

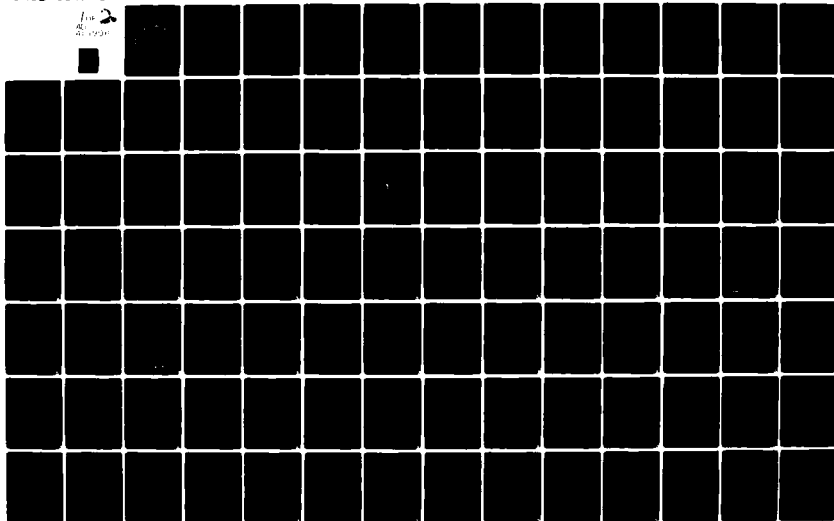
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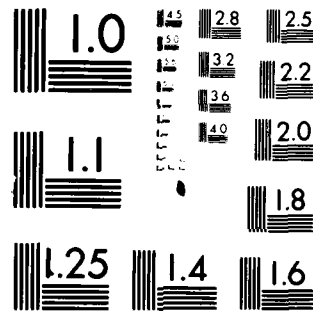
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STANDARD ENGINEERING INSTALLATION PACKAGE, STANDARD REMOTE TERM--ETC(U)
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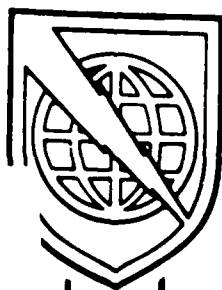




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STANDARD ENGINEERING INSTALLATION PACKAGE

STANDARD REMOTE TERMINALS (SRT)

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HEADQUARTERS
US ARMY COMMUNICATIONS-ELECTRONICS
ENGINEERING INSTALLATION AGENCY
FORT HUACHUCA, ARIZONA 85613

30 October 1981

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1. REPORT NUMBER SEIP 041	2. GOVT ACCESSION NO. AD A111906	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Standard Engineering Installation Package STANDARD REMOTE TERMINALS (SRT)		5. TYPE OF REPORT & PERIOD COVERED Final, Indefinite
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s)		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS US Army Communications-Electronics Engineering Installation Agency ATTN: CCC-CED-STD Fort Huachuca, Arizona 85613		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS US Army Communications-Electronics Engineering Installation Agency ATTN: CCC-CED-STD Fort Huachuca, Arizona 85613		12. REPORT DATE
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) US Army Communications-Electronics Engineering Installation Agency ATTN: CCC-CED-STD Fort Huachuca, Arizona 85613		13. NUMBER OF PAGES
		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release. Distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Standard Remote Terminals (SRT), Line Control Unit (LCU) with peripheral equipment, COMSEC equipment, site survey and quality assurance.		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This Standard Engineering Installation Package (SEIP) provides guidance involved in selecting, acquiring, and installing SRT's. It gives a system description along with the technical aspects of the equipment and installation areas. It contains a list of applicable documents, describes a comprehensive checklist for site surveys, tells how to install equipment, and gives a bill of materials to accomplish it all. The SEIP describes quality assurance inspection and gives sample forms to ascertain areas of responsibility check- lists, and certification. One section gives a detailed test plan and checkout.		

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-procedure while the system is in operation and suggests the form for a technical acceptance certificate. The SEIP also contains sample coordination documents of all agencies involved in the upgrade process and a completion certification that the project has met all of the test criteria.

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Department of the Army
Headquarters, US Army Communications-Electronics
Engineering Installation Agency
Fort Huachuca, Arizona 85613

STANDARD ENGINEERING INSTALLATION PACKAGE
FOR
STANDARD REMOTE TERMINALS (SRT)

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SECTION 1. GENERAL

1.1 background. The US Army Communications-Electronics Engineering Installation Agency (USACEEIA) is responsible for engineering and installation of communications-electronics (C-E) equipment for the standard remote terminal (SRT). The SRT has been developed to replace existing communications terminals that are becoming obsolete due to lack of modern functional capabilities, the age of components with the resulting difficulty to repair, and to satisfy new requirements. It includes a family of standardized, automated data communications equipment which will interface with the US Army's automated multimedia exchange (AMME) and other data switching centers of the Defense Communications System (DCS). This standard engineering installation package (SEIP) will provide engineering and installation data, site survey criteria, quality assurance provisions, and test plan guidance in preparing an engineering installation package (EIP) which will be tailored to meet specific site requirements.

1.2 General System Description.

1.2.1 SRT. The SRT is a digital communications terminal with COMSEC equipment which provides various data/message capabilities through the use of modular hardware components. The SRT includes a line control unit (LCU) which operates with the following peripherals: paper tape equipment (PTE), an optical scan unit (OSU), a low speed page printer (LSPP), a medium speed line printer (MSLP), a high speed line printer (HSLP), a storage module disk drive (SMDD), magnetic tape units (MTU), a card reader (CR), and a card punch (CP), and COMSEC equipment. The SRT will perform all of the usual functions required to receive, process, store, transmit and retrieve both narrative and data traffic in both secure and nonsecure communications centers.

1.2.2 Line Control Unit. Each SRT installation will require an LCU which provides all necessary components for system operation, but does not include the peripheral devices and their interfaces. Included in the LCU are a processor and read-only memory which comprise the macroprocessor. Other components of the LCU are the diskette drive, operator panel, visual display unit, and control panel. An electronic bay in the LCU contains the communications interface, logic rack, macroprocessor, random access memory, other electronics and interfaces, power supplies, and cabling.

1.2.3 Paper Tape Equipment. The paper tape punch (PTP) is mounted in a single cabinet which also contains the paper tape reader (PTR). Both units have adjustable tape guides permitting use of 11/16-inch, 7/8-inch, or 1-inch-wide paper tape. Eight level American Standard Code for Information Interchange (ASCII) and five level International Telegraph Alphabet-Number Two (ITA-2) codes can be used. Punch speed is 120 characters per second and read speed is 150 characters per second.

1.2.4 Optical Scan Unit. The OSU automatically feeds red printed DD Form 173 messages and reads at a rate of 150 characters per second. The OSU has its own processor which provides control logic, character recognition, and the OSU processor interface.

1.2.5 Low Speed Page Printer. The LSPP is capable of printing one to six copies using paper up to 9.5 inches wide. The LSPP can print 100 characters per second, 80 characters per line with double- or single-space printing.

1.2.6 Medium Speed Line Printer. The MSLP prints at 165 lines per minute, up to 132 characters per line, and uses paper up to 14-7/8 inches wide. Up to six-part printer paper may be used and double- or single-space printing may be selected.

1.2.7 High Speed Line Printer. The HSLP increases printing speed to 600 lines per minute and can use paper up to 19 inches wide. Other printing characteristics are essentially the same as the MSLP.

1.2.8 Storage Module Disk Drive. The SMDD stores messages for subsequent retrieval. It has a capacity in excess of 40 million characters.

1.2.9 Magnetic Tape Unit. The MTU uses 1/2-inch-wide tape and 10-1/2-inch reels. It is available in 7- or 9-track configurations and will record up to 1,600 characters per inch. Read and write operations are performed at 37.5 inches per second. Rewind is at 150 inches per second.

1.2.10 Card Reader and Card Punch. Both the CR and CP use the standard 80-column cards (binary or Hollerith code). The CR reads 300 cards per minute, and its hopper and stacker accommodate 1,000 cards each. The CP punches 100 cards per minute. Its two hopper each have a capacity of 1,000 cards and the two stackers will hold 850 cards each.

1.2.11 Key Generators, TSEC/KG-13 and TSEC/KG-34. Both key generators provide bulk encryption and decryption for the system. Both generators use Modems MD-674(P)/G, or MD-701B/UY, or the LSI 4800. However, only the TSEC/KG-13 will use a CAU, the AN/UYK-22 or the SN-394(V)/G.

