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ARMY COMMUNICATIONS-ELECTRONICS ENGINEERING INSTALLAT--ETC F/G 17/7
STANDARD ENGINEERING INSTALLATION PACKAGE. AIR TRAFFIC RADIO CH--ETC(U)
OCT 81

UNCLASSIFIED

USACEEIA-SEIP-036-1

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1 OF 1

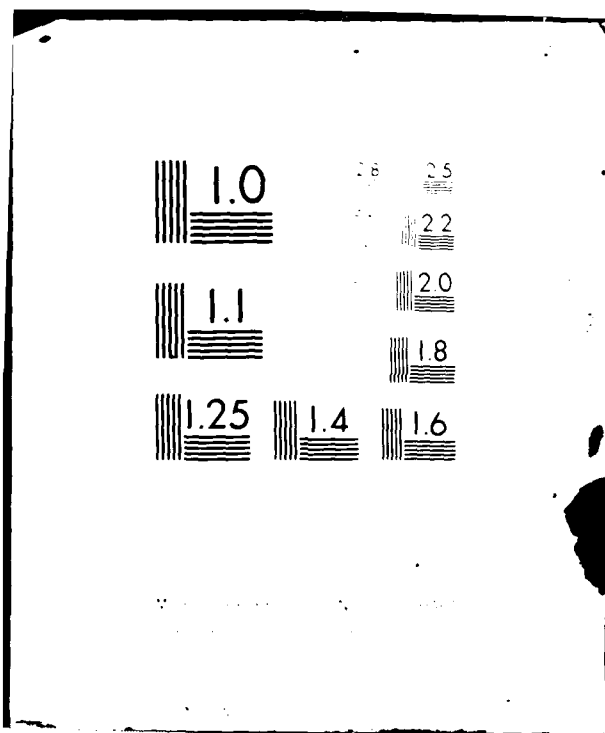
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DEPARTMENT OF THE ARMY
HEADQUARTERS, US ARMY COMMUNICATIONS-ELECTRONICS
ENGINEERING INSTALLATION AGENCY
Fort Huachuca, AZ 85613

Change 1

30 Oct 81

STANDARD
ENGINEERING INSTALLATION PACKAGE
AIR TRAFFIC RADIO CHANNEL CONTROL EQUIPMENT

USACEEIA SEIP-036, 1 November 1979, is changed as follows:

1. Remove old pages

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Insert new pages

1-3 and 1-4
1-5 and 1-6
1-7 and 1-8
2-1 and 2-2
3-3 and 3-4
5-2 thru 5-7

1-3 and 1-4
Delete
1-7
2-1 and 2-2
3-3 and 3-4
5-2 thru 5-8

2. Remove old Section 4 and replace with New Section 4.

3. After posting the changes, file this change sheet in front of the basic publication for reference purposes.

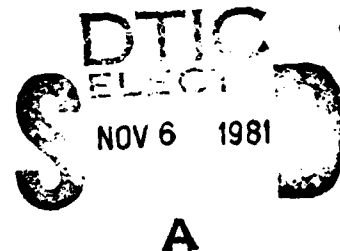
FOR THE COMMANDER:

OFFICIAL:

Ted M. Murray

TED M. MURRAY
CPT, Signal Corps
Executive Officer

R. K. BOWERS
Colonel, Signal Corps
Deputy Commander



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1.3.2 Non-Government Publications.

NFPA 70-XXXX	National Electrical Code (Current edition)
IM-1000	GRM Corporation Instruction Book, Air Traffic Radio Channel Control Equipment
IM-1588	GRM Corporation Instruction Book, Table Top Console Model TTC-8/800 (A)

1.4 DEFINITION OF TERMS.

Amplification. Increase in magnitude of a signal, usually to counteract losses.

Attenuation. Weakening of a signal, either incidentally by normal transmission losses or deliberately.

Collocated. Two or more units placed in close proximity so as to share common facilities.

Radio channel control equipment. The facilities which enable an operator at a console to have access to multiple send and receive radio channels through remote radio transmitters and receivers.

Ring. A ring-shaped contacting part of a plug, in back of but insulated from, the tip. The corresponding contact on a jack. The corresponding conductor.

Sleeve. A cylindrical contacting part of a plug, in back of the ring, insulated from both the ring and the tip. The corresponding contact on a jack. The corresponding conductor.

Tip. The contacting part at the tip end of a plug. The corresponding contact on a jack. The corresponding conductor.

1.5 BACKGROUND. This SEIP is prepared in accordance with US Army Communications Command (USACC) Supplement 1 to AR 105-5.

1.6 Other Considerations. RED/BLACK criteria have not been covered in this document. Refer to MIL-HDBK-232 for details.

1.7 SYSTEM DESCRIPTION. The ARTCC equipment provides control over the ground based portion of radio communications between the airfield operations center and aircraft. The ARTCC equipment consists of a table-top console, model TTC-8/800(A), which houses one jack panel JU-2404 (included), one audio unit AU-2400 (not included), and one selector unit ASU-2400 (not included). The console comprises a complete radio control operator's position with the

capability of controlling one to eight radio channels. The console is designed to be mounted on a flat, horizontal surface wherever operation is convenient, and the necessary wiring is accessible. Figure 1-1 shows a block diagram of the ATRCC equipment interconnections. Figure 1-2 shows the front elevation of the console.

1.7.1 Jack Panel (JU-2404). The jack panel consists of a panel in which four jacks are mounted to accommodate the microphones, headphone (and headset as required), and a circuit board. The jack panel is connected to the audio unit by means of a cable and a plug. The jacks and associated circuits are as follows:

a. J1 and J2: These are spaced 5/8" apart to receive a standard twin wire plug (JAN type PJ-511). The associated circuits are for operation with Plantronics HS-0111 or equivalent headset. R1 in conjunction with the microphone bias circuits provides a matching 50 ohm load for the microphone. C1 prevents the passage of biasing current thru R1. R3 and R4 provide bias current for the headset microphone. The microphone is connected to the tip terminals, the earphone to the sleeve terminals, and the transmitter keying switch to the ring terminals. The headset twin plug can be inserted either way, with no polarity.

b. J3: The low level microphone jack is connected directly to the microphone input line to the Microphone Amplifier Lamp Brightener Module and will accommodate the M-80C low level (-50dBm) microphone for use with the equipment.

c. J4: This jack will accommodate the NT-409985A or equivalent M-109 (with suitable connector) with internal transistor preamplifier requiring a voltage source. This source is provided by R8 and CR1 connected across the supply voltage and R7 as a current limiting and isolation resistor. Filtering and decoupling is provided by C6. Isolation between this and a headset microphone connected to J1 and J2, and also attenuation of the signals to the correct levels for input to the microphone amplifier circuits, are provided by R2 and R5. D.C. isolation is provided by C2 and C3. When the keying switch is pressed a voltage is impressed on the base of Q1 causing it to conduct and ground the key line, thereby activating the keying function in the equipment.

1.7.2 Audio Unit (AU-2400). The audio unit is a module that plugs into and becomes a part of the console. This module is interconnected to the other modules within the console through three connectors located on the back of the module. The audio unit contains a microphone amplifier/lamp brightener module, volume control module, speaker amplifier, recorder monitor module (if required), and speaker.

1.7.3 Air Traffic Control Tower (ATCT) Selector Unit (ASU-2400). The ATCT selector unit is an enclosure that plugs into and becomes a part of the control console. This enclosure houses the ATCT selector modules (ASM-2401) and provides the interconnect capability between the selector modules, the audio unit, and the external radios. The ATCT selector unit can house from one to eight selector modules.

1.7.4 ATCT Selector Modules (ASM-2401). Each ATCT selector module provides the capability for control of one radio channel. This capability consists of audio transmit and receive amplifications, transmit keying provisions, visual indication of receive audio, channel selection and channel status, and a headset/speaker selector control.

1.7.5 Console Power Supply Module (HP62024G). The power supply module provides 24 V dc nominal output at 7.5 a maximum for the console. The power supply module is not a part of the operating console.

1.7.6 Forty-eight Volt Power Supply Module (HP62048G). The 24 V console power supply described in 1.7.5 is required at all sites. In addition, some sites will require a 48 V power supply. The HP-62048G provides 48 V at 4 A. The 48 V power supply will be used:

a. When the cable plant is such that a 48 V dc keying circuit must be used to operate the keying relay in a transmitter control panel located at a remote transmitter site.

b. When a transmitter control panel is presently installed and command decision has been made to continue its use without alteration.

1.7.7 Power Supply Module Tray (HP62410A). The HP 62410A is a rack mounted tray in which the power supply module(s) will be mounted. The tray may be installed in any convenient 19-inch equipment rack or in a separate cabinet (see 1.7.8). The tray requires three mounting spaces.

1.7.8 Cabinet (EK 314). Where no rack space is available, the HP 62410A power supply module tray may be mounted in Par Metal cabinet EK 314.

1.8 PROCEDURES FOR SUBMITTING COMMENTS.

a. Users of this publication are invited to submit recommendations for its improvement. Comments should be keyed to the drawing, page, paragraph, and line of the text for which the change is recommended. A mailing card for convenience is bound with this SEIP. Comments should be sent directly to the Commander, US Army Communications-Electronics Engineering Installation Agency, ATTN: CCC-CED-STD, Fort Huachuca, AZ 85613.

b. Requests for USACEEIA regulations and forms should be addressed to the Commander, USACEEIA, ATTN: CCC-DRM-P-R, Fort Huachuca, AZ 85613.

SECTION 2. SITE SURVEY DATA AND CHECKLIST.

2.1 GENERAL. This section provides the information necessary to accomplish preliminary engineering, equipment layout, and arrangements pertinent to the installation of the ATRCC equipment.

2.2 PRE-SITE SURVEY. Prior to the site survey, it should be determined whether the ATRCC installation will be a new facility or a part of an existing facility. Where the ATRCC must interface with an existing facility, the following must be determined:

a. Collocated, separate, remote, local, or a combination of these configurations for transmitters and receivers.

b. Type of equipment which ATRCC must interface.

c. Keying voltage required.

2.3 SITE SURVEY. Adequate, current information may be available at the responsible area engineering-installation agency. If this information is sufficient to perform detailed engineering, no site survey is necessary. If a site survey is required, it should be conducted in accordance with the criteria set forth in DCAC 370-160-3.

2.3.1 Site Survey Checklist. The site survey checklist (figure 2-1) should be used as a guide by the survey team for identifying and assembling the required technical data during the site survey. The checklist, when completed, will aid in preparing an official site survey report with equipment layout drawings.

2.3.2 Information To Be Obtained. Information to be obtained during the survey includes:

a. Location for all planned equipment.

b. Accurate, dimensioned floor plan of all areas affected.

c. Rack and cabinet layouts of all equipment to be interfaced including recorder AN/TNH-24(V), if required.

d. Data for cable ladders, ducts, and conduits as required.

e. Ac power panels and circuit breakers available and their locations.

f. Interconnecting cabling available or required between console and transmitters, receivers, and recorder if required.

2.4 EQUIPMENT CHARACTERISTICS. The physical and electrical characteristics of the applicable equipments are listed in table 2-1. This table should be used to determine the site's physical size, ac power requirements, floor loading criteria, and additional heat dissipation.

2.5 SITE SUPPORT. During the survey, arrangements should be made for the site support required prior to and during installation. Immediately after the survey, the project engineer will document agreements reached in the project coordination letter (PCL). The project engineer is also responsible for updating the PCL if site support requirements change.

d. Inventory the BOM items to ensure all items are on hand. Missing items or shortages must be noted prior to the arrival of the installation team onsite.

e. Arrange for the transportation of personnel and equipment; determine the methods for control and storage of BOM items, tools, and other required equipment.

f. Review all specifications and drawings to ensure that no additional engineering assistance is required prior to the start of installation.

g. Coordinate all outages that may be required for the installation and/or cutover of this facility with the air traffic control (ATC) chief and the airfield commander.

3.3.2 Console Installation.

3.3.2.1 The TTC-8/800(A) console is comprised of several operational components. Reference STD-AF-0665, sheet 1, for console details. The number of selector modules (radio channels) will be determined by the operational requirements of the airfield being installed.

3.3.2.2 Install the TTC-8/800 console at location determined in site survey and in accordance with EIP drawings. Reference STD-AF-0481 for typical console location.

3.3.3 Power Supply Installation.

3.3.3.1 The 24-V dc power supply will be utilized in all cases where a TTC-8/800(A) console is being installed. In addition, the 48-V dc power supply will be used as specified in 1.7.6.

3.3.3.2 Install the 24-V dc power supply (and the 48-V dc power supply, where required) in accordance with STD-AF-0665, sheet 2, STD-AF-0481 and the EIP drawings.

3.3.4 Terminal Box. Install the terminal box and terminal board in accordance with STD-AF-0481, sheet 1 STD-AF-0476, sheet 1 and EIP drawings.

3.3.5 Cable Raceway Installation. Install the cable raceway in accordance with STD-AF-0476, STD-AF-0478, STD-AF-0480 and EIP drawings.

3.3.6 Cable Installation. Install cables in accordance with STD-AF-0476, STD-AF-0477, STD-AF-0478, STD-AF-0480 and EIP drawings.

3.3.7 Ground Installation. Install a ground in accordance with STD-AF-0479, sheet 1, and EIP drawings.

3.3.8 Coaxial Relay Installation. The coaxial relay panel has provisions for installation of up to 3 relays, to be used as required. Install in accordance with drawing STD-AF-0666.

3.3.9 Terminations. Terminate cables in accordance with drawings STD-AF-0477, STD-AF-0478, STD-AF-0480 and EIP drawings.

3.4 RT-524/VRC TRANSCEIVER INSTALLATION.

3.4.1 When installing an AN/RT-524/VRC to be controlled by the TTC-9/800(A), either a remote control panel or an audio isolation panel (STD-AF-0309) will be used. The RT-524/VRC, unlike the AN/GRR and AN/GRT equipment, has unbalanced audio lines. This condition, if not corrected, may cause objectionable noise to be generated on the audio lines that are extended from the RT-524/VRC. Either of these two external panels provide audio isolation transformers to correct the potential problem.

3.4.2 When fabricating the audio isolation panel, connect transformer pins 3 to 4 and pins 9 to 10 on each transformer. For matching 600 ohms to 600 ohms, pins 1 and 12 are primary and pins 6 and 8 are secondary.

SECTION 4. ENGINEERING INSTALLATION DRAWINGS

4.1 GENERAL. The engineering installation drawings contained in this section show typical interconnect diagrams, console configuration, and cabinet details.

4.2 MODIFICATION OF INSTALLATION DRAWINGS. The engineering drawings may be modified during and after the installation of a project to reflect changes. Drawing changes will be marked with color pencils as follows: red for additions, blue for engineering notes, and yellow for deletions. Copies of modified drawings will be retained at each site and will also be forwarded to the responsible area office of the C-E engineers for corrective action.

