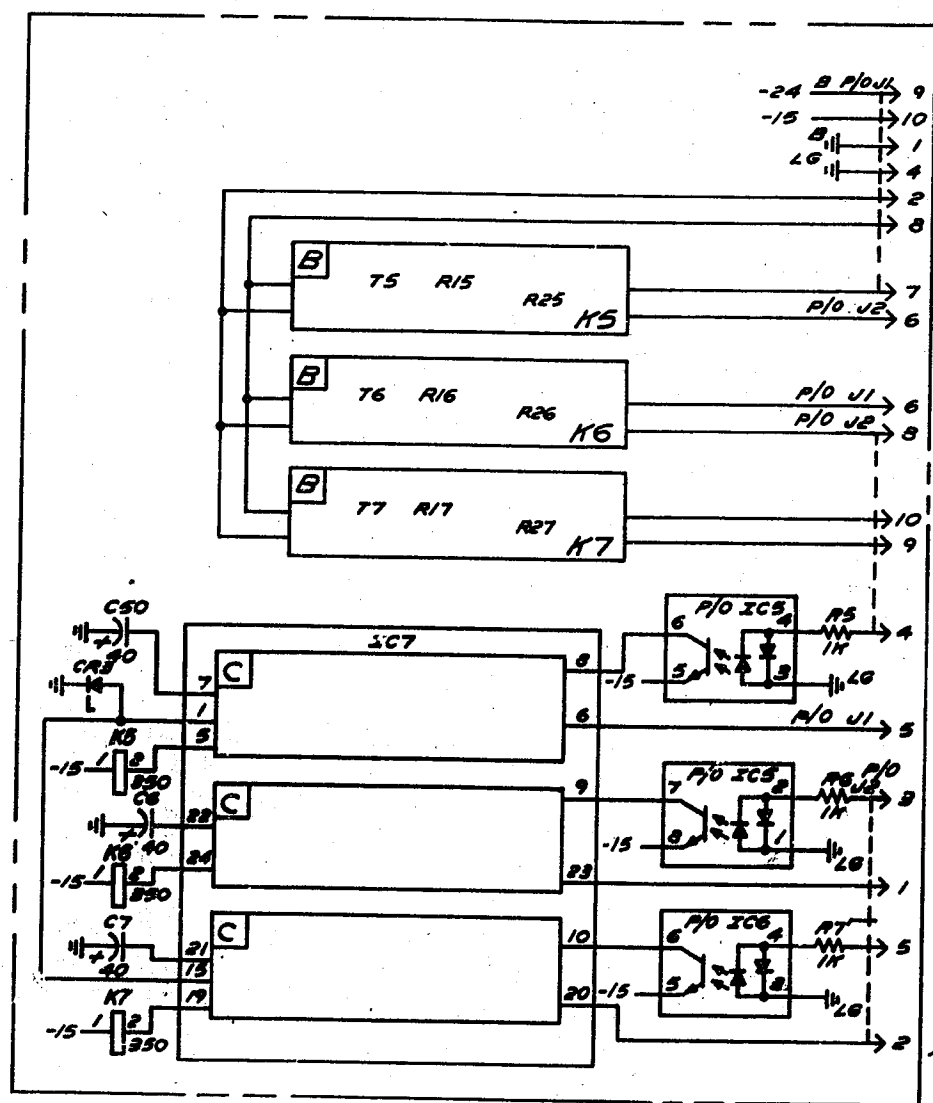
SYMBOL



7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		6S	4D1
BELL LABORATORIES	SD-69652-01	SHEET	J20C

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PART OF KTU 498A & 116A1CM MUSIC ON HOLD



