SUPERSEDED FILE
BD-74

DESCRIPTION AND OPERATING
INSTRUCTIONS FOR THE

FIRE CONTROL COMMUNICATION SWITCHBOARD BD-74, COMBINATIONS A TO F

APRIL 3, 1934

COPY 1

3 APRIL 1934

SIGNAL CORPS LABORATORIES
FORT MONMOUTH, NEW JERSEY

DESCRIPTION AND OPERATING INSTRUCTIONS FOR THE FIRE-CONTROL COMMUNICATION SWITCHBOARD, TYPE BD-74, COMBINATIONS A TO F

April 3, 1934

This pamphlet consists of 7 pages

SIGNAL CORPS LABORATORIES
FORT MONMOUTH, NEW JERSEY

GOT:D/s

April 3, 1934.

DESCRIPTION AND OPERATING INSTRUCTIONS FOR THE FIRE-CONTROL COMMUNICATION SWITCHBOARD, TYPE BD-74, COMBINATIONS A TO F

I. REFERENCES: (All attached)

1. Circuit Label SC-D-659-D (Figs. 1 and 3. Fig. 2 not used on combinations A to F.)
2. Circuit Label SC-D-1172-A (Figs. 1 to 6)
3. Schematic Diagrams SC-D-1028-B (Figs. 1 to 3. Fig. 4 not used on combinations A to F.)
4. General Assembly SC-D-1113-B.
5. Rack Assembly (except jack panels) Combinations A to D, SC-D-1114-B
6. Equipment Layout (except jack panel) Combination E, SC-D-1171-A
7. Equipment Layout (except jack panel) Combination F, SC-D-1170-A
8. Equipment Layout (jack panel) Combination A and B, SC-D-1148-A
9. Equipment Layout (jack panel) Combination C and D, SC-D-1149-A
10. Equipment Layout (jack panel) Combination E and F, SC-D-1150-A
11. Cabinet Assembly SC-D-1119-B
12. Method of Packing Rack SC-D-1127-A
13. Terminal Punching List Combination A, SC-A-1179-A
14. Terminal Punching List Combination B, SC-A-1180-A
15. Terminal Punching List Combination C, SC-A-1181-A
16. Terminal Punching List Combination D, SC-A-1182-A
17. Terminal Punching List Combination E, SC-A-1183-A
18. Terminal Punching List Combination F, SC-A-1184-A.

II. GENERAL:

1. The switchboard comprises a single panel, unit type communication switchboard. It may be equipped with common and local battery telephone circuits, jack circuits for connecting together through lines and circuits for simplex telegraph. The design is such that it may be expanded to include practically any type of communication circuit. The arrangement is similar to the Western Electric Co. Toll Test Switchboard No. 5 as used by the Bell Telephone System. The frame dimensions are such that commercial telephone and telegraph repeaters, loud-speaking equipment, transmission testing equipment, etc., may be mounted thereon.

2. An operator's telephone circuit is not provided. A standard fire-control telephone, conveniently located, may be connected to one of the line circuits and patched to any desired line.

III. WORKING LIMITS:

1. Direct-Current Supervision. Refer to Drawing SC-D-659, Fig. 1. Maximum permissible line resistance: 1200 ohms at a minimum battery voltage of 28.

2. Transmitter Current - Supply Efficiency. The transmitter current supply will vary from .155 ampere with 0 loop to .027 ampere with a loop resistance of 900 ohms (approximately 10 miles of 19-gauge cable), for a minimum battery voltage of 28. The current-supply loss will of course vary with the transmitter used. The following table gives the losses of two commercial types of transmitters.

Miles of 19-gauge Cable	Current-Supply Loss W.E.Co. #323 db #	W.E.Co. #337 db #
0	0	*
3	3.8	1.4
5	5.5	2.6
10	8.6	4.5

* W.E.Co. 337 transmitter should not be used on short loops where the current will exceed .085 ampere.
# This loss is in addition to the voice frequency current loss.

IV. OPERATION:

1. Principal Functions.

a. To provide means of cross-connecting two or more lines with jumper wires.

b. To provide means of connecting or patching together two or more lines with patching cords.

c. To provide "ring-through" circuits for connecting together telephones or switchboards.

d. To provide means for supplying transmitter battery to common-battery telephones.

e. To provide lamp supervisory signals.

f. To provide a visual and audible signal when a fuse operates.

g. To provide for the rearrangement of connections, by the use of patching cords, without disconnecting the jumper wires.

h. To provide means for connecting test equipment to the lines or switchboard equipment.

i. To provide means of originating and answering calls to and from telephones and switchboards.

j. To provide means of connecting lines together to form through circuits.

k. To provide telegraph channels by means of simplex coils.

2. Connecting Circuits.

a. Common-battery telephone circuits.

b. Local-battery telephone circuits.

c. Common-battery line circuits at other switchboards.

d. Local-battery line circuits at other switchboards.

e. Incoming ring-down, outgoing automatic tie line or trunk circuits at other switchboards.

f. Two-way ring-down tie line or trunk circuits at other switchboards.

V. DETAILED DESCRIPTION:

1. Circuit SC-D-659 and associated schematic diagram SC-D-1028.

a. Common-Battery Telephones. Common-battery telephones should be connected to the T and R terminal punchings of Fig. 1. When a direct-current circuit is completed through the telephone by the operation of the switch-hook or equivalent, this results in the operation of the supervisory relay which is in series with the transmitter battery-supply coil. The operation of the supervisory relay causes the supervisory lamp to light and remain lighted the entire time the line is in use. The lamp may be flashed, for the purpose of attracting the attention of the switchboard operator, by slowly operating the switch-hook.

b. Local-Battery Telephones. When local-battery telephones are used with Fig. 1, the supervisory lamp may be lighted or flashed by short-circuiting the line.

c. Fuse-Alarm Circuit per Fig. 3. The melting of the fuse wire allows the spring on the fuse to connect -30 V battery to the fuse-alarm busbar. This results in the fuse-panel lamp lighting and the operation of the fuse-alarm relay, which in turn closes the bell circuit.

2. Cross-connecting Lines.

a. By Means of Jumper Wires.

(1) Circuit SC-D-659, Fig. 1. The T_1 and R_1 terminal punchings may be cross-connected at the terminal strip in the switchboard. If desired the T_1 and R_1 terminal punchings may be cabled to a cross-connecting frame and the cross-connections made there.

(2) SC-D-1172, Figs. 1 to 6. These circuits may be cross-connected at the terminal strips in the switchboard or at a cross-connecting frame. The jack circuit per Fig. 2 may be cross-connected to form tie lines between switchboard sections.

b. By Means of Patching Cords.

(1) Use type CC-66, CC-67 or CC-68 patching cords or equivalent. Circuit drawing SC-D-1028 shows the method of connecting circuits together by means of patching cords and also replacing jumpered connections with patching cords.

3. Testing Lines and Switchboard Equipment.

a. When testing a line, monitor or "listen in" on the circuit to determine whether or not the line is in use. For this purpose use the "Tie" jack of circuit SC-D-659, Fig. 1, or the "Monitor" jack of circuit SC-D-1172, Fig. 3. To test a line plug in the test equipment in the "Line" jack of circuit SC-D-659, Fig. 1 or the "East" or "West" jack of circuit SC-D-1172, Fig. 3. This disconnects all other switchboard equipment and other lines tied or patched to the line under test.

b. To test switchboard equipment of circuit SC-D-659, Fig. 1, plug the test equipment into the "Swbd" jack to test the relay, lamp and the battery or "wet" side of the coil. To test the "dry" side of the coil, plug the test equipment into the "Tie CO" (tie cut-off) jack.

c. The relay adjusting instructions are on circuit label SC-D-659.

4. Originating and Answering Calls.

a. To apply ringing current to lines connected to the T and R terminals of circuit SC-D-659, Fig. 1, patch the switchboard circuit that is used for an operator's telephone circuit to the "Line" jack of the desired line. The application of ringing current to a "Tie" jack of an arrangement like that shown in SC-D-1028, Fig. 1, would ring all three telephones. Calls may be answered by plugging into the "Tie" or the "Tie CO" jack depending on whether or not it is desired to disconnect other lines.

b. To apply ringing current to individual lines connected to circuit SC-D-1172 plug into the "East" or "West" jack. To ring on both lines plug into the "Mon." (monitoring) jack.

5. Ring-Through Switchboard Circuit.

a. The repeating coils of circuit SC-D-659, Fig. 1, and SC-D-1172, Figs. 4 and 5, are of the ring-through type therefore telephones or switchboards connected together through this switchboard may ring each other directly.

6. Connecting Circuits.

a. Common-Battery Telephones. Should be connected to the T and R terminals of SC-D-659, Fig. 1.

b. Local-Battery Telephones.

(1) If a supervisory signal is not required, connect to circuit SC-D-1172, Figs. 2 or 3.

(2) If direct-current supervision is desired, connect to the T and R terminals of circuit SC-D-659, Fig. 1. A condenser should be used at the local-battery telephone to prevent the supervisory relay from lighting when the line is not in use and to prevent direct current from flowing through the local-battery telephone induction coil and receiver. Direct current flowing through the receiver windings will result in a large decrease in receiving efficiency in case the current is poled incorrectly. Such an extraneous direct current flowing in the local-battery telephone induction coil may result in a large decrease in transmitting efficiency depending on the strength and polarity of this current. The supervisory signal may be operated by short-circuiting the line. If a supervisory signal is desired the entire time a line is in use, a retard (impedance) coil may be connected across the line. In some types of telephones the generator winding may be used for this purpose.

(3) If ringing supervision is desired on just a few lines the local-battery telephones may be connected to circuit SC-D-1172, Fig. 2 or 3, and high impedance ringers with gongs of different tones bridged across the lines at the switchboard.

c. Incoming Ring-down, Outgoing Automatic Tie Lines or Trunk Circuits at Other Switchboards. Connect to the T and R terminals of circuit SC-D-659, Fig. 1.

d. Two-way, Ring-down, Tie-line or Trunk Circuits at Other Switchboards.

(1) If supervision is not required at the fire-control switchboard, connect to circuit SC-D-1172, Figs. 2 or 3.

(2) If supervision is required connect to circuit SC-D-1172, Fig. 2 or 3, and bridge a high-impedance ringer across the line at the fire-control switchboard. If more than one ringer is required, use gongs with different tone.

e. Common-Battery Line Circuits at Other Switchboards.

(1) If supervision at the fire-control switchboard is not desired connect to circuit SC-D-1172, Fig. 2 or 3.

(2) If supervision at the fire-control switchboard is required, connect to circuit SC-D-1172, Fig. 2 or 3, and bridge a ringer with a condenser in series across the line at the fire-control switchboard. When the "dry" side of the circuit per SC-D-659, Fig. 1, which is being used for the operator's telephone circuit, is patched to the line from the distant switchboard, this will complete a direct-current circuit for supervision at the distant switchboard.

f. Local-Battery Telephone Circuits at Other Switchboards. Same as paragraph V 6 b (1), (2) or (3).

VI. INSTALLATION:

1. The cabinet and the apparatus rack are packed in individual boxes. The method of packing the rack is shown on SC-D-1127. Erect the apparatus rack in its approximate location before removing the boxing.

2. Fasten the rack (iron framework) to the floor with bolts or lag screws.

3. Assemble the cabinet front, sides (less the rear door stops) and roof. If a cable opening is desired in the side of the switchboard, remove the lower panel in the side of the switchboard (the panel five inches in width, held in place by screws), cut off five inches of the lower end and replace the remaining portion. If two "Combination F" sections are adjacent to each other remove the entire lower panels in the adjacent sides (the panels five inches in width, held in place by screws). Place the cabinet in front of the frame and lift sufficiently to clear the frame and set in place. Fasten in place the wooden assembly on which the rear door rests and the rear door stops. Fasten the cabinet to the frame with wood screws inserted through the inside of the channel-iron frame. Fasten the wooden details, that cover the jack fasteners on the jack panel, to the rack with machine screws.

4. In the event the incoming cables come in overhead, cut the necessary holes in the roof of the switchboard. These cables may be fastened to the sides of the wooden cabinet.