4.3 US ARMY COMMUNICATIONS-ELECTRONICS ENGINEERING INSTALLATION AGENCY DRAWINGS.

STD-AF-0665 2 Sheets	Air Traffic Radio Channel Control Equipment
Sheet 1	Console Configuration
Sheet 2	Power Supply Cabinet Details
STD-AF-0666	Coaxial Relay Panel
STD-AF-0476	Advisory Facility Typical Installation Detail
STD-AF-0477	ATC Radio Control Block Diagram
STD-AF-0478 3 Sheets	ATC Radio Control Wiring Diagram
Sheet 1	Channel One Schematic for 6 Wire Operation
Sheet 2	Channel One Schematic for 48 Vdc Keying Operation
Sheet 3	Channel One Schematic for RT-524/VRC Transceiver
STD-AF-0479	Advisory Facility Grounding Plan
STD-AF-0480	ATC Radio Control Wiring List
STD-AF-0481	Advisory Facility Typical Floor Plan
STD-AF-0309	Audio Isolation Panel

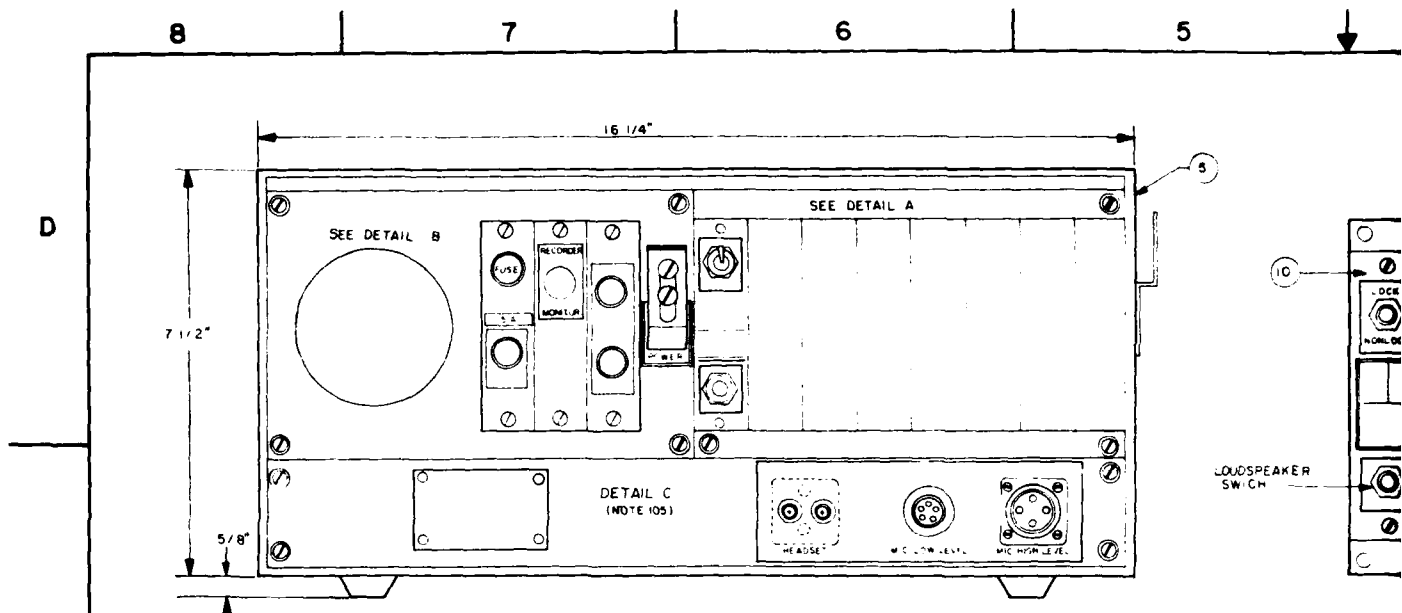
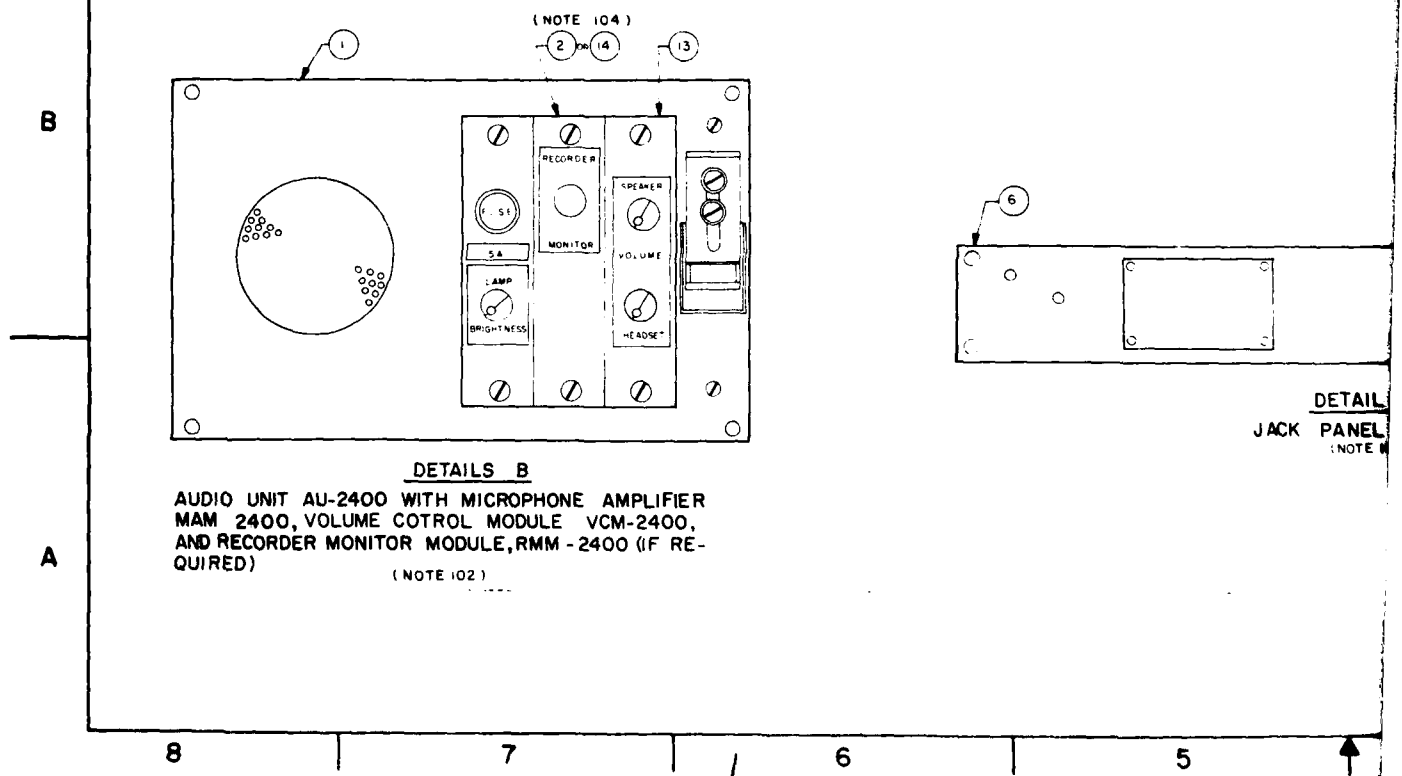
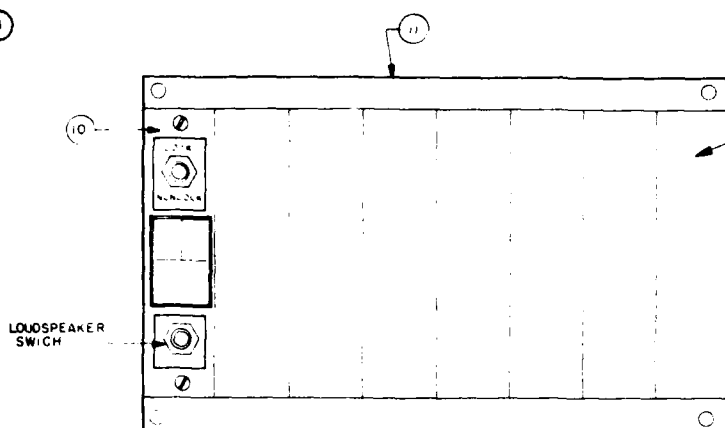


FIGURE 1
TTC -8/800(A) CONSOLE

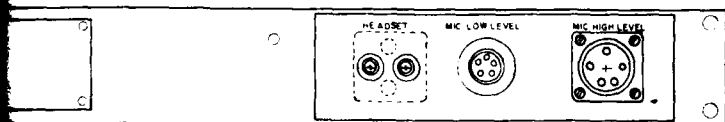




DETAIL A
SELECTOR UNIT ASU-2400 WITH
SELECTOR MODULE ASM-2401
 (NOTE 101)

NOTES

- 101 THE SELECTOR UNIT CONTAINS ONE TO EIGHT SELECTOR MODULES. ONE MODULE IS REQUIRED FOR EACH CHANNEL. EACH SELECTOR MODULE PLUGS INTO A RECEPTACLE IN THE SELECTOR UNIT. THE SELECTOR UNIT HAS THREE RECEPTACLES (J201, J202 AND J203) AND P204. P204 MATES WITH J102 ON THE AUDIO UNIT. J203 IS USED ONLY IF MORE THAN EIGHT CHANNELS ARE REQUIRED. J201 AND J202 ARE THE OUTLETS FOR THE AUDIO AND KEYING. REFER TO STD-AF-0477, 0478 AND 0480 FOR WIRING INFORMATION.
- 102 THE AUDIO UNIT HAS FIVE RECEPTACLES (J101, J102, J103, J104 AND J105) ON THE REAR. J101 MATES WITH P301 FROM THE JACK PANEL. J102 MATES WITH P204 FROM THE SELECTOR UNIT. J105 IS THE 24V DC INPUT. J104 IS A RECORDER-MONITOR JACK. J103 IS USED FOR REMOTE VOICE TRANSMISSION (AUDIO AND PUSH-TO-TALK). REFER TO STD-AF-0480 FOR WIRING INFORMATION.
- 103 CONNECTOR RECEPTACLES J1, J2, J3, J4, AND J5 ARE WIRED INTERNALLY WITHIN THE JACK PANEL. PLUG P301 PLUGS INTO AUDIO UNIT CONTINUING THE NECESSARY SIGNAL AND VOLTAGE.
- 104 ITEM 14 IS USED WHEN RECORDING IS REQUIRED OTHERWISE USE ITEM 2.
- 105 JACK PANEL JU-2404 IS INCLUDED IN THE CONSOLE, TTC-B/800(A) AND NEED NOT BE CALLED OUT AS SEPARATE ITEM WHEN TTC-B/800(A) IS ORDERED.



DETAIL C
JACK PANEL JU-2404
 (NOTE 105)

NOTE 105

QTY	ITEM NO.	DESCRIPTION	PART NO / NSN	UI	QTY
9	9746A	SCREW MACHINE 10-32X3/4"	NSNR	EA	
8	02406H	PANEL, BLANK, 19"x7"x1/8", GREY	5975-00-665-9791	EA	
7	02469E	PANEL, BLANK, 19"x5-1/4"x1/8", GREY	5975-00-666-9546	EA	
6	08712Z	PANEL, BLANK, 19"x3-1/2"x1/8", GREY	5975-00-666-2541	EA	
5	25145J	ELBOW, RACEWAY, INVERTED, INTERNAL WIREMOLO G-3017W	NSNR	EA	
14	28604D	RECORDER-MONITOR MODULE GRM CORP. FA-9334-4	5820-01-053-7869	EA	
3	25139D	VOLUME CONT. MDL. GRM CORP. VCM-2400	NSNR	EA	
12	25136A	TRAY, POWER SUPPLY, RACK MOUNTING, 19"W X5-1/4" H, HEWLETT PKG 62410A	NSNR	EA	
1	25138C	SEL. UNIT, ATCT, GRM CORP. ASU-2400	NSNR	EA	
10	25137B	SEL. MODULE, ATCT, GRM CORP. ASM-2401	NSNR	EA	
9	25244J	POWER SUPPLY, 48-V DC, 4 AMPERES OUTPUT, 120/240 V AC INPUT, HEWLETT PACKARD MODEL HP62048G	NSNR	EA	
8	25135G	POWER SUPPLY, 24-V DC, 7.5 AMPERES OUTPUT, 120/240 V AC INPUT, HEWLETT PACKARD MODEL HP62024G	NSNR	EA	
7	25132L	MIC AMPLIFIER MODULE, GRM CORP. MAM-2400	NSNR	EA	
6	30325W	JACK PANEL, GRM CORP. JU-2404	NSNR	EA	
5	25130N	CONSOLE, GRM CORP. TTC-B/800(A)	NSNR	EA	
4	30054B	CABINET, EQUIPMENT, 21"-1/2" WIDE, 18" DEEP, 19-1/4" HIGH, PAR. METAL, #DL-1717	NSNR	EA	
3	25128D	CABINET, EQUIPMENT, 22" WIDE, 18" DEEP, 47-1/2" HIGH, PAR. METAL, #EK-314	NSNR	EA	
2	25127C	BLANK PANEL, ATCT SELECTOR UNIT, GRM CORP. ABP-2400	NSNR	EA	
1	25126B	AUDIO UNIT, GRM CORP. AU-2400	NSNR	EA	
1	SML	DESCRIPTION	PART NO / NSN	UI	QTY

PARTS LIST

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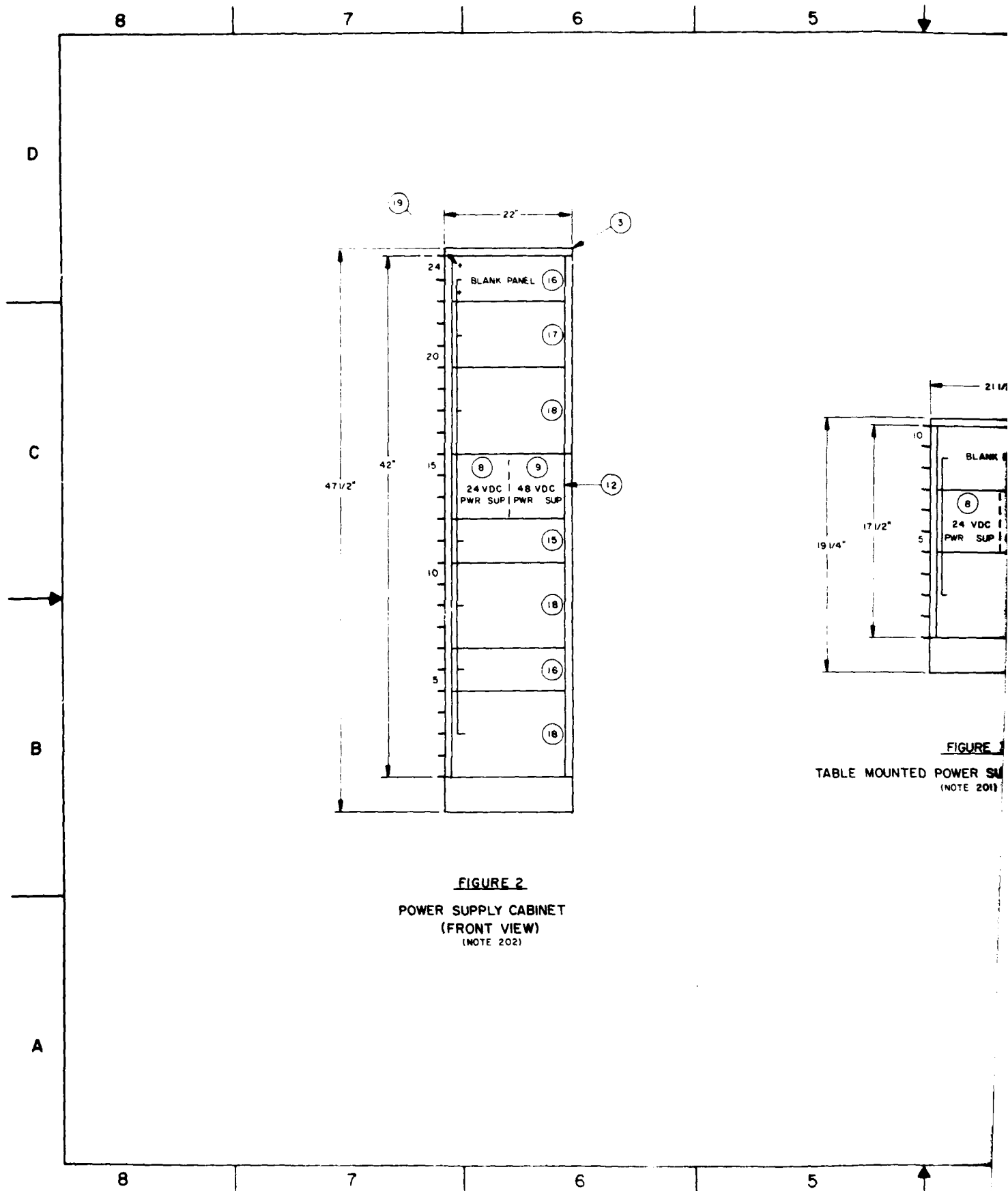


FIGURE 2
POWER SUPPLY CABINET
(FRONT VIEW)
 (NOTE 202)

FIGURE 1
TABLE MOUNTED POWER SUPPLY
 (NOTE 201)

REVISION			
NO.	DESCRIPTION	DATE	APPROVED

NOTES:

- 201 WHEN SPACE PERMITS, INSTALL POWER SUPPLIES IN EXISTING 19" EQUIPMENT RACKS OR CABINETS WITHIN 50 CABLE FEET OF CONSOLE
- 202 WHEN EXISTING RACK SPACE IS NOT AVAILABLE FOR THE POWER SUPPLIES, PROVIDE A SEPARATE CABINET, EITHER A FREE-STANDING CABINET (ITEM 3) OR TABLE-MOUNTED CABINET (ITEM 4) DEPENDING ON SPACE AND OTHER EQUIPMENT CONSIDERATIONS.

