

CIRCUIT NOTES:

DESIG	CODE	POTENTIAL	ONE PER
	1/3	48V TALK	CKT (SEE NOTE 106)
	1/2 HV	+130V SIG	10 CKTS
		-48	45-50V
		+130	125-135V

FEATURE OR OPTION	PROVIDE		
	FIG	APP OR WIR	QUANTITY
TRUNK CIRCUIT	1		1 PER CKT
LOCAL COMPLETION ONLY		Y	
WHERE A SXS REPEATER OF THE EAT.-GRD SUPERVISION TYPE SUCH AS SD-31147-01 IS USED BETWEEN THIS CIRCUIT & THE SXS CUSTOMER		ZA	
LOCAL AND TANDEM COMPLETION	2	Z	ONE PER TRK
WHERE ALL MESSAGE RATE AND COIN LINES IN SXS OFFICE CALLING THIS OFFICE HAVE DELAY CHARGE	2	Z	ONE PER TRK
WHERE ANY MESSAGE RATE OR COIN LINE IN SXS OFFICE CALLING THIS OFFICE HAS IMMEDIATE CHARGE	2		ONE PER TRK
PERMANENT SIGNAL ALARM	3	G	ONE PER RR FR
REQUIRED			
NOT REQUIRED			
WHEN 4 PARTY SEMI-SEL, 8 PARTY OR 10 PARTY LINES ARE SERVED.	4		ONE PER TRK
TRK CONNECTED DIRECTLY TO SXS SEL BANK IN SAME BLDG.	5		ONE PER TRK
FOR 0-2000Ω CONDUCTOR LOOP WITH BAT.-GRD PULSING (SEE NOTE 302) OR FOR 0-1200Ω CONDUCTOR LOOP WITH LOOP PULSING (SEE NOTE 304).		ZG	
FOR 2000-4200Ω CONDUCTOR LOOP WITH BAT.-GRD PULSING OR FOR 1200-2500Ω CONDUCTOR LOOP WITH LOOP PULSING (SEE NOTE 304).		ZB	
FOR USE WITH OFFICE TEST FRAME TESTING		B	

NETWORK VALUES		
NETWORK NO.	RES IN OHMS	CAP. IN μF

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	A&M	M.D.
4B	T OR S	T		S	T	
6D	R OR Q	R		Q	R	
7D	N	NONE		N		
8B	K OR M	M		K	M	
9D	J, H	J		H	J	
9D			102, 201	G		
9D	F, E	F		E	F	
	ZC OR ZD	ZC	102	ZB	V	
				ZD	ZC	
	B	NONE	102	B		
	A	NONE		A		
			102, 107, 201	ZA		
11D	ELECTRON TUBE		346C		346B	
	ZE OR ZF	ZE		ZF	ZE	
			102, 108	ZG		
12D	SWITCH KS-13674		L27		L12	
	ZH OR ZI	ZH		ZI	ZH	
16B	ZJ OR ZK	ZJ	109	ZK	ZJ	
17B	ZL	NONE	111	ZL		

- 105. THE ASSOCIATED LINE CKT SHALL BE ARRANGED FOR "TERM. SERVICE ONLY."
- 106. BATTERY FOR PERMANENT SIGNAL ALARM RELAY (PS) AND RES (E) SHALL BE OBTAINED FROM FIRST TRUNK CIRCUIT ON RELAY RACK FRAME.
- 107. WHEN "ZA" OPTION IS REQUIRED "A" OPTION MUST BE PROVIDED. WHEN CIRCUITS MANUFACTURED PRIOR TO ISSUE 104 ARE SO MODIFIED THE (B) RELAY, AG21, MUST BE READJUSTED TO THE VALUES SPECIFIED IN THE CIRCUIT REQUIREMENTS TABLE.
- 108. THE ADJUSTMENT SHOWN IN THE CIRCUIT REQUIREMENTS TABLE FOR THE (A) RELAY AJ34 OPTION "W" DIFFERS FROM THE ADJUSTMENT APPLIED DURING MANUFACTURE. WHEN THE ADJUSTMENT SHOWN IN THE TABLE HAS BEEN APPLIED, THE AJ34 RELAY WILL BE IDENTICAL WITH THE AJ36 OPTION "ZG" AND MAY BE STENCILED AJ136.

INFORMATION NOTES:

- 301. WHERE NO. 3 CROSSBAR IS IN SAME BLDG WITH SXS OFFICE WITH THIS TRUNK CONNECTED DIRECTLY TO SXS SELECTOR BANK, THE CALLING SUBSCRIBER WORKING LIMITS (I.E. SXS SUB.) ARE THE SAME AS FOR THE PRECEDING SELECTOR AND THE RES OF THE SLEEVE LEAD FROM THIS TRUNK TO THE SXS LINE FINDER MULTIPLE BANK SHALL BE 15Ω MAXIMUM.
- 302. THIS CIRCUIT WITH "ZG" OR "W" OPTION MAY BE USED WITH TRUNK CONDUCTOR LOOPS OF 2000Ω TO 2400Ω PROVIDED THE ASSOCIATED SXS OUTGOING REPEATER IS OF THE BAT.-GRD SUPERVISION AND BAT.-GRD PULSING TYPE SUCH AS SD-31147-01.
- 303. WHERE THE ENTIRE LENGTH OF CABLE IS 19 GAUGE THE "MAX. MILES OF CABLE" IS 32. THE "MAX. MILES OF CABLE" IS 24 FOR ANY OTHER CASE.
- 304. LOOP PULSING ASSUMES:
 - A) THAT ANY SWITCHBOARD TRUNK THAT REPEATS PULSES USES THE S522 RELAY FOR PULSE REPEATING AND HAS A NETWORK OF 2μF AND 600 OR 1000 OHMS ACROSS THE PULSE REPEATING CONTACT.
 - B) THAT ANY SWITCHBOARD DIAL PULSING DIRECTLY INTO THIS CIRCUIT HAS A NETWORK OF 2μF AND 600 OR 1000 OHMS ACROSS THE DIAL PULSE CONTACT, AND
 - C) THAT OTHER DIRECT DIALING INTO THIS CIRCUIT WITHOUT REPEATING RELAYS IS FROM STEP BY STEP SUBSCRIBER LINES.