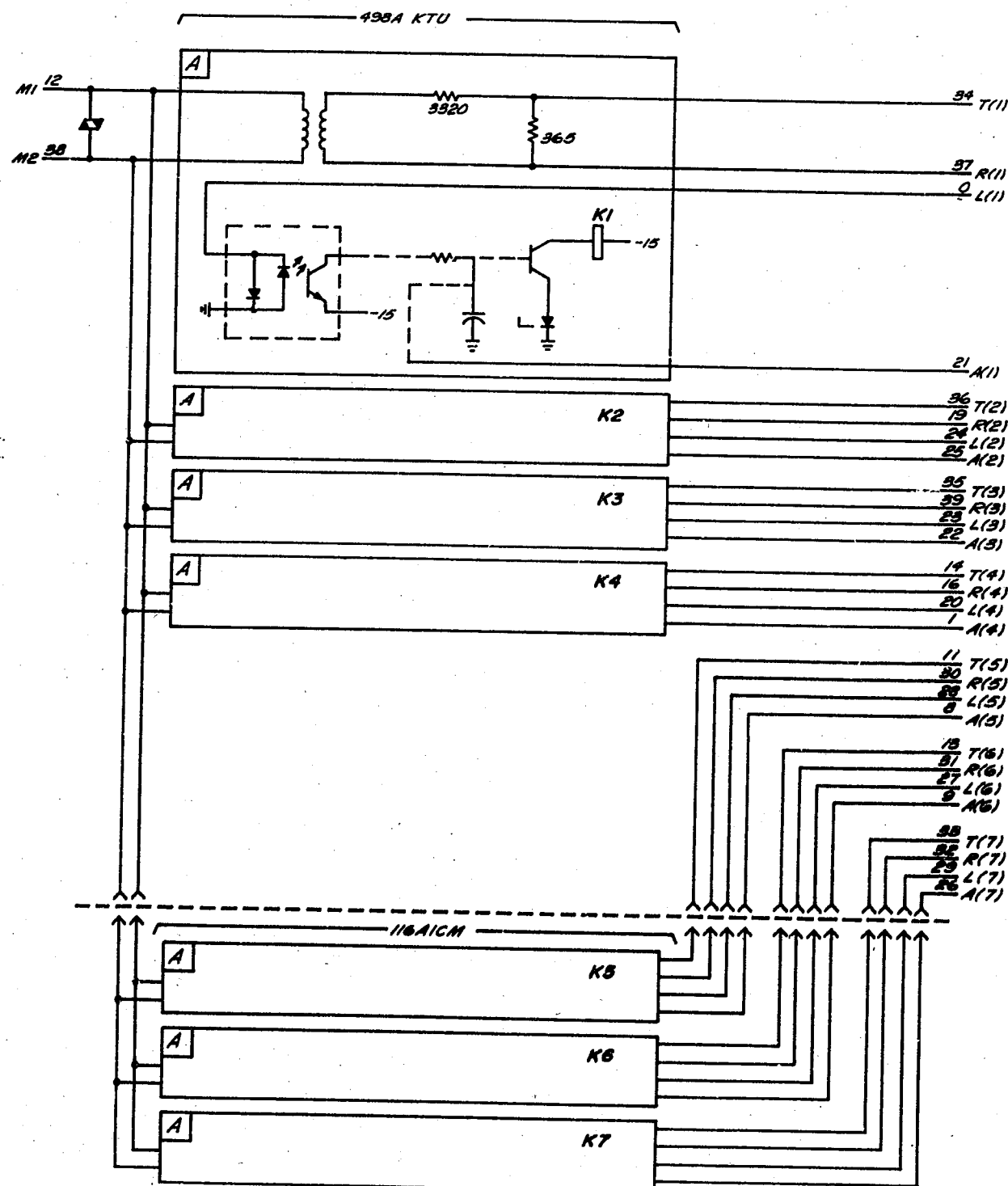
7A COMMUNICATION SYSTEM		DWG SIZE	ISSUE
		65	4D1
BELL LABORATORIES		SD-69652-01	SHEET J21A