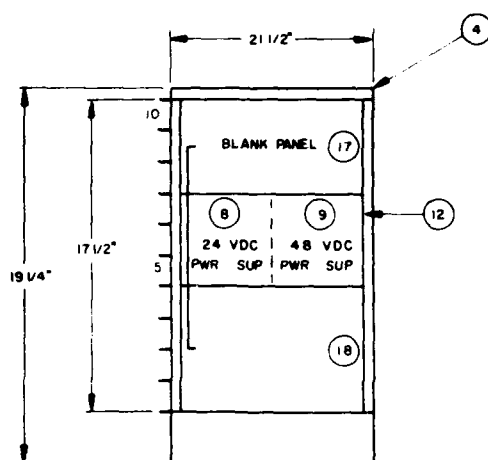
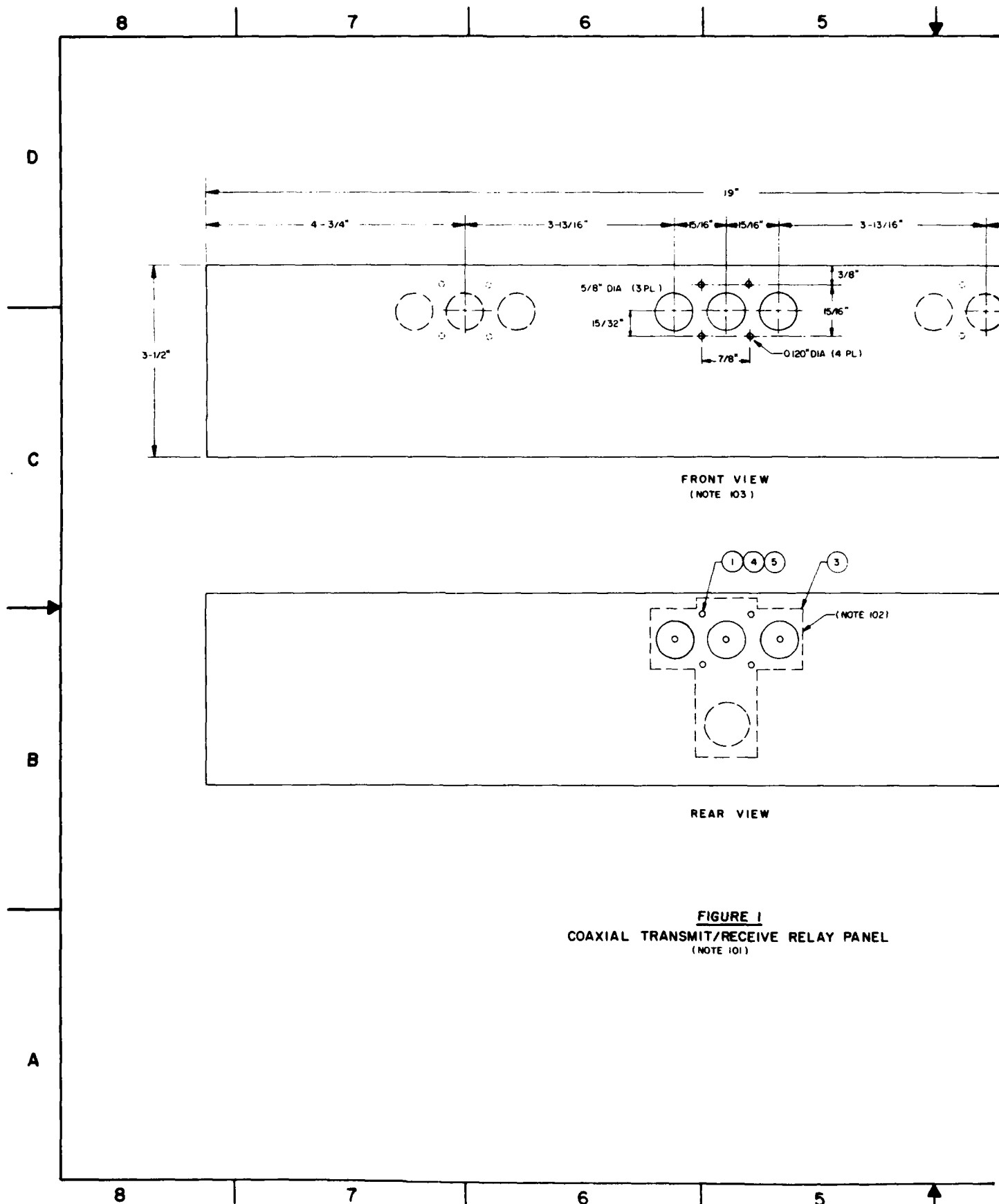
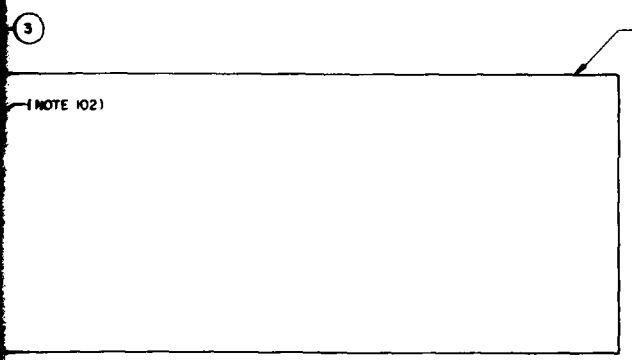
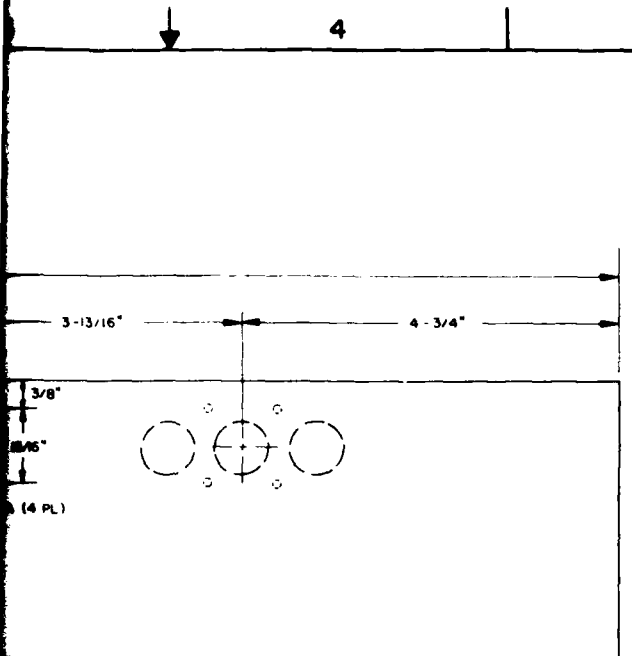


FIGURE 3

TABLE MOUNTED POWER SUPPLY CABINET
(NOTE 201)

IDENT NO	STD-AF-0665	SIZE	PSCH NO	DRAWING NO
SHEET	2 OF 2	D	50470	
DRAWN BY	K. VANAGH	DATE	APR 81	
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SHEET		OF		





Y PANEL

NOTES:

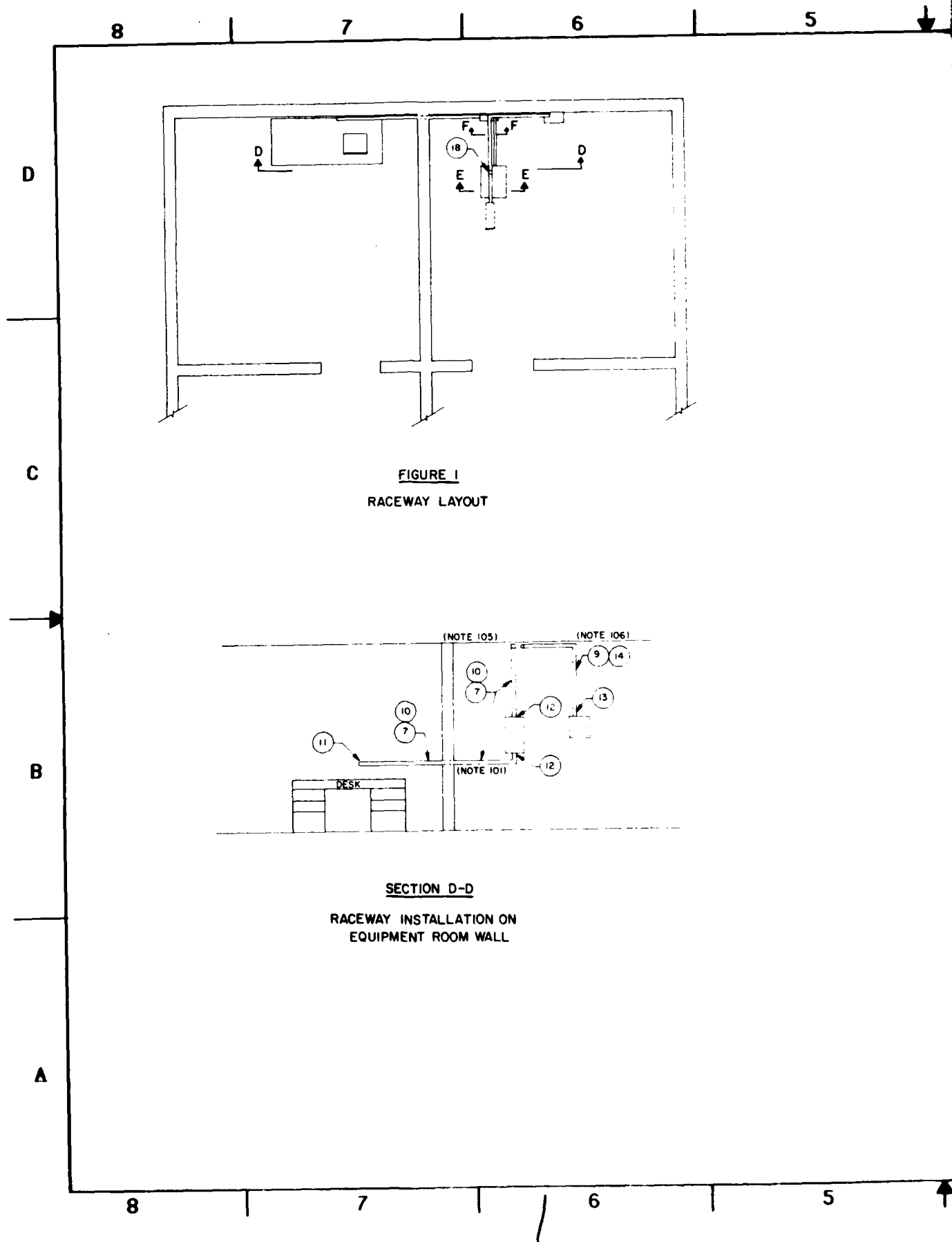
- 101. INSTALL PANEL IN THE REAR OF THE TRANSMITTER/RECEIVER RACK.
- 102. MOUNT COAXIAL RELAY TO PANEL WITH COAXIAL CABLE CONNECTORS FACING THE REAR OF THE CABINET.
- 103. DRILL THREE 5/8" DIAMETER HOLES FOR EACH COAXIAL RELAY. DRILL FOUR 0.120" DIAMETER HOLES USING NO. 31 DRILL FOR MOUNTING RELAY TO PANEL.

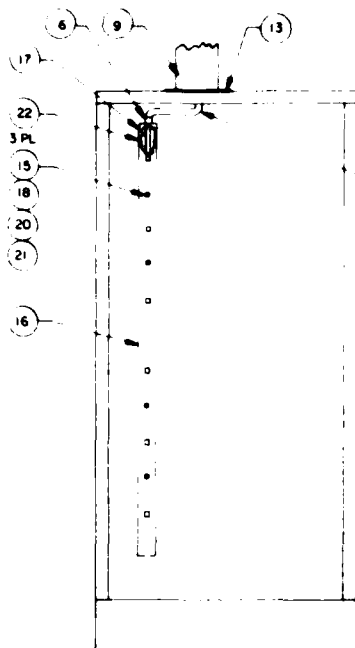
REVISION			
ZONE	REV	DESCRIPTION	DATE

ITEM	QTY	DESCRIPTION	PART NO/NSN	UI	QTY
5	0945K	WASHER, FLAT, STEEL, #4	5310-00-505-6425	ND	
4	11042K	SCREW, MACHINE, PAD HD, STL, 4-40X1/2"	5305-00-984-6036	EA	
3	11743P	RELAY, COAX, 500W, 24V DC CHANGEDOVER, TYPE H, APPENDIX P/B 316-10744-3	9945-00-004-7131	EA	
2	087122	PANEL, BLANK, 18"X3-1/2"X1/8", GREY	5975-00-686-2541	EA	
1	07670K	NUT, HEX, STEEL, CADMIUM PLATED, 4-40	5310-00-104-8186	EA	

DWT NO STD-AF-0666		U S ARMY COMMUNICATIONS-ELECTRONICS ENGINEERING INSTALLATION AGENCY	
SHEET 1 OF 1		COAXIAL RELAY PANEL	
DESIGNED BY YOUNG	DATE 26 JAN 81	SIZE PSCM NO D 50470	
CHECKED BY GOODHUE	DATE 14 FEB 81	DRAWING NO	
NEXT ASSEMBLY	USED ON	SCALE NONE	SHEET 1 OF 1
DWG INDEX NO		CCC-CED-SWA	

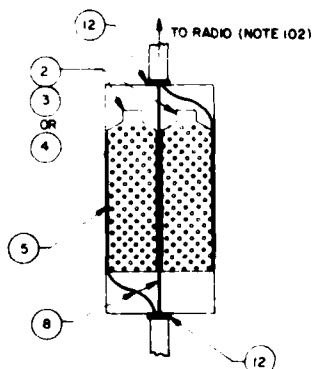
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SECTION E-E

POWER SUPPLY CABINET RACEWAY
AND AC OUTLET INSTALLATION



SECTION F-F

SIGNAL TERMINAL BOX MOUNTING
AND RACEWAY TERMINATION
(NOTE 103)

REVISION		DATE	APPROVED
ZONE	REV		

NOTES:

101. SPECIFY HOLE LOCATION AND SIZE IN PROJECT COORDINATION LETTER AS INSTRUCTIONS TO THE FACILITIES ENGINEER.
102. REFER TO SEIP 010 FOR ENGINEERING CRITERIA FOR CABLE INSTALLATION BETWEEN TERMINAL BOARD AND RADIO TRANSMITTERS AND RECEIVERS.
103. TERMINAL BOX SHOWN WITH UNPROTECTED BLOCKS INSTALLED. USE PROTECTED BLOCKS (ITEM 25, 26 OR 27) WHEN OUTSIDE PLANT CABLES ARE USED FOR CONNECTION TO RADIO TRANSMITTERS AND RECEIVERS.
104. CONNECT POWER CABLE TO 15 AMP CIRCUIT BREAKER IN TECHNICAL POWER PANEL.
105. ATTACH RACEWAY BASE TO WALL AND CEILING USING BOM ITEM 23 OR 24.
106. ATTACH BX CABLE TO WALL USING BOM ITEMS 14, 23 AND 24.

27	214540	BLOCK, TERMINAL, 25 PAIR, PROTECTED W/1304 PROTECTORS, RELIABLE W/125P	NSHR	EA	
26	751431	BLOCK, TERMINAL, 12 PAIR, PROTECTED PROTECTORS, RELIABLE W/12P	NSHR	EA	
25	25142M	BLOCK, TERMINAL, 6 PAIR, PROTECTED W/1304 PROTECTORS, RELIABLE W/10P	NSHR	EA	
24	06315A	SHIELD, EXPANSION, 1 4"X1 2"	5340-00-961-7302	MC	
23	00189B	SCREW, WOOD, 8X1"	5305-00-901-2134	GR	
22	25134J	WIRE CONNECTOR, PRESSURE TYPE, #12-14 WIREHOLD W30	5940-00-984-5060	EA	
21	09019J	WASHER, LOCK, SPLIT, STEEL, #8	5310-00-045-3298	ND	
20	00487C	WASHER, FLAT, STEEL, #8	5310-00-167-0833	ND	
19	00740C	SHIELD, EXPANSION, 3/8"-16	5340-00-754-4560	BY	
18	08301M	SCREW, MACHINE, RND HD, STL B-32X3.4"	5305-00-013-2768	EA	
17	13789F	ENTRANCE, END FITTING WIREHOLD 2010A	5975-00-673-7658	EA	
16	07788Z	OUTLET STRIP, AC, 6 OUTLETS, WIREHOLD 206B306	5935-00-490-9842	EA	
15	07675L	NUT, HEX, STEEL, CADMIUM PLATED, B-32	5310-00-550-2490	EA	
14	06244M	STRAP, RETAINING, 3/8" IN	5340-00-150-6183	EA	
13	11172M	BOX CONNECTOR, ELECTRICAL 3/8"	5975-00-284-6978	EA	
12	09051L	BOX CONNECTOR, ELECTRICAL, 0.7813 ID	5975-00-802-6531	EA	
11	02365Z	JUNCTION BOX	5975-00-153-6398	EA	
10	07945C	STRAP, RETAINING, 3/4" I HOLE	5340-00-598-2570	EA	
9	17106Z	CABLE, POWER, BX, 3 CONDUCTOR, #12 AWG, 0.307 DIAMETER	6145-00-806-9389	FT	
8	14548F	CABLE, ELEC, 15-PAIR, #22 AWG STR, 1.5 BELDEN 8776	6145-00-948-6412	FT	
7	02376Z	CONDUIT (ENT) THINWALL, 1 1/2"	5975-00-178-1217	FT	
6	18392R	BOX CONNECTOR, FLOW 0.307 DIA, BX CABLE, TAB 3301	5975-00-141-0453	EA	
5	06142N	BOX, TERMINAL, 23" HIGH, 11" WIDE, 2 1/2" DEEP, RELIABLE 5603	5975-00-933-7678	EA	
4	25140Y	BLOCK, TERMINAL, 26 PAIR, UNPROTECTED RELIABLE 5585	5940-00-933-7904	EA	
3	11279D	BLOCK, TERMINAL, 11 PAIR UNPROTECTED RELIABLE 5555	5940-00-933-7902	EA	
2	25141M	BLOCK, TERMINAL, 6 PAIR, UNPROTECTED RELIABLE 5561	5940-00-933-7901	EA	
1	22329G	BLANK END FITTING, WIREHOLD G 3010B	5975-01-008-7218	EA	
FIND NO	SPIL	DESCRIPTION	PART NO/NSH	UT	QTY