CIRCUIT NOTES (CONT):

- 109. OPTION "ZK" MUST REPLACE OPTION "ZJ" IF AN E6 REPEATER IS USED WITH NON-LOADED-LINE BUILD-OUT NETWORK.
- 110. THE ADJUSTMENT SHOWN IN THE CKT REQUIREMENTS TABLE FOR THE (A) RELAY, AJ29, OPTION "V" DIFFERS FROM THE ADJUSTMENT APPLIED DURING MANUFACTURE. WHEN THE ADJUSTMENT SHOWN IN THE TABLE HAS BEEN APPLIED, THE AJ29 WILL BE ELECTRICALLY SIMILAR TO THE AJ15, OPTION "ZB".
- 111. TO ELIMINATE THE POSSIBILITY OF BELL TAPPING WHEN OPTION "ZK" IS PROVIDED OPTION "ZL" MUST ALSO BE FURNISHED.

EQUIPMENT NOTES:

- 201. JOB RECORDS, NEED NOT BE MAINTAINED FOR OPTIONS "X", "Z", "ZA", "B", "G".
- 202.

NO. OF TRKS	MAX. NO. OF PCL AND "PCT" LEADS MULTIPLIED
1-30	30
31-50	25
OVER 50	20
- 203. CONNECT ONE TERMINAL OF CAPACITOR (B) DIRECTLY TO THE TERMINAL OF TUBE (CH) WHICH IS DESIGNATED "1 OR 2" ON FS 1.

DRAWING ISSUE	DATE	BY	CHKD
1			
2A			
3B			
4B			
6D			
7D			
8B			
9D			
10D			
11D			
12D			
13D			
15D			
16B			
17B			

TRANSMISSION TEST REQUIREMENTS (1000 CYCLE LOSS BETWEEN 600Ω LINES)

APPARATUS	DESIG	CODE	MAX LOSS	MIN LOSS	REMARKS
CAPACITOR	T, R	2μF	14.5	11.5	SEE NOTE 1
RELAY	A	AJ29	0.1		
RELAY	A	AJ34	0.2		
RELAY	CS	280FG	0.2		
RELAY	S	AJ26	0.2		
RELAY	A	AJ15	0.1		
RELAY	A	AJ136	0.2		

NOTES:
1. THE INDIVIDUAL LOSS FOR THE (T) & (R) CAPACITORS SHALL BE WITHIN 0.5 db OF EACH OTHER.

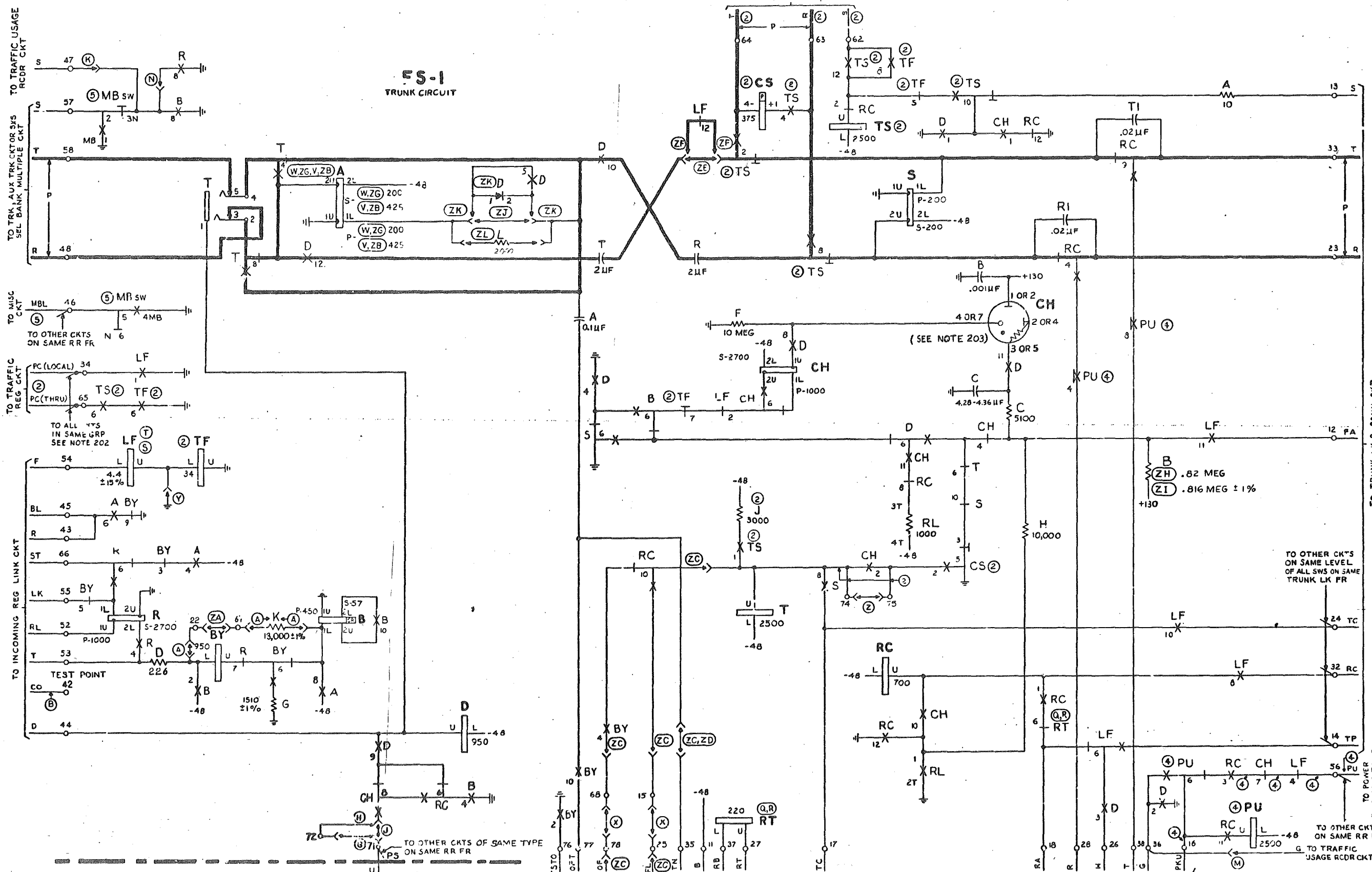
WORKING LIMITS			
TRUNK PULSING LOOP	BAT.-GRD	TRUNK SUPV (A) RELAY	CALLLED SUB.
"ZG" OR "ZB" OR "ZG" OR "ZB" OR "W" OR "V" OR "W" OR "V" OR "W" OR "V"		"ZG" OR "ZB" OR "W" OR "V"	SEE NO. 5 CROSSBAR KEYSHEET
MAX. EXT CKT LOOP RES.	1200**2500 *2000 4200	2410 4465	SEE NO. 5 CROSSBAR KEYSHEET
MAX. COND LOOP RES.			
MAX. MILES OF CABLE		SEE NOTE 303	
MIN INS RES	30,000	30,000	
			45-50V 40-56V 20-28V 21-26V
			8000 7110 3415 3575
			30,000