1.2.12 Crypto Auxiliary Set, AN/UYK-22(V). The AN/UYK-22(V) provides red/black interface between data terminal and data modems, and the interface with and synchronization capability for key generator, TSEC/KG-13.

1.2.13 Modem, Low Speed Wire Line, MD-674(P)/G. The MD-674(P)/G transmits serial digital information over four-wire voice frequency channels. The modem operates at synchronous modulation rates of 150, 300, 600 and 1200 baud and at asynchronous modulation rates up to and

including 150 baud. The MD-674(P)/G is not functional without the Clock Module Group, OA8072/G which provides the necessary timing for the control of phasing and timing for associated terminal equipment.

1.2.14 Electrical Synchronizer, SN-394(V)/G. This crypto ancillary unit (CAU) establishes and maintains synchronization with distant terminal during secure mode of operation for TSEC/KG-13. It also provides an interface for signal and timing lines between the terminal equipment, crypto equipment, and modems.

1.2.15 Digital Data Modem, MD701B/UY. The MD-701B/UY transmits and receives serialized digital data at speeds of 600, 1200, or 2400 bits per second (bps) over a standard 3 kHz voice channel.

1.2.16 Modem, LSI 4800. LSI 4800 Data Modem processes serial digital data for transmission over a 4-wire telephone circuit. It operates synchronously at 2400 and 4800 bps.

1.3 List of Applicable Documents.

a. Government documents.

Manuals

Standards

MIL-STD-188-124

Grounding, Bonding and Shielding
for Common Long Haul/Tactical
Communications Systems

Regulations

(C) AR 530-4

Control of Compromising Emanations
(U)

CCR 702-1-2

USACC Quality Assurance Program for
Engineering, Installation and
Acceptance of Communications
Electronics Equipment and Systems

CCCR 34-2

Preparation of Engineering
Installation Packages and Standard
Engineering Installation Packages

CCCR 702-1

USACEEIA Quality Assurance and
Testing Programs

CCCR 702-2	Preparation of Documentation for Test and Evaluation of Communications-Electronics Material
CCCR 702-3	Role of the Test Director
CCCR 702-4	Quality Assurance During Onsite Installation
CCCR 702-6	Quality Assurance Reports
CCCR 702-7	Quality Assurance Corrective Action

Handbooks

(C) MIL-HDBK-232	RED/BLACK Engineering and Installation Guidelines (U)
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Directives

(C) DCAC 370-160-3	Site Survey Data Book for Communications Facilities (U)
CCC-TED-79-TP-065, October 1979	USACEEIA, Test and Evaluation Directorate, Modular AUTODIN Terminal Equipment (MATE) Onsite Test Plan
Air Force Technical Order T.O. 31-10	Standard Installation Practices

Pamphlets

CCCP 105 Series	Communications-Electronics Standard Installation Practices
USACEI-Bn Pamphlet 105-3	USACEI Bn, Communications-Electronics Installation Planning and Implementation Guide

b. Non-Government documents.

Directives

Astronautics Corp of America (ACA)	Category III Operational and Acceptance Test Plan, 30 April 1980.
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30 October 1981

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Astronautics Corp of
America (ACA)

System Acceptance Test Plan for
SRT-SA-GENSER OCRE

NFPA Number 70

National Electrical Code

1.4 Comments on Publication.

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. For convenience, a mailing card is bound with this SEIP. Comments should be sent directly to the Commander, HQ USACEEIA, ATTN: CCC-CED-STD, Fort Huachuca, Arizona 85613.

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

SECTION 2. SITE SURVEY DATA AND CHECKLIST

2.1 General. This section provides the information needed for preliminary engineering, equipment layout, and site survey associated with installation of the SRT.

2.2 Site Survey Criteria. The site survey should be conducted in accordance with the guidelines and criteria set forth in Defense Communications Agency Circulars 370-160-3, and Site Survey Data Book for Communications Facilities. In addition, the physical and electrical security requirements, as outlined in (C) AR 530-4 and (C) MIL-HDBK-232, must be satisfied when selecting a site location and specifying power and construction design criteria.

2.2.1 Site Survey Checklist. The site survey data checklist (fig. 2-1) should be used as a guide by the survey team for identifying and assembling the required technical data during the site survey.

2.2.2 Additional Site Survey Items. The following items, as applicable, may be included in the SRT site survey checklist:

a. Floor plan of building containing controlled area (if any) indicating occupants and equipment adjacent to controlled area (reproducible from district engineer or using unit).

b. Layout indicating buildings and equipment within 200 feet of controlled area (if any) and indicating occupants and electrical equipment in buildings (reproducible from district engineer).

c. A line drawing of existing electrical distribution and power supply system. If possible, show required changes or additions to meet the new requirements.

d. Copy of DA Form 2701, Job Order Request, or Military Construction Army (MCA) project previously submitted, if any.

e. Installation Site floor plan sketch to scale.

f. Current local telephone directory.

g. Applicable security agency comments and satisfactory RED/BLACK inspection reports with any changes required.

h. Comments on any anticipated difficulties in the flow of materials, work, or personnel in the operation area.

i. Memorandum of Understanding between using unit, Project Engineer, District Space Coordinator.

2.2.3 Use of the Site Survey Checklist. The checklist, when completed, will be used to assist in the preparation of an official site survey report with equipment layout drawings. The site survey report will be an inclosure to the project coordination letter which must be forwarded through responsible agencies for concurrence/nonconcurrence and/or comments.

2.3 Equipment Characteristics. The physical and electrical characteristics of equipment are given in Table 2-1. This table may be used in arriving at site requirements for overall space, ac power, floor loading, and air-conditioning.

2.4 Equipment Floor Plan Layouts. Example SRT floor plan layouts are shown on the drawings in section 4. The project engineer responsible for the MODEM installation will determine the type of mounting (rack, table, or wall) to be used. Sites with continuous security will use either rack or table mounting for COMSEC equipment as deemed necessary by the project engineer. Terminals processing classified traffic in unsecure rooms must use an approved class 5 secure equipment cabinet for the COMSEC equipment.

2.5 Standard Remote Terminal Circuits. During the site survey the circuit and circuit speed will be checked against the Telecommunications Requirements (TELER) submitted. The site survey team will then ensure that appropriate telecommunications service requests will be prepared by the Operations and Maintenance (O&M) command.

2.6 Standard Remote Terminal Signal Cables. The SRT signal cables are contractor supplied prefabricated assemblies. Each assembly consists of a number of shielded pairs (or twinax) that are bundled together within an overall shield, and terminated to connectors at each end. It will be the responsibility of the project engineer to provide the cable contractor with the exact length of each cable required. These lengths are of extreme importance since cables that are too short will require resupply with the attendant delays and probable increase in cost, while cables that are too long may detract from the professional appearance of the finished installation.

2.7 Main Power Service. The responsibility for providing adequate power service for the SRT rests with the facility engineer (or construction design agency). Under extreme circumstances, they may not be able to provide power service that meets all required parameters. In that event, it may be necessary to use inverters or frequency converters. These can be used to change the available power source voltage or frequency to a regulated voltage at a specified frequency. They are also used wherever the power source is not capable of providing the frequency stability, voltage regulation, or noise isolation required by a specific application. It is the responsibility of the project engineer to coordinate with the facility engineer during the site survey to determine if special power correcting equipment will be required.

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2.8 Raised Flooring. All SRT's will be installed on raised flooring or with partial raised flooring behind the SRT equipment. The raised flooring requirement shall be specified in the Site Preparation Plan. Installation of the raised flooring will be the responsibility of the O&M commands. Maximum height of partial raised floors will not exceed 7-1/2 inches.

2.9 Cable and Wire Running Lists. Cable and wire running lists shall be prepared by the Project Engineer for inclusion in individual engineering installation packages (EIP).

SITE SURVEY CHECKLIST
FOR

DATE: _____

PROJECT NUMBER: _____

SITE LOCATION: _____

CITY: _____ COUNTRY: _____

INSTALLATION: _____

BUILDING: _____ ROOM: _____

PROJECT ENGINEER: _____

CLASSIFICATION: _____

Figure 2-1. Sample Site Survey Checklist (sheet 1 of 11).