PARTS LIST

IDENT NO
STD-AF-0476

U S ARMY COMMUNICATIONS-ELECTRONICS
ENGINEERING INSTALLATION AGENCY

SHEET OF

DESIGNED BY

DRAWN BY

CHECKED BY

APPROVED BY

DATE

SCALE

ADVISORY FACILITY
TYPICAL INSTALLATION DETAIL

FIG NO
D 50470

DRAWING NO

SCALE

SHEET OF

NEXT ASSEMBLY
USED ON
DWG INDEX NO

2

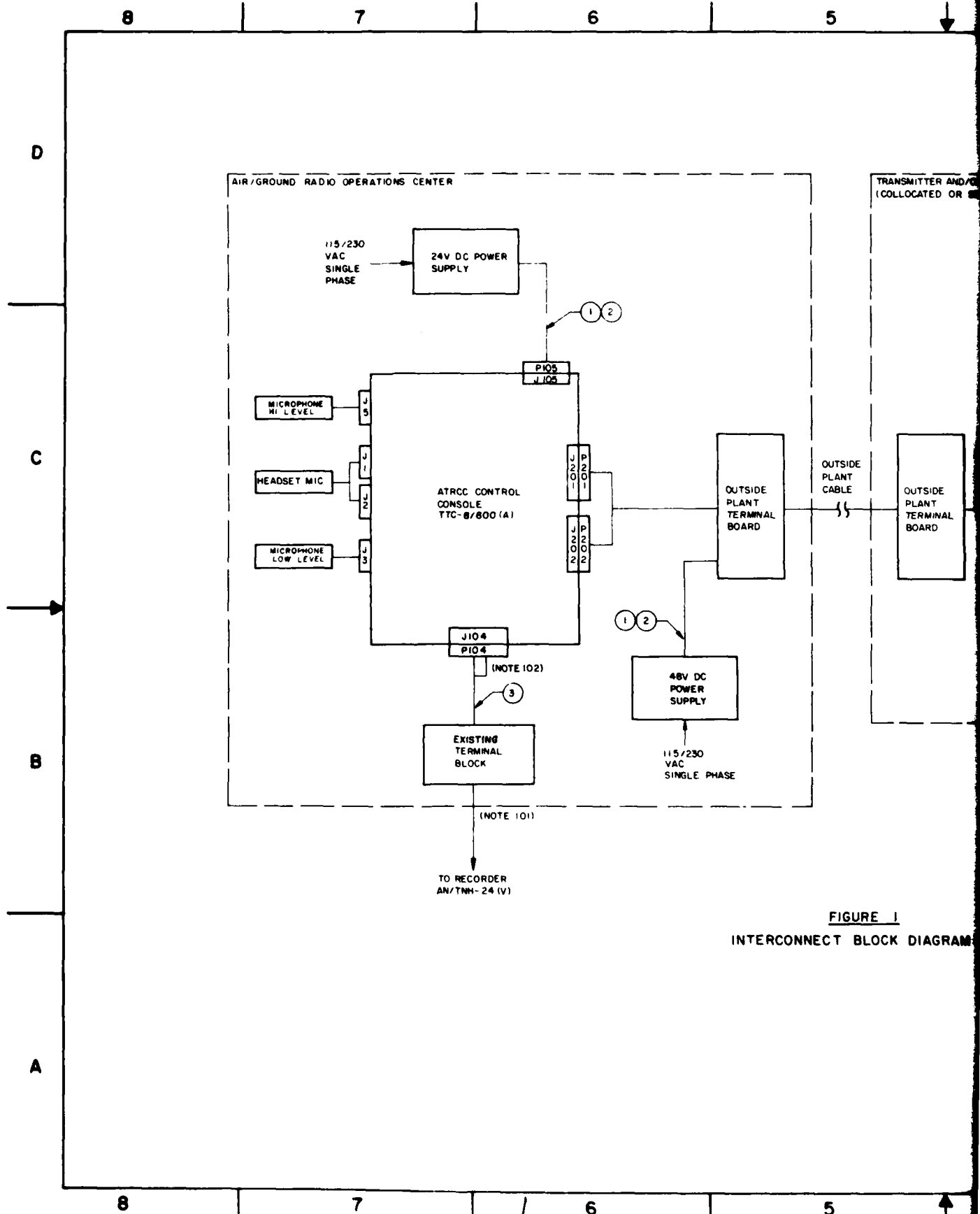
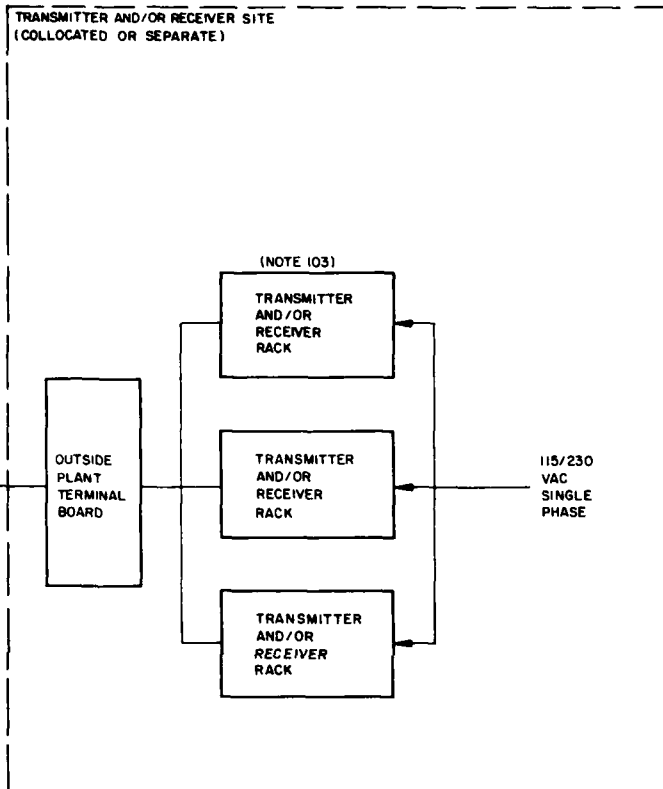


FIGURE 1
INTERCONNECT BLOCK DIAGRAM



NOTES:

- 101 P104 CABLED TO RECORDER (SINGLE PAIR TO EXISTING MDF OR IDF), ONLY WHEN RECORDING IS REQUIRED. RECORDER CHANNEL ASSIGNMENTS TO BE MADE IN ACCORDANCE WITH LOCAL REQUIREMENTS. RECORD THE POSITION ONLY, ONLY ONE RECORD CHANNEL IS REQUIRED PER POSITION.
- 102 WHEN USING RECORDER ACTIVATE SYLLBATIC LAMP INDICATOR ON RECORDER MONITOR MODULE BY CONNECTING PINS H TO B AND J TO C OF P104.
- 103 WHEN USING RT524/VRC TRANSCEIVER USE REMOTE CONTROL PANELS (DWGS STD-AF-0625 AND 0626) TO PROVIDE NECESSARY ISOLATION TRANSFORMERS OR USE OPTIONAL AUDIO ISOLATION PANELS (DWG STD-AF-0309).

FIGURE 1
BLOCK DIAGRAM

3	14548F	CABLE, ELEC, 3 PAIR, # 22 AWG, STR, 1 S BELDEN 8777	6445-00-948-6402	FT	
2	03540K	WIRE, ELEC, #14 AWG, BLK, SOLID, INS, 600V	6445-00-191-2577	FT	
1	03509A	WIRE, ELEC, #14 AWG, WHT, SOLID, INS, 600V	6445-00-184-5348	FT	
P. NO.	SML	DESCRIPTION	PART NO / NSN	U1	QTY

IDENT NO. STD-AF-0477		U S ARMY COMMUNICATIONS-ELECTRONICS ENGINEERING INSTALLATION AGENCY	
DESIGNED BY YOUNG		DATE 28 JAN 81	
DRAWN BY GOODHUE		DATE 5 FEB 81	
CHECKED BY [Signature]		DATE 16 MAR 81	
APPROVED BY [Signature]		DATE 16 MAR 81	
DESIGN ACT. NO. CCC-CED-SWA		DRAWING NO. D 50470	
SCALE NONE		SHEET 1 OF 1	

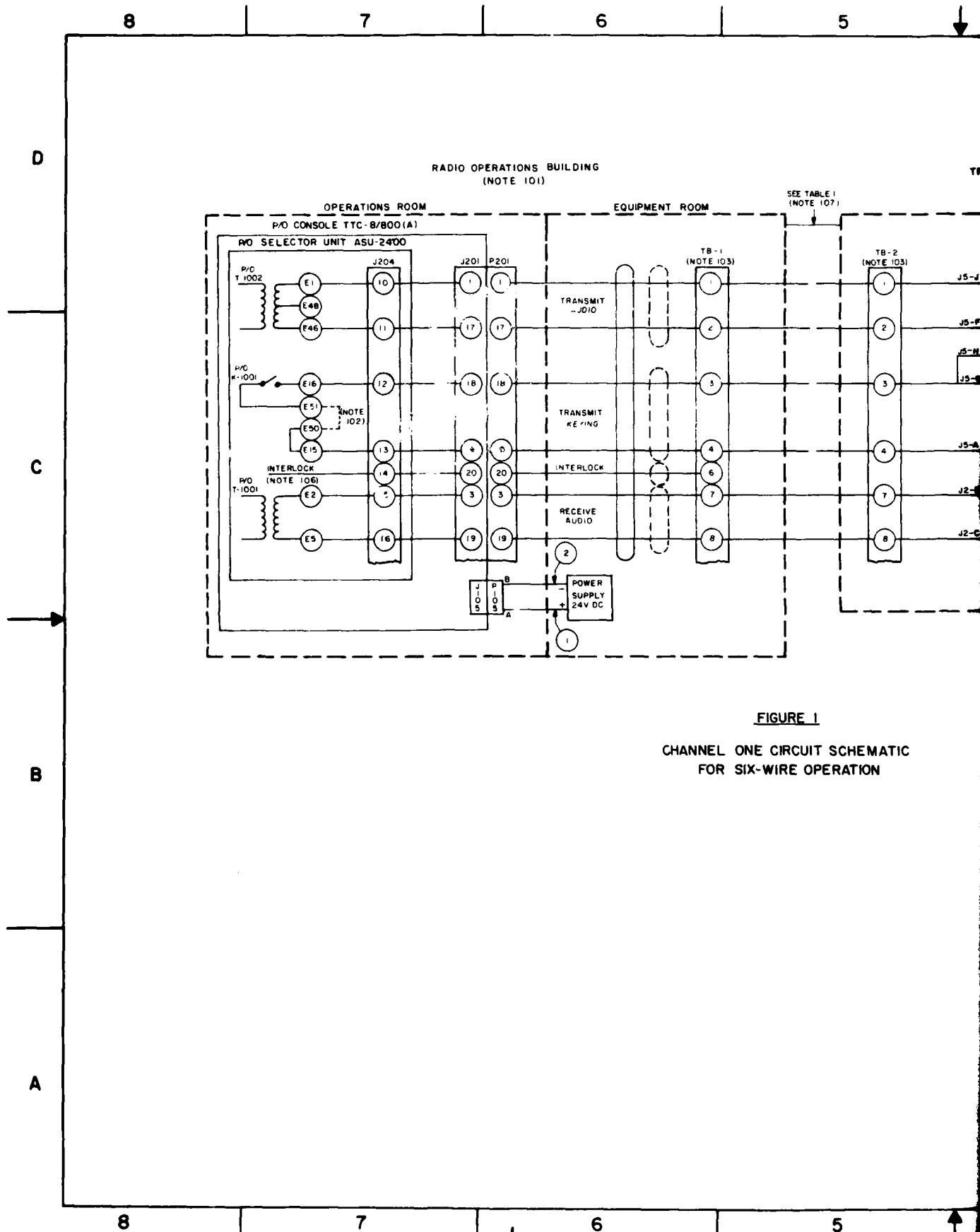


FIGURE 1

CHANNEL ONE CIRCUIT SCHEMATIC
FOR SIX-WIRE OPERATION

4

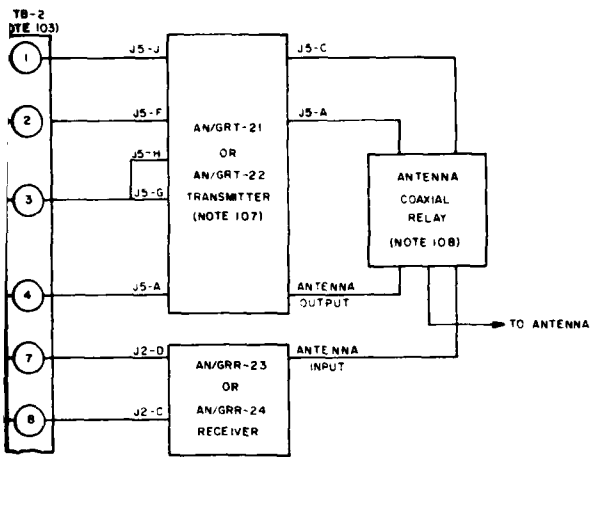
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2

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REVISION			
ZONE	REV.	DESCRIPTION	DATE

TRANSMITTER/RECEIVER SITE (NOTES 104 & 105)



NOTES:

101. ONLY CONNECTIONS FOR CHANNEL ONE ARE SHOWN. CONNECTIONS FOR CHANNELS ONE THROUGH EIGHT ARE SHOWN ON STD-AF-0480.
102. FOR SIX WIRE OPERATION, REMOVE STRAPS FROM E-49 TO E-50; E-48 TO E-51; E-15 TO E-16; AND ADD STRAP E-50 TO E-51. SIX WIRE OPERATION IS THE PREFERRED MODE OF OPERATION.
103. TERMINAL BOARD NUMBERS ARE FOR REFERENCE ONLY.
104. THE TRANSMITTER AND/OR RECEIVER FACILITY MAY BE ANY OF THE FOLLOWING CONFIGURATIONS:
 - A. COLLOCATED REMOTE TRANSMITTER/RECEIVER SITE.
 - B. COLLOCATED LOCAL TRANSMITTER/RECEIVER SITE.
 - C. SEPARATE REMOTE TRANSMITTER AND RECEIVER SITES.
 - D. LOCAL TRANSMITTER OR RECEIVER FACILITY WITH REMOTE RECEIVER OR TRANSMITTER FACILITY.
105. CRITERIA FOR ALL ENGINEERING EXTERNAL TO TB-1 IS PRESENTED IN SETP 010.
106. INTERLOCK BUS IS USED WHERE MORE THAN ONE CONSOLE TTC-B/800 IS USED.
107. FOR SIX-WIRE OPERATION, TRANSMITTER PIN J5-H MUST BE JUMPED TO J5-G. THIS METHOD OF KEYING IS LIMITED TO A CABLE DISTANCE OF 300 OHMS LOOP RESISTANCE OF LESS AND UTILIZES THE INTERNAL AN/GRT-21/22 KEYING VOLTAGE (SEE TABLE 1).
108. A COAXIAL RELAY WILL BE REQUIRED FOR EACH TRANSMITTER/RECEIVER SET AT COLLOCATED SITES WHERE A CONTROL PANEL IS NOT USED (SEE STD-AF-0666).

TABLE 1

REMOTE KEYING LINE DISTANCE LIMITS
FOR FOUR TYPICAL WIRE GAGE SIZES

KEYING LINE WIRE GAGE	OHMS PER 1000 FEET AT 20°C	MAXIMUM LINEAR KEYING LINE DISTANCE, MILES (1)		
		ONE PAIR	TWO (2) PAIRS	THREE (2) PAIRS
#19	0.912	8.05	3.53	7.06
#20	0.912	10.15	2.80	5.60
#22	0.644	16.14	1.76	3.52
#24	0.511	25.67	1.11	2.21

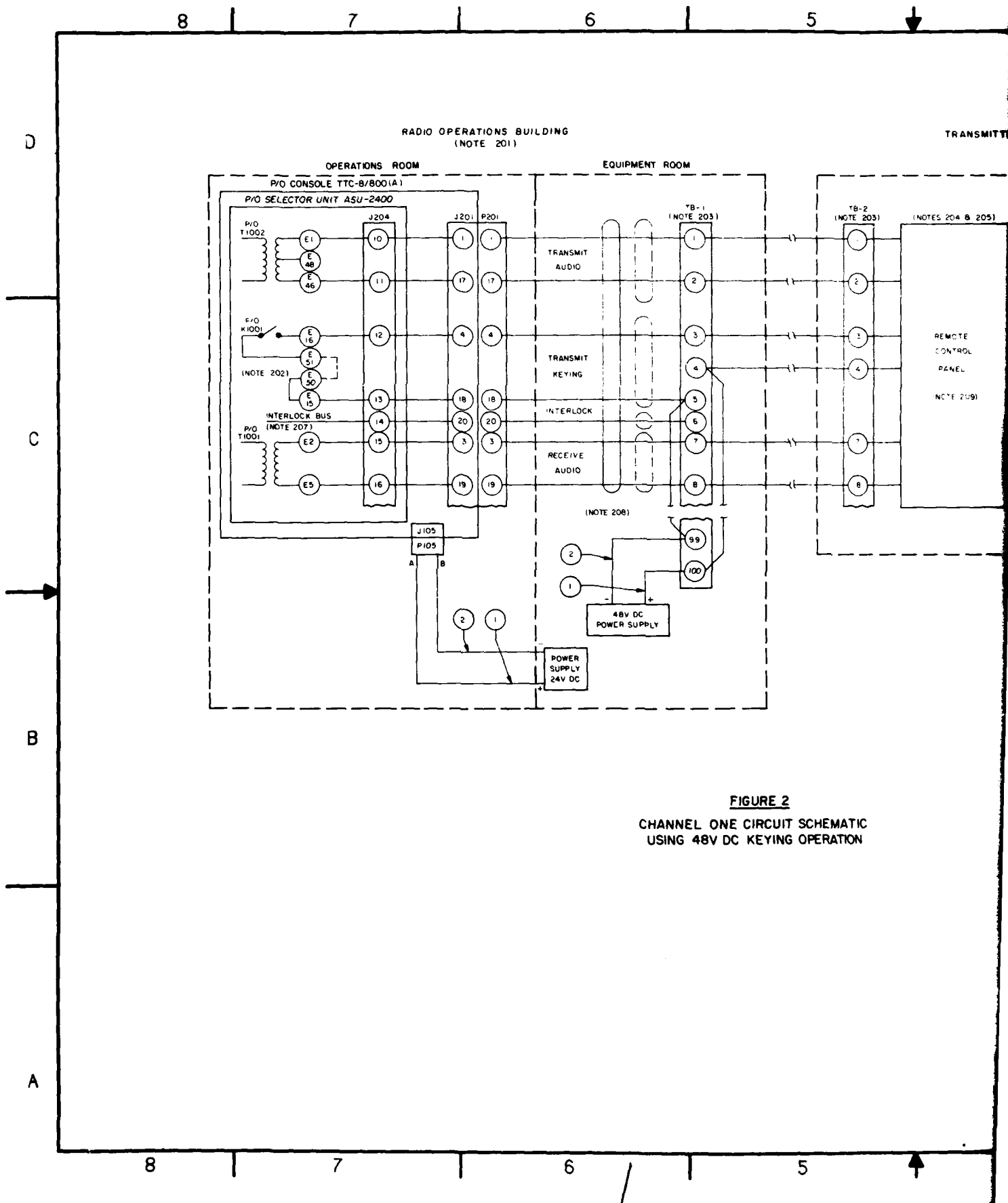
NOTES (TABLE 1)

1. BASED ON A MAXIMUM EXTERNAL KEYING LOOP RESISTANCE OF 300 OHMS.
2. TWO OR THREE UNLOADED CABLE PAIRS CONNECTED IN PARALLEL.