* SEE NOTE 302
** MIN 1200

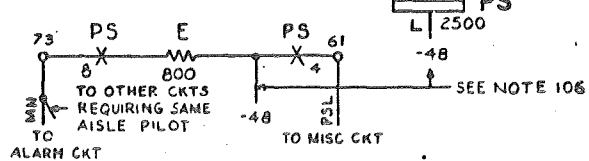
INCOMING TRUNK CIRCUIT 2 SD-26077-01-2
 BELL TELEPHONE LABORATORIES, INC. 6S PAINTED IN U.S.A.

FS-1
TRUNK CIRCUIT

TO LINE, LINE LK & CONN CKT OR TO
LINE, LINE LK & MKR CONN CONT CKT
SEE NOTE 105



FS-2
PERMANENT SIGNAL
ALARM



TO RINGING SELECTION SWITCH CKT

INCOMING TRUNK CIRCUIT (2) **SD-26077-01-3**
BELL TELEPHONE LABORATORIES, INC. 65

1	ISSUE
2A	
4A	
6D	
7D	
8B	
9D	
100	
110	
120	
14D	
16B	
17B	

SD-26077-01-3

APP FIG. 1

DESIG	A		A		A		B		BY		CH		D		A		LF		LF		DESIG	
CODE	AJ29		AJ34		AJ115		AG21		AF98		AF94		AJ3		AJ136		AF107		AJ32		CODE	
OPTION	V		W		ZB								ZG				T		S		OPTION	
	CONT	LOC	CONT	LOC	CONT	LOC	CONT	LOC	CONT	LOC	CONT	LOC	CONT	LOC	CONT	LOC	CONT	LOC	CONT	LOC	CONT	LOC
12																						
11																						
10							M	3F2	ERM	3G4	M	3D6	BM	3D7								
9																						
8	M	3G2	M	3G2	M	3G2	EMB	3A1	EBM		EMB	3G2	EMB	3C2	M	3G2						
7																						
6	M	3E0	M	3E0	M	3E0	EMB	3D4	EMB	3F1	EMB	3D5	EMB	3D6	M	3E0						
5																						
4	M	3E1	M	3E1	M	3E1	M	3H3	EBM	3G4	EBM	3D6	EBM	3D4	M	3E1						
3																						
2							M	3F1	M	3G3	M	3E6	EBM	3G8								
1																						
COIL	3B3	3B3	3B3	3B3	3F2	3F1	3D5	3G3	3B2													

DESIG	RC		R		RT		RT		S		T		DESIG	
CODE	AJ9		AF70		AJ25		AJ47		AJ26		AF505		CODE	
OPTION					R		Q						OPTION	
	CONT	LOC	CONT	LOC	CONT	LOC	CONT	LOC	CONT	LOC	CONT	LOC	CONT	LOC
12	EBM	(A)												
11	EBM	3H8												
10	EBM	3E4							B	3E6				
9	EBM	3B7												
8	EMB	3E6	EBM	3A1					M	3E5		EBM	3C1	
7														
6	EMB	3G3	EMB	3E0	B	3G7	B	3G7	BM	3D4		EMB	3E6	
5														
4	EBM	3C7	M	3F0					M			EBM	3B1	
3	EBM	3G8												
2	EBM	3A5												
1	EBM	3F7												
COIL	3F6		3F1		3G5		3G5		3B6			3F5		

(A) 3B7, 3G6

RELAY:
 RL 235E

CAPACITOR:
 DESIG LOC CODE
 A 3C4 441K
 B 3C6 KS-13368, L3, .001M
 C 3D6 437EA
 R 3C4 437E
 T 3C4 441H
 RI 3B7
 TI 3B8

JACK:
 DESIG LOC CODE
 T 3B1 239C

RESISTOR:
 DESIG LOC CODE
 A 3A8 1BR
 B 3D8 KS-13490, L1, .02 MEG
 C 3D7 KS-19131, L1, 5100Ω
 D 3F1 18AG
 F 3C5 KS-19150, L3, 10 MEG
 G 3G1 18DA
 H 3E7 KS-19151, L1, 10,000
 K 3F1 221A, 19,000Ω
 B 3D8 221A, .816 MEG
 L 3C3 KS-19150, L1, 2000