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PROJECT OR TASK NO: _____

1. PURPOSE OF SITE SURVEY: _____

2. PERSONNEL CONTACTED OR PRESENT DURING SURVEY:

<u>Name, Grade, and Title</u>	<u>Organization</u>	<u>Phone No.</u>
a. _____	_____	_____
b. _____	_____	_____
c. _____	_____	_____
d. _____	_____	_____
e. _____	_____	_____
f. _____	_____	_____
g. _____	_____	_____
h. _____	_____	_____

3. EQUIPMENT TO BE INSTALLED:

- a. Contractor furnished and installed.
- b. GFE, Government installed.
- c. GFE, contractor installed.
- d. Equipment description chart.

Figure 2-1. Sample Site Survey Checklist (sheet 2 of 11).

PROJECT OR TASK NO: _____

<u>Nomen-</u>			<u>Ambient</u>		<u>Access</u>
<u>clature</u>	<u>Weight</u>	<u>Dimensions</u>	<u>operating</u>	<u>Heat</u>	<u>clearance</u>
			<u>ranges</u>	<u>dissipation</u>	<u>requirements</u>

4. DOCUMENTATION:

a. Documentation of the status of the physical plant should be completed by requisition and review of the appropriate as-built drawings. The list of as-built drawings obtained is as follows:

<u>Drawing number</u>	<u>Title</u>	<u>Revision date</u>	<u>Source</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

b. Drawings not available during the site survey should be requested by the local military authorities through the most expeditious channels. Once obtained, the drawings should be immediately forwarded to responsible area electronics engineering installation agency.

Figure 2-1. Sample Site Survey Checklist (sheet 3 of 11).

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PROJECT OR TASK NO: _____

c. If as-built drawings of the physical plant are not available, lack sufficient details, or are otherwise inadequate, provide a dimensioned sketch of the floor plan including location, dimensions, and identity of each equipment. (Please attach sketch.)

d. Additional general information, which bears on the engineering of the facility, is as follows:

5. ROOM CONFIGURATION (to be supported by scaled drawings):

a. Room numbers: _____

b. Floor:

(1) Material: _____

(2) Condition: _____

(3) Loading capacity: _____

(4) Obstructions (pipes, pillars, etc): _____

Figure 2-1. Sample Site Survey Checklist (sheet 4 of 11).

PROJECT OR TASK NO: _____

(5) Space available under raised flooring, if installed:

c. Walls:

- (1) Material: _____
 - (2) Condition: _____
 - (3) Load bearing: _____
 - (4) Obstructions: _____
 - (5) Height: _____
 - (6) Possible removal: _____
-
- _____

d. Doors:

- (1) Number of outer doors: _____
- (2) Number of inner doors: _____
- (3) Material: _____
- (4) Condition: _____
- (5) Dimensions: _____
- (6) Opening: In _____ Out _____

e. Windows:

- (1) Quantity on outer walls: _____
 - (2) Dimensions: _____
 - (3) Type (double hung, projected, etc.): _____
-
- _____

Figure 2-1. Sample Site Survey Checklist (sheet 5 of 11).

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PROJECT OR TASK NO: _____

(4) Height above floor: _____

(5) Number of windows: Barred _____ Opaques _____

f. Ceiling:

(1) Material: _____

(2) Condition: _____

(3) Height (suspended or other): _____

(4) Obstructions (pipes, pillars, etc.): _____

(5) Space available for ducting if a drop ceiling is installed: _____

g. Lighting (if wiring is to be removed, check here _____):

(1) Type: Incandescent _____ Flourescent _____

(2) Type of fixtures: _____

(3) Number of fixtures: _____

(4) Size of lamps in watts: _____

(5) Height above floor: _____

(6) All power cable for lights in ferrous conduit:

Yes _____ No _____

(7) Foot candle rating: _____

(8) Total power loading: _____

Figure 2-1. Sample Site Survey Checklist (sheet 6 of 11).

PROJECT OR TASK NO: _____

h. Convenience outlets (if wiring is to be removed, check here _____):

- (1) Type: _____ Number: _____
- (2) Voltage: _____ Phase: _____
Frequency: _____ Ampere rating: _____
- (3) Number of wires: _____
- (4) Protective ground to ac outlets: Yes _____ No _____
- (5) All power cable in ferrous conduit: Yes _____ No _____

i. Environmental systems:

- (1) Type of heating: _____
Btu/hr capacity: _____
- (2) Type of air conditioning: _____
Btu/hr capacity: _____
- (3) Maximum number of personnel who normally occupy area: _____

- (4) Humidity controlled: Yes _____ No _____

- (5) Heat dissipation capacity of existing equipment: _____

_____ Btu/hr

(6) Surplus air-conditioning capacity available for this installation: _____ Btu/hr

- (7) Feasibility of expansion (if necessary): _____

- (8) Monitoring equipment: _____

Figure 2-1. Sample Site Survey Checklist (sheet 7 of 11).

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PROJECT OR TASK NO: _____

6. POWER AVAILABILITY:

a. Primary power supplied by commercial means: Yes ___ No ___

b. Power specifications:

(1) Present available capacity: _____ kW

(2) Voltage: _____ volts

(3) Frequency: _____ Hz

(4) Phase: _____ ϕ

(5) Size of feeder lines: _____ AWG

(6) Monitoring equipment (if any): _____

c. Means of providing emergency power:

(1) Manual start, automatic start, or no-break: _____

(2) Manual or automatic switching unit:

(3) Emergency power available: _____ kW

(4) Generator specifications:

<u>Number</u>	<u>Rating (kW)</u>	<u>Frequency (Hz)</u>	<u>Nomenclature</u>	<u>Capacity (kW)</u>
---------------	--------------------	-----------------------	---------------------	----------------------

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

d. Space available for additional generators: Yes ___ No ___

Figure 2-1. Sample Site Survey Checklist (sheet 8 of 11).

PROJECT OR TASK NO: _____

e. Uninterrupted power requirements: Yes _____ No _____

(1) Voltage: _____

(2) Current: _____

(3) Solid state system: Yes _____ No _____

Life after power failure: _____

Type of battery: _____

f. Presently programmed power upgrade (give details): _____

g. Technical load:

(1) Present critical technical load: _____ kW

(2) Present noncritical technical load: _____ kW

(3) Present nontechnical load: _____ kW

7. EXISTING POWER CONFIGURATION:

a. Main power panel:

(1) Location: _____

(2) Rating: _____ kVA

(3) Voltage: _____ Volts

(4) Phase: _____ ϕ

(5) Frequency: _____ Hz

(6) Number of spare circuit breakers: _____

(7) RED/BLACK TEMPEST: _____

b. Additional power panels should also be reported here using the same reporting format given in a above. (Please attach sheet.)

Figure 2-1. Sample Site Survey Checklist (sheet 9 of 11).

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PROJECT OR TASK NO: _____

c. All power panels have ac protective ground wire installed:

Yes _____ No _____

d. All ac power lines contained in conduit: Yes _____ No _____

e. All ac junction boxes used: Yes _____ No _____

(1) If yes, what type: _____

(2) Pre-punched knockouts: Yes _____ No _____

(3) Ferrous box and cover: Yes _____ No _____

f. Power isolation transformer available: Yes _____ No _____

(1) If yes, what type: _____

(2) Rating: _____

(3) Primary voltage: _____ volts Secondary voltage: _____ volts

(4) Number of phases: _____ 0

8. STATION GROUND:

a. Signal ground installed: Yes _____ No _____

(1) Type (water pipe, rod, etc.) _____

(2) Resistance of true earth ground _____ ohms

(3) Date measured: _____

(4) Method used: _____

(5) RED/BLACK ground distribution boxes available for

installation: Yes _____ No _____

b. Protective ac ground installed: Yes _____ No _____

(1) All equipment grounded to ac protective ground by
separate wires: Yes _____ No _____

Figure 2-1. Sample Site Survey Checklist (sheet 10 of 11).