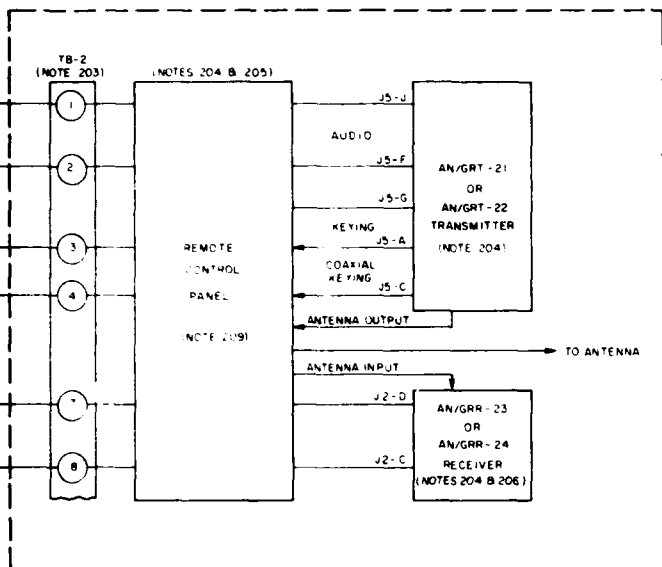
2	03540K	WIRE, ELEC, #14 AWG, BLK, SOLID, INS, 600V	6145-00-191-2577	FT	
	03509A	WIRE, ELEC, #14 AWG, WHT, SOLID, INS, 600V	6145-00-194-5348	FT	
SML		DESCRIPTION		PART NO / NSN	UI
				QTY	

PARTS LIST

STD-AF-0478		U.S. ARMY COMMUNICATIONS-ELECTRONICS ENGINEERING INSTALLATION AGENCY			
YOUNG R MILLER		ATC RADIO CONTROL WIRING DIAGRAM			
NEXT ASSEMBLY		USED ON		DWG INDEX NO.	
DWG INDEX NO.		D 50470		SHEET	



TRANSMITTER/RECEIVER SITE



NOTES:

- 201 ONLY CONNECTIONS FOR CHANNEL ONE ARE SHOWN. CONNECTIONS FOR CHANNELS ONE THROUGH EIGHT ARE SHOWN ON STD-AF-0480 48V DC OR 28V DC KEYING REQUIRED DEPENDING ON TRANSMITTER CONTROL PANELS INSTALLED
- 202 FOR KEYING THROUGH TRANSMITTER CONTROL PANEL, THE INTERNAL JUMPERS BETWEEN E15 AND E16, E48-E51, E49 AND E50 MUST BE REMOVED AND E50 JUMPED TO E51 AS SHOWN.
- 203 TERMINAL BOARD NUMBERS ARE FOR REFERENCE ONLY
- 204 THE TRANSMITTER AND/OR RECEIVER FACILITY MAY BE ANY OF THE FOLLOWING CONFIGURATIONS:
 - A COLLOCATED REMOTE TRANSMITTER/RECEIVER SITE
 - B COLLOCATED LOCAL TRANSMITTER/RECEIVER SITE
 - C SEPARATE REMOTE TRANSMITTER AND RECEIVER SITES
 - D LOCAL TRANSMITTER OR RECEIVER SITE WITH REMOTE RECEIVER OR TRANSMITTER SITE
- 205 CRITERIA FOR ALL ENGINEERING EXTERNAL TO TB-1 IS PRESENTED IN SEIP 010
- 206 WHERE RECEIVERS ARE SEPARATE FROM TRANSMITTERS THE RECEIVE AUDIO WILL GO DIRECTLY FROM THE RECEIVER TO THE TERMINAL BOARD
- 207 INTERLOCK BUS IS USED ONLY WHERE MORE THAN ONE CONSOLE TTC-8/800 IS USED
- 208 FOR 48 VDC KEYING WIRING, SEE NOTE 102 OF STD-AF-0480
- 209 SEE DWG COM-AF-333 C & D

REVISIONS		DATE	APPROVED
ZONE	REV		

IDENT NO STD-AF-0478		SIZE FROM NO D 50470		DRAWING NO	
SHEET 2 OF 3		SCALE NONE		SHEET OF	
DRAWN BY GOODHUE		APPROVED BY			

SCHEMATIC
OPERATION

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RADIO OPERATIONS BUILDING (NOTE 301)

TRANSCIVER SITE (NOTES 304 & 305)

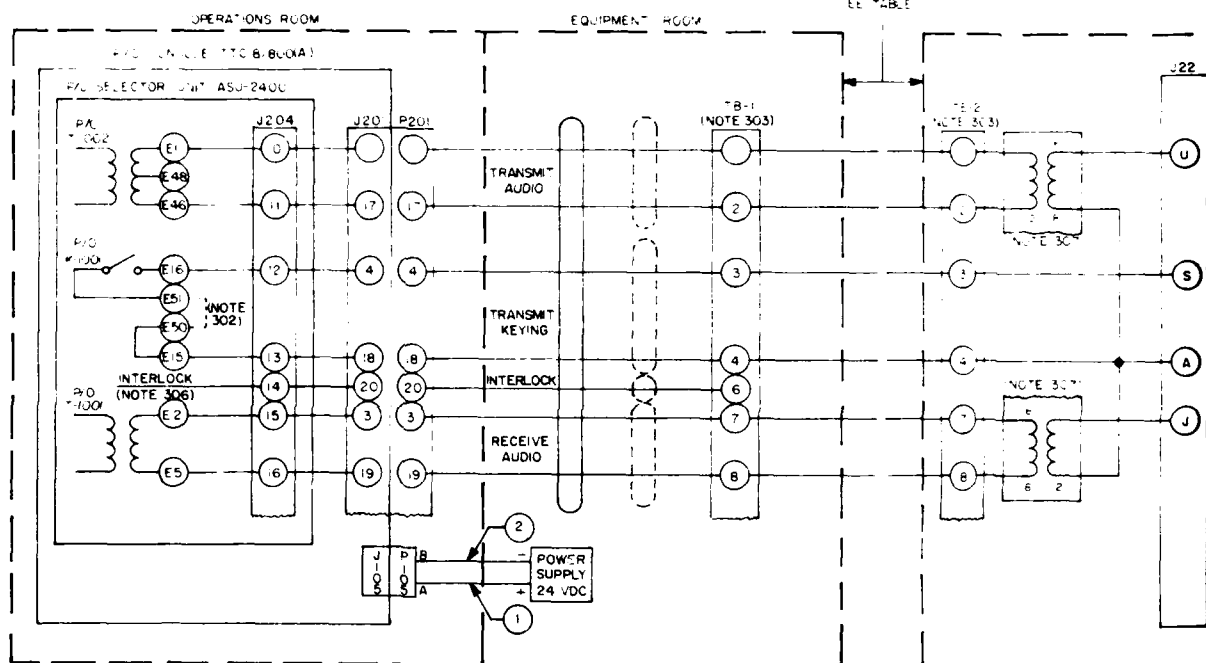


FIGURE 3
CHANNEL ONE CIRCUIT SCHEMATIC
FOR SIX-WIRE OPERATION

TABLE I REMOTE KEYING LINE DISTANCE LIMITS FOR FOUR TYPICAL WIRE GAGE SIZES				
KEYING LINE WIRE GAGE	AWG	METRIC mm.	TURNS PER 100 FEET AT 2.5 K.	MAXIMUM LINE DISTANCE
				ONE PAIR
9	0.92		8.05	153
10	0.82		7.80	160
11	0.73		7.4	176
12	0.65		6.9	188
13	0.57		6.4	201
14	0.50		5.9	221
15	0.44		5.4	241
16	0.39		5.0	261
17	0.35		4.6	281
18	0.31		4.2	301
19	0.28		3.9	321
20	0.25		3.6	341
21	0.22		3.3	361
22	0.20		3.0	381
23	0.18		2.7	401
24	0.16		2.4	421
25	0.14		2.1	441
26	0.12		1.8	461
27	0.11		1.6	481
28	0.10		1.4	501
29	0.09		1.2	521
30	0.08		1.0	541
31	0.07		0.9	561
32	0.06		0.8	581
33	0.05		0.7	601
34	0.04		0.6	621
35	0.03		0.5	641
36	0.02		0.4	661
37	0.01		0.3	681
38	0.01		0.2	701
39	0.01		0.1	721
40	0.01		0.1	741
41	0.01		0.1	761
42	0.01		0.1	781
43	0.01		0.1	801
44	0.01		0.1	821
45	0.01		0.1	841
46	0.01		0.1	861
47	0.01		0.1	881
48	0.01		0.1	901
49	0.01		0.1	921
50	0.01		0.1	941
51	0.01		0.1	961
52	0.01		0.1	981
53	0.01		0.1	1001
54	0.01		0.1	1021
55	0.01		0.1	1041
56	0.01		0.1	1061
57	0.01		0.1	1081
58	0.01		0.1	1101
59	0.01		0.1	1121
60	0.01		0.1	1141
61	0.01		0.1	1161
62	0.01		0.1	1181
63	0.01		0.1	1201
64	0.01		0.1	1221
65	0.01		0.1	1241
66	0.01		0.1	1261
67	0.01		0.1	1281
68	0.01		0.1	1301
69	0.01		0.1	1321
70	0.01		0.1	1341
71	0.01		0.1	1361
72	0.01		0.1	1381
73	0.01		0.1	1401
74	0.01		0.1	1421
75	0.01		0.1	1441
76	0.01		0.1	1461
77	0.01		0.1	1481
78	0.01		0.1	1501
79	0.01		0.1	1521
80	0.01		0.1	1541
81	0.01		0.1	1561
82	0.01		0.1	1581
83	0.01		0.1	1601
84	0.01		0.1	1621
85	0.01		0.1	1641
86	0.01		0.1	1661
87	0.01		0.1	1681
88	0.01		0.1	1701
89	0.01		0.1	1721
90	0.01		0.1	1741
91	0.01		0.1	1761
92	0.01		0.1	1781
93	0.01		0.1	1801
94	0.01		0.1	1821
95	0.01		0.1	1841
96	0.01		0.1	1861
97	0.01		0.1	1881
98	0.01		0.1	1901
99	0.01		0.1	1921
100	0.01		0.1	1941

TRANSCIVER SITE
(NOTES 304 & 305)

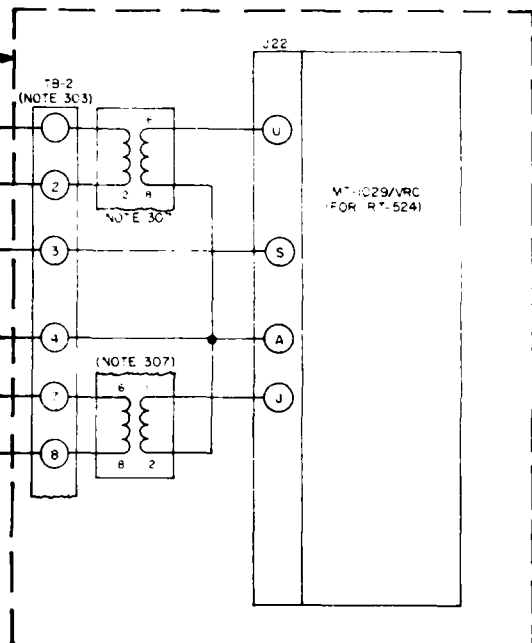


TABLE 1

REMOTE KEYING LINE DISTANCE LIMITS
FOR FOUR TYPICAL WIRE GAGE SIZES

WIRE GAGE	KEYING LINE WIRE GAGE	OHMS PER 1000 FEET AT 20° C	MAXIMUM LINEAR KEYING LINE DISTANCE, MILES (1)		
			ONE PAIR	TWO (2) PAIR	THREE (2) PAIR
18	0.912	8.05	3.53	7.06	10.6
20	0.812	10.5	2.80	5.60	8.40
22	0.644	16.14	1.76	3.52	5.28
24	0.54	25.67	1.11	2.21	3.32

NOTES

- 1 BASED ON A MAXIMUM EXTERNAL KEYING LOOP RESISTANCE OF 300 OHMS
- 2 TWO OR THREE UNLOADED CABLE PAIRS CONNECTED IN PARALLEL

REVISION			DATE	APPROVED
NO.	DESCRIPTION			

NOTES:

- 301 ONLY CONNECTIONS FOR CHANNEL ONE ARE SHOWN. CONNECTIONS FOR CHANNELS ONE THROUGH EIGHT ARE SHOWN ON STD-AF-0480.
- 302 FOR SIX-WIRE OPERATION, REMOVE STRAPS FROM E49 TO E50, E48 TO E51, E15 TO E16, AND ADD STRAP E50 TO E51. SIX-WIRE OPERATION IS THE PREFERRED MODE OF OPERATION.
- 303 TERMINAL BOARD NUMBERS ARE FOR REFERENCE ONLY.
- 304 THE TRANSCIVER FACILITY MAY BE EITHER LOCAL OR REMOTE.
- 305 CRITERIA FOR ALL ENGINEERING EXTERNAL TO THIS DOCUMENT ARE PRESENTED IN SEP 010.
- 306 INTERLOCK BUS IS USED WHERE MORE THAN ONE CONSOLE TTC-B/800 IS USED.
- 307 ADD ISOLATION PANEL (STD-AF-0309).