DIODE:
 DESIG LOC CODE
 D 3B3 446F

ELECTRON TUBE:
 DESIG LOC CODE
 CH 3C7 346B OR 346C

APP FIG. 2

DESIG	TF		TS		DESIG
CODE	AF89		AF79		CODE
OPTION	CONT	LOC	CONT	LOC	OPTION
	ARR		ARR		
12					EMB 3A5
11					M
10					EBM 3A6
9					
8	M	3A6			EBM 3C5
7	B	3D4			
6	M	3D0			EMB 3D0
5	B	3A6			
4					EBM 3A5
3					
2					EBM 3B5
1					M 3E5
COIL	3D1		3B6		

APP FIG. 3

DESIG	PS		DESIG
CODE	AF15		CODE
OPTION	CONT	LOC	OPTION
	ARR		
12			
11			
10			
9			
8	M	3H1	
7			
6			
5	EMB		
4	M	3H2	
3			
2			
1			
COIL	3H2		

APP FIG. 4

DESIG	PU		DESIG
CODE	AF15		CODE
OPTION	CONT	LOC	OPTION
	ARR		
12			
11			
10			
9			
8	M	3C7	
7			
6	EMB	3G8	
5			
4	M	3D7	
3			
2			
1			
COIL	3G8		

APP FIG. 5

SWITCH:
 MB
 F KS-13535, L1
 E KS-13674, L27 OR KS-13674, L12

RELAY:
 CS 280FG

RESISTOR:
 DESIG LOC CODE
 J 3E5 18DB

RESISTOR:
 DESIG LOC CODE
 E 3H1 18CN

SD-26077-01-4

INCOMING TRUNK CIRCUIT
 BELL TELEPHONE LABORATORIES, INC.
 6S
 17
 SD-26077-01-4

CIRCUIT REQUIREMENTS

INCOMING TRUNK CIRCUIT ARRANGED FOR TANDEM OPERATION - BY LINK FROM SXS OFFICE (INC TRK TDM SXS)

APPARATUS				MECH REQ			CIRCUIT PREPARATION				DIRECT CURRENT FLOW REGT				REMARKS		
DESIG	CODE	OPTION	FIG.	BSP FIG	CONT PRES	ARM. TRVL	BLOCK OR INSULATE	TEST CLIP DATA		TEST SET PREP	TEST NOTE	TEST WDG	TEST FOR	AFTER SOAK		TEST	READJ
				CONN BAT.		CONN GRD		CONN BAT.	CONN GRD	CONN BAT.	CONN GRD	CONN BAT.	CONN GRD	CONN BAT.	CONN GRD	CONN BAT.	CONN GRD
RELAYS																	
A	AJ25	ZB	1	46			(BY)O	IL(A)	2U(A)	M	4.59	P/S	O	FS	7.7	7.5	
							(BY)O	IL(A)	2U(A)	M		P/S	NO	FS	6.0	6.4	
							(BY)O	IL(A)	2U(A)	M		P/S	R	FS	3.6	3.8	
A	AJ29	V	1	46B			(BY)O	IL(A)	2U(A)	M	4.59	P/S	O	FS	7.9	7.5	
							(BY)O	IL(A)	2U(A)	M		P/S	NO	FS	6.0	6.4	
							(BY)O	IL(A)	2U(A)	M		P/S	R	FS	3.6	3.8	
A	AJ34	W	1	46B			(BY)O	IL(A)	2U(A)	M	5.6	P/S	O	FS	15	14.3	
	AJ136	ZG					(BY)O	IL(A)	2U(A)	M	9	P/S	NO	FS	11.5	12.1	
							(BY)O	IL(A)	2U(A)	M		P/S	R	FS	6.2	6.6	
E	AG21		1	2B2B			2(B), (BY)O	IL(B)		BAT.	2	P	O	FS	5.1	4.6	
								IL(B)		BAT.		P	H	FS	6	5.7	
								IL(B)		BAT.		P	R	FS	4.6	4.6	
							(BY)O, 10(B)	2L(B)	2U(B)	B/G		S	O	FS	63.5		
BY	AF98		1	245			7(R), (B)O		U(BY)	GRD					14.9	1.1	
CH	AF94		1	243			(RC)O	IL(CH)	1U(CH)	B/G	1	P	O		21	20	
							(RC)O		2U(CH)	GRD		S	O		12.6		
CS	2B0FG		2	B				PCHG 64	4(TS)	B/G			O	-14		0.3	
								PCHG 64	4(TS)	B/G			NO	-14		0.2	
								PCHG 64	4(TS)	B/G			O	-14	3.9	3.7	
								PCHG 64	4(TS)	B/G			R	14	1.4	1.5	
D	AJ3		1	226					U(D)	GRD					18	17	
LF	AF107	T	1	254			(T)O	L(LF)		BAT.			O		290	275	
													NO		95	90	
LF	AJ82	S	1	254			(T)O	L(LF)		BAT.			O		245	230	
													NO		85	90	
PS	AF15		3	216			4(PS), 8(FS)		U(PS)	GRD					7.4	6.7	
PU	AF15		4	216					U(PU)	GRD					7.1	6.7	
R	AF70		1	202			6M(R)	IL(R)	1U(R)	B/G		P	O		18.5	16.5	
							7(R)	2L(R)		BAT.		S	O		10.9		
RC	AJ9		1	234					U(RC)	GRD					40	38	
RL	235E										1						
RT	AJ25	R	1	53				L(RT)	U(RT)	B/G	7		O	-50	25	24	
								L(RT)	U(RT)	B/G	7		NO	-50	21	22	
								L(RT)	U(RT)	B/G	8		O	-50	24	23	
								L(RT)	U(RT)	B/G	8		NO	-50	20	21	
RT	AJ47	Q	1	53				L(RT)	U(RT)	B/G			O	-50	24	23	
								L(RT)	U(RT)	B/G			NO	-50	20	21	
S	AJ26		1	55B				IL(S)	2U(S)	M	4	P/S	O	FS	16.5	15.5	
								IL(S)	2U(S)	M		P/S	R	FS	6.4	6.8	
T	AF505		1	207					U(T)	GRD	3				9	8.5	