PROJECT OR TASK NO: _____

(2) Ferrous shields tied to ac protective ground bus:

Yes _____ No _____

9. UTILITIES AVAILABLE (water and gas):

a. Size and capacity of each: _____

b. Supplier: _____

c. Available capacity: _____

10. PRESENTLY INSTALLED EQUIPMENT (List type and quantity of installed equipment that will be associated with or used for this installation.):

<u>Item No.</u>	<u>Room location</u>	<u>Nomenclature</u>	<u>Qty. in operation</u>	<u>Qty. reserved</u>
-----------------	----------------------	---------------------	------------------------------	--------------------------

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

11. MISCELLANEOUS:

Site Survey Team Chief*Figure 2-1. Sample Site Survey Checklist (sheet 11 of 11).*

TABLE 2-1. EQUIPMENT CHARACTERISTICS

Equipment Type	Breaker Size (Amps)	Power Requirements			Physical Dimensions (Inches)				Clearance (Inches)			Weight (Lbs)	
		Voltage	Current (Amps)	Power (Watts)	BTU/Hr	Width	Depth	Height	Front	Rear	Left		Right
Line Control Unit	15	115	9.0	1035	3600	51	38	45	37	37	0	0	650
Low Speed Page Printer	10	115	3.3	375	1285	34	40	39	37	35	0	0	200
Medium Speed Line Printer	15	115	7.0	800	2740	30	39	42	37	35	13	13	285
High Speed Line Printer	30	115	20.0	1950	6760	36	40	46	37	37	37	37	395
Card Reader	10	115	5.5	600	2050	30	28	50	37	25	0	0	200
Card Punch (Model 1)	50/2P-30	115/220	40.0/20.0	4400	12000	51	36	44	37	25	25	25	800
Card Punch (Model 2)	50/2P-30	115/220	40.0/20.0	4400	12000	45	28	41	37	25	25	25	540
Paper Tape Equipment	10	115	6.0	690	2360	28	24	60	37	37	0	0	455
Magnetic Tape Unit	10	115	3.0	350	1200	23	24	60	37	37	0	0	355
Optical Scan Unit	10	115	4.8	550	1500	26	30	34	37	37	37	0	300
Storage Module Disk Drive	15	115	12.0	720	2460	21	36	39	37	25	25	25	370
TSEC/KG-34	10	115	--	48	--	17.5	22	7	--	--	--	--	45
TSEC/KG-13	10	105-130	--	316	--	19	26 3/4	33 1/4	23	--	--	--	280
AN/UYK-22 (CAU 2200V)	--	--	115/230	100	--	19	20	7	--	--	--	--	50
Electrical Synchronizer SN-394(V)	--	--	115	25	--	19	28.5	7	--	--	--	--	70
LSI 4800 CODEX MODEM	--	--	115/230	--	--	8/5	18	5 1/4	--	--	--	--	--
MD-674(P/G) MODEM, Low Speed	--	--	115	--	--	19	32	11	--	--	--	--	--
MD-701B/UY MODEM Digital Data	--	--	115	15	--	19	3.5	12 1/4	--	--	--	--	50
Crypto Safe, Mosler													
Rack Elec Equip RR 197													
RS-232, Fall Back Switch													
Keyboard Video Display Unit (KVDU)	10	115	6.0	600	2050	28	30	21					125

SECTION 3. INSTALLATION SPECIFICATIONS AND INSTRUCTIONS

3.1 General. These instructions, together with applicable directives and established criteria, provide the guidance necessary for proper installation of the SRT. Installation instructions for individual sites will be provided in EIP's prepared for those sites.

3.2 Documentation and Applicable Directives. All changes or alterations to engineering drawings shall be marked in red for additions, yellow for deletions, and notes in blue; submitted to Commander, US Army Communications-Electronics Engineering Installation Agency, ATTN: CCC-CED-DCD, Fort Huachuca, Arizona 85613, for coordination and incorporation of applicable changes. Installer personnel must be familiar with, and will be guided by (C) MIL-HDBK-232, (C) AR 530-4, TO 31-10 Series, CCCP 105 Series and NFPA 70 Series.

3.3 Installation Detail. The following steps provide typical procedures and sequence of events for installation of the SRT. All SRT installations use raised flooring.

3.3.1 Order of installation. The SRT equipment should be installed in sequential steps to assure compliance with the installation drawings. Minor changes to the sequence of installation procedures may be made in consideration of available manpower, material, equipment, and facilities. The following sequence is suggested:

3.3.2 Inventory. Inventory material and equipment and establish storage and control procedures. Coordinate secure storage requirements during nonworking hours with the O&M command.

3.3.3 Layout. Lay out the equipment floor plan and establish reference working lines and location points. Drawing STD-SD-0074 shows a typical SRT layout.

3.3.4 Equipment Racks/Cabinets. Install the equipment racks and/or cabinets and secure them to the floor using specified hardware. Using the reference lines and points, cut holes in the floor panels as appropriate.

3.3.5 Power Conduit. Position the SRT equipment in the proposed locations and install ac power conduits beneath the raised floor to the SRT units and to the SRT power distribution panel using drawing STD-SD-0074. Mount the equipment in racks, cabinets, or on shelves and install the power conduits as shown on the applicable drawings listed in section 4 of this SEIP. Figures 3-1 through 3-3 show typical equipment layout in relay racks.

3.3.6 Power Cables. Install all ac power cables in conduit. At the power panel, terminate the cables to the appropriate circuit breakers (drawing STD-SD-0074); and at the equipment, terminate to the appropriate power

connector supplied with each unit of the SRT, and to the utility ac boxes on the equipment racks or cabinets. Observe all safety precautions and make the proper checks before terminating.

3.3.7 Signal Conduit. Install the data line interface box (DLIB) (Figure 3-4, drawings STD-SD-0069 and SAAD-D-40630) in the engineered location and run the conduit to the red patch rack/cabinet. Install the remaining signal conduit as required from the red patch rack/cabinet to the synchronizer/COMSEC rack or cabinet; to the digital/vf patch and modem rack/cabinet; to the external signal entrance box. If the modem is not located in the same rack as the digital and VF patches, run conduit between modem and patches. For installations not requiring patch panels, run conduit from the DLIB to synchronizer/COMSEC rack or cabinet; to the modem; and to the external signal entrance box.

3.3.8 Signal Cables. Install the prefabricated signal cables from the LCU to the peripheral equipment, under the raised floor. These cables are prefabricated and cut to specific lengths. Refer to figure 3-5 for proper cable designations. Install the remaining signal cables in the applicable conduits. Check before terminating.

3.3.9 Cable Crossover. A unistrut separator will be erected at the crossover point where the power conduit cable run and the signal cable run meet (fig 3-6). The two (2) cable runs will be separated a minimum of 4". Two (2) unistrut supports, one (1) on each side of the crossover, shall be used. Separation will be determined by the Project Engineer.

3.3.10 Patch Panel. Cooke patch panel, 153 series, are used for digital and audio, RED or BLACK. STD-SD-0068 drawings shows the patch panel and its wiring diagram.

3.3.11 TSEC/KG-13. Depending on the type of modem used with the TSEC/KG-13, use drawings STD-SD-0067, STD-SD-0034, and STD-SD-0073. Use drawings STD-SD-0052, STD-SD-0076, and SAAD-D-40683 when TSEC/KG-13 uses the AN/UYK-22. Drawing STD-SD-0066 shows the interconnect between the patch panel and the TSEC/KG-13.

3.3.12 TSEC/KG-34. Make only authorized punchouts on the equipment. Drawing STD-MS-0004 shows the signal and power cables and conduit installation for the TSEC/KG-34. Drawing STD-SD-0028 shows TSEC/KG-34 with modem, MD-674.

3.3.13 Secure Cabinet. Drawing COM-CM13-003 shows the secure equipment installation in a Mosler safe.

3.3.14 Non-Secure Modem. Drawing STD-SD-0029 shows Modem, MD-674 installation in a non-secure area.

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3.3.15 Modem Installation. In CONUS, modems will be furnished and installed by the contractor. Overseas installation the Government will provide and install modems.

3.3.16 Cutover Information. Sequential steps required to make the cutover are developed jointly by the O&M command and USACEEIA.

3.3.17 Equipment Removal Instructions.

- a. Remove equipment to be removed as soon as possible after cutover.
- b. Instruction for the movement of any unique equipment should be discussed with the project engineer, installation supervisors, and O&M personnel.
- c. All unused cable shall be removed from the communications center.