CENT NO STD-AF-0478		SIZE D	PCB NO 50470	DRAWING NO
DRAWN BY [Signature]	CHECKED BY [Signature]	DATE [Date]	APPROVED BY [Signature]	SHEET OF [Number]

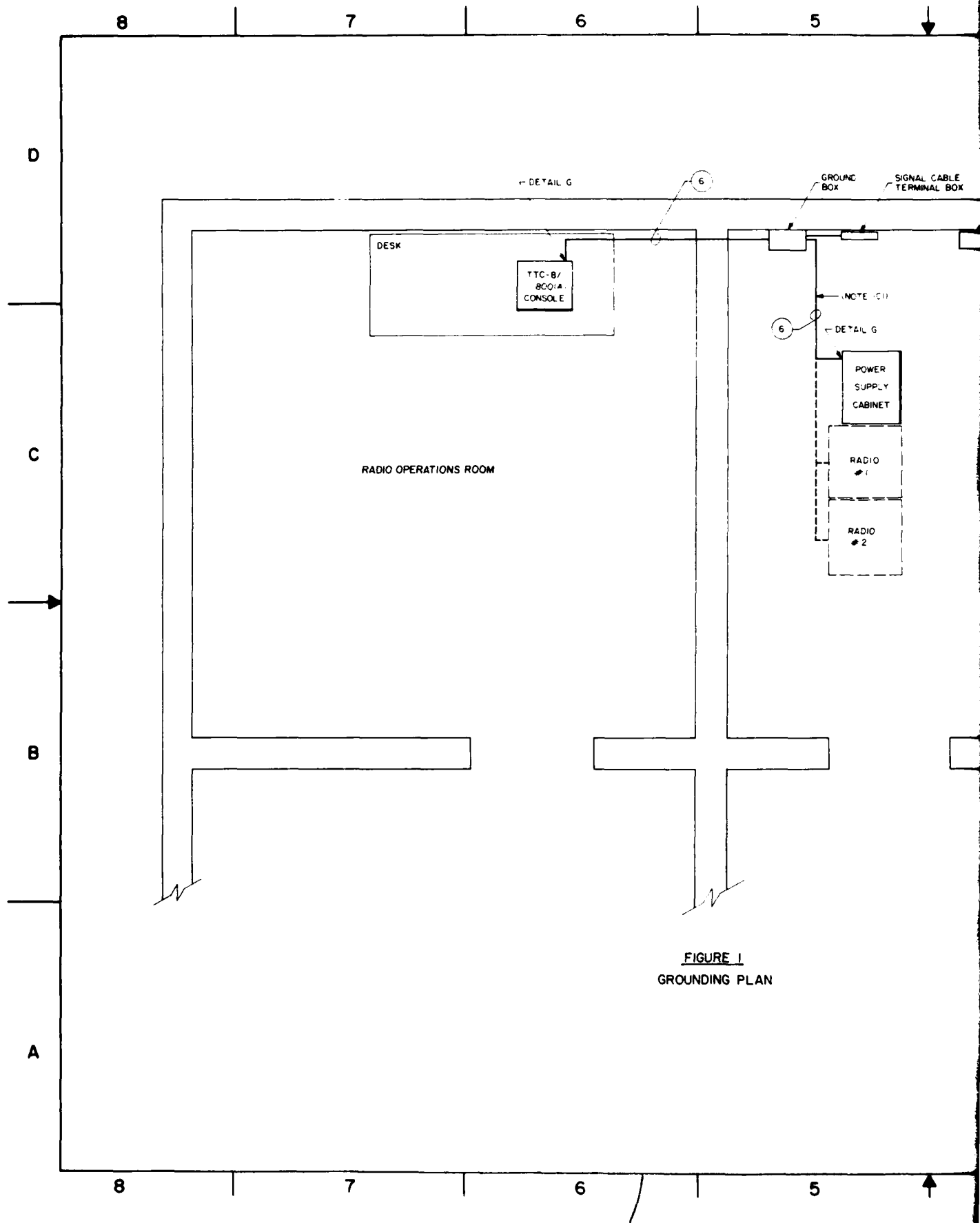
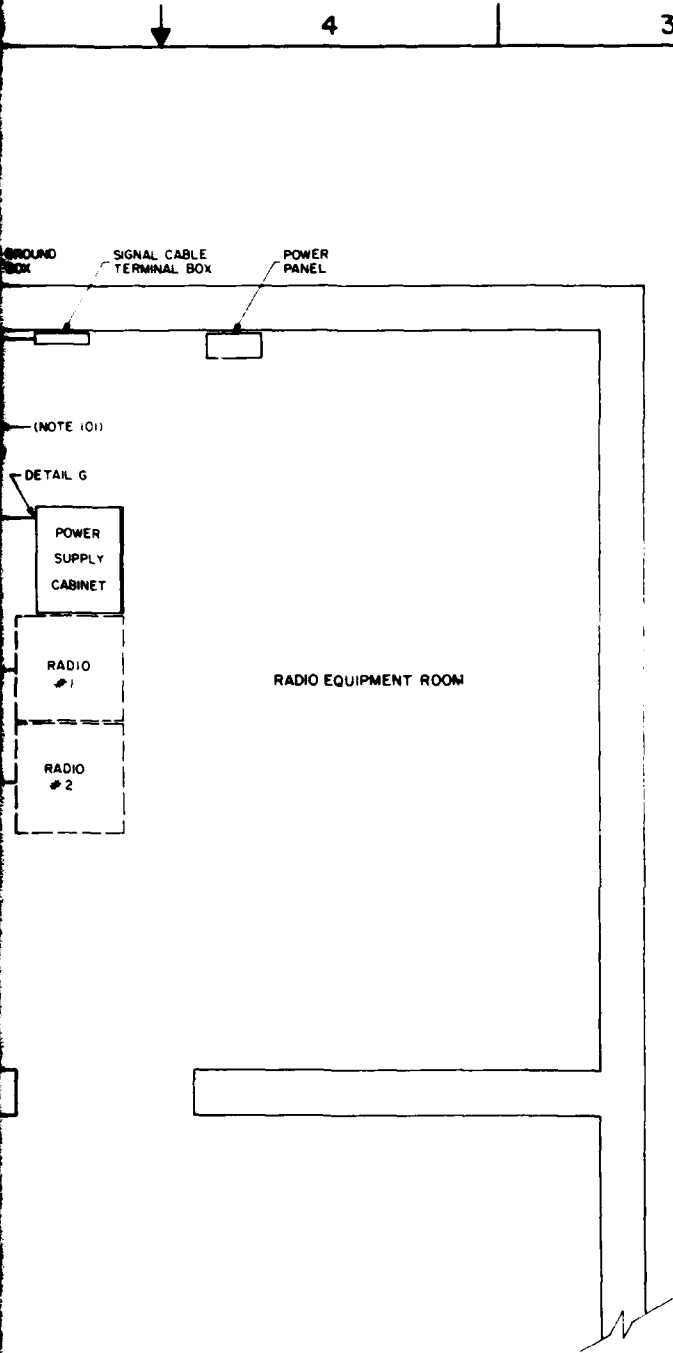
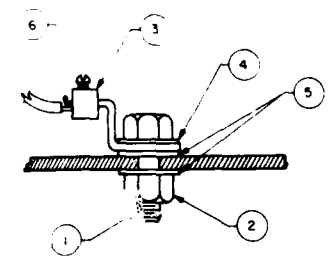


FIGURE 1
GROUNDING PLAN



NOTE

(10) INSTALL THE GROUND CONDUCTORS ON THE OVERHEAD WIREWAY



DETAIL G
TERMINAL LUG ATTACHMENT
TO GROUND PLATE OR
EQUIPMENT CABINET

6	03506A	WIRE, ELEC, #12 AWG, YELLOW, SOLID, TW	6145-00-184-5344	FT	
5	25252M	WASHER, LOCK INT & EXT TEETH 1/4"	5310-00-689-2528	EA	
4	005162	WASHER, FLAT, RD, STEEL, 0.266" ID x 0.50" OD	5310-00-198-3642	EA	
3	21955Z	TERMINAL LUG, #10-12 AWG, 1/4"	5940-00-866-2586	EA	
2	00558H	NUT, HEX, STEEL, CADMIUM PLATED, 1/4 x 20	5310-00-285-1630	HD	
1	19544L	BOLT, MACH, HEX HD 1/4 - 20 x 7/8" LG	5306-00-834-3939	HD	
SML		DESCRIPTION	PART NO / NSN	UI	QTY

PARTS LIST

DWT NO STD-AF-0479		U.S. ARMY COMMUNICATIONS-ELECTRONICS ENGINEERING INSTALLATION AGENCY	
DESIGNED BY YOUNG		DATE 28 JAN 81	
DRAWN BY N. HERRINGTON		DATE 4 FEB 81	
APPR. BY [Signature]		DATE [Signature]	
DWG INDEX NO.		D 50470	
NEXT ASSEMBLY		USED ON	
CCC-CED-SWA		SCALE NONE	

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TABLE 1
INTERCONNECT WIRING LIST
48V DC KEYING SYSTEM

CABLE PAIR	CONN	PIN NO.	FUNCTION	TB-1 PIN NO.
S1	1	P-201	1 CHANNEL ONE TRANSMIT AUDIO	1
	2	4	CHANNEL ONE TRANSMIT KEYING	2
	3	3	CHANNEL ONE TRANSMIT KEYING	3
	4	19	CHANNEL ONE RECEIVE AUDIO	7
	5	20	CHANNEL ONE RECEIVE AUDIO	8
	6	20	CHANNEL ONE INTERLOCK	6
	7	5	CHANNEL TWO TRANSMIT AUDIO	11
	8	21	CHANNEL TWO TRANSMIT AUDIO	12
	9	8	CHANNEL TWO TRANSMIT KEYING	13
	10	22	CHANNEL TWO TRANSMIT KEYING	15
	11	7	CHANNEL TWO RECEIVE AUDIO	17
	12	23	CHANNEL TWO RECEIVE AUDIO	18
	13	24	CHANNEL TWO INTERLOCK	16
	14	9	CHANNEL THREE TRANSMIT AUDIO	21
	15	25	CHANNEL THREE TRANSMIT AUDIO	22
	16	12	CHANNEL THREE TRANSMIT KEYING	23
	17	26	CHANNEL THREE TRANSMIT KEYING	25
	18	11	CHANNEL THREE RECEIVE AUDIO	27
	19	27	CHANNEL THREE RECEIVE AUDIO	28
	20	28	CHANNEL THREE INTERLOCK	26
	21	13	CHANNEL FOUR TRANSMIT AUDIO	31
	22	29	CHANNEL FOUR TRANSMIT AUDIO	32
	23	14	CHANNEL FOUR TRANSMIT KEYING	33
	24	30	CHANNEL FOUR TRANSMIT KEYING	35
	25	15	CHANNEL FOUR RECEIVE AUDIO	37
	26	31	CHANNEL FOUR RECEIVE AUDIO	38
	27	32	CHANNEL FOUR INTERLOCK	36
S2	1	P-202	1 CHANNEL FIVE TRANSMIT AUDIO	41
	2	4	CHANNEL FIVE TRANSMIT AUDIO	42
	3	18	CHANNEL FIVE TRANSMIT KEYING	43
	4	3	CHANNEL FIVE TRANSMIT KEYING	44
	5	19	CHANNEL FIVE RECEIVE AUDIO	47
	6	20	CHANNEL FIVE RECEIVE AUDIO	48
	7	5	CHANNEL FIVE INTERLOCK	46
	8	5	CHANNEL SIX TRANSMIT AUDIO	51
	9	21	CHANNEL SIX TRANSMIT AUDIO	52
	10	8	CHANNEL SIX TRANSMIT KEYING	53
	11	22	CHANNEL SIX TRANSMIT KEYING	55
	12	7	CHANNEL SIX RECEIVE AUDIO	57
	13	23	CHANNEL SIX RECEIVE AUDIO	58
	14	24	CHANNEL SIX INTERLOCK	56
	15	9	CHANNEL SEVEN TRANSMIT AUDIO	61
	16	25	CHANNEL SEVEN TRANSMIT AUDIO	62
	17	12	CHANNEL SEVEN TRANSMIT KEYING	63
	18	26	CHANNEL SEVEN TRANSMIT KEYING	64
	19	11	CHANNEL SEVEN RECEIVE AUDIO	67
	20	27	CHANNEL SEVEN RECEIVE AUDIO	68
	21	28	CHANNEL SEVEN INTERLOCK	66
	22	13	CHANNEL EIGHT TRANSMIT AUDIO	71
	23	29	CHANNEL EIGHT TRANSMIT AUDIO	72
	24	14	CHANNEL EIGHT TRANSMIT KEYING	73
	25	30	CHANNEL EIGHT TRANSMIT KEYING	75
	26	15	CHANNEL EIGHT RECEIVE AUDIO	77
	27	31	CHANNEL EIGHT RECEIVE AUDIO	78
	28	32	CHANNEL EIGHT INTERLOCK	76

FOR 48V DC KEYING CONNECTIONS

(NOTE 102)

TABLE 2
INTERCONNECT WIRING LIST
6-WIRE SYSTEM

CABLE PAIR	CONN	PIN NO.	FUNCTION	TB-1 PIN NO.
S1	1	P-201	1 CHANNEL ONE TRANSMIT AUDIO	1
	2	4	CHANNEL ONE TRANSMIT KEYING	2
	3	3	CHANNEL ONE TRANSMIT KEYING	3
	4	19	CHANNEL ONE RECEIVE AUDIO	7
	5	20	CHANNEL ONE RECEIVE AUDIO	8
	6	20	CHANNEL ONE INTERLOCK	6
	7	5	CHANNEL TWO TRANSMIT AUDIO	11
	8	21	CHANNEL TWO TRANSMIT AUDIO	12
	9	8	CHANNEL TWO TRANSMIT KEYING	13
	10	22	CHANNEL TWO TRANSMIT KEYING	15
	11	7	CHANNEL TWO RECEIVE AUDIO	17
	12	23	CHANNEL TWO RECEIVE AUDIO	18
	13	24	CHANNEL TWO INTERLOCK	16
	14	9	CHANNEL THREE TRANSMIT AUDIO	21
	15	25	CHANNEL THREE TRANSMIT AUDIO	22
	16	12	CHANNEL THREE TRANSMIT KEYING	23
	17	26	CHANNEL THREE TRANSMIT KEYING	25
	18	11	CHANNEL THREE RECEIVE AUDIO	27
	19	27	CHANNEL THREE RECEIVE AUDIO	28
	20	28	CHANNEL THREE INTERLOCK	26
	21	13	CHANNEL FOUR TRANSMIT AUDIO	31
	22	29	CHANNEL FOUR TRANSMIT AUDIO	32
	23	14	CHANNEL FOUR TRANSMIT KEYING	33
	24	30	CHANNEL FOUR TRANSMIT KEYING	35
	25	15	CHANNEL FOUR RECEIVE AUDIO	37
	26	31	CHANNEL FOUR RECEIVE AUDIO	38
	27	32	CHANNEL FOUR INTERLOCK	36
S2	1	P-202	1 CHANNEL FIVE TRANSMIT AUDIO	41
	2	4	CHANNEL FIVE TRANSMIT AUDIO	42
	3	18	CHANNEL FIVE TRANSMIT KEYING	43
	4	3	CHANNEL FIVE TRANSMIT KEYING	44
	5	19	CHANNEL FIVE RECEIVE AUDIO	47
	6	20	CHANNEL FIVE RECEIVE AUDIO	48
	7	5	CHANNEL FIVE INTERLOCK	46
	8	5	CHANNEL SIX TRANSMIT AUDIO	51
	9	21	CHANNEL SIX TRANSMIT AUDIO	52
	10	8	CHANNEL SIX TRANSMIT KEYING	53
	11	22	CHANNEL SIX TRANSMIT KEYING	55
	12	7	CHANNEL SIX RECEIVE AUDIO	57
	13	23	CHANNEL SIX RECEIVE AUDIO	58
	14	24	CHANNEL SIX INTERLOCK	56
	15	9	CHANNEL SEVEN TRANSMIT AUDIO	61
	16	25	CHANNEL SEVEN TRANSMIT AUDIO	62
	17	12	CHANNEL SEVEN TRANSMIT KEYING	63
	18	26	CHANNEL SEVEN TRANSMIT KEYING	64
	19	11	CHANNEL SEVEN RECEIVE AUDIO	67
	20	27	CHANNEL SEVEN RECEIVE AUDIO	68
	21	28	CHANNEL SEVEN INTERLOCK	66
	22	13	CHANNEL EIGHT TRANSMIT AUDIO	71
	23	29	CHANNEL EIGHT TRANSMIT AUDIO	72
	24	14	CHANNEL EIGHT TRANSMIT KEYING	73
	25	30	CHANNEL EIGHT TRANSMIT KEYING	75
	26	15	CHANNEL EIGHT RECEIVE AUDIO	77
	27	31	CHANNEL EIGHT RECEIVE AUDIO	78
	28	32	CHANNEL EIGHT INTERLOCK	76

(* NOTE 101)

WHEN USING
INDICATOR 1CONN
P. 14
P. 14

A

8

7

6

5

4

3

2

1

REVISION			
NO.	DATE	DESCRIPTION	APPROVED

TABLE 3

WHEN USING RECORDER ACTIVE SYLLABIC LAMP
INDICATOR BY CONNECTING THE FOLLOWING PINS

CONN	PIN NO	TO	PIN NO
P-04	H		B
P-04	J		C

NOTES:

101. W INDICATES SPLIT CABLE PAIRS.

102. CONNECT THE FOLLOWING TB-1 PINS TOGETHER:
4.14.24.34.44.54.64.74.100. CONNECT PIN 100 TO 48 VDC.
CONNECT THE FOLLOWING TB-1 PINS TOGETHER:
5.15.25.35.45.55.65.75.99. CONNECT PIN 99 TO 48 VDC RETURN.

D

C

B

A

STANDARD	SML	DESCRIPTION	PART NO / NSN	UI	QTY
PARTS LIST					
IDENT NO		U S ARMY COMMUNICATIONS-ELECTRONICS ENGINEERING INSTALLATION AGENCY			
STD-AF-0480					
SHEET 1 OF 1					
DESIGNED BY	DATE	ATC RADIO CONTROL AIR TRAFFIC RADIO CHANNEL CONTROL EQUIPMENT WIRING LIST			
DUNG	28 JAN 81				
CHANGED BY	DATE				
LEWIS	6 JAN 81				
APPROVED BY	DATE				
[Signature]	26 JAN 81				
ACTIVITY	CC-CEC-SWA	SIZE FROM NO	DRAWING NO		
		D 50470			
NEXT ASSEMBLY	USED ON	SCALE NONE	SHEET OF		
DWG INDEX NO.					