5. Install the lamps and lamp caps.

6. Insert fuses in position on fuse panel.

7. Connect 30-volt battery to the battery busbars on the fuse panel.

8. Connect 110-volt power to the heating lamp circuit.

18 attachments
(as listed in Section I above)

SWITCHBOARD, TYPE BD-74
COMBINATION "C"
TERMINAL PUNCHINGS LIST

Punching	Connection	Circuit
1	T	B-1
2	R	B-1
3	T	B-2
4	R	B-2
5	T	B-3
to		to
136	R	B-68
137	T	B-69
138	R	B-69
139	T	B-70
140	R	B-70
141	T	J-1
142	R	J-1
143	T	J-2
144	R	J-2
145	T	J-3
to		to
152	R	J-6
153	T	J-7
154	R	J-7
155	T	J-8
156	R	J-8
173	T	T-1
174	R	T-1
175	T	T-2
176	R	T-2
177	T	T-3
to		to
264	R	T-46
265	T	T-47
266	R	T-47
267	T	T-48
268	R	T-48

Punching	Connection	Circuit
281	T_1	B-1
282	R_1	B-1
283	T_1	B-2
284	R_1	B-2
285	T_1	B-3
to		to
416	R_1	B-68
417	T_1	B-69
418	R_1	B-69
419	T_1	B-70
420	R_1	B-70
421	T_1	J-1
422	R_1	J-1
423	T_1	J-2
424	R_1	J-2
425	T_1	J-3
to		to
432	R_1	J-6
433	T_1	J-7
434	R_1	J-7
435	T_1	J-8
436	R_1	J-8
437	L	L-1
438	L_1	L-1
439	L	L-2
440	L_1	L-2
445	+	LB
447	-	LB
453	T_1	T-1
454	R_1	T-1
455	T_1	T-2
456	R_1	T-2
457	T_1	T-3
to		to
544	R_1	T-46
545	T_1	T-47
546	R_1	T-47
547	T_1	T-48
548	R_1	T-48

B Battery feed circuit, Dwg.SC-D-659, Fig.1
J Jack circuit, Dwg.SC-D-1172, Fig.2
L Lamp circuit, Dwg.SC-D-1172, Fig.1
LB Lamp battery circuit, Dwg. SC-D-1172, Fig.6
T Through circuit, Dwg. SC-D-1172, Fig.3

Switchboard, type BD-74
Combination "C"
Terminal Punchings List

DRAWN: HERSON	VERIFIED: C.R.	ENGINEER: GOT
TRACED:	APPROVED: W.S.	CH OF SECT: G.A.T
CHECKED: GOT	DATE: 3-14-34	APPROVED PROJ. OFFICER: J.H.

Signal Corps Laboratories
U.S.Army
Ft.Monmouth, New Jersey

SC-A-1181-A

SWITCHBOARD, TYPE BD-74
COMBINATION "B"
TERMINAL PUNCHINGS LIST

Punching	Connection	Circuit	Punching	Connection	Circuit	Punching	Connection	Circuit
1	T	B-1	281	T_1	B-1	489	L	L-1
2	R	B-1	282	R_1	B-1	490	L_1	L-1
3	T	B-2	283	T_1	B-2	491	L	L-2
4	R	B-2	284	R_1	B-2	492	L_1	L-2
5	T	B-3	285	T_1	B-3	493	L	L-3
to		to	to		to	to		to
156	R	B-78	436	R_1	B-78	496	L_1	L-4
157	T	B-79	437	T_1	B-79	497	L	L-5
158	R	B-79	438	R_1	B-79	498	L_1	L-5
159	T	B-80	439	T_1	B-80	499	L	L-6
160	R	B-80	440	R_1	B-80	500	L_1	L-6
161	T	J-1	441	T_1	J-1	505	+	LB
162	R	J-1	442	R_1	J-1	507	−	LB
163	T	J-2	443	T_1	J-2	513	TG_1	S-1
164	R	J-2	444	R_1	J-2	514	T_1	S-1
165	T	J-3	445	T_1	J-3	515	R_1	S-1
to		to	to		to	517	TG_1	S-2
204	R	J-22	484	R_1	J-22	518	T_1	S-2
205	T	J-23	485	T_1	J-23	519	R_1	S-2
206	R	J-23	486	R_1	J-23	521	TG_1	S-3
207	T	J-24	487	T_1	J-24	to		to
208	R	J-24	488	R_1	J-24	543	R_1	S-8
233	TG	S-1				545	TG_1	S-9
234	T	S-1				546	T_1	S-9
235	R	S-1				547	R_1	S-9
237	TG	S-2				549	TG_1	S-10
238	T	S-2				550	T_1	S-10
239	R	S-2				551	R_1	S-10
241	TG	S-3						
to		to						
263	R	S-8						
265	TG	S-9						
266	T	S-9						
267	R	S-9						
269	TG	S-10						
270	T	S-10						
271	R	S-10						

B Battery feed circuit, Dwg. SC-D-659, Fig. 1
J Jack circuit, Dwg. SC-D-1172, Fig. 2
L Lamp circuit, Dwg. SC-D-1172, Fig. 1
LB Lamp battery circuit, Dwg. SC-D-1172, Fig. 6
S Simplex circuit, Dwg. SC-D-1172, Fig. 4

SWITCHBOARD TYPE BD-74
COMBINATION "B"
TERMINAL PUNCHINGS LIST

DRAWN: HERSON	VERIFIED: C.E.R.	ENGINEER: G.O.T.
TRACED:	APPROVED: WSO	CH. OF SECT: GAG.T
CHECKED: G.O.T.	DATE: 3-14-34	APPROVED PROJ OFFICER: F.I.G.
SIGNAL CORPS LABORATORIES U.S. ARMY FORT MONMOUTH NEW JERSEY		SC-A-1180-A

SWITCHBOARD, TYPE BD-74
COMBINATION "F"
TERMINAL PUNCHINGS LIST

Punching	Connection	Circuit	Punching	Connection	Circuit
1	T	T-1	401	T_1	T-1
2	R	T-1	402	R_1	T-1
3	T	T-2	403	T_1	T-2
4	R	T-2	404	R_1	T-2
5	T	T-3	405	T_1	T-3
to		to	to		to
332	R	T-166	732	R_1	T-166
333	T	T-167	733	T_1	T-167
334	R	T-167	734	R_1	T-167
335	T	T-168	735	T_1	T-168
336	R	T-168	736	R_1	T-168

T Through circuits, Dwg. SC-D-1172, Fig. 3

Switchboard, type BD-74 Combination "F" Terminal Punchings List		
DRAWN: HERSON.	VERIFIED: C.F.K.	ENGINEER: GOT
TRACED:	APPROVED: USO	CH. OF SECT. GAS T
CHECKED: GOT.	DATE: 3-14-34	APPROVED: PROJECT ENGINEER: J.H.
Signal Corps Laboratories U.S.Army Ft. Monmouth, New Jersey		SC-D-1184-A

SWITCHBOARD, TYPE BD-74
COMBINATION "A"
TERMINAL PUNCHINGS LIST

Punching	Connection	Circuit
1	T	B-1
2	R	B-1
3	T	B-2
4	R	B-2
5	T	B-3
to		to
176	R	B-88
177	T	B-89
178	R	B-89
179	T	B-90
180	R	B-90
181	T	J-1
182	R	J-1
183	T	J-2
184	R	J-2
185	T	J-3
to		to
224	R	J-22
225	T	J-23
226	R	J-23
227	T	J-24
228	R	J-24

Punching	Connection	Circuit
281	T_1	B-1
282	R_1	B-1
283	T_1	B-2
284	R_1	B-2
285	T_1	B-3
to		to
456	R_1	B-88
457	T_1	B-89
458	R_1	B-89
459	T_1	B-90
460	R_1	B-90
461	T_1	J-1
462	R_1	J-1
463	T_1	J-2
464	R_1	J-2
465	T_1	J-3
to		to
504	R_1	J-22
505	T_1	J-23
506	R_1	J-23
507	T_1	J-24
508	R_1	J-24
509	L	L-1
510	L_1	L-1
511	L	L-2
512	L_1	L-2
513	L	L-3
to		to
518	L_1	L-5
519	L	L-6
520	L_1	L-6
525	+	LB
527	-	LB

B Battery feed circuits, Dwg. SC-D-659, Fig.1
J Jack circuits, Dwg. SC-D-1172, Fig.2
L Lamp circuits, Dwg. SC-D-1172, Fig.1
LB Lamp battery circuit, Dwg. SC-D-1172, Fig.6

Switchboard, type BD-74
Combination "A"
Terminal Punchings List

DRAWN: HERSON	VERIFIED: C.L.K.	ENGINEER: [illegible]
TRACED:	APPROVED: [illegible]	CH. OF SECT. [illegible]
CHECKED: [illegible]	DATE: 3-14-34	APPROVED PROJ. OFFICER [illegible]