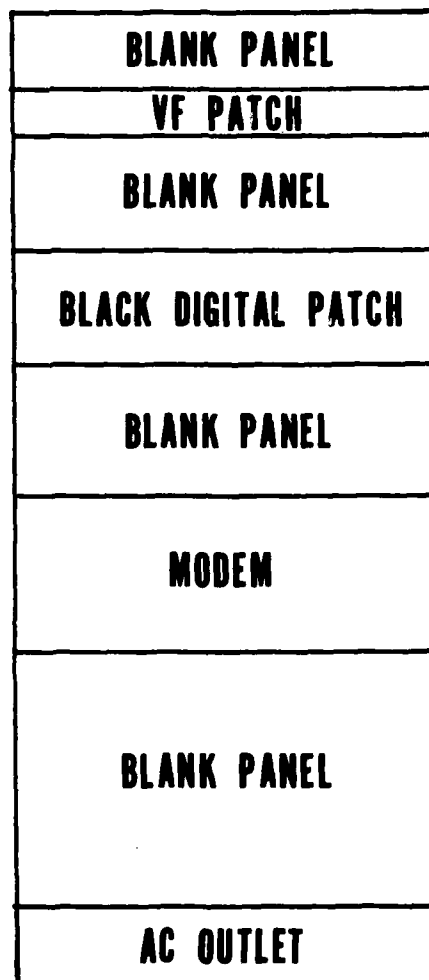


Figure 3-1. Typical Black DC Patch Panel Elevation

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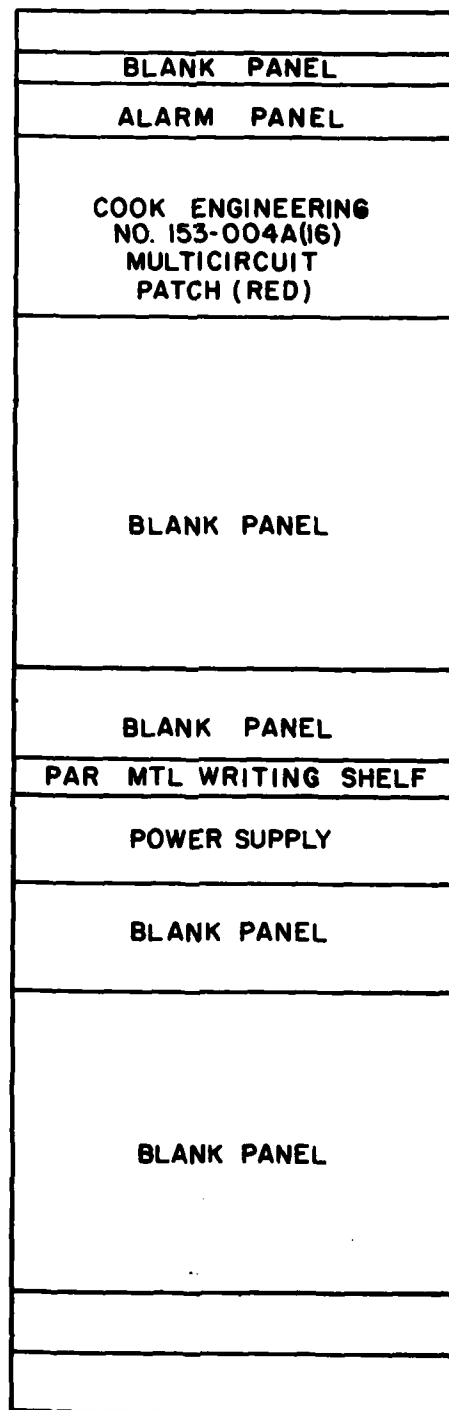
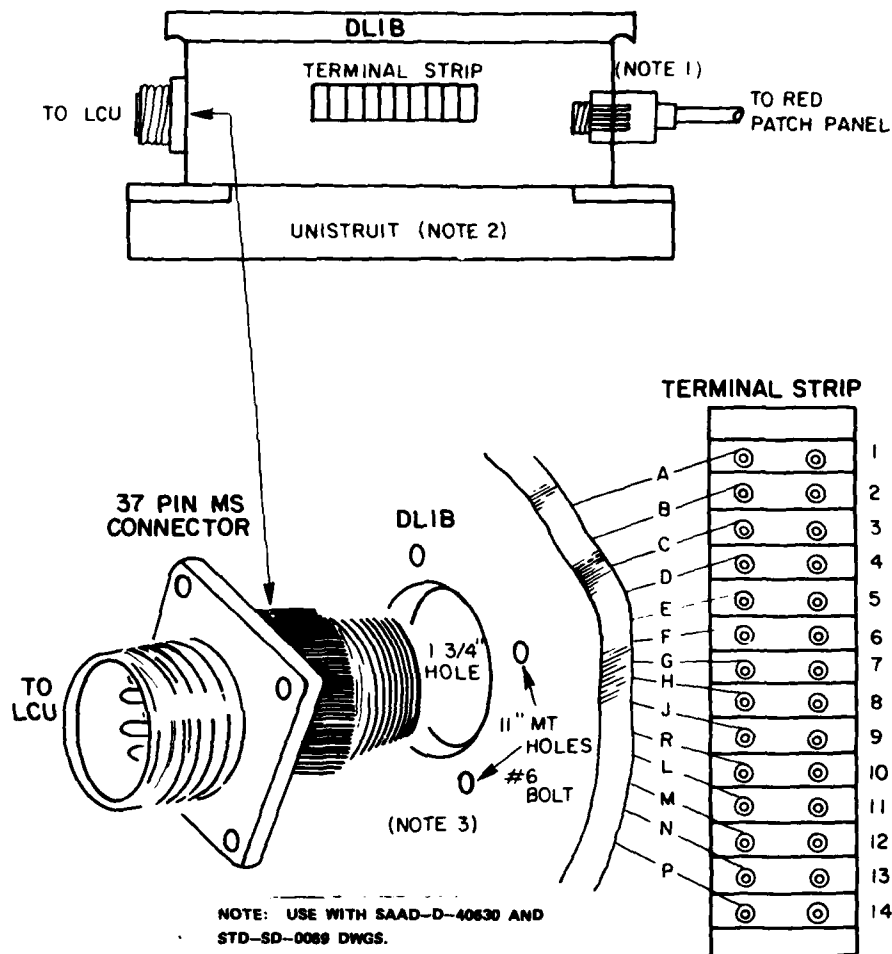


Figure 3-2. Typical Red DC Patch Panel Secure Elevation



NOTE: USE WITH SAAD-D-40630 AND STD-SD-0089 DWGS.

1. USE 3/4 CONDUIT AND BOX CONN. PUNCH OUT 3/4" HOLE CENTER REAR OF DLIB. LENGTH OF CONDUIT AND CABLE IS DETERMINED BY EQUIP. SEPARATION.

2. CUT UNISTRUIT FULL LENGTH OF DLIB (2 EA.). SEE DWG STD-SD-0089 FOR MOUNTING DETAILS.

★3. PUNCH OUT 1 3/4" HOLE CENTER (FRONT) OF DLIB AND DRILL 4 EA 11/64" MOUNTING HOLES. TERMINATE WIRES TO CONNECTOR AND TERMINAL STRIP. USE #6 BOLT TO MOUNT CONNECTOR TO DLIB. USE DWG STD-SD-0087 FOR TERMINAL STRIP TERMINATION TO 153 PATCH PANEL.