DRAWING ISSUE
1 P/J
2A R/JD
3B B/TG
4B R/H
5B R/H
6D R/H
10D M/D
11D P/J
12D P/J
13D L/W

TEST NOTES:

- SEE TIMING REQUIREMENTS.
- ARM. BACK TENSION, MAX. 80 GRAMS READJ; 85 GRAMS TEST
- ARM. BACK TENSION, MIN. 65 GRAMS READJ; 60 GRAMS TEST
- ARM. BACK TENSION, MIN 20 GRAMS READJ; 15 GRAMS TEST
- CONTACT MAKE 5, NO MAKE 8.5, READJ; MAKE 3.5, NO MAKE 10, TEST.
- READJ AND TEST WITH 4.5 GAUGE INSERTED BETWEEN ARM. AND ARM. BACK STOP WITH RELAY NOT ENERGIZED, NO PAIR OF CONTACTS SHALL MAKE
- STANDARD REQUIREMENTS.
- REQUIREMENTS FOR MAINTENANCE ONLY TO BE USED WHERE ALL TRIP RELAYS ARE WIRE SPRING TYPE USING THESE SAME REQUIREMENTS AND SUBSCRIBER LINE MINIMUM INSULATION RESISTANCE IS 15,000 OHMS.
- INSERT A 165C OR 165D DUMMY PLUG IN (T) JACK.

INCOMING TRUNK CIRCUIT SD-26077-01-5
BELL TELEPHONE LABORATORIES, INC

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CIRCUIT REQUIREMENTS

APPARATUS				MECH REQ			CIRCUIT PREPARATION				DIRECT CURRENT FLOW REGT				REMARKS		
DESIG	CODE	OPTION	FIG.	BSP FIG	CONT PRES	ARM. TRVL	BLOCK OR INSULATE	TEST CLIP DATA		TEST SET PREP	TEST NOTE	TEST WDG	TEST FOR	AFTER SOAK		TEST	READJ
				CONN BAT.		CONN GRD		CONN BAT.	CONN GRD	CONN BAT.	CONN GRD	CONN BAT.	CONN GRD	CONN BAT.	CONN GRD	CONN BAT.	CONN GRD
TF	AF89		2				41B		L(TF)		BAT.			O	130	47.5	45
														NO	130	28	29.5
TS	AF79		2				205		(RC)O		U(TS)	GRD		O		9.7	9.2
TIMING REQ																	
CH			1												1.4		
RL			1				(D)O							2			ALLOW 2 MIN BETWEEN TESTS
ELECTRON TUBES																	
CH	346B OR 346C		1												3		

TEST NOTES:

- USE TEST SET FOR TIMING TESTS:
- TEST REL (RL) FOR OPERATION BY OPERATING REL (CH) REL (RL) SHALL OPERATE AND OPERATE REL (RC) IN MIN 13 TEST, 16 READJ, MAX 32 TEST, 25 READJ SECONDS.
- USE COLD CATHODE TUBE TEST SET CONN BK TO 8(D) AND W TO 11(D). TEST REQUIREMENTS FOR THE 346B OR 346C TUBE ARE:
- CONN 2(D) TO 2U(S).

DESIG	TEST CLIP DATA			TEST SET PREP		TIME REQ (MIL-SEC)	
	CONN BK	CONN R	CONN W	SEND KEY	REC SW	MIN	MAX
CH	GRD	U(D)	2U(CH)	MK	-48V-GRD	2000	5000

	SG ION	AG DROP (AT 20 MA)	AG FWD POT
MIN VOLTS	62	72	
MAX VOLTS	89	90	180

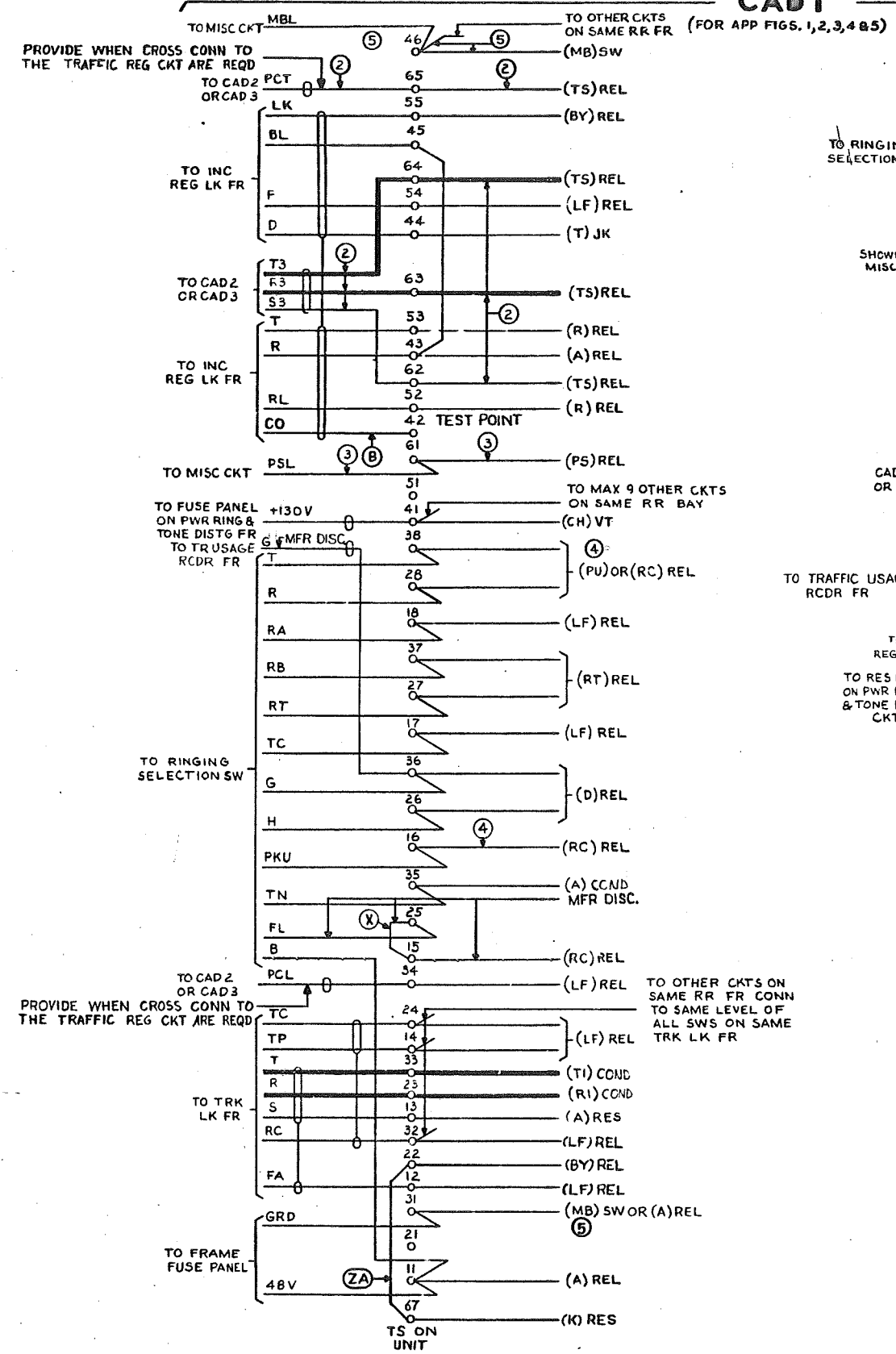
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(2 PAGES) PAGE 1