Signal Corps Laboratories
U.S.Army
Ft.Monmouth, New Jersey

SC-A-1179-A

SWITCHBOARD, TYPE BD-74
CIRCUIT DIAGRAM

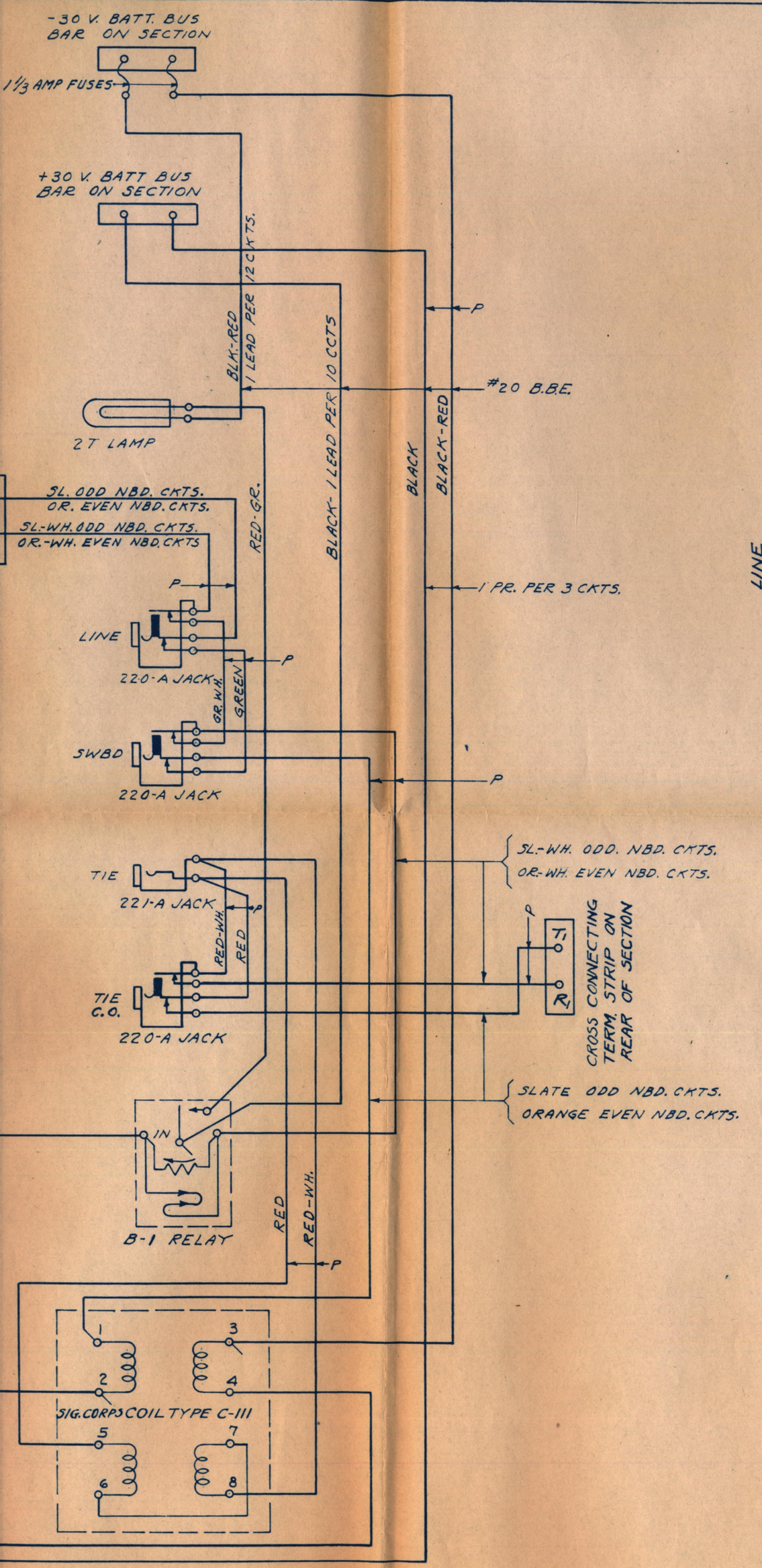


FIG. 1

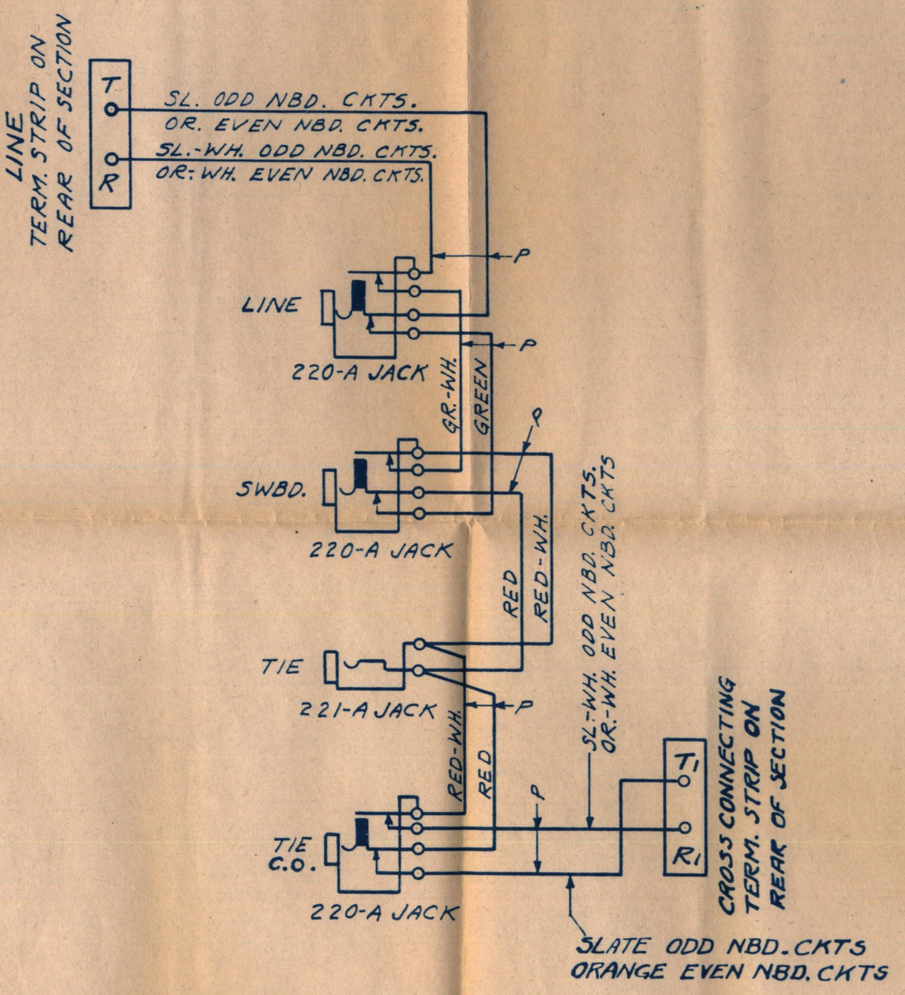
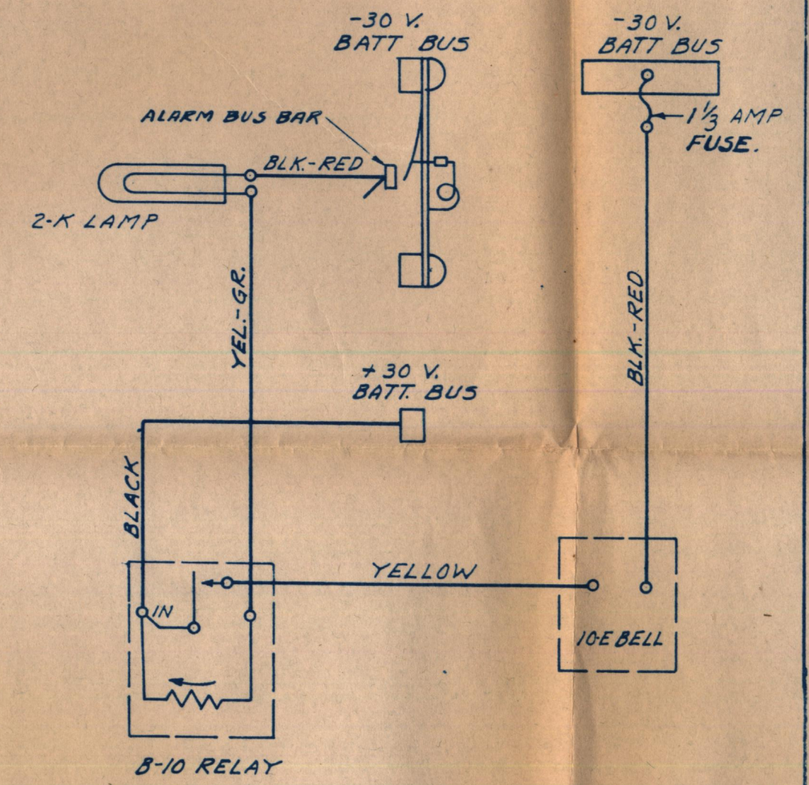


FIG. 2



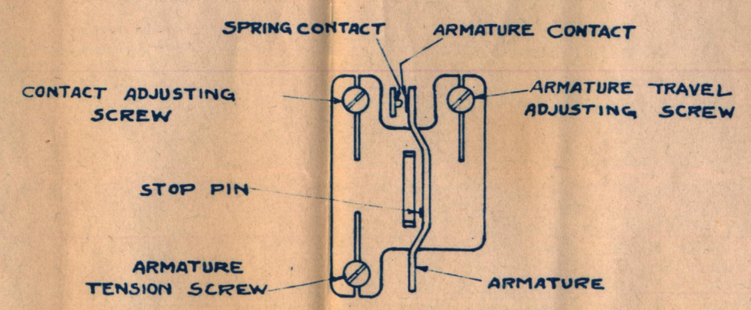
ALL WIRING #20 A.W.G. BRAIDED BLACK ENAMEL.

FIG.- 3

NOTE:
1. WIRES NOT OTHERWISE SPECIFIED TO BE #22 A.W.G. ENAMELED D.S.& C. SWITCHBOARD WIRE.
2. "P" DENOTES PAIR.
3. ALL APPARATUS CODE NUMBERS ARE WESTERN ELECTRIC CO. INC. UNLESS OTHERWISE SPECIFIED.

NOTE:
CIRCUIT LABEL TO BE SET UP IN GOTHIC TYPE AND PRINTED ON A GOOD GRADE OF 80# (25 X 38) COATED WHITE BOOK PAPER. BOTH SIDES OF CIRCUIT LABEL TO BE COATED WITH WOOD LACQUER AS MADE BY THE EGYPTIAN LACQUER MFG. CO. OF NEW YORK CITY.

RELAY ADJUSTMENTS



W.E.CO CODE NUMBER	MAX. ARM TRAVEL	FRONT CONTACT MAKE	OPERATE D.C. AMPERES	RELEASE D.C. AMPERES
B-1	.030"	.005"	.020	.005
B-10	.030"	.005"	.022	.002

CONTACTS:
WITH A .005" THICKNESS GAUGE INSERTED BETWEEN STOP PIN ON ARMATURE AND CORE, TURN CONTACT ADJUSTING SCREW SO THAT THE CONTACTS JUST TOUCH.

ARMATURE TRAVEL:
WITH A .030" THICKNESS GAUGE INSERTED BETWEEN THE STOP PIN ON ARMATURE AND CORE, ADJUST ARMATURE TRAVEL SCREW SO THAT ARMATURE TOUCHES GUAGE LIGHTLY.

ELECTRICAL REQUIREMENTS

B-1 RELAY:
PLUG IN A MILLIAMMETER IN SERIES WITH A 3000 OHM ADJUSTABLE RHEOSTAT INTO THE SWITCHBOARD JACK AND ADJUST CURRENT FOR THE SPECIFIED VALUE. ADJUST RELAY BY MEANS OF THE ARMATURE TENSION SCREW

B-10 RELAY:
CONNECT A MILLIAMMETER IN SERIES WITH A 3000 OHM ADJUSTABLE RHEOSTAT BETWEEN ALARM AND -30 VOLT BUS BARS AND ADJUST CURRENT TO SPECIFIED VALUE. ADJUST RELAY BY MEANS OF ARMATURE TENSION SCREW.

SC-D-659-D

SUPERSEDES ISSUE A DATED 12-

SWITCHBOARD, TYPE BD CIRCUIT LABEL			
AUTHENTICATION			
DRAWN BY: STALLINGS	VERIFIED: C. E. Ranck		
TRACED BY: STALLINGS	APPROVED: [illegible]		
CHECKED BY: [illegible]	DATE: AUGUST 24, 1933		
SIGNAL CORPS LABORATORIES			

SWITCHBOARD, TYPE BD-74
CIRCUIT DIAGRAM

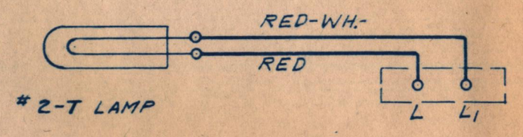


FIG. 1

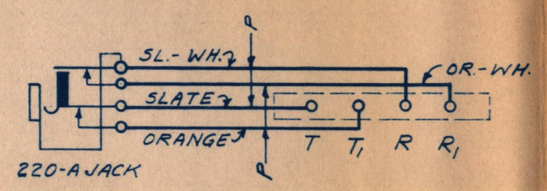


FIG. 2

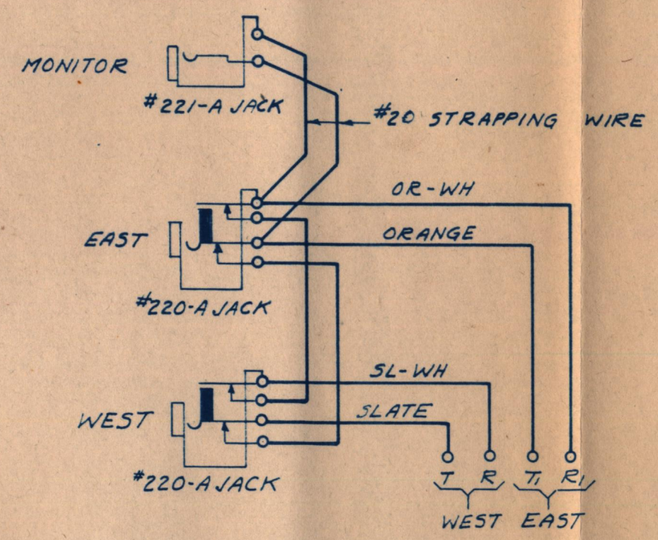


FIG. 3

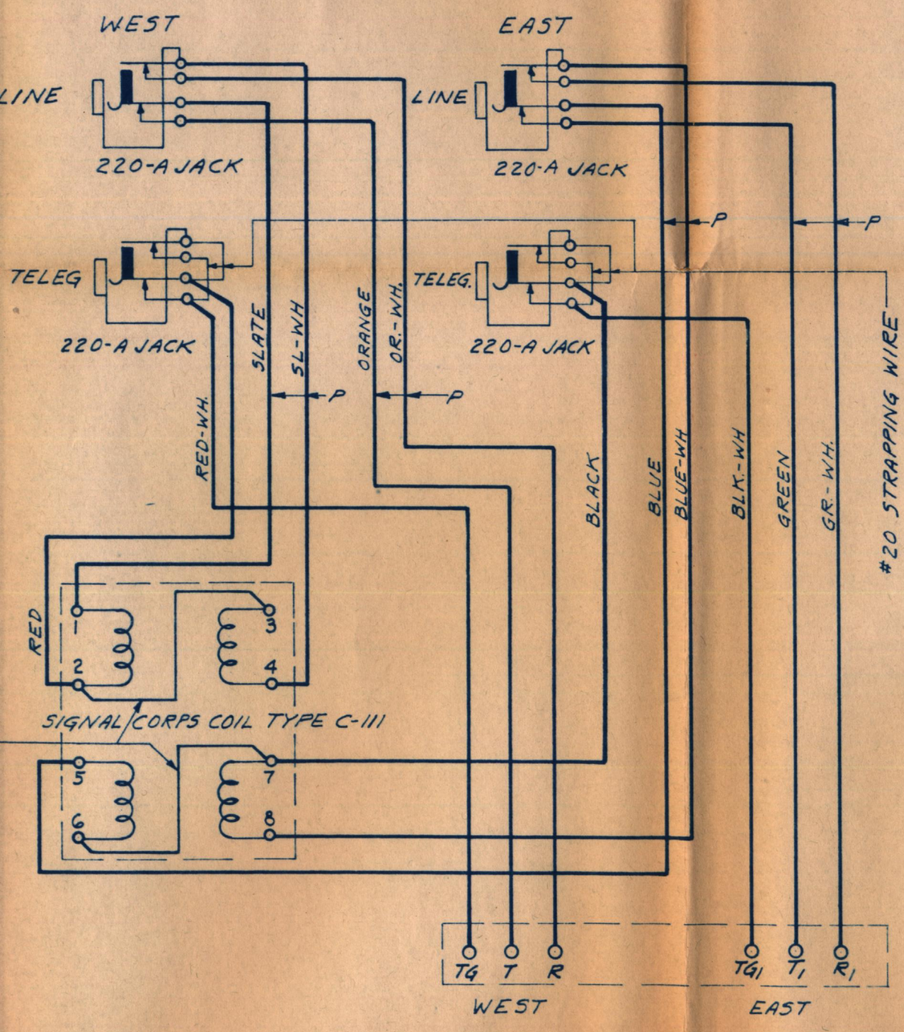


FIG. 4 (SEE NOTE 4)