4

3

2

1

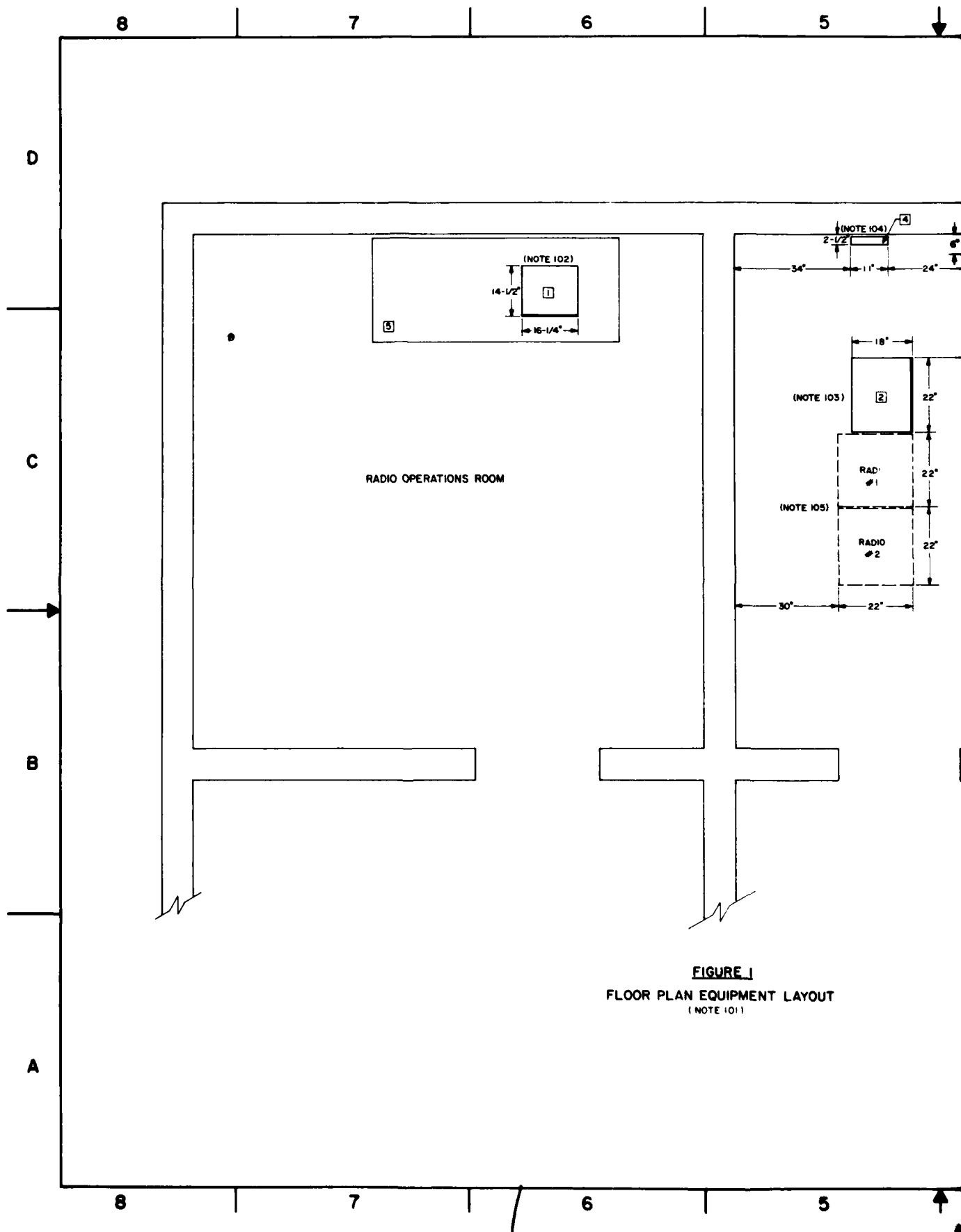
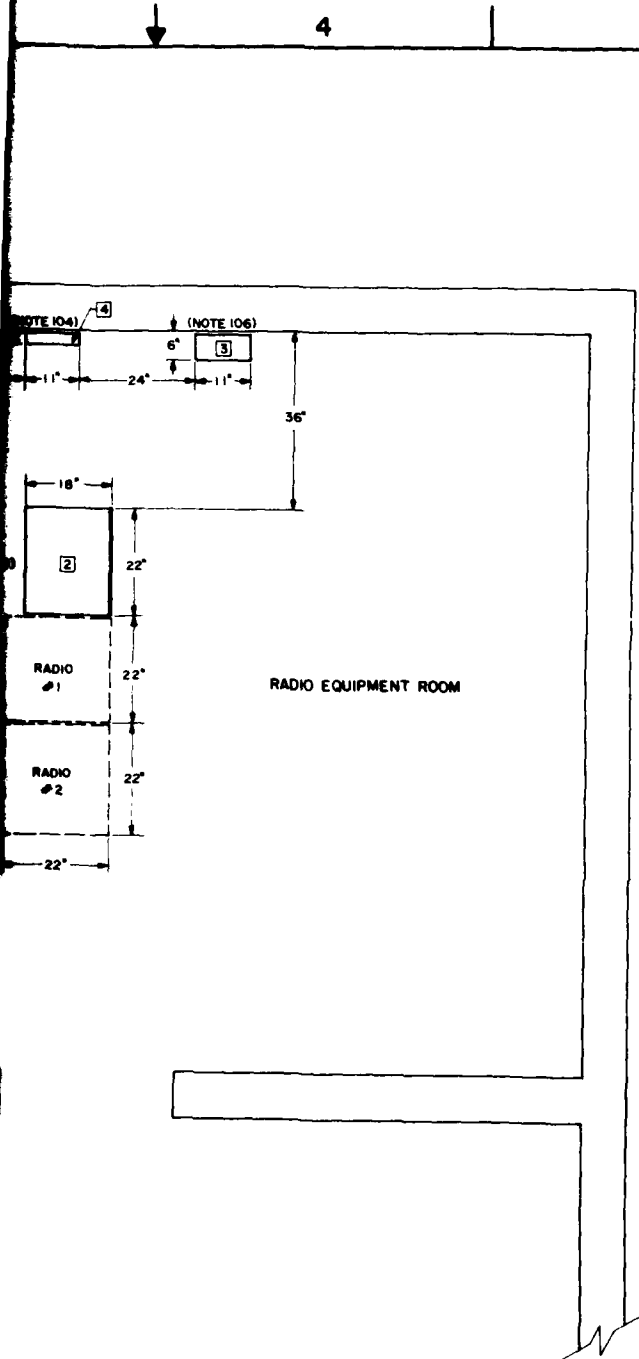


FIGURE 1
FLOOR PLAN EQUIPMENT LAYOUT
 (NOTE 101)



LEGEND

- 1 TTC-8/800 (A) CONSOLE
- 2 POWER SUPPLY CABINET
- 3 AC POWER PANEL
- 4 SIGNAL CABLE TERMINAL BOX
- 5 TABLE OR DESK

NOTES:

101. THE FLOOR PLAN LAYOUT IS FOR A TYPICAL SITE WITH RADIO TRANSMITTERS AND RECEIVERS LOCATED NEAR OPERATIONS ROOM. OTHER LAYOUTS MAY CONSIST OF THE FOLLOWING:
 - A. SEPARATE REMOTE TRANSMITTER AND RECEIVER SITES.
 - B. LOCAL TRANSMITTER OR RECEIVER SITE WITH REMOTE RECEIVER OR TRANSMITTER SITE.
 - C. REMOTE COLOCATED TRANSMITTER AND RECEIVER SITE
102. REFER TO STD-AF-0665, SHEET 1 FOR CONSOLE LAYOUT.
103. REFER TO STD-AF-0665, SHEET 2 FOR POWER SUPPLY CABINET INSTALLATION DETAILS.
104. REFER TO STD-AF-0476, FOR SIGNAL CABLE TERMINAL BOX AND WIREWAY INSTALLATION DETAILS.
105. REFER TO SEIP D10 FOR RADIO TRANSMITTERS AND RECEIVERS ENGINEERING CRITERIA.
106. ONE 15-AMPERE, 120 VAC, 50 OR 60 HZ, CIRCUIT BREAKER IS REQUIRED FOR POWER SUPPLY CABINET OUTLET STRIP. PROJECT COORDINATION LETTER SHOULD RESERVE THIS BREAKER IF EXISTING OR PROVIDE FOR NEW PANEL OR NEW BREAKER IN EXISTING PANEL.

NO.	SML	DESCRIPTION	PART NO / NSN	UI	QTY
PARTS LIST					
DENT NO		U S ARMY COMMUNICATIONS-ELECTRONICS			
STD-AF-0481		ENGINEERING INSTALLATION AGENCY			
SHEET 1 OF 1					
DESIGNED BY		DATE			
YOUNG		28 JAN 81			
CHECKED BY		DATE			
W. HERRINGTON		14 FEB 81			
APPROVED BY		DATE			
[Signature]		[Signature]			
NEXT ASSEMBLY		USED ON		DATE	
DWG INDEX NO.		CCC-CED-SWA		SCALE NONE	
SIZE		FORM NO		DRAWING NO	
D		50470		1	

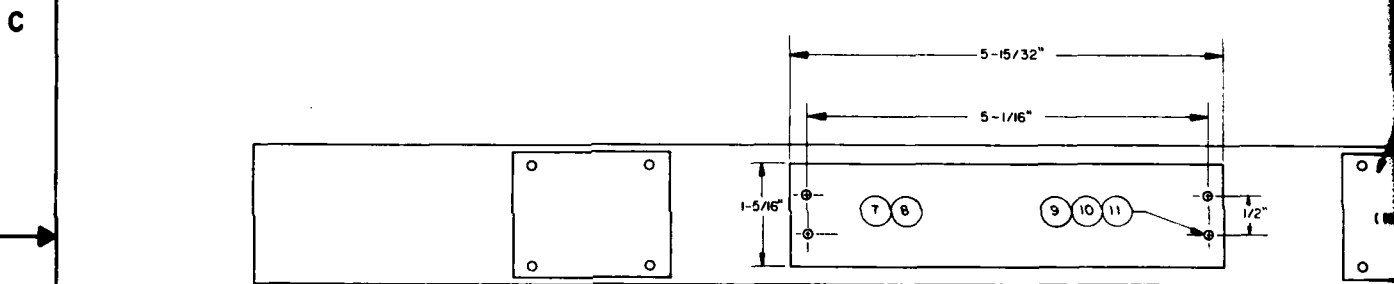
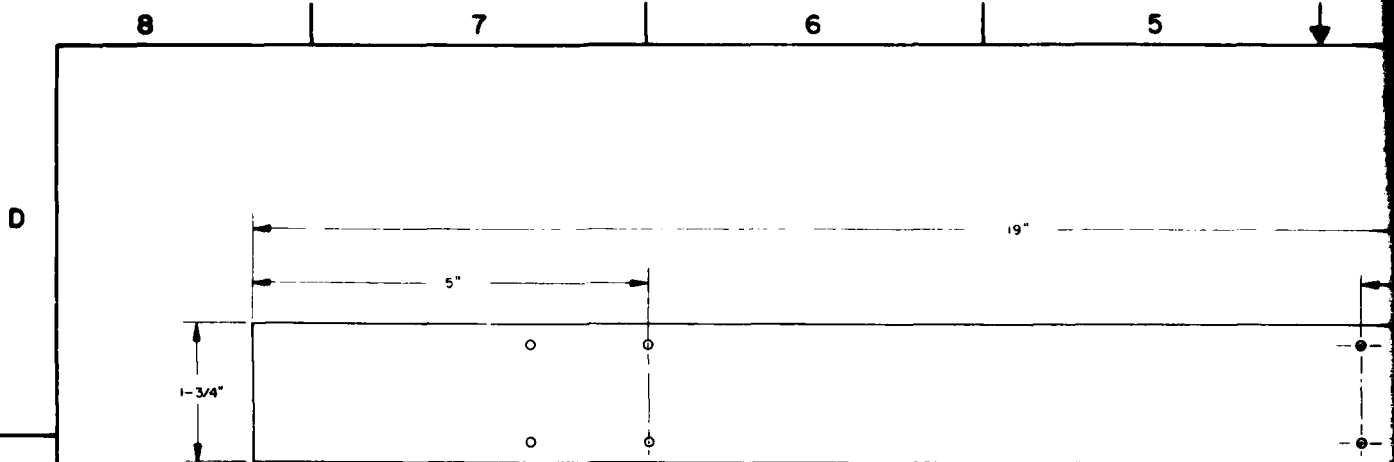
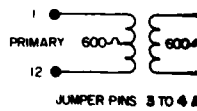
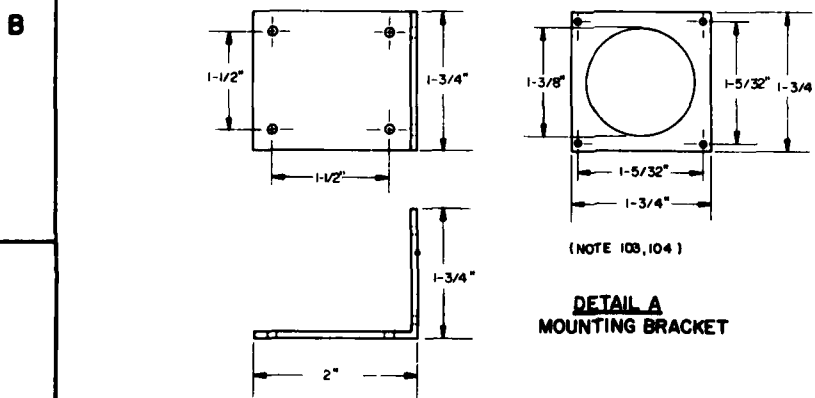
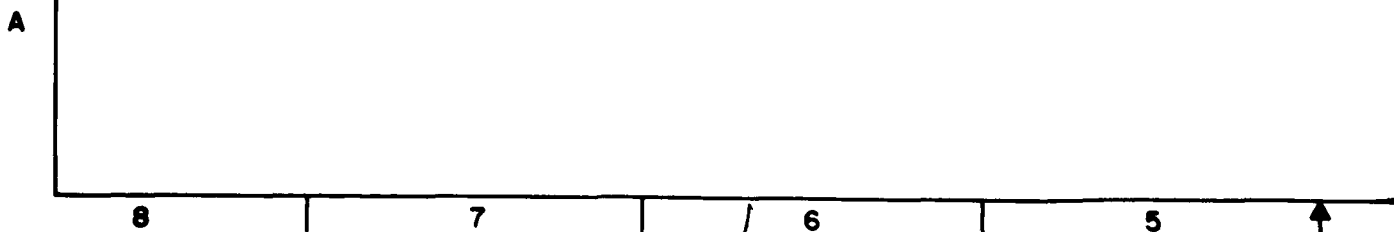
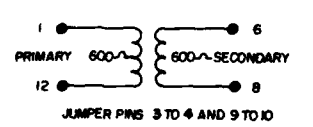
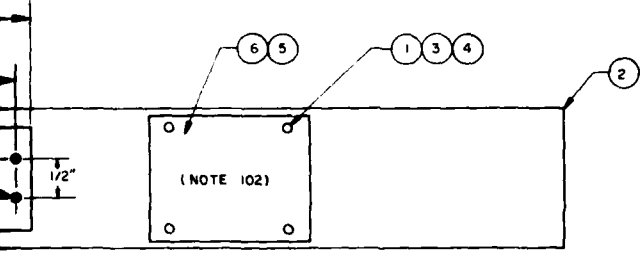
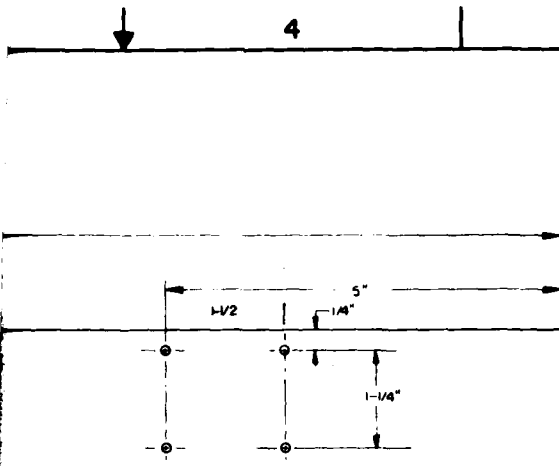


FIGURE 1
AUDIO ISOLATION PANEL
(NOTE 101)



DETAIL B
TRANSFORMER WIRING





DETAIL B
TRANSFORMER WIRING DETAILS

REVISION			
ZONE	REV	DESCRIPTION	DATE

NOTES:

- 101 INSTALL PANEL IN THE TRANSCEIVER RACK.
- 102 MOUNT TRANSFORMERS TO PANEL WITH ELECTRICAL CONNECTION OF TRANSFORMERS FACING TOWARDS CENTER OF PANEL
- 103 DRILL FOUR 0.120" DIAMETER HOLES USING NO 31 DRILL FOR MOUNTING TRANSFORMERS TO BRACKET AND BRACKET TO PANEL
- 104 FABRICATE LOCALLY FROM BLANK A PANEL

11	07675L	NUT, HEX, STEEL, CADMIUM PLATED 8-32	5310-00-260-2490	EA	
10	00487C	WASHER, FLAT, STEEL NO 8	5310-00-167-0833	EA	
9	08301M	SCREW, MACHINE, PAN HD STEEL 8-32 x 3/4"	5305-00-013-2788	EA	
8	28624B	TERMINALS, SPRING SPADE TONGUE (STUD SIZE 8) AMP SPECIAL INDUSTRIES P/N 52920	NSNR		
7	28626D	BLOCK, TERMINAL BARRIER, 8 TERMINAL TABS WITH DOUBLE TERMINAL POSTS (8-32 SCREWS) AMP SPECIAL INDUSTRIES P/N 501717-B	NSNR	EA	
6	NSML	BRACKET, MOUNTING, ALUMINUM STOCK, 1-1/2" x 3-3/4" x 1/8", FABRICATE LOCALLY SEE DETAIL "A"	NSNR	EA	
5	028670P	TRANSFORMER, MATCHING TYPE A-20, TRW	NSNR	EA	
4	09458K	WASHER, FLAT, STEEL, #4	5310-00-595-0425	HD	
3	11042K	SCREW, MACHINE, PAN HD, STEEL 4-40 x 1/2"	5305-00-064-0032	EA	
2	08712Z	PANEL, BLANK, 19" x 1 3/4" x 1/8" GREY	5975-00-606-2041	EA	
1	07678K	NUT, HEX, STEEL, CADMIUM PLATED, 4-40	5310-00-194-8193	EA	
FIND NO	SML	DESCRIPTION	PART NO / NSN	UI	QTY