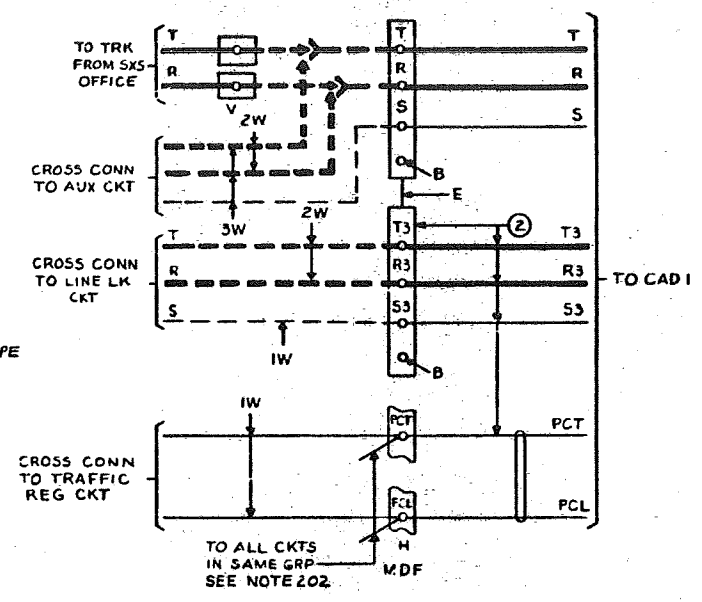
SD-26077-01-5

DRAWING	1
ISSUE	1
1	P.V.
2	R.J.L.
8B	P.S.
9D	P.S.
10D	P.S.
12D	P.S.
14D	P.S.

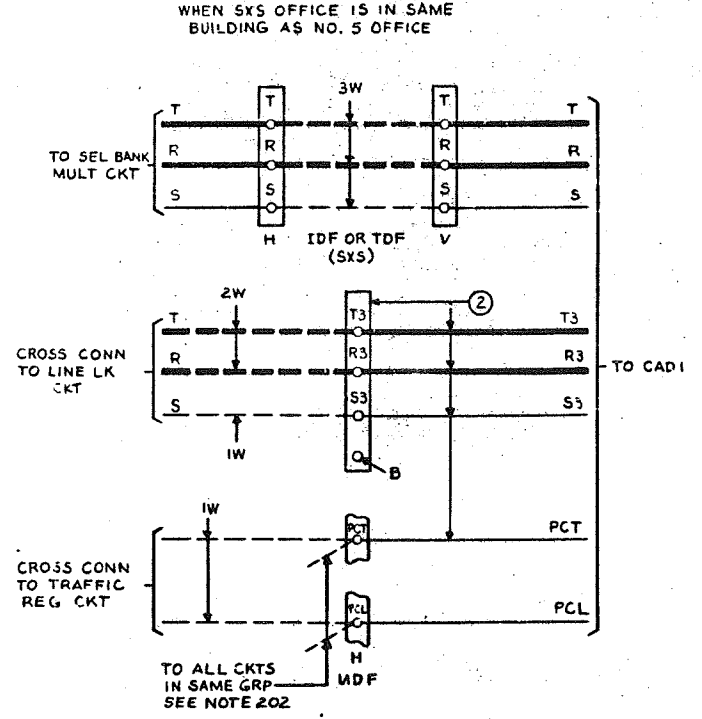
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CAD 2