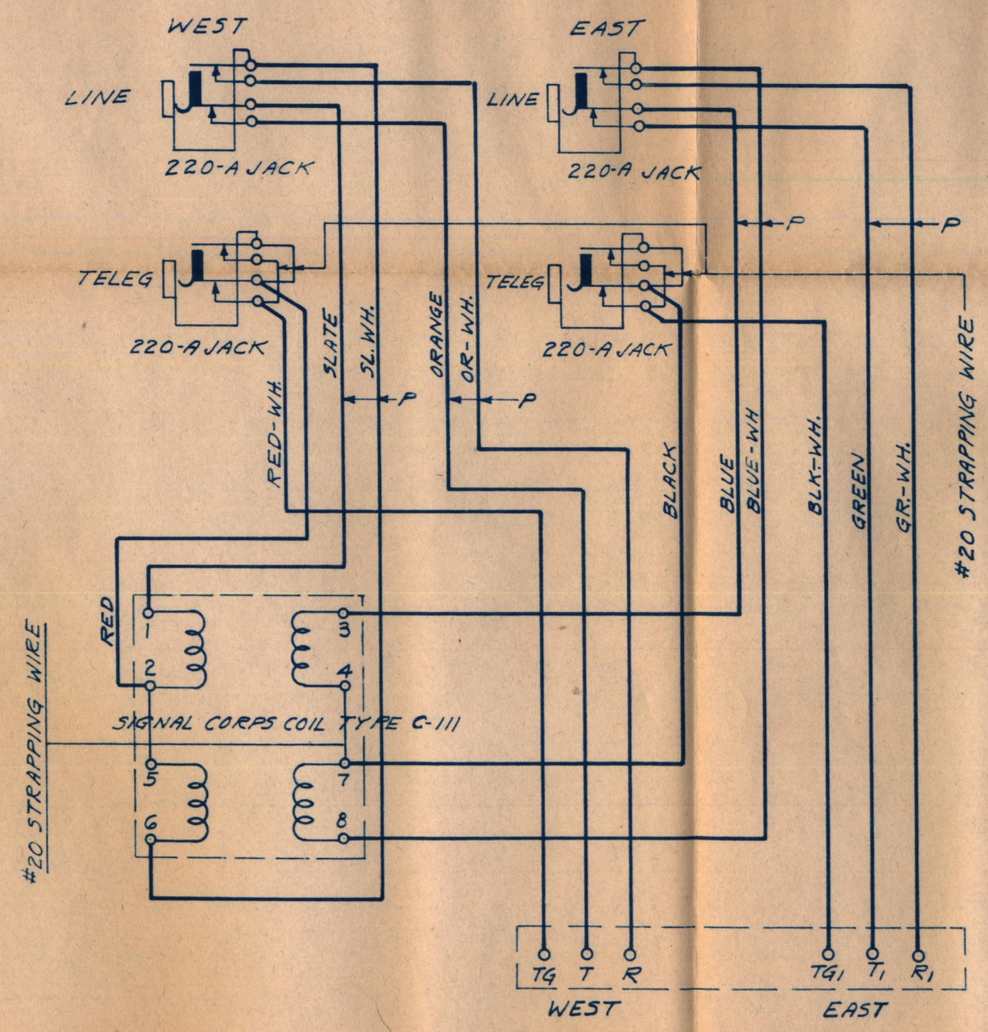


FIG. 5 (SEE NOTE 5)

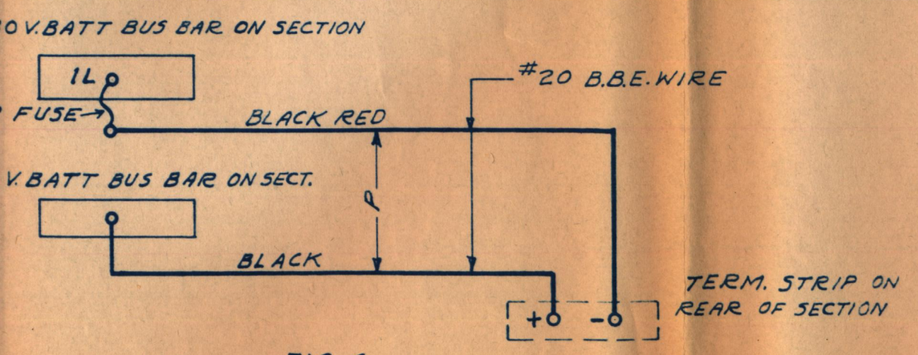


FIG. 6

NOTES:
1. WIRES NOT OTHERWISE SPECIFIED TO BE #22 A.W.G. ENAMELED D.S.&C. SWITCHBOARD WIRE.
2. "P" DENOTES PAIR.
3. ALL APPARATUS CODE NUMBERS ARE WESTERN ELECTRIC CO. INC. UNLESS OTHERWISE SPECIFIED.
4. CONNECT SIMPLEX CKT. PER FIG. 4 FOR MAXIMUM TELEPHONE EFFICIENCY.
5. CONNECT SIMPLEX CKT. PER FIG. 5 TO REDUCE NOISE IN TELEPHONE CKT. DUE TO TELEGRAPH CURRENT.

NOTE:
CIRCUIT LABEL TO BE SET UP IN GO
TYPE AND PRINTED ON A GOOD GRA
80# (25 X 38) COATED WHITE BOOK PA
BOTH SIDES OF CIRCUIT LABEL TO B
COATED WITH WOOD LACQUER AS M
BY THE EGYPTIAN LACQUER MFG.
OF NEW YORK CITY.

SC-D-1172-A

QUAN. REQ.	NAME OF ITEM	MATERIAL	TYPE NO
	SWITCHBOARD, TYPE
CIRCUIT LABEL		
		AUTHENTICATIO	
DRAWN BY: STALLINGS		VERIFIED: C. E. Ran	
TRACED BY: STALLINGS		APPROVED: WSD	
CHECKED BY: G.O.T.		DATE: MARCH, 6 1934	
SIGNAL CORPS LABORATORIES			

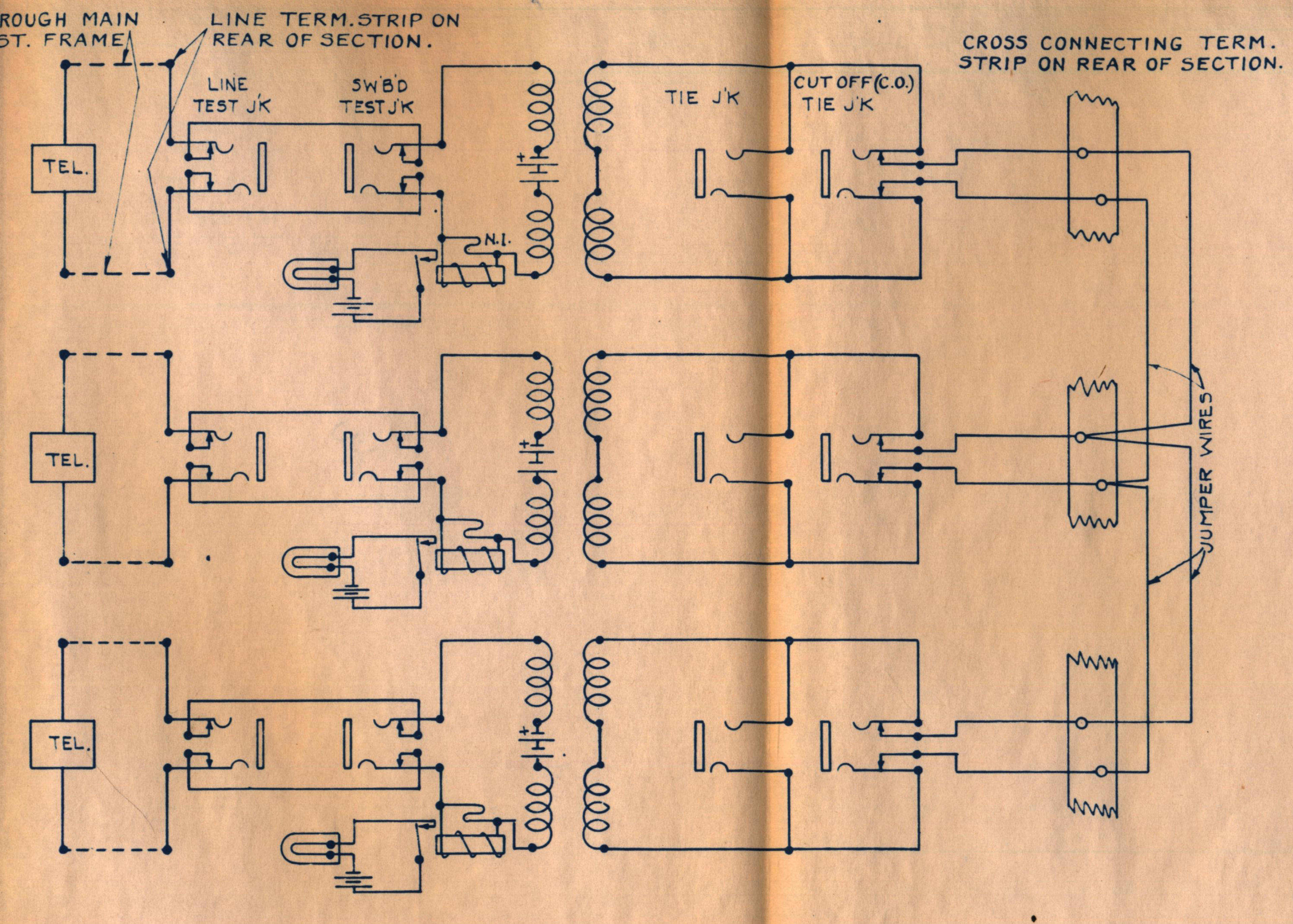


FIG. 1 CIRCUIT SHOWING THREE TELEPHONES NORMALLY CONNECTED WITHOUT PATCHING CORDS
ASSOCIATED WIRING DIAGRAM PER DWG. SC-D-659, FIG. 1.

SC-D-1028-B

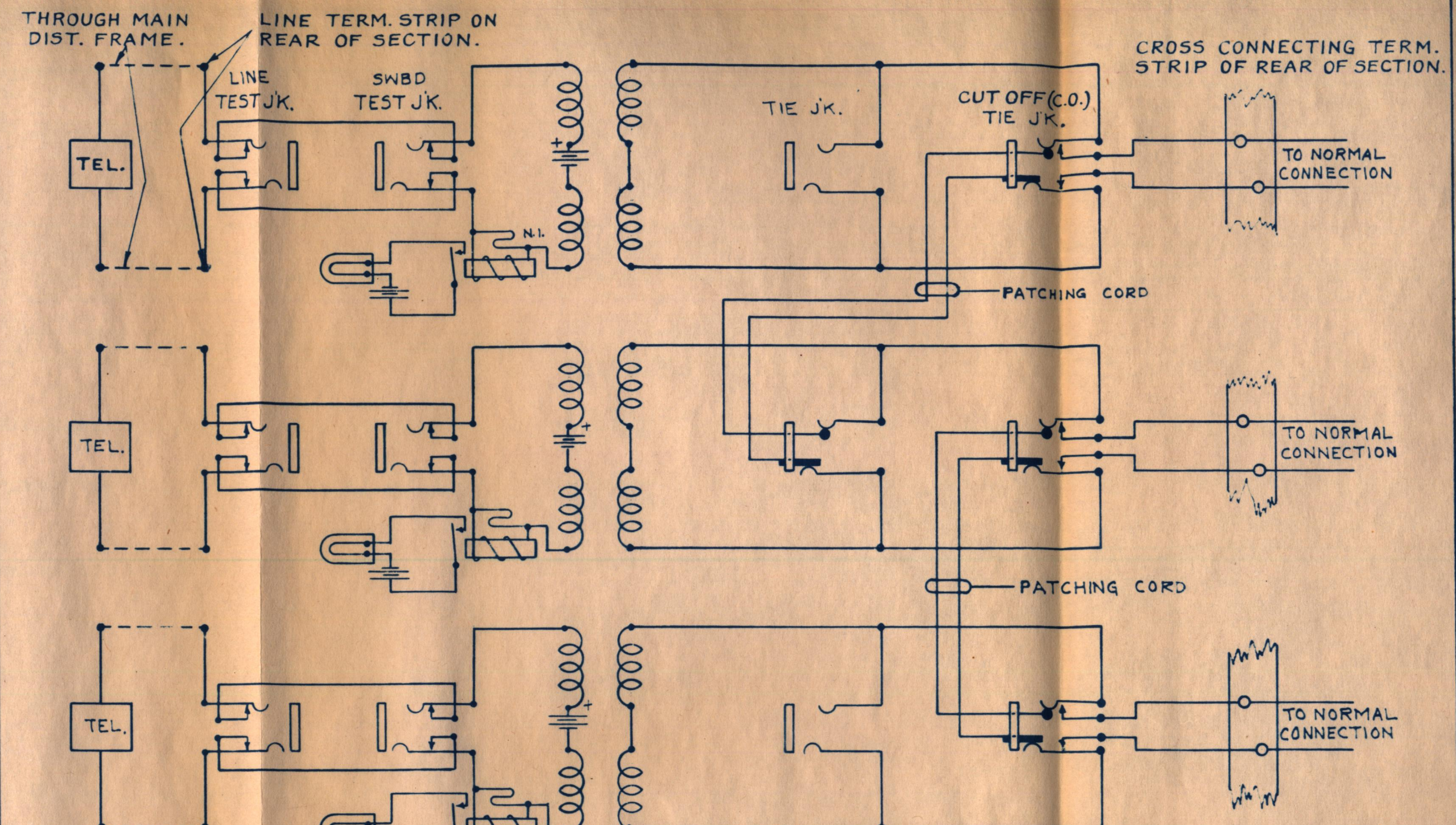


FIG. 2 CIRCUIT SHOWING THREE TELEPHONES WITH NORMAL CONNECTIONS REPLACED WITH TEMPORARY CONNECTIONS BY MEANS OF PATCHING CORDS.
ASSOCIATED WIRING DIAGRAM PER DWG. SC-D-659, FIG. 1.

SC-D-1028-B

NOTE:
CIRCUIT LABELS ... IN GOTHIC TYPE A... ON A GOOD GRADE ... 38) COATED WHITE ... BOTH SIDES OF CIR... TO BE COATED WIT... QUER AS MADE BY ... LACQUER MFG. CO. ... CITY.
REDUCE LABELS TO ...