***If DLIB is not ordered pre-assembled**

Figure 3-3 Data Line Interface Box Installation

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LCU REAR VIEW

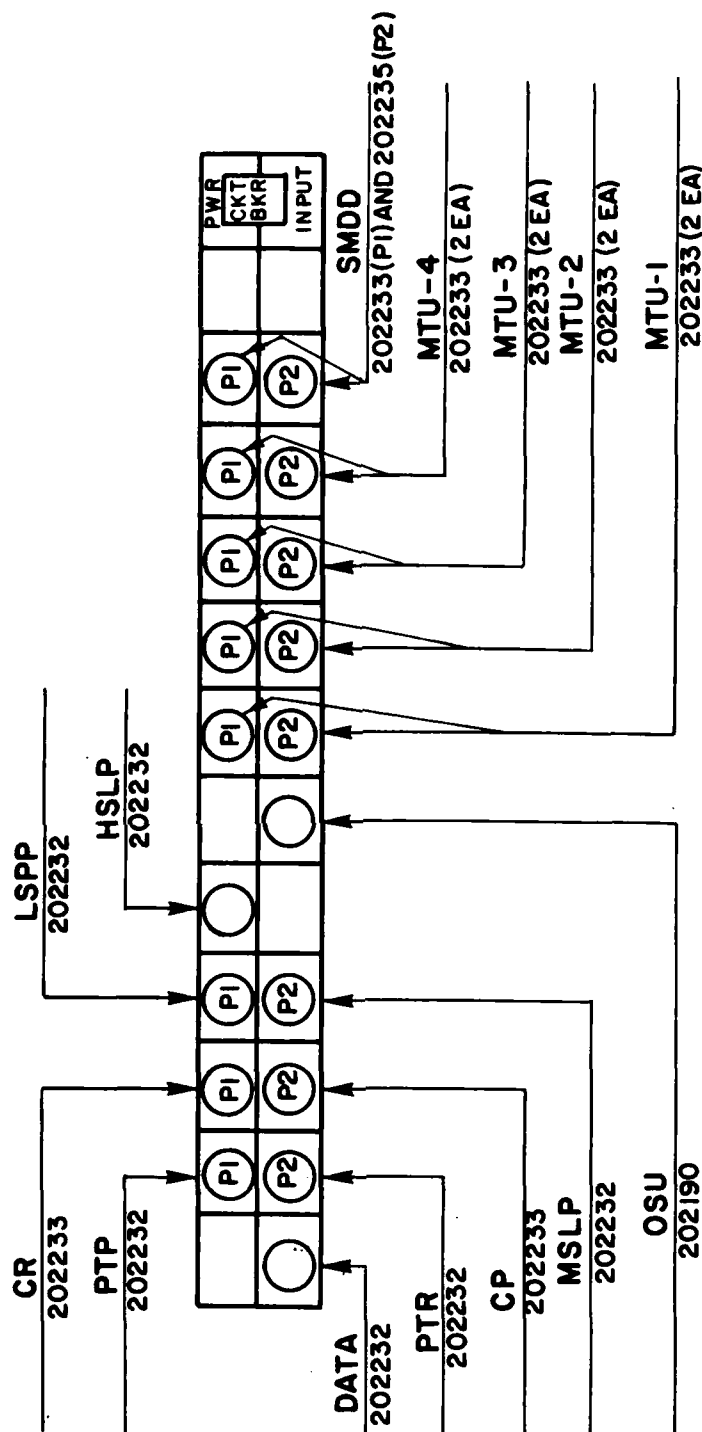
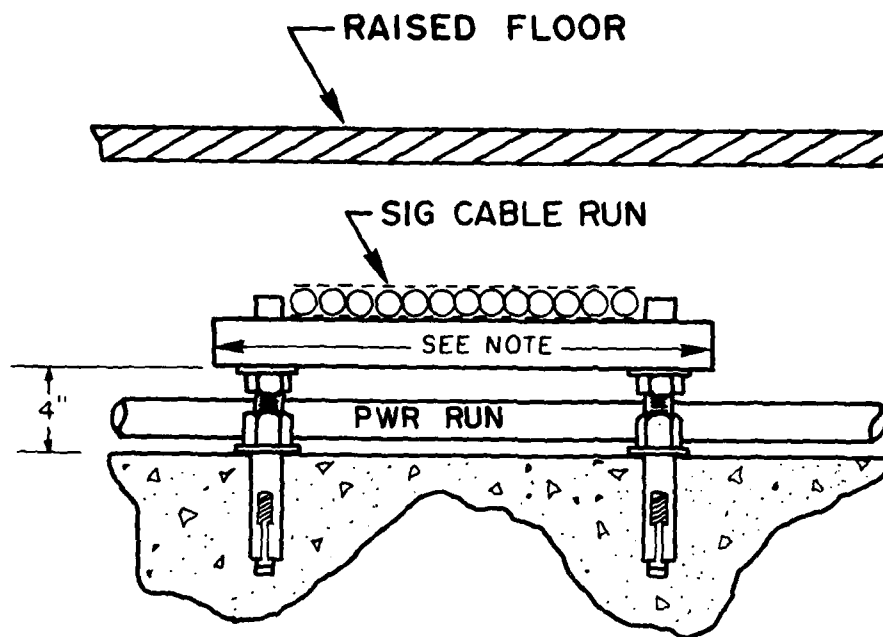


Figure 3-4. LCU and Peripheral Equipment Signal Cable Connections



NOTE: LENGTH DETERMINED BY PROJECT ENGINEER
SECURE SIG CABLES TO UNISTRUT USING
TWINE.

Figure 3-5. Signal Cables and Power Cables
Crossover and Unistrut Construction

SECTION 4. ENGINEERING INSTALLATION DRAWINGS

4.1 GENERAL. The engineering installation drawings provided in this section depict typical floor plans, equipment placement, conduit runs, and electrical interface/interconnections.

4.2 MODIFICATION OF INSTALLATION DRAWINGS. The engineering drawings may be modified during and after installation of a project to reflect adaptation to local physical and environmental conditions. Copies of modified drawings should be retained on site and changes, corrections, and deletions forwarded to the responsible area's communications-electronics engineering installation agency.

4.2.1 USACEEIA drawings. The engineering installation drawings included are 11-1/2 by 16 inches, foldout type, and are not to scale format. The scale referenced on these drawings refer to D size drawings only. The drawings are:

- | | |
|------------------------------|--|
| a. STD-SD-0074
(3 sheets) | Standard Remote Terminal for LCU
and Peripheral Equip Power
Distribution and Equip Layout |
| b. STD-SD-0066
(1 sheet) | Standard Remote Terminal Inter-
connect Diagram (153 Patch, KG-34,
MD-701B, LSI 4800) |
| c. STD-MS-0004
(1 sheet) | Installation Details TSEC/KG-34 |
| d. STD-SD-0029
(1 sheet) | MD-674 Non-Secure SRT Installation
Interconnect Schematic |
| e. STD-SD-0034
(1 sheet) | KG-13/SN-394(V)/G Interconnection
Schematic |
| f. STD-SD-0068
(3 sheets) | Cooke Multi Circuit Digital Patch
Panel Model 153-006-16 Patch Panel |
| g. STD-SD-0028
(1 sheet) | KG-34/MD-674 SRT Installation
Interconnect Schematic |
| h. SAAD-D-40630
(1 sheet) | SRT Data Line Interface Box Assy |
| i. COM-CM13-003
(1 sheet) | Installation of KG-13 and
SN-394(V)/G and Two KG-34's in
Mosler Safe Company Double Door
Security Cabinet |

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- | | |
|-------------------------------|---|
| j. SAAD-D-40683
(3 sheets) | KG-13/UYK-22 Installation Package |
| k. STD-SD-0052
(2 sheets) | AN/UYK-22 Strapping for Sync
Operation of SRT |
| l. STD-SD-0072
(1 sheets) | Typ Conduit Inst Dual Fctn Elec
Sync SN-394(V)/G CAU, KG-13's &
Fallback Sw in a RR 197 Rack |
| m. STD-SD-0073
(1 sheet) | Intcon and wire Running List for
Data Intfc Box, Fallback Switch,
SN-394(V)/G, KG-13 and MD-674 |
| n. STD-SD-0067
(1 sheet) | Standard Remote Terminal Inter-
connect Diagram (153 Patch, KG-13,
MD-674 Modem) |
| o. STD-SD-0069
(2 sheet) | Standard Remote Terminal Conduit
Hangers, Unistrut Data Intfc Box
Std Instc Matl Det |
| p. STD-SD-0076
(1 sheet) | SRT Installation Interconnect
Schematic |
| q. STD-SD-0064
(3 sheets) | SRT Patch and Test Facility Wiring
Details Interconnecting Diagram |