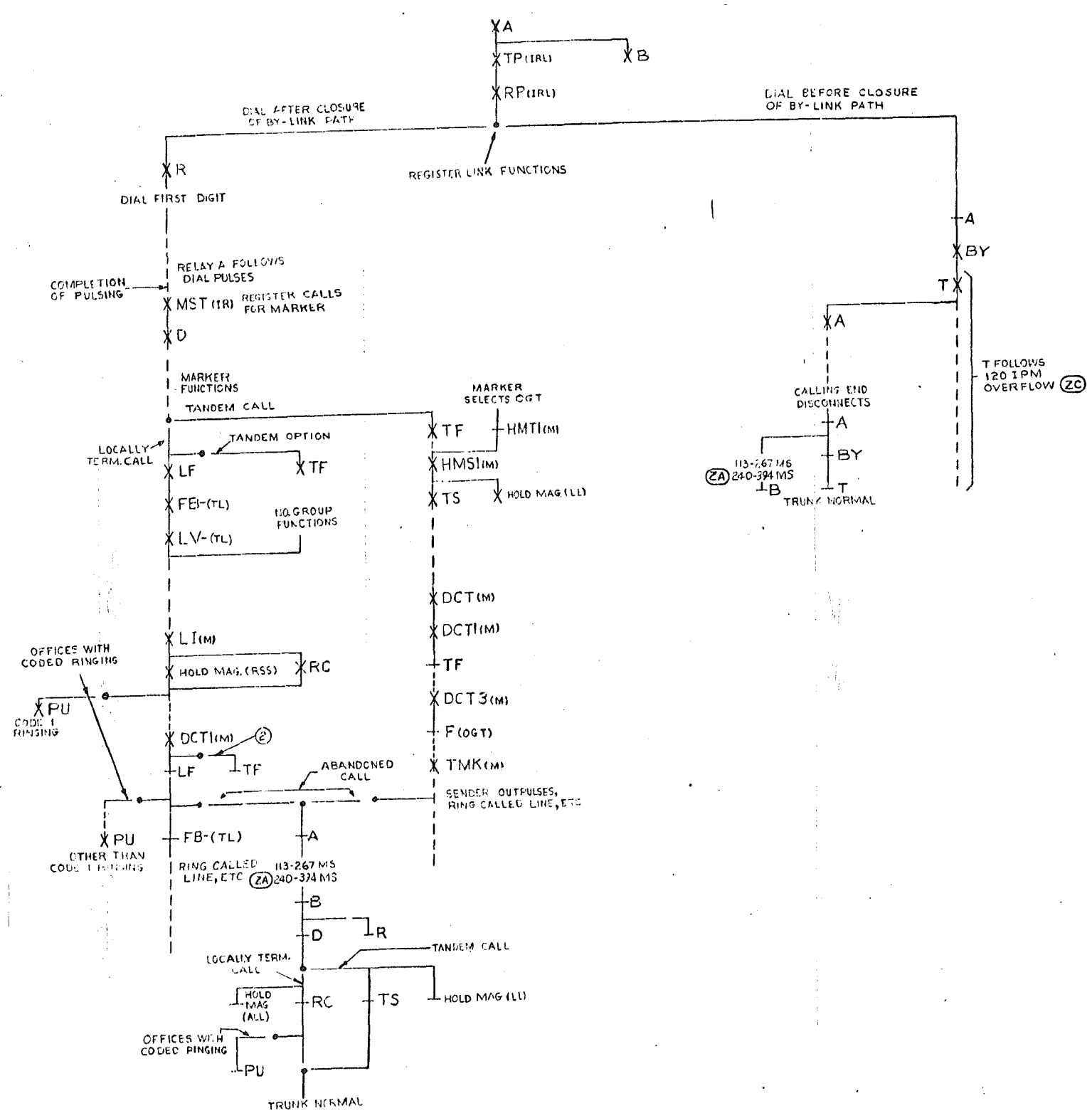
CAD 3



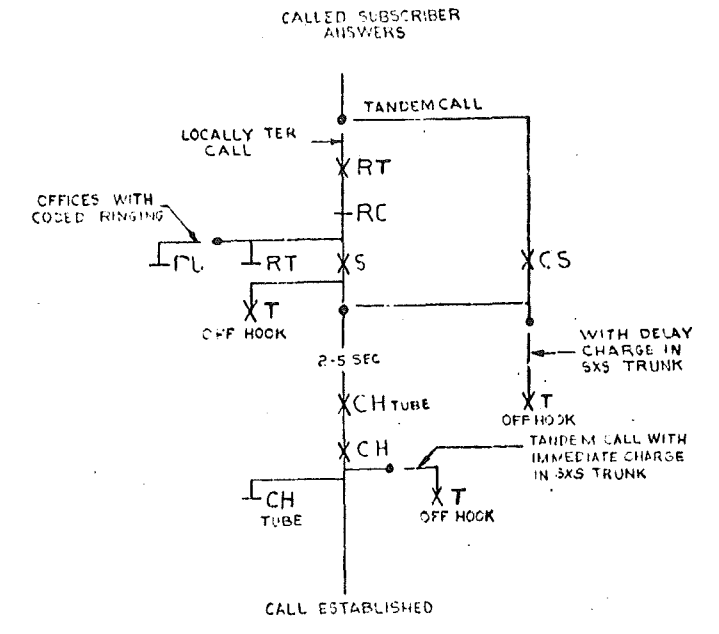
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INCOMING TRUNK CIRCUIT		②	SD-26077-01-6
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SCI TRUNK SEIZURE