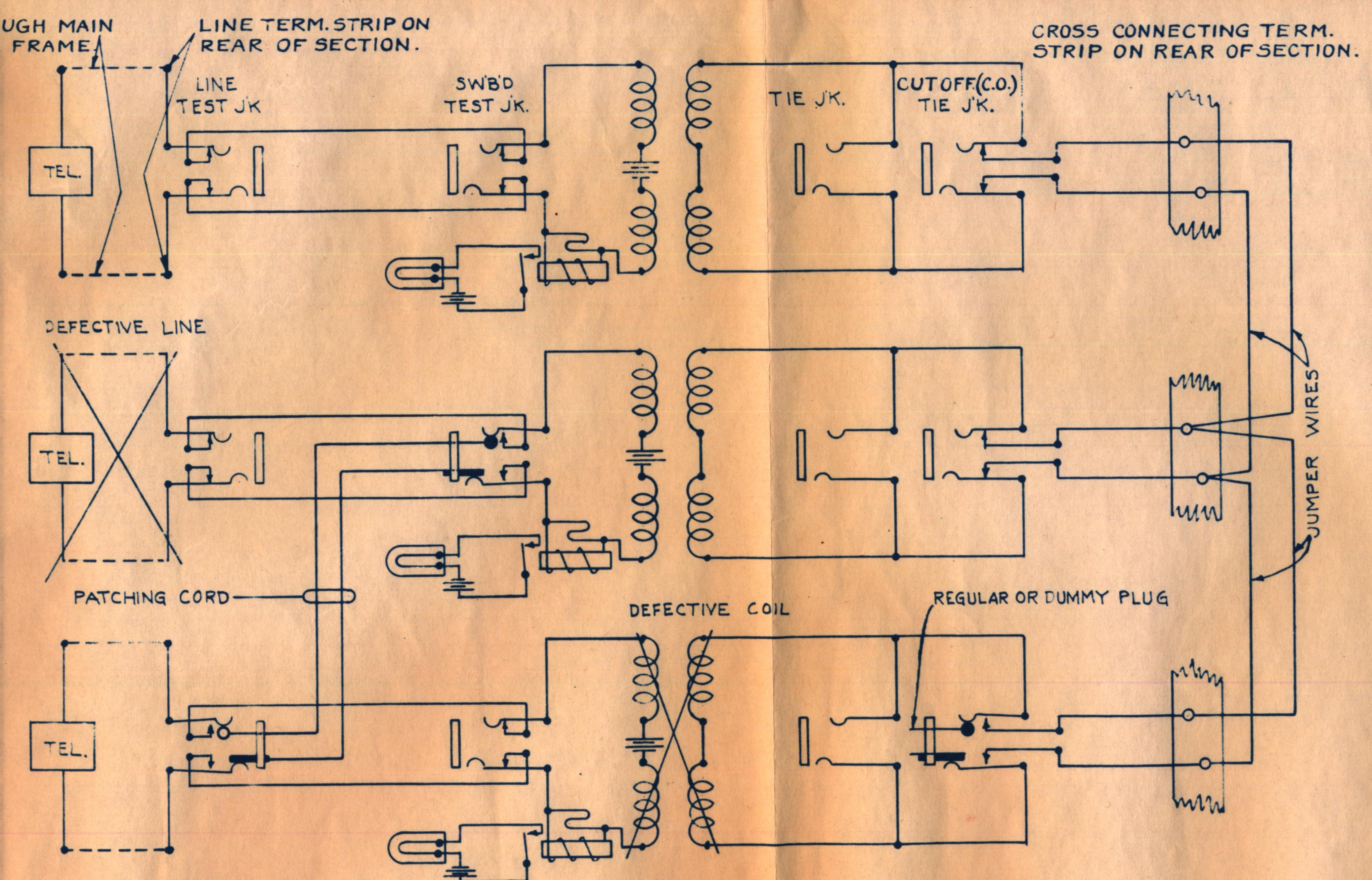


FIG. 3 CIRCUIT SHOWING METHOD OF DISCONNECTING A DEFECTIVE LINE AND COIL BY MEANS OF A PATCHING CORD.
ASSOCIATED WIRING DIAGRAM PER DWG. SC-D-659, FIG. 1.

SC-D-1028-B

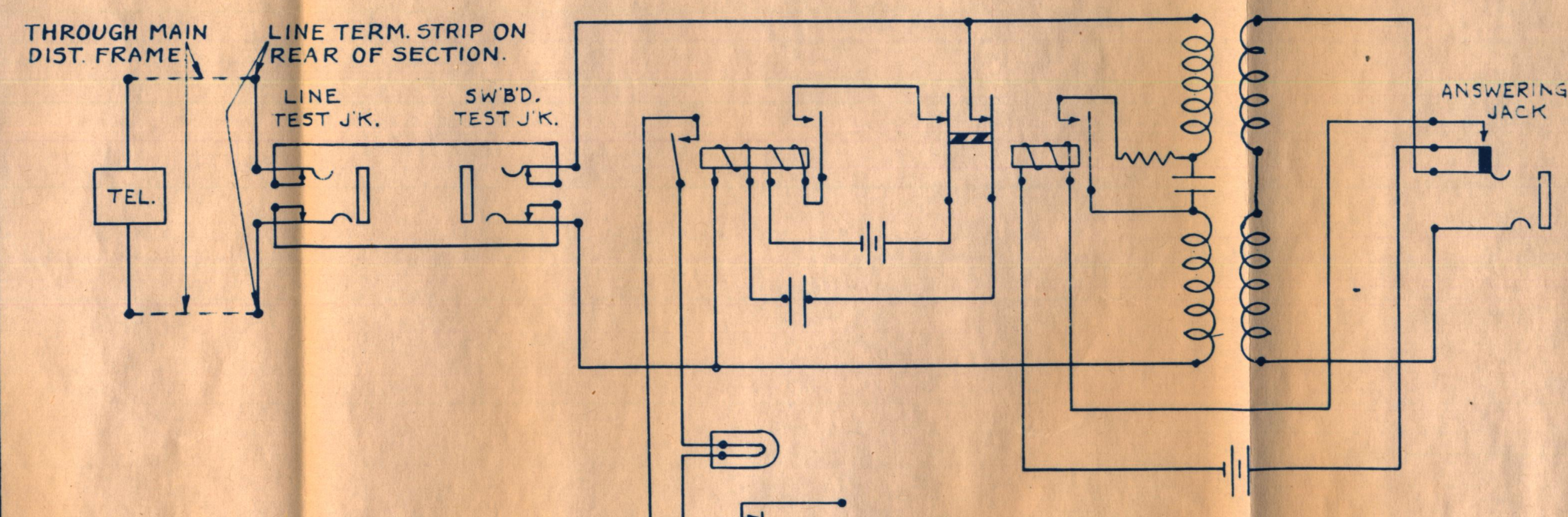


FIG. 4. RING DOWN CIRCUIT.

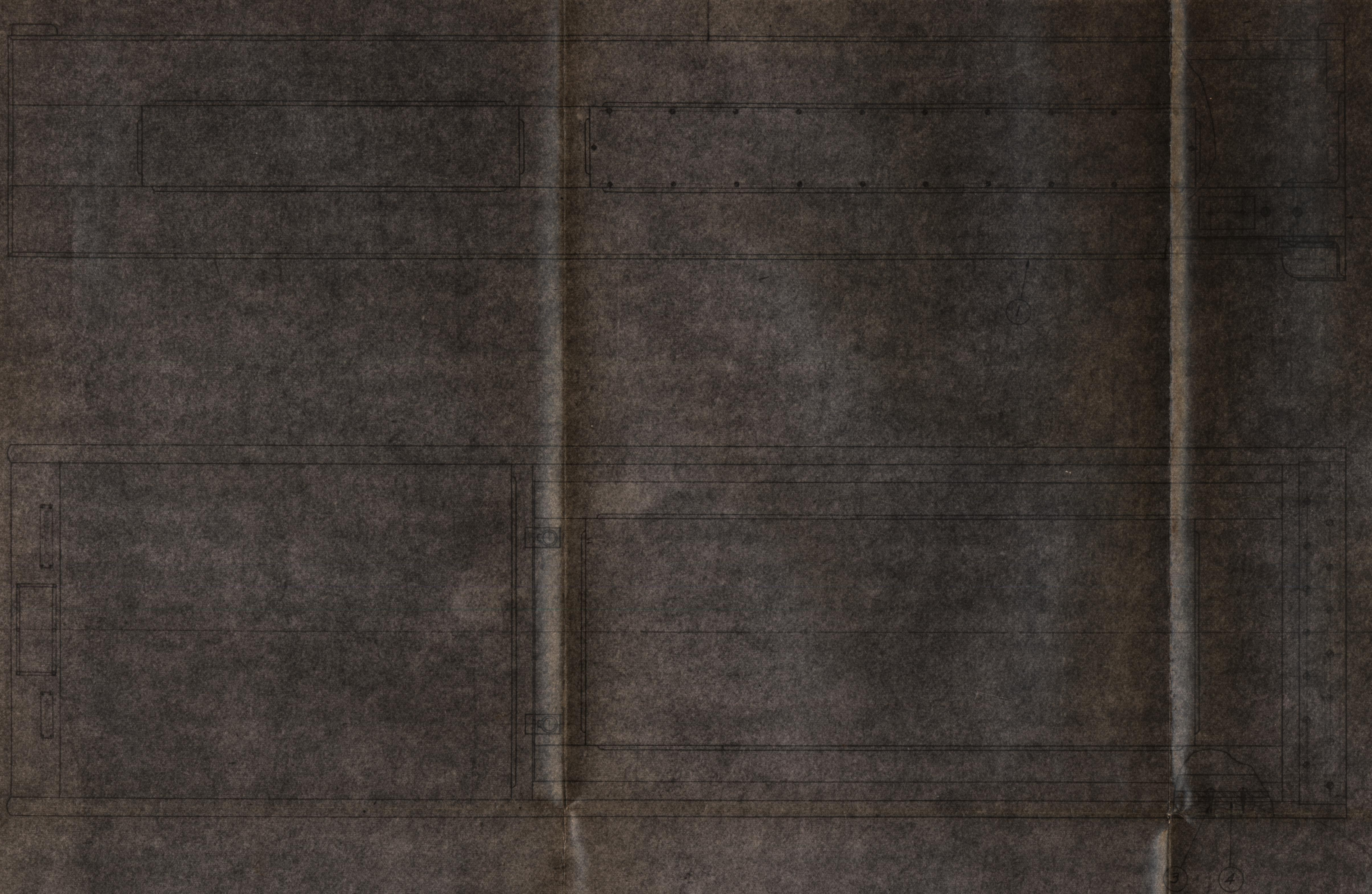
SC-D-1028-B

SUPERSEDES D...

SWITCHBOAR...
SCHEMAT...

DRAWN: STALLINGS	VERIFIED:
TRACED: STALLINGS	APPROVE...
CHECKED: G.O.T.	DATE: AU...

SIGNAL CORPS LABORAT...
U.S. ARMY



USED ON	DWG.	ISSUE A-10-23-33
		ISSUE B-3-5-34 NAME PLATES ADDED
		C.R.T.G.

Sup file

QUAN. REQ.	NAME OF ITEM	MATERIAL	TYPE NO.	ITEM NO.	REMARKS
6	SHIM	WOOD		4	2"X3½" X THICKNESS AS REQ.
12	RD. HD. W. SCREW	STEEL		3	#10X1½ LONG
1	PACK ASSEMBLY			2	PER SC-D-1114
1	CABINET ASSEMBLY			1	PER SC-D-1119