8

7

6

5

D

C

B

A

PART NO	SML	DESCRIPTION	PART NO/NSN	UI	QTY
30	21628C	BOX JUNCTION, LG 4x4x03"	5975-00-104-6599	EA	AR
29	00740C	SHIELD EXP, F 3/8-16 MACH BOLT	5340-00-754-4560	BX	AR
28	27191K	WASHER, FLAT, RD 3/8 D4 7/8 00	5310-00-020-9410	EA	AR
27	13505H	NUT, HEX 3/8-16 UNC 20	5310-00-056-3395	EA	AR
26	03117D	ROD, CONT THD, 3/8-16x72" LG PH H1933-0-6	5306-00-939-9500	LG	AR
25	00754F	CHANNEL, CONT SLO", UNIS*AUT P2000	5340-00-693-2401	EA	AR
24	15081J	STRAP RETAINING, FWM 2" ENT, 1 HOLE	5340-00-925-2375	BX	AR
23	02380P	CONDUIT, METAL, RIGID, 2" TW, 10' LG	5975-00-170-1221	LG	AR
22	27131V	PATCH PANEL, DIGITAL&V MODULAR COOKE ENG MDL 153-006-00	153-006-00 COOKE	EA	AR
21	14116C	PATCH PNL, DIGITAL COOKE ENG MDL 153-004A-16	5005-01-036-1103	EA	AR
20	27453L	KG-13 INSTALLATION PACKAGE GP 11	5005-00-479-3655	EA	AR
19	27452H	KG-13 INSTALLATION PACKAGE GP 1	5005-00-479-3654	EA	AR
18	11055H	TSEC/KG-34, ELEC KEY GEN	5010-00-463-3273	EA	AR
17	01592N	TSEC/KG-13, ELEC KEY GEN	5010-00-063-9016	EA	AR
16	20000H	BOX, HOFFMAN, 10"x8"x4", RFI SHIELD, A1000 CHRFI CAT #4527 W/BACKET, TERMINAL BLOCK STRIP AND CONNECTOR, MS3102A20-21P	5975-00-020-5094	EA	1
15	30796G	CABLE ASSEMBLY, 04-LLL, FOR DISK DRIVE, 40C, 22AWG SH CA, MS3106F/36- 10 SW CONN, ACA#202235	5935-00-500-3170	EA	AR
14	29649D	CABLE ASSEMBLY, 03-LLL, 40C, 22AWG SH CA, MS3106A36-105 CONN, FWM CR, CP, MTU, AND SHOD, ACA#202233-L	5935-00-510-9479	EA	AR
13	12197K	CABLE ASSEMBLY, 02-LLL, 37C, 22AWG SH CA, MS3106A20-215 CONN FWM HSLP, HSLP, LSLP, PTR, PTP, DIFB-ACA#202232-L	5935-00-552-2773	EA	AR
12	21564D	CABLE ASSEMBLY, 01-LLL, 14C, 22AWG SH CA, MS3106A-20-275 CONN FWM DSU, ACA# 20219-L	5935-00-259-1656	EA	AR
11	26077H	STORAGE MODULE DISK DRIVE (SMDD) W21"x036"xH39", 115VAC, 12A, 720 WATTS 2460 BTU/HR, 370 LBS	7025-00-104-1402	EA	1
10	28141Q	PAPER TAPE EQUIPMENT: PAPER TAPE READER (PTR), W20"x024"xH60", 115VAC, 3.0A, 690 WATTS, 1180 BTU/HR, 250 LBS. PAPER TAPE PUNCH (PTP), W20"x024"x H60", 115VAC, 3.0A, 690 WATTS, 1180 BTU/HR, 250 LBS	7025-00-104-1545	EA	1
9		MAGNETIC TAPE UNIT (MTU), W23"x024"x H60", 115VAC, 3.0A, 350 WATTS, 1200 BTU/HR, 200 LBS			
	23143J	a. MTU19 TRK, 1600 CPI	7025-00-104-1549	EA	AR
	23144Z	b. MTU19 TRK, 800 CPI	7025-00-104-3805	EA	AR
	27712C	c. MTU17 TRK, 550 800 CPI	7025-00-104-3806	EA	AR
	23142K	d. MTU17 TRK, 200/550 CPI	7025-00-104-1548	EA	AR
8	23141L	OPTICAL SCAN UNIT (OSU), W26"x030"x H34", 115VAC, 4.0A, 550 WATTS, 1500 BTU/HR, 300 LBS	7025-00-104-1547	EA	1
7	23133Z	CARD PUNCH, MODEL 2, W45"x028"xH41", 115/220VAC, 40/20A, 4400 WATTS, 12,000 BTU/HR, 800 LBS	7025-00-104-5116	EA	1
6	23137D	CARD PUNCH (CPI) MODEL 1, W51"x036"x H44", 115/220VAC, 40/20A, 4400 WATTS, 12,000 BTU/HR, 800 LBS	7025-00-104-1543	EA	1
5	23130E	CARD READER (CRI), W30"x028"xH50", 115VAC, 5.5A, 600 WATTS, 2050 BTU/HR, 200 LBS	7025-00-104-1544	EA	1
4	23136C	HIGH SPEED LINE PRINTER (HSLP), W36"x040"xH46", 115VAC, 1950 WATTS, 6760 BTU/HR, 460 LBS	7025-00-104-1542	EA	1
3	23135B	MEDIUM SPEED LINE PRINTER (MSLP), W30"x040"xH42", 115VAC, 7.0A, 800 WATTS, 2740 BTU/HR, 210 LBS	7025-00-104-1541	EA	1
2	23134A	LOW SPEED PAGE PRINTER (SPPI), W34"x D30"xH39", 115VAC, 3.3A, 375 WATTS, 1285 BTU/HR, 200 LBS	7025-00-104-1540	EA	1
1	23133Z	LINE CONTROL UNIT (LCU), W51"x038"x H45", 115VAC, 9.0A, 1035 WATTS, 3600 BTU/HR, 650 LBS	7025-00-104-1539	EA	1
PART NO	SML	DESCRIPTION	PART NO/NSN	UI	QTY

PARTS LIST

PART NO	SML	DESCRIPTION	PART NO/NSN	UI	QTY
62	30223F	INSTALLATION PACKAGE KG-13/UTK-22 ISAAD-D-40603)	5010-00-104-6616	EA	AR
61	06932B	COVER, BLANK, 1 1/2", #570, CH	5975-00-601-3100	EA	AR
60	21219A	MODEM, DIGITAL DATA, CODFX LS14800	5020-01-001-2340	EA	AR
59	08701Z	MODEM, MD-701 B/UY	7025-00-070-0316	EA	AR
58	06019Z	MODEM, 150/1200 BAUD, MD-674(P)/G	5005-00-963-4000	EA	AR
57	02045E	COVER, CONDUIT OUTLET, 2" CH670	5975-00-150-0405	EA	AR
56	27221M	OUTLET, ELEC, CONDUIT, TYPE LB, 2" TW CH LB-67	5975-00-655-2760	EA	AR
55	10090Z	CONNECTOR, RECEPT, ELEC, 2 CONNECTING MATING ENDS	5935-01-012-3000	EA	AR
54	07459A	BOX CONN, ELEC, 1/2" FLEX CONDUIT TYPE T&B532	5975-00-903-9225	EA	AR
53	10708Z	CONDUIT, FLEX, 1/2" LGB TIGHT TYPE EF	5975-00-903-9230	FT	AR
52	03535D	WIRE, ELEC, THW, SOLID, GRN, 14AWG, 600V	6145-00-191-2571	FT	AR
51	03509A	WIRE, ELEC, THW, SOLID, WHT, 14AWG, 600V	6145-00-104-9340	FT	AR
50	03540K	WIRE, ELEC, THW, SOLID, BLK, 14AWG, 600V	6145-00-950-7405	FT	AR
49	12016B	WIRE, ELEC, THW, SOLID, BLU, 10AWG, 600V	6145-00-066-2500	FT	AR
48	30735B	WIRE, ELEC, THW, SOLID, GRN, 10AWG, 600V	6145-00-066-2507	FT	AR
47	30737D	WIRE, ELEC, THW, SOLID, WHT, 10AWG, 600V	6145-00-990-3000	FT	AR
46	30736C	WIRE, ELEC, THW, SOLID, RED, 10AWG, 600V	6145-00-990-2990	FT	AR
45	30731H	OUTLET ELEC COND, TYPE LB57 1-1/2", CH	5975-00-232-7644	EA	AR
44	02630W	OUTLET ELEC COND, TYPE LB57 1-1/2", CH	5975-00-659-2373	EA	AR
43	11205J	OUTLET ELEC COND, TYPE LB57, 1-1/2", CH	5975-00-610-9025	EA	AR
42	07459A	BOX CONN, ELEC, 1/2" FLEX	5975-00-903-9225	EA	AR
41	10708Z	CONDUIT, FLEX, 1/2"	5975-00-903-9230	FT	AR
40	02667E	REDUCER 1-1/2" ENT TO 1/2" FLEX RES	5975-00-001-0040	EA	AR
39	052500	BOX CONN, ELEC 3/4" STR F/FLEX	5975-00-001-7411	EA	AR
38	05207D	CONDUIT, METAL, FLEX, 3/4"	5975-00-007-0750	FT	AR
37	07260J	REDUCER 1-1/2" TW TO 3/4", CH, RE 52	5970-00-296-0700	EA	AR
36	06930Z	OUTLET, ELEC, CONDUIT, TYPE T, 1-1/2" TW C-M 757	5975-00-219-1600	EA	AR
35	30739F	COUPLING, ELEC CONDUIT 1-1/2" TW, CH	5975-00-104-6990	EA	AR
34	02644D	COUPLING, ELEC CONDUIT, 2" TW	5975-00-041-1002	EA	AR
33	02379C	CONDUIT, METAL, ENT, TW, 1-1/2", 10' LG	5975-00-170-1220	LG	AR
32	30730E	BOX CONN, ELEC, 1-1/2" TW STRAIGHT CH, CGK 5915	5935-00-104-6997	EA	AR
31	0	BOX CONN, 2" ENT, ELEC TW	5975-00-003-0940	EA	AR
PART NO	SML	DESCRIPTION	PART NO/NSN	UI	QTY