PART OF KTU 498A & 116A1CM MUSIC ON HOLD

SYMBOL

MANUFACTURING REFERENCES

CATEGORY	NO.
CONTROLLING DRAWING	SD-69922-01
KTU CODE	498A/116A1CM



7A COMMUNICATION SYSTEM

DWG SIZE
6S

ISSUE
4D1

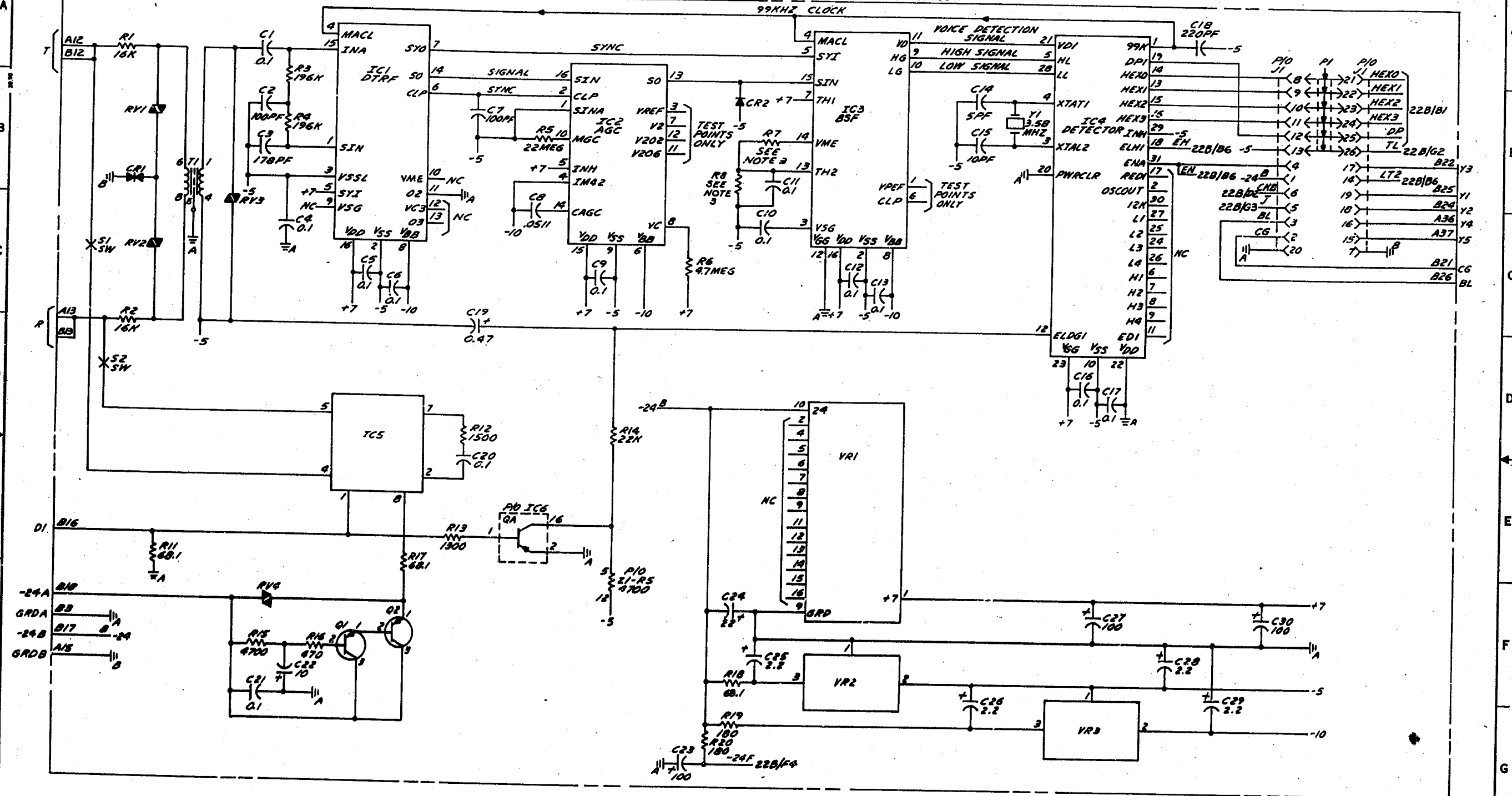
BELL LABORATORIES

SD-69652-01

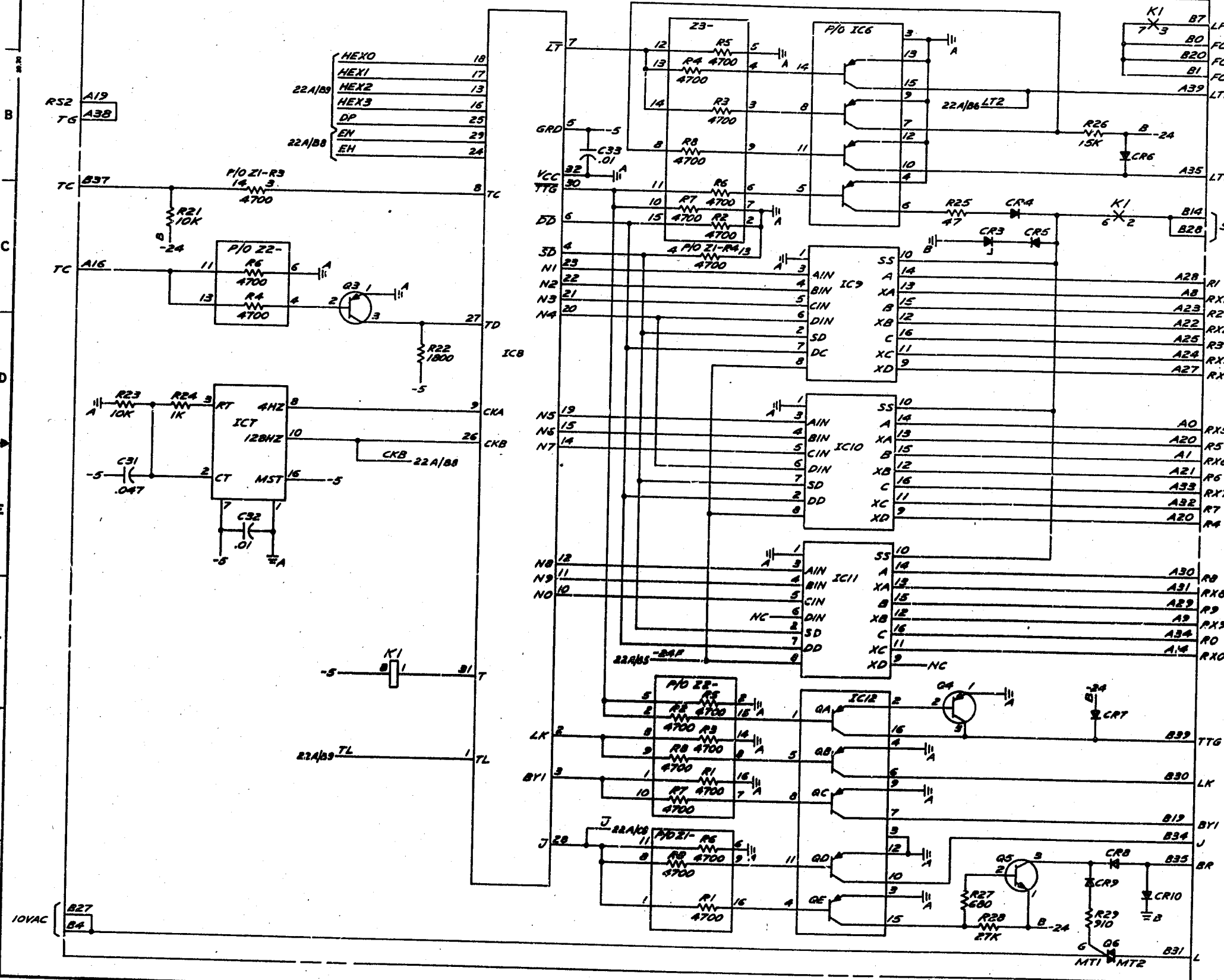
SHEET
J21B

PRINTED IN U.S.A.