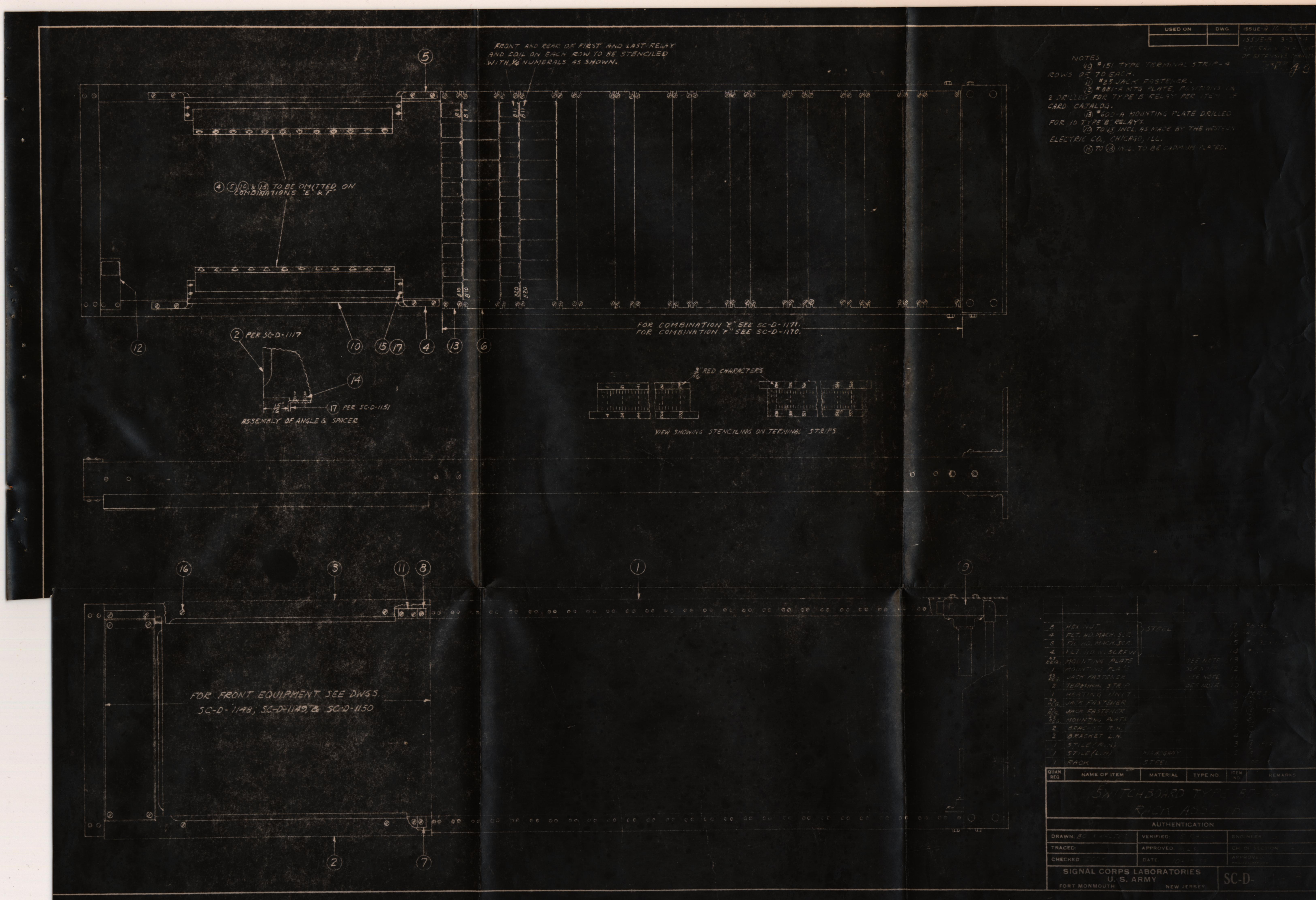
SWITCHBOARD TYPE BD-74 GENERAL ASSEMBLY

AUTHENTICATION

DRAWN: V.L. MICKMAN	VERIFIED: C.F. Rouch	ENGINEER: J.C.T.
TRACED:	APPROVED: W.H.S.	CH. OF SECTION: J.A.G.
CHECKED: Cook	DATE: 10-23-33	APPROVED: PROJECT OFFICER F.T.G.

SIGNAL CORPS LABORATORIES
U. S. ARMY
FORT MONMOUTH NEW JERSEY

SC-D-1113-B


USED ON
DWG
ISSUE
NOTES
(49) #151 TYPE TERMINAL STRIP-4 ROWS OF 70 EACH.
(11) #25 JACK FASTENER.
(12) #881-A MTG PLATE,
2 DRILLED FOR TYPE 'B' RELAY PER
CARD CATALOG.
(13) #600-A MOUNTING PLATE DRILLED FOR 10 TYPE 'B' RELAYS.
(11) TO (13) INCL. AS MADE BY THE WESTERN ELECTRIC CO., CHICAGO, ILL.
(15) TO (18) INCL. TO BE CADMIUM PLATED.
FRONT AND REAR OF FIRST AND LAST RELAY AND COIL ON EACH ROW TO BE STENCILED WITH 1/4" NUMERALS AS SHOWN.
(4) (5) (10) & (15) TO BE OMITTED ON COMBINATIONS "E" & "F"
(2) PER SC-D-1117
(14)
(17) PER SC-D-1151
ASSEMBLY OF ANGLE & SPACER
FOR COMBINATION "E" SEE SC-D-1171.
FOR COMBINATION "F" SEE SC-D-1170.
3/16" RED CHARACTERS
VIEW SHOWING STENCILING ON TERMINAL STRIPS
FOR FRONT EQUIPMENT SEE DWGS.
SC-D-1148, SC-D-1149, & SC-D-1150
8 HEX NUT
4 FLT. HD. MACH. SCR.
8 FL. HD. MACH. SCR.
4 FLT. HD. W. SCREW
AS REQ. MOUNTING PLATE
1 MOUNTING PLATE
AS REQ. JACK FASTENER
2 TERMINAL STRIP
1 HEATING UNIT
AS REQ. JACK FASTENER
AS REQ. JACK FASTENER
AS REQ. MOUNTING PLATE
2 BRACKET R.H.
2 BRACKET L.H.
1 STILE (R.H.)
1 STILE (L.H.)
1 RACK
STEEL
MAHOGANY
STEEL
SEE NOTE
SEE NOTE
SEE NOTE
SEE NOTE
QUAN. REQ.
NAME OF ITEM
MATERIAL
TYPE NO
ITEM NO
REMARKS
SWITCHBOARD TYPE
RACK ASSE
AUTHENTICATION
DRAWN
VERIFIED
ENGINEER
TRACED
APPROVED
CH. OF SECTION
CHECKED
DATE
APPROVED
SIGNAL CORPS LABORATORIES
U. S. ARMY
FORT MONMOUTH
NEW JERSEY
SC-D-

USED ON	DWG.	ISSUE A- 3-7-1934

NOTE:
(4) TO BE #196-A TERMINAL STRIP AS MADE BY THE WESTERN ELECTRIC CO, CHICAGO, ILL.

QUAN. REQ.	NAME OF ITEM	MATERIAL	TYPE NO.	ITEM NO.	REMARKS
4	HEX. HD. CAP SCREW	STEEL		5	5/16-18 x 7/8 LONG
5	TERMINAL STRIP			4	SEE NOTE
1	TERMINAL STRIP MTG.			3	PER SC-D-1167
1	TERMINAL STRIP MTG.			2	PER SC-D-1164
1	RACK ASSEMBLY			1	PER SC-D-1114

SWITCHBOARD TYPE BD-74
EQUIPMENT LAYOUT

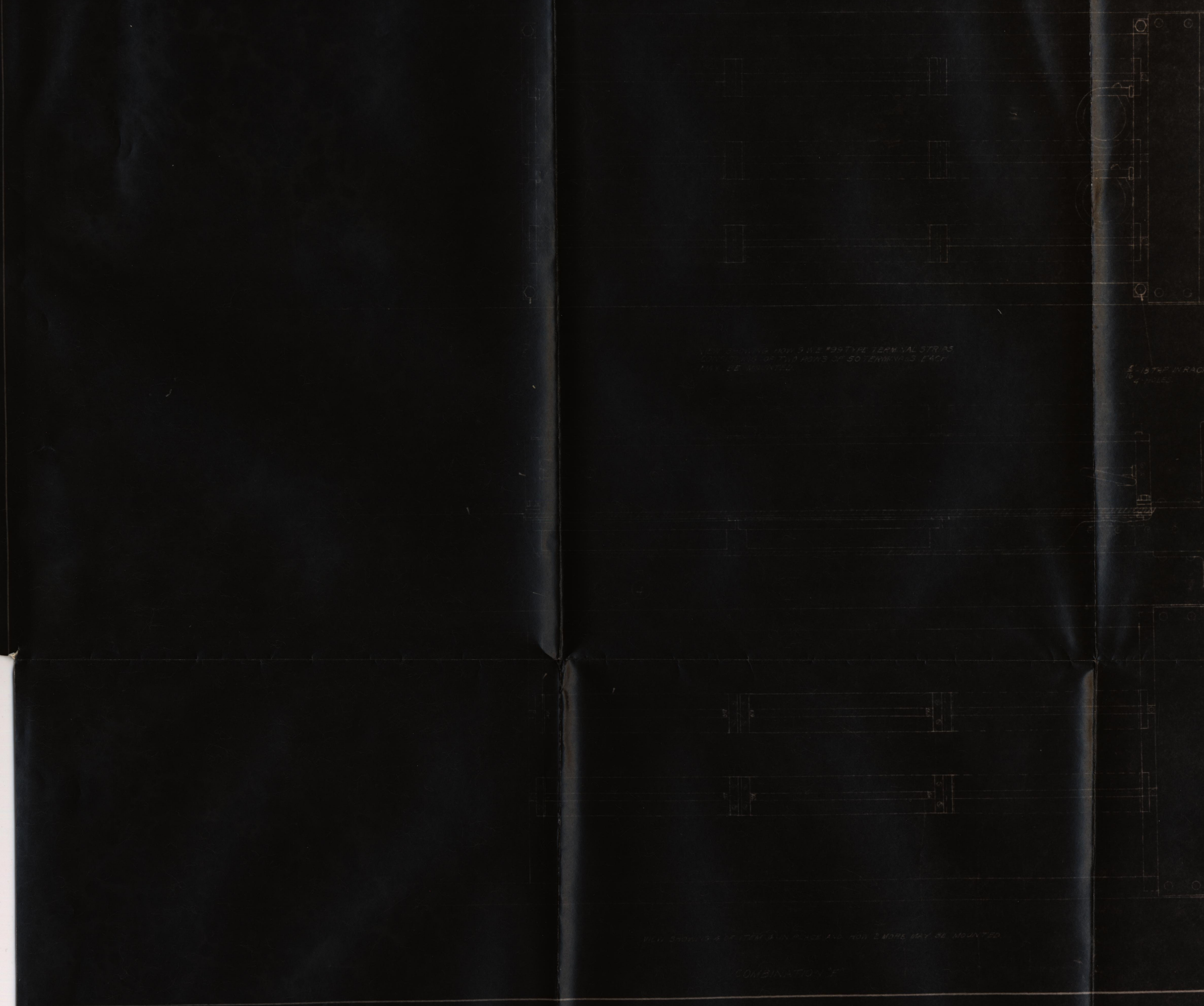
AUTHENTICATION

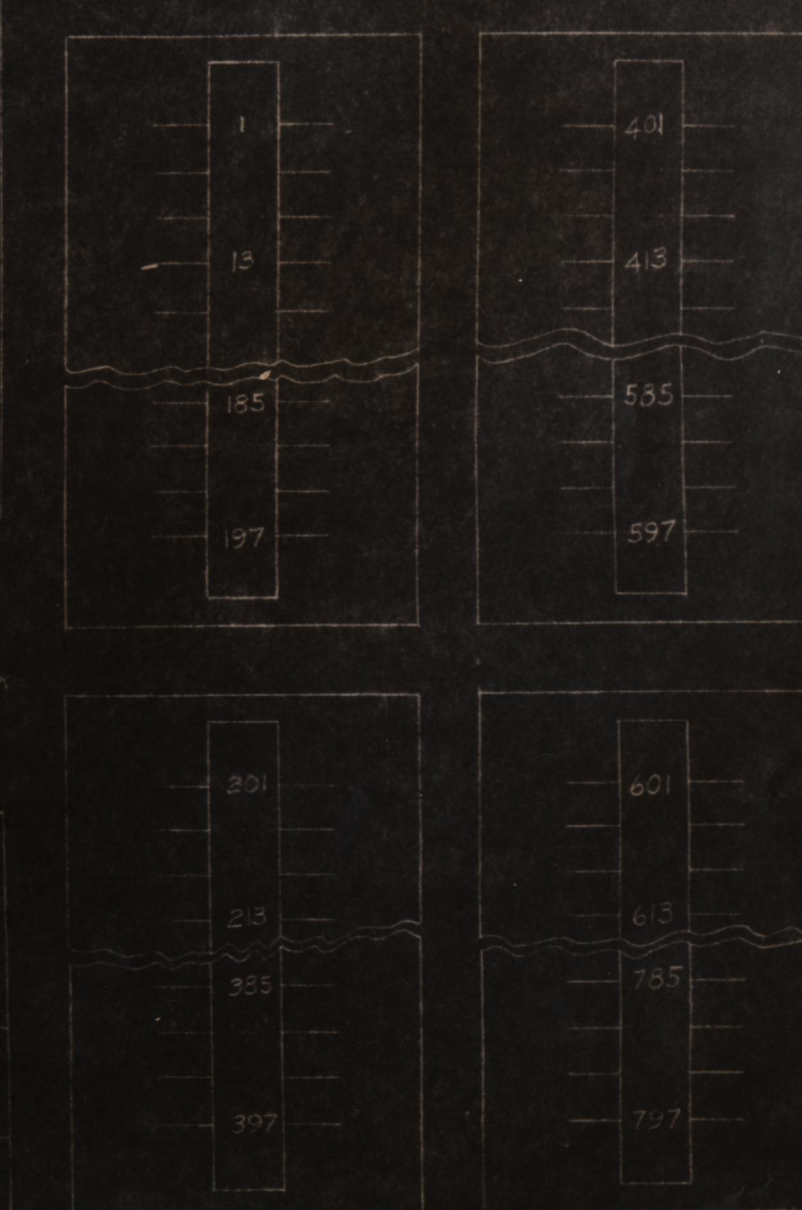
DRAWN: W. G. HUDSON	VERIFIED:	ENGINEER:
TRACED:	APPROVED:	CH. OF SECTION:
CHECKED:	DATE: 3-7-1934	APPROVED: PROJECT OFFICER

SIGNAL CORPS LABORATORIES
U. S. ARMY
FORT MONMOUTH NEW JERSEY

SC-D-1171-A

NOTE –
(4) TO BE #99 TYPE TERMINAL STRIP CONSISTING OF 4 ROWS OF 50 TERMINALS EACH, AS MADE BY THE WESTERN ELECTRIC CO., CHICAGO, ILL.





FRONT TERMINAL STRIP NUMBERING

STENCIL 1/8" RED CHARACTERS. NUMBER EVERY 12 TERMINALS.