PARTS LIST

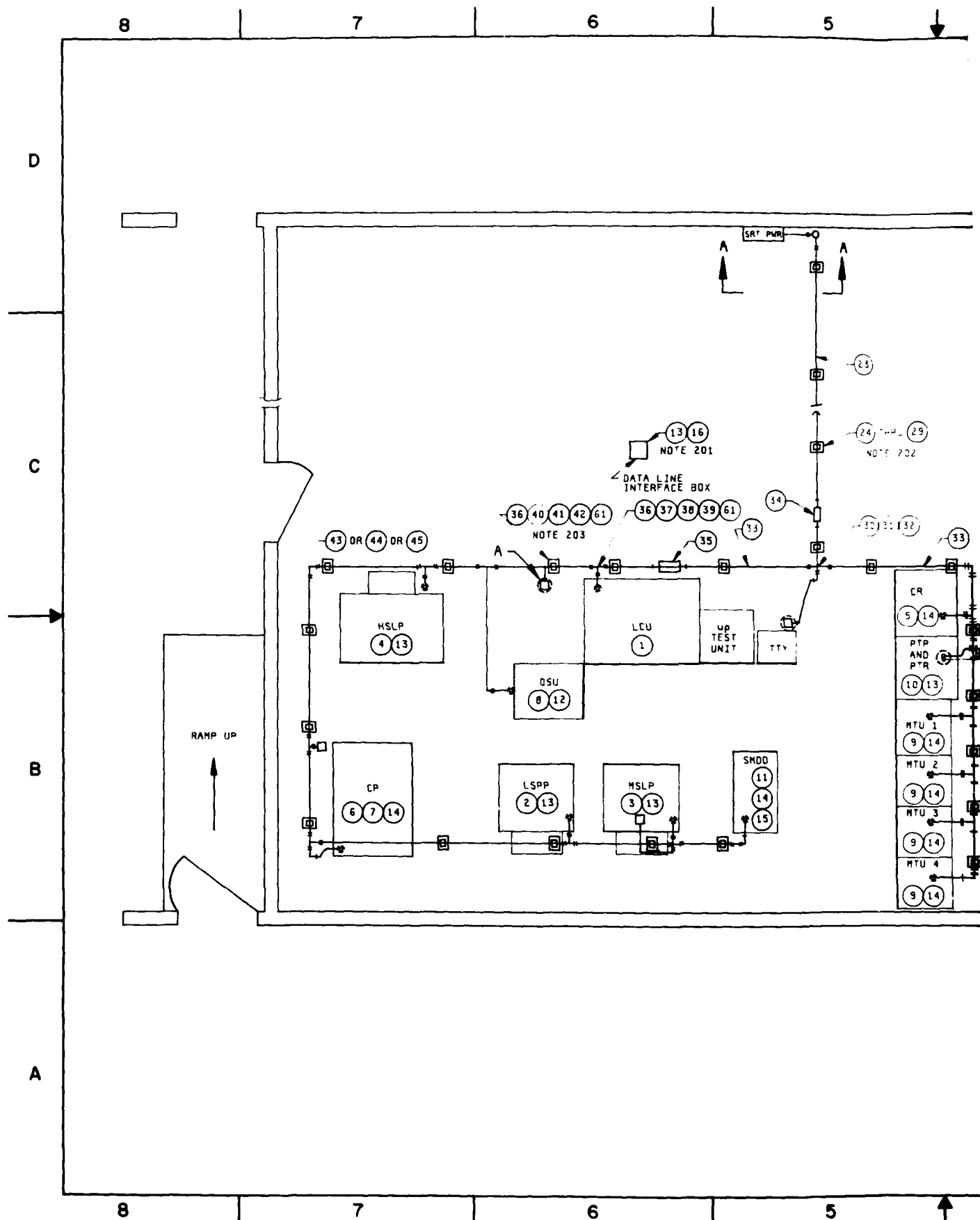
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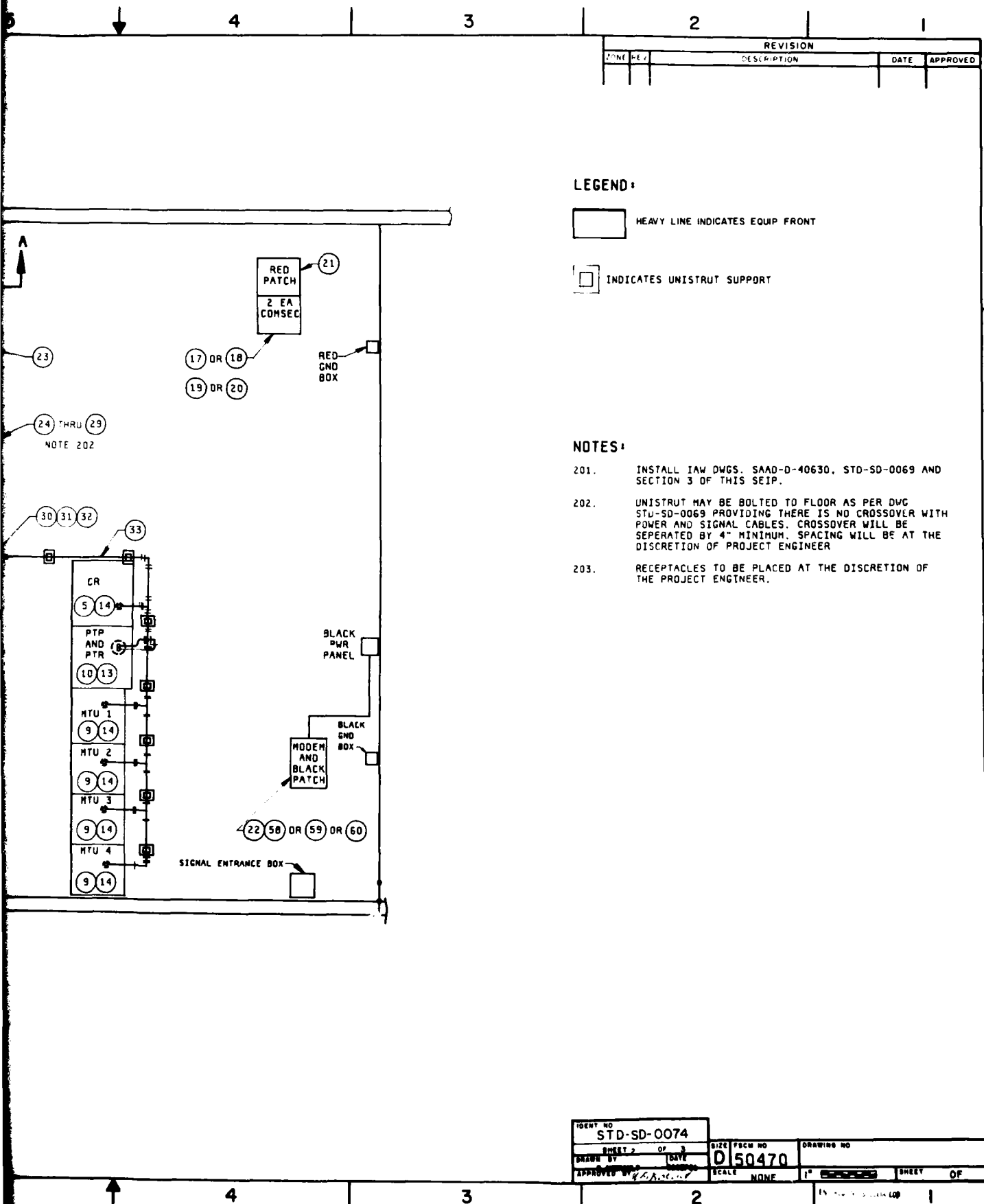
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