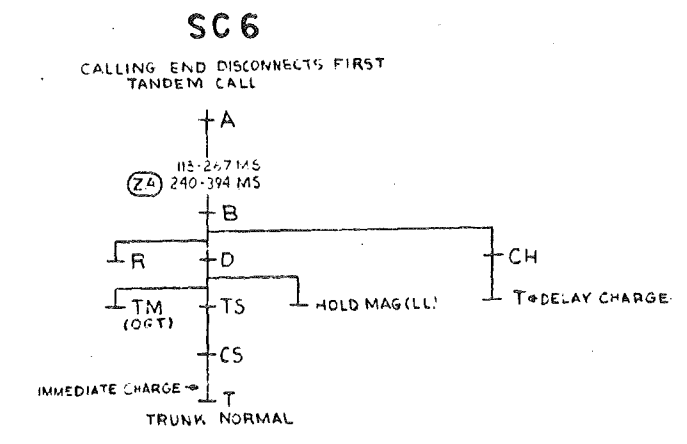
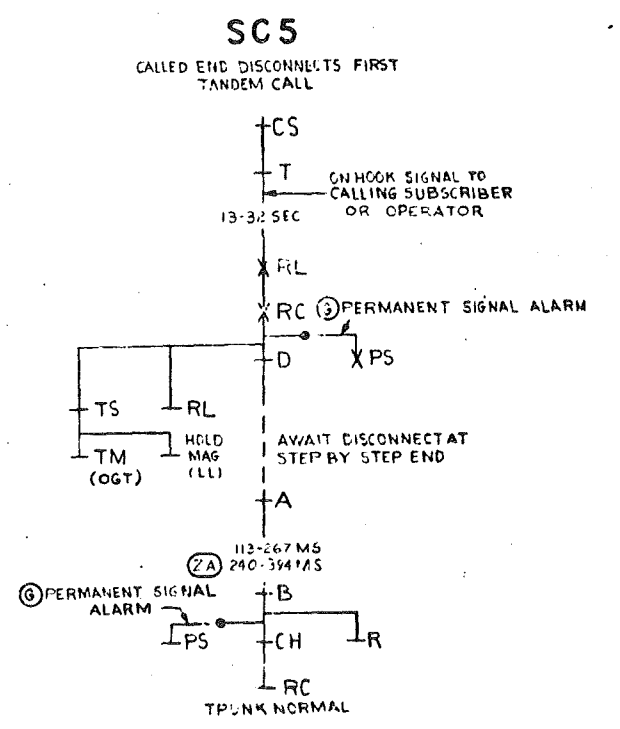
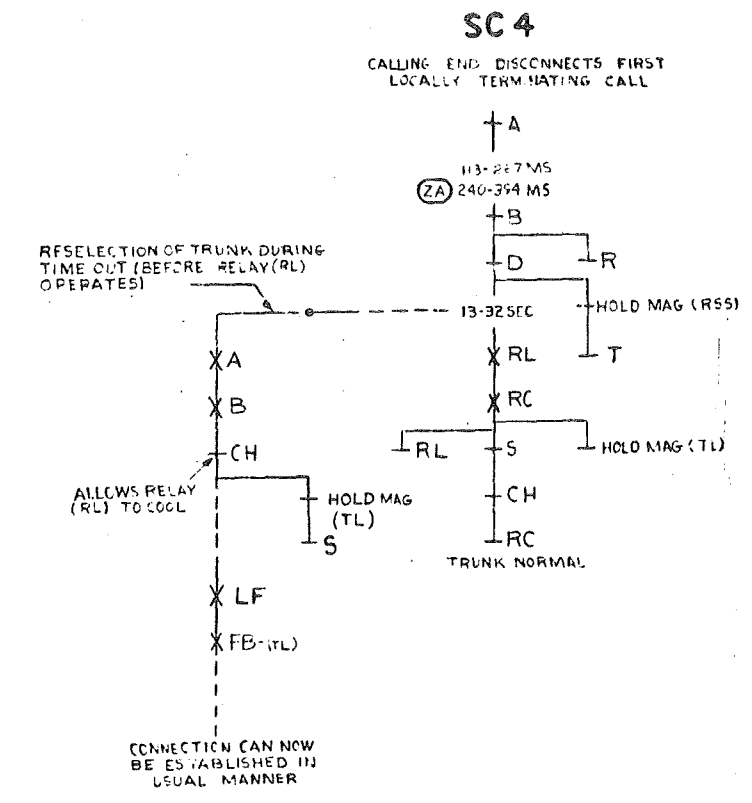
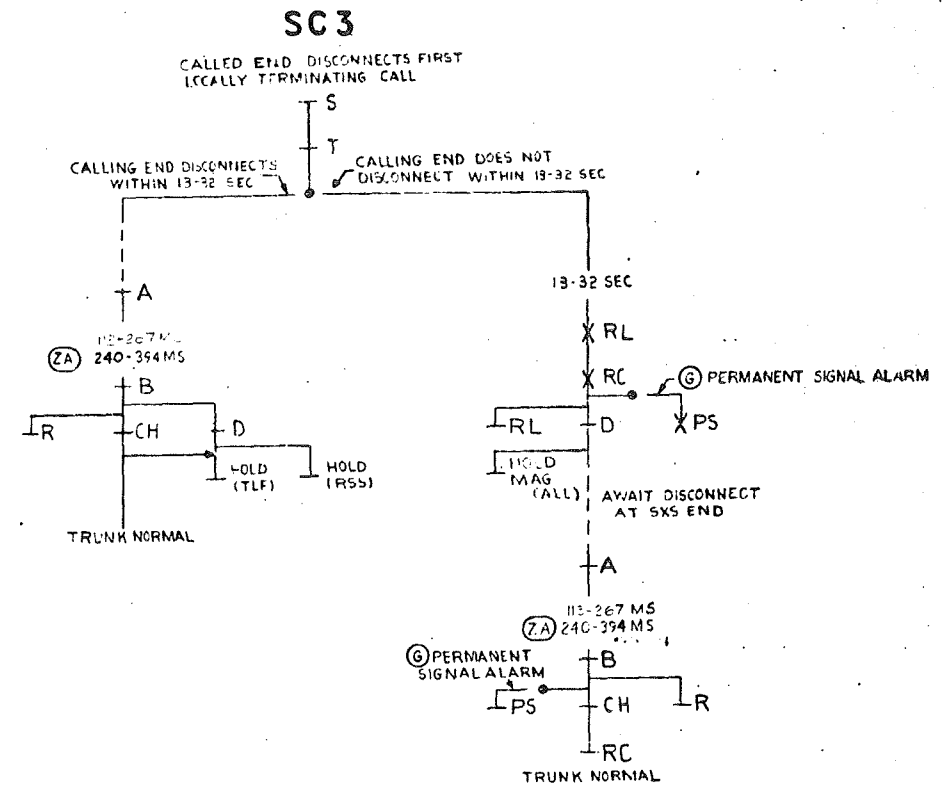


SC 2 CALLED SUBSCRIBER ANSWERS



SD-26077-01-7

CROSSBAR SYSTEMS		10
HC.5 INCOMING TRUNK CIRCUIT		
BELL TELEPHONE LABORATORIES, INC.		SD-26077-01-7
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SD-26077-01-8

CROSSBAR SYSTEMS	10 SD-26077-01-8
NO. 5 INCOMING TRUNK CIRCUIT	
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