QUAN. REQ.	NAME OF ITEM	MATERIAL	TYPE NO.	ITEM NO.	REMARKS
4	HEX HD CAP SCREW	STEEL		5	5/16"-18 x ½" LONG
4	TERMINAL STRIP			4	SEE NOTE
1	TERMINAL STRIP MTG			3	PER SC-D-1166
1	TERMINAL STRIP MTG			2	PER SC-D-1165
1	RACK ASSEMBLY			1	PER SC-D-1114

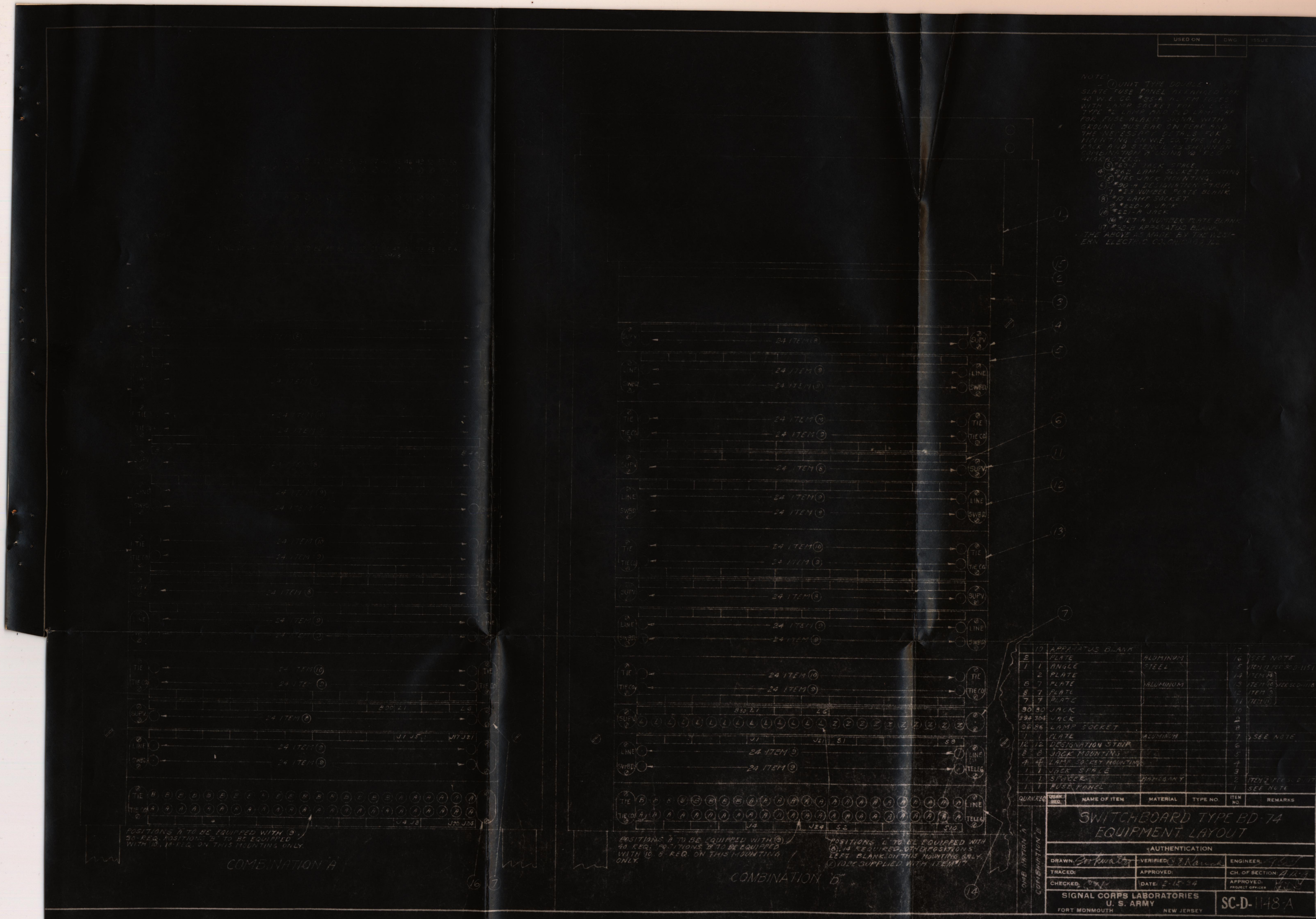
SWITCHBOARD TYPE BD-74
EQUIPMENT LAYOUT

AUTHENTICATION

DRAWN: V.L. McCAHAN	VERIFIED: C.E. Rauch	ENGINEER: [illegible]
TRACED:	APPROVED: WH	CH. OF SECTION: [illegible]
CHECKED: C.E.R.	DATE: 4-5-34	APPROVED: PROJECT OFFICER [illegible]

SIGNAL CORPS LABORATORIES
U. S. ARMY
FORT MONMOUTH NEW JERSEY

SC-D-1170-A


SWITCHBOARD TYPE BD-74
EQUIPMENT LAYOUT
AUTHENTICATION
DRAWN:
VERIFIED:
ENGINEER:
TRACED:
APPROVED:
CH. OF SECTION:
CHECKED:
DATE: 2-15-34
APPROVED: PROJECT OFFICER
SIGNAL CORPS LABORATORIES
U. S. ARMY
FORT MONMOUTH
NEW JERSEY
SC-D-1148-A
USED ON
DWG.
ISSUE
QUAN. REQ.
COMBINATION 'A'
COMBINATION 'B'
NAME OF ITEM
MATERIAL
TYPE NO.
ITEM NO.
REMARKS
10 APPARATUS BLANK 17
2 PLATE ALUMINUM 16 SEE NOTE
1 1 ANGLE STEEL 15
2 PLATE 14 ITEM 14
8 7 PLATE ALUMINUM 13 ITEM 10 PER SC-D-1118
8 7 PLATE 12 ITEM 9
7 7 PLATE 11 ITEM 11
90 80 JACK 10
294 304 JACK 9
96 86 LAMP SOCKET 8
1 1 PLATE ALUMINUM 7 SEE NOTE
12 12 DESIGNATION STRIP 6
8 8 JACK MOUNTING 5
4 4 LAMP SOCKET MOUNTING 4
1 1 JACK SPACE 3
1 1 SPACER MAHOGANY 2
1 1 FUSE PANEL 1 SEE NOTE
63-B JACK SPACE.
62 LAMP SOCKET MOUNTING.
185 JACK MOUNTING.
90-A DESIGNATION STRIP.
#23 NUMBER PLATE BLANK.
LAMP SOCKET.
#220-A JACK.
221-A JACK.
#127-A NUMBER PLATE BLANK
POSITIONS A TO BE EQUIPPED WITH 9
POSITIONS C TO BE EQUIPPED WITH
COMBINATION 'A'
COMBINATION 'B'
24 ITEM
TIE
TIE CO
LINE
SWBD
SUPV
TELEG

USED ON	DWG.	ISSUE A 2-21-34

NOTE:
(1) UNIT TYPE DOUBLE ROW SLATE FUSE PANEL ARRANGED FOR 40 W.E. CO. #35-A ALARM FUSES WITH LAMP SOCKET FOR W.E. CO. TYPE #2 LAMP AND RED LAMP CAP FOR FUSE ALARM SIGNAL WITH GROUND BUS BAR ON REAR AND THE NECESSARY DETAILS FOR MOUNTING ON W.E. CO TYPE 10HB RACK AND STENCIL AS SHOWN ON COMBINATION "A" PER SC-D-1148 USING 1/4" RED CHARACTERS.

(4) #62-C JACK SPACE.
(5) #63-A JACK SPACE.
(6) #262 LAMP SOCKET MOUNTING.
(7) #165 JACK MOUNTING.
(8) #13 LAMP SOCKET.
(9) #220-A JACK.
(10) #221-A JACK.
(11) #90-A DESIGNATION STRIP.
(18) #23 NUMBER PLATE BLANK.
(19) #127-A NUMBER PLATE BLANK.
(20) #184 JACK MOUNTING.
(21) #32-B APPARATUS BLANK.

THE ABOVE AS MADE BY THE WESTERN ELECTRIC CO, CHICAGO, ILL.

QUAN. REQ. (COMBINATION "C")	QUAN. REQ. (COMBINATION "D")	NAME OF ITEM	MATERIAL	TYPE NO.	ITEM NO.	REMARKS
	10	APPARATUS BLANK			21	
2	2	JACK MOUNTING			20	
2		PLATE	ALUMINUM		19	SEE NOTE
1	1	PLATE	ALUMINUM		18	SEE NOTE
	2	PLATE	ALUMINUM		17	ITEM (14) PER SC-D-1115
4	4	PLATE	ALUMINUM		16	ITEM (16) PER SC-D-1151
4	4	PLATE	ALUMINUM		15	ITEM (15) PER SC-D-1151
5	5	PLATE	ALUMINUM		14	ITEM (9)
5	5	PLATE	ALUMINUM		13	ITEM (11) PER SC-D-1115
5	5	PLATE	ALUMINUM		12	ITEM (13)
13	13	DESIGNATION STRIP			11	SEE NOTE
118	108	JACK			10	SEE NOTE
314	324	JACK			9	SEE NOTE
72	62	LAMP SOCKET			8	SEE NOTE
8	8	JACK MOUNTING			7	SEE NOTE
3	3	LAMP SOCKET MOUNTING			6	SEE NOTE
1	1	JACK SPACE			5	SEE NOTE
1	1	JACK SPACE			4	SEE NOTE
1	1	ANGLE	STEEL		3	ITEM (17) PER SC-D-1151
1	1	SPACER	MAHOGANY		2	ITEM (2) PER SC-D-1117
1	1	FUSE PANEL			1	SEE NOTE

SWITCHBOARD TYPE BD-74 EQUIPMENT LAYOUT

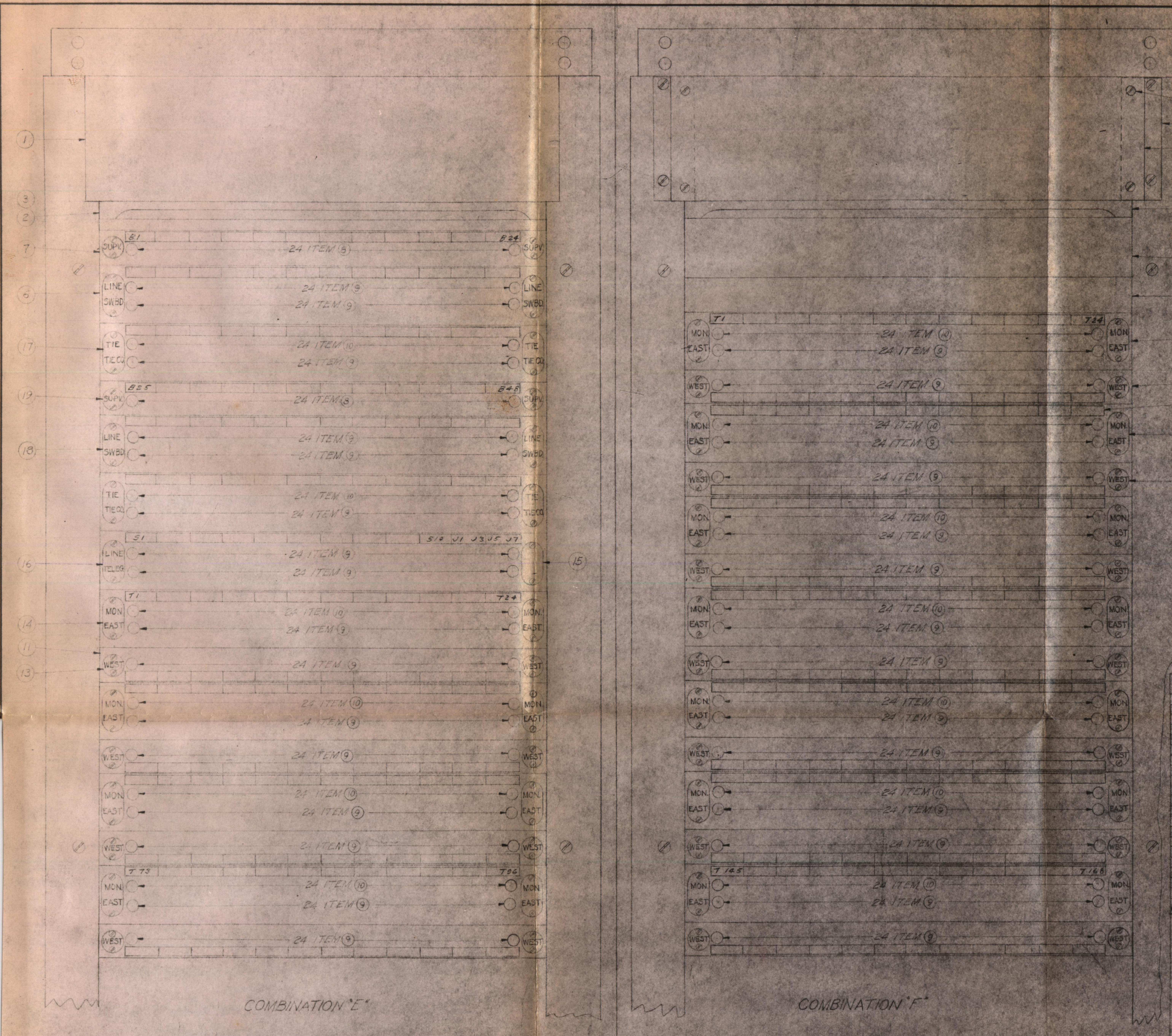
AUTHENTICATION

DRAWN: W. L. MICKMAN	VERIFIED: C. J. Ramsh	ENGINEER:
TRACED:	APPROVED:	CH. OF SECTION:
CHECKED: CTR	DATE: 2-21-34	APPROVED: PROJECT OFFICER

SIGNAL CORPS LABORATORIES
U. S. ARMY
FORT MONMOUTH NEW JERSEY

SC-D-1149 A

USED ON	DWG.	ISSUE A-2-24-34



NOTE:-
(1) UNIT TYPE DOUBLE ROW SLATE FUSE PANEL ARRANGED FOR 40 W.E. CO. #35-A ALARM FUSES WITH LAMP SOCKET FOR W.E. CO. TYPE #2 LAMP AND RED LAMP CAP FOR FUSE ALARM SIGNAL WITH GROUND BUS BAR ON REAR AND THE NECESSARY DETAILS FOR MOUNTING ON W.E. CO. TYPE 101-B RACK AND STENCIL AS SHOWN ON COMBINATION "A" PER SC-D-1148 USING 1/4" RED CHARACTERS.
(4) #63-D JACK SPACE.
(5) #63-C JACK SPACE.
(6) #185 JACK MOUNTING.
(7) #262 LAMP SOCKET MOUNTING.
(8) #13 LAMP SOCKET.
(9) #220-A JACK.
(10) #221-A JACK.
(11) #184 JACK MOUNTING.
(12) #90-A DESIGNATION STRIP.
(13) #127-A NUMBER PLATE BLANK
THE ABOVE AS MADE BY THE WESTERN ELECTRIC CO., CHICAGO ILL.