PARTS LIST

IDENT NO STD-AF-0309		U S ARMY COMMUNICATIONS-ELECTRONICS ENGINEERING INSTALLATION AGENCY	
SHEET 1 OF 1		AUDIO ISOLATION PANEL	
DESIGNED BY YOUNG	DATE 26 JAN 61		
DRAWN BY L. GOODHUE	4 FEB 61		
CHECKED BY <i>[Signature]</i>	26 JAN 61	SHEET NO D 50470	DRAWING NO
NEXT ASSEMBLY	USED ON	DESIGN ACTIVITY CCC-CEC SWA	SCALE NONE
DWG INDEX NO.		1" UNLESS OTHERWISE SPECIFIED TYPICAL	

TELECOMMUNICATIONS DEVELOPMENT PROJECT -- BILL OF MATERIALS
For use of this form, see AR 105-22, the proponent agency is the United States Army Communications Command

LOCATION SEIP 036		UNIT IDENT CODE				
TELER NUMBER		DATE	PAGE NO	NO OF PAGES		
AIR TRAFFIC RADIO CHANNEL CONTROL EQUIPMENT			1	7		
ITEM NO	STOCK NUMBER	NOMENCLATURE	UNIT	TOTAL REQ FOR PROJECT	AVAILABLE IN COMMAND	REQUIRED
1	NSNR (25126B)	AUDIO UNIT, 5" H X 8" W X 12-1/4" D, ALUMINUM FRONT PANEL CONTAINING SPEAKER AMPLIFIER ASSEMBLY AND 3" LOUDSPEAKER, GRM CORP. AU-2400	EA			
2	NSNR (25127C)	BLANK PANEL, ATCT SELECTOR UNIT, GRM CORP. ABP-2400	EA			
3	NSNR (25128D)	CABINET, EQUIPMENT, 22" WIDE, 18" DEEP, 47-1/2" HIGH, 42" X 19" PANEL MOUNTING SPACE, MODIFICATION REAR DOOR (MOD LS), GRAY HAMMERTONE, PAR METAL #EK-314	EA			
4	NSNR (30054B)	CABINET, EQUIPMENT, 21-1/2" WIDE, 18" DEEP, 19-1/4" HIGH, 17-1/2" X 19" PANEL MOUNTING SPACE, GRAY HAMMERTIME, PAR METAL #DL-1717	EA			
5	NSNR (25130N)	CONSOLE, RADIO CONTROL OPERATOR'S POSITION, 1 TO 8 RADIO CHANNELS, 16-1/2" W X 14-1/2" D, 7-1/2" H AT FRONT AND 5" AND 5" H AT REAR, TABLE TOP MOUNTING WITH FOUR 5/8" H RUBBER FEET, GRM CORP. TTC-8/800(A)	EA			
6	NSNR (30325W)	JACK PANEL, EQUIPPED WITH FOUR JACKS FOR MICROPHONES, HEADPHONES, AND HEADSET, GRM CORP. JU-2404	EA			
7	NSNR (25132L)	MICROPHONE AMPLIFIER MODULE, GRM CORP. MAM-2400	EA			
8	NSNR (25135G)	POWER SUPPLY, 24-V DC 7.5 AMPERES OUTPUT, 120/240 V AC INPUT, 5.08" H X 8.36" W X 12.25" D, HEWLETT PACKARD MODEL HP62024G	EA			
9	NSNR (25244J)	POWER SUPPLY, 48-V DC 4 AMPERES OUTPUT, 120/240 V AC INPUT, 5.08" H X 8.36" W X 12.25" D, HEWLETT PACKARD MODEL HP62048G	EA			
10	NSNR (25237B)	SELECTOR MODULE, ATCT, GRM CORP. ASM 2401	EA			

Figure 5-1. Bill of Materials (sheet 1 of 7).

EDITION OF 1 AUG 72 IS OBSOLETE

DA FORM 3071-R
1 APR 78

TELECOMMUNICATIONS DEVELOPMENT PROJECT -- BILL OF MATERIALS

For use of this form, see AR 105-22; the proponent agency is the United States Army Communications Command.

LOCATION SFIP 036		UNIT IDENT CODE		PAGE NO		NO OF PAGES	
TELER NUMBER ATR TRAFFIC RADIO CHANNEL CONTROL EQUIPMENT		DATE		2		7	
ITEM NO	STOCK NUMBER	NOMENCLATURE	UNIT	TOTAL REQ FOR PROJECT	AVAILABLE IN COMMAND	REQUIRED	
11	NSNR (25138C)	SELECTOR UNIT, ATCT, 5" H X 8" W X 12-1/4" D, GRM CORP. ASU 2400	EA				
12	NSNR (25136A)	TRAY, POWER SUPPLY, RACK MOUNTING, 19" W X 5-1/4" H, HEWLETT PACKARD 62410A	EA				
13	NSNR (25130D)	VOLUME CONTROL MODULE, GRM CORP. VCM-2400	EA				
14	5975-01-008-7210 (22326G)	BLANK END FITTING, 1-7/8" LONG F/U/W G-3000 WIREWAY, WIREMOLD G-3010R	EA				
15	5040-00-033-7901 (25141N)	LOCK, TERMINAL, 6 PAIR, UNPROTECTED, 7.00" H X 1.25" W X 1.38" D, RELIABLE 5561	EA				
16	5040-00-033-7902 (11270D)	LOCK, TERMINAL, 11 PAIR, UNPROTECTED, 12.41" H X 1.25" W X 1.75" D, RELIABLE 5555	EA				
17	5040-00-033-7904 (25140Y)	LOCK, TERMINAL, 26 PAIR, UNPROTECTED, 15.53" H X 2.5" W X 1.75" D, RELIABLE 5585	EA				
18	NSNR (25142M)	LOCK, TERMINAL, 6 PAIR, PROTECTED W/1304 PROTECTORS, 7" H X 3.04" W X 1.72" D, RELIABLE W1-6P	EA				
19	NSNR (25143L)	LOCK, TERMINAL, 12 PAIR, PROTECTED W/1004 PROTECTORS, 14" H X 3.04" W X 1.72" D, RELIABLE W1-12P	EA				
20	NSNR (21454D)	LOCK, TERMINAL, 25 PAIR, PROTECTED W/1304 PROTECTORS, 16.75" H X 5" W X 1.75" D, RELIABLE W1-25P	EA				
21	5306-00-934-3930 (10544L)	BOLT, MACH, HEX HD 1/4" - 20 X 7/8" LG	EA				
22	5975-00-033-7678 (06372N)	BOX, TERMINAL, 23" HIGH, 11" WIDE, 2-1/2" DEEP, 18 GAGE STEEL, HINGED COVER, RELIABLE 5603	EA				

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LOCATION		UNIT IDENT CODE							
SFIP 036									
TELETYPE NUMBER									
AIR TRAFFIC RADIO CHANNEL CONTROL EQUIPMENT									
ITEM NO	STOCK NUMBER	NOMENCLATURE	UNIT	TOTAL REQ FOR PROJECT	AVAILABLE IN COMMAND	PAGE NO	NO OF PAGES		
22	5075-00-141-0143 (16392R)	BOX CONNECTOR, F/U/W 0.307 DIA. BX CABLE, T&B 3301	EA			3	7		
24	5075-00-178-1217 (023767)	CONDUIT, STEEL RIGID, (W/EMT) 3/4"	EA						
25	5145-0-948-6412 (14548F)	CABLE, ELEC, 15-PAIR, #22 AWG, STRANDED INDIVIDUAL SHIELDED PAIRS, REIDEN 8776	FT						
26	5145-00-806-0389 (17106A)	CABLE, POWER, BX 3-CONDUCTOR, #12 AWG, 0.307 DIAMETER	FT						
27	5340-00-508-2570 (07945C)	STRAP, RETAIN, 3/4", 1" HOLE	EA						
28	5075-00-153-6308 (023657)	JUNCTION BOX	EA						
29	5075-00-802-6531 (09051L)	BOX, CONNECTOR, ELEC, 0.7813ID, 1H"	EA						
30	5075-00-284-7978 (11172M)	BOX, CONNECTOR, ELEC, 3/8"	EA						
31	5340-00-150-67803 (06244M)	STRAP, RETAIN, 3/8", 1H"	EA						
32	5310-00-104-8195 (07676K)	NUT, HEX, STEEL, CADMIUM PLATED, 4-40	EA						
33	5310-00-550-2490 (07675L)	NUT, HEX, STEEL, CADMIUM PLATED, 8-32	EA						
Figure 5-1. Bill of Materials (sheet 3 of 7).									

EDITION OF 1 AUG 72 IS OBSOLETE.

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DA FORM 3071-R
1 APR 78

TELECOMMUNICATIONS DEVELOPMENT PROJECT — BILL OF MATERIALS

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LOCATION SF1D 036		UNIT IDENT CODE		
TELE NUMBER AIR TRAFFIC RADIO CHANNEL CONTROL EQUIPMENT		DATE	PAGE NO 4	NO OF PAGES 7
ITEM NO	STOCK NUMBER	NOMENCLATURE	UNIT	TOTAL REQ FOR PROJECT
34	5310-00-285-1650 (00558H)	NUT, HEX, STEEL, CADMIUM PLATED, 1/4 X 20	HD	
35	5035-00-400-0842 (077887)	OUTLET STRIP, AC, 6 OUTLETS ON 6" CENTERS, 3-WIRE, 1 CIRCUIT W/INSULATED GROUNDING CONDUCTOR, 3" LONG, WIREMOLD 20G8306	EA	
36	5075-00-686-2-41 (087127)	PANEL, BLANK, 10" X 3-1/2" X 1/8", GREY	EA	
37	5075-00-685-0546 (02460F)	PANEL, BLANK 19" X 5-1/4" X 1/8", GREY	EA	
38	5075-00-685-0701 (02406H)	PANEL, PLANK, 10" X 7" X 1/8", GREY	EA	
39	NSNR (142787)	PANEL, CONNECTOR, RACEWAY, 2-3/4" W X 1-7/16" D, WIREMOLD G-3086A	EA	
40	5075-00-673-7658 (13780F)	ENTRANCE END FITTING, WIREMOLD 2010A	EA	
41	5045-00-066-7131 (11743F)	RELAY, COAX, 500 W, 24V DC CHANGEOVER, TYPE N, AMPHENOL P/N 316-10744-3	EA	
42	5305-00-022-7708 (00230J)	SCREW, CAP, 3/8" - 16 X 1-1/2", HEX HD STEEL	EA	
43	5305-00-064-5032 (11042K)	SCREW, MACHINE, PAN HD, STEEL, 4-40 X 1/2"	EA	
44	5305-00-013-2768 (08301M)	SCREW, MACHINE, ROUND HEAD, STEEL, 8-32 X 3/4"	HD	

Figure 5-1. Bill of Materials (sheet 4 of 7).

Figure 5-1. Bill of Materials (Sheet 4 of 7).

EDITION OF 1 AUG 72 IS OBSOLETE

DA FORM 3071-R

TELECOMMUNICATIONS DEVELOPMENT PROJECT — BILL OF MATERIALS
For use of this form, see AR 105-22, the proponent agency is the United States Army Communications Command

LOCATION		UNIT IDENT CODE			
SETD 036		DATE		PAGE NO	NO OF PAGES
TELETYPE NUMBER				5	7
AIR TRAFFIC RADIO CHANNEL CONTROL EQUIPMENT					
ITEM NO	STOCK NUMBER	NOMENCLATURE	UNIT	TOTAL REQ FOR PROJECT	AVAILABLE IN COMMAND
45	NSNR (10746A)	SCREW, MACHINE, 10-32 X 3/4", PAR METAL GSC-10-3	EA		
46	5305-00-001-2134 (001308)	SCREW, WOOD, 8 X 1", ROUND HEAD, CROSS RECESS DRIVE	GR		
47	5340-00-061-7302 (06315A)	SHIFLD, EXPANSTON, 1/4" X 1-1/2", WITH PAN HEAD, SLOT DRIVE SCREW	HD		
48	5340-00-754-4560 (00740C)	SHIFLD, EXPANSTON, 3/8" - 16, MACHINE BOLT	BX		
49	5074-00-062-1916 (25133K)	TEE, RACEWAY, 2-3/4" W X 1-7/16" D, COMPLETE WITH COUPLINGS WIREMOLD G-3015	EA		
50	5040-00-366-2586 (210557)	TERMINAL LUG, #10-12 AWG, 1/4"	EA		
51	5310-00-505-6425 (00458K)	WASHER, FLAT, STEEL, #4	HD		
52	5310-00-167-0833 (00007C)	WASHER, FLAT, STEEL, #8	HD		
53	5310-00-100-3642 (005167)	WASHER, FLAT, RD, STEEL, 0.266" ID X 0.50" OD	EA		
54	5310-00-007-7403 (006658A)	WASHER, FLAT, STEEL, 3/8"	HD		
55	5310-00-045-3200 (000101)	WASHER, LOCK, SPLIT, STEEL, #8	HD		
Figure 5-1. Bill of Materials (sheet 5 of 7).					

DA FORM 3071-R
1 APR 74

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TELECOMMUNICATIONS DEVELOPMENT PROJECT - BILL OF MATERIALS
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LOCATION		UNIT IDENT CODE			
SFIP 036		DATE		PAGE NO	NO OF PAGES
TELECOM NUMBER				6	7
AIR TRAFFIC RADIO CHANNEL CONTROL EQUIPMENT		NOMENCLATURE		TOTAL REQ FOR PROJECT	AVAILABLE IN COMMAND
ITEM NO	STOCK NUMBER			UNIT	REQUIRED
56	5310-00-500-2528 (25252M)	WASHER, LOCK INT & EXT TEETH 1/4"		EA	
57	5310-00-637-0541 (005860)	WASHER, LOCK, SPLIT, STEEL, 3/8"		HD	
58	6145-00-194-5349 (03500A)	WIRE, FLEC, #14 AWG, WHT, SOLID, INS, 600V		FT	
59	6145-00-191-2577 (03540K)	WIRE, ELEC, #14 AWG, BLK, SOLID, INS, 600V		FT	
60	6145-00-194-5344 (03500A)	WIRE, ELEC, #12 AWG, YELLOW, SOLID, TW		FT	
61	5040-00-094-5060 (25134J)	WIRE CONNECTOR, PRESSURE TYPE, #12-14 AWG, WIREMOLD W30		EA	
62	5020-00-053-7960 (20604D)	RECORDER, MONITOR MODULE, GYM CORP, GA 9334-4		EA	
63	6145-00-048-6412 (14548F)	CABLE, FLEC, #22 AWG, STR, I.S. REIDEN		FI	
64	5310-00-104-9105 (07676K)	NUT, HEX, STEEL, CADMIUM PLATED, 4-40		EA	
65	5075-00-696-2541 (007127)	PANEL, BLANK, 10" X 1-3/4", X 1/8", GREY		EA	
66	5305-00-064-6032 (11042K)	SCREW, MACHINE, PAN HD, STEEL, 4-40 X 1/2"		EA	

Figure 5-1. Bill of Materials (sheet 6 of 7).

DA 3071-R

EDITION OF 1 AUG 67 IS OBSOLETE

TELECOMMUNICATIONS DEVELOPMENT PROJECT — BILL OF MATERIALS
For use of this form, see AR 105-22. The proponent agency is the United States Army Communications Command.

LOCATION FTD 036		UNIT IDENT CODE				
TELETYPE NUMBER AIR TRAFFIC RADIO CHANNEL CONTROL EQUIPMENT		DATE	PAGE NO 7	NO OF PARTS 7		
ITEM NO	STOCK NUMBER	NOMENCLATURE	UNIT	TOTAL REQ FOR PROJECT	AVAILABLE IN COMMAND	REQUIREC
67	5310-00-595-6425 (00458K)	WASHER, FLAT, STEEL, #4"	EA			
68	5305-00-964-6032 (08301M)	SCREW, MACHINE, PAN HD, STEEL, 8-32 X 3/4"	EA			
69	5310-00-045-3299 (004586C)	WASHER, FLAT, STEEL, #8"	EA			
70	5310-00-550-2400 (07675L)	NUT, HEX, STEEL, GALVANIZED PLATED, 8-32"	EA			
71	NSN (226260)	BLOCK, TERMINAL BARRIER, 8 TERMINAL TABS WITH DOUBLE POSTS (8-32 SCREWS), AMP SPECIAL IND, PIN 601717-8	EA			
72	NSN (28624R)	TERMINALS, SPRING SPADE TONGUE, (STUD SIZE 8), AMP SPECIAL IND, PIN 52030	EA			
73	NSN (28670P)	TRANSFORMER, MACH, AUDIO TYPE A-20, TRW	EA			

Figure 5-1. Bill of Materials (sheet 7 of 7).