PART OF KTU 494B ROTARY AND TOUCH-TONE SELECTOR CIRCUIT 99 KHZ CLOCK



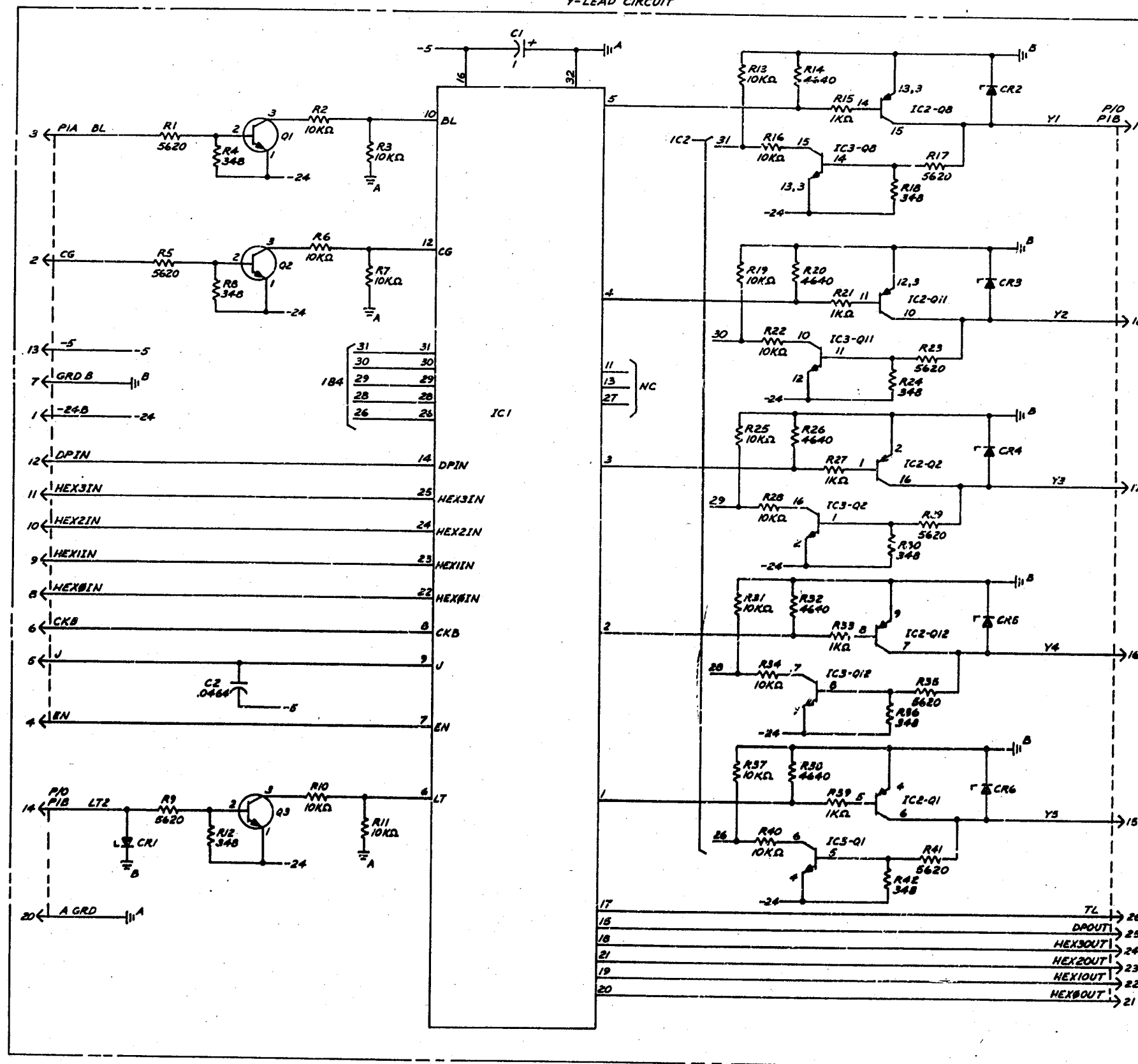
ROTARY AND TOUCH-TONE SELECTOR CIRCUIT



CROSS-REFERENCING REFERENCES	
CATEGORY	NO.
CONTROLLING DRAWING KTU CODE	APS-837440 494B

U-2466 (4-26/)

CM 120A Y-LEAD CIRCUIT



MANUFACTURING REFERENCES

CATEGORY	NO.
CONTROLLING DRAWING	APS-837467
CIRCUIT MODULE CODE	120A

7A COMMUNICATION SYSTEM

DWG SIZE
65

ISSUE
4D1

BELL LABORATORIES

SD-69652-01

SHEET
J23

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