Supp file

QUAN. REQ. (COMBINATION "E")	QUAN. REQ. (COMBINATION "F")	NAME OF ITEM	MATERIAL	TYPE NO.	ITEM NO.	REMARKS
	4	FLT. HD. M. SCREW	STEEL		22	#10-32 x 1 1/4" LONG
	2	PLATE	STEEL		21	ITEM (8) PER SC-D-1151
	1	PANEL			20	ITEM (3) PER SC-D-1117
4		PLATE	ALUMINUM		19	ITEM (11) PER SC-D-1118
4		PLATE	ALUMINUM		18	ITEM (9) PER SC-D-1118
4		PLATE	ALUMINUM		17	ITEM (10) PER SC-D-1118
1		PLATE	ALUMINUM		16	ITEM (14) PER SC-D-1118
1		PLATE	ALUMINUM		15	SEE NOTE
8	14	PLATE	ALUMINUM		14	ITEM (15) PER SC-D-1151
8	14	PLATE	ALUMINUM		13	ITEM (16) PER SC-D-1151
15	14	DESIGNATION STRIP			12	SEE NOTE
4	7	JACK MOUNTING			11	SEE NOTE
144	168	JACK			10	SEE NOTE
384	336	JACK			9	SEE NOTE
48		LAMP SOCKET			8	SEE NOTE
2		LAMP SOCKET MOUNTING			7	SEE NOTE
9	7	JACK MOUNTING			6	SEE NOTE
	1	JACK SPACE			5	SEE NOTE
	1	JACK SPACE			4	SEE NOTE
1	1	ANGLE	STEEL		3	ITEM (9) PER SC-D-1151
1	1	SPACER	MAHOGONY		2	ITEM (2) PER SC-D-1117
1		FUSE PANEL			1	SEE NOTE

SWITCHBOARD TYPE BD-74
EQUIPMENT LAYOUT

AUTHENTICATION		
DRAWN: V.L. MICKMAN	VERIFIED: C.T. Ranck	ENGINEER: [illegible]
TRACED:	APPROVED:	CH. OF SECTION: G.O.G.
CHECKED: C.T.R.	DATE: 2-24-34	APPROVED: PROJECT OFFICER [illegible]

SIGNAL CORPS LABORATORIES
U. S. ARMY
FORT MONMOUTH NEW JERSEY

SC-D-1150-A

USED ON	DWG	ISSUE
GEN. ASSEM.	[illegible]	

NOTE –
CABINET FINISHES
INSIDE, EXCEPT [illegible] LAP EACH OTHER AND [illegible] CAN BE SEEN FROM OUTSIDE, APPLY ONE COAT OF FLAKE ALUMINUM PAINT CONSISTING OF ALBRON [illegible] AS MADE BY [illegible] ALUMINUM [illegible] AMERICA AND #72 BAKELITE VARNISH AS MADE BY THE BROOKLYN VARNISH MFG. CO. BROOKLYN, N.Y.
OUTSIDE, APPLY ONE COAT [illegible] DARK MAHOGANY STAIN, MADE BY S.C. JOHNSON & SON, RACINE, WIS., [illegible] COATS OF VALSPAR VARNISH [illegible] VALENTINE & CO., [illegible] ONE COAT OF VELVET [illegible] #1044 MADE BY THE [illegible] CO. CLEVELAND, OHIO.
AFTER REAR DOOR 4 HAS BEEN VARNISHED MOUNT CIRCUIT LABEL (20) ON INSIDE OF UPPER PANEL AND CIRCUIT LABEL (21) (22) (23) 24 AND (25) INCL. ON INSIDE OF LOWER PANEL BY GIVING UNDER SIDE OF LABELS ONE COAT OF VALSPAR VARNISH AS MADE BY THE VALENTINE VARNISH CO. OF NEW YORK CITY, AND WHEN VARNISH BECOMES TACKY, SMOOTH LABEL IN PLACE AND CLAMP UNDER PAD UNTIL DRY. THEN APPLY ONE COAT OF VALSPAR VARNISH OVER TOP OF LABEL.
(19) CUPBOARD CATCH No. 25 AS FURNISHED BY HAMMACHER, SCHLEMMER, & CO., OF NEW YORK CITY.

QUAN. REQ.	NAME OF ITEM	MATERIAL	TYPE NO.	ITEM NO.	REMARKS
15	FLT. HD. W. SCREW	BRASS		26	#8 × [illegible]
26	FLT. HD. W. SCREW	BRASS		25	#6 × [illegible]
1	CIRCUIT LABEL			24	PER SC-D-1172
1	CIRCUIT LABEL			23	FIG. 3 PER SC-D-1028
1	CIRCUIT LABEL			22	FIG. 2 PER SC-D-1028
1	CIRCUIT LABEL			21	FIG. 1 PER SC-D-1028
1	CIRCUIT LABEL			20	PER SC-D-659
2	CUPBOARD CATCH	SEE NOTE		19	
10	FLT. HD. W. SCREW	BRASS		18	#10 × 2" LONG
17	FLT. HD. W. SCREW	BRASS		17	#6 × 1" LONG
12	RD. HD. W. SCREW	BRASS		16	#4 × [illegible]
48	RD. HD. W. SCREW	BRASS		15	#8 × [illegible]
10	FLT. HD. W. SCREW	BRASS		14	#6 × [illegible]
1	PLATE	BAKELITE		13	
1	PLATE	BAKELITE		12	
1	PLATE	BRASS		11	
1	PLATE	BRASS		10	
1	NAME PLATE	NICKEL SILVER		9	
2	STOP STRIP	HONDURAN MAHOGANY		8	PER SC-D-1125
6	BRACKET	BRASS		7	
1	DOOR STOP (BOTTOM)	HONDURAN MAHOGANY		6	
1	TOP	HONDURAN MAHOGANY		5	PER SC-D-1124
1	REAR DOOR	HONDURAN MAHOGANY & PLYWOOD PER SPEC. #92-6		4	PER SC-D-1123
2	SIDE PANEL			3	PER SC-D-1122
1	FRONT DOOR			2	PER SC-D-1121
1	FRONT DOOR FRAME	HONDURAN MAHOGANY		1	PER SC-D-1120

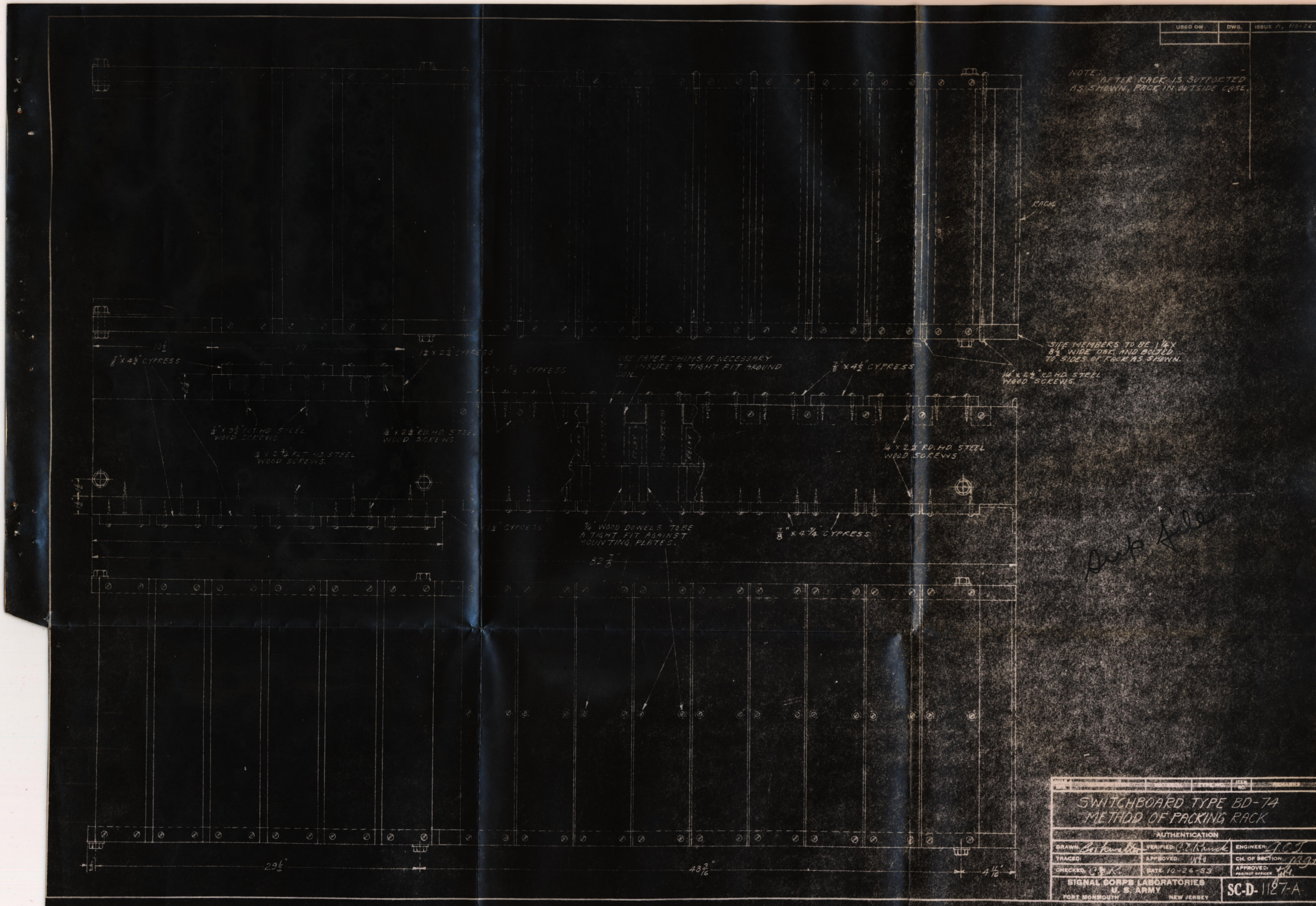
SWITCHBOARD TYPE BD-74
CABINET ASSEMBLY

AUTHENTICATION

DRAWN: C.E. Rinck	VERIFIED: [illegible]	ENGINEER: [illegible]
TRACED:	APPROVED: [illegible]	CH. OF SECTION: [illegible]
CHECKED: COOK	DATE: Oct. 16, 1933	APPROVED: PROJECT OFFICER [illegible]

SIGNAL CORPS LABORATORIES
U. S. ARMY
FORT MONMOUTH NEW JERSEY

SC-D-1419-B



NOTE: AFTER RACK IS SUPPORTED AS SHOWN, PACK IN OUTSIDE CASE.
RACK
SIDE MEMBERS TO BE 1¼" X 8½" WIDE OAK AND BOLTED TO SIDES OF RACK AS SHOWN.
¼" x 2½" RD. HD. STEEL WOOD SCREWS.
7/8" x 4½" CYPRESS
USE PAPER SHIMS IF NECESSARY TO INSURE A TIGHT FIT AROUND COIL.
1½" x 2⅜" CYPRESS
7/8" x 4¼" CYPRESS
¾" WOOD DOWELS TO BE A TIGHT FIT AGAINST MOUNTING PLATES.
29½"
48 3/16"
4 11/16"
SWITCHBOARD TYPE BD-74
METHOD OF PACKING RACK
AUTHENTICATION
DRAWN:
VERIFIED: C. E. Rauck
ENGINEER:
TRACED:
APPROVED:
CH. OF SECTION:
CHECKED: C. E. R.
DATE: 10-26-33
APPROVED: PROJECT OFFICER
SIGNAL CORPS LABORATORIES
U. S. ARMY
FORT MONMOUTH NEW JERSEY
SC-D-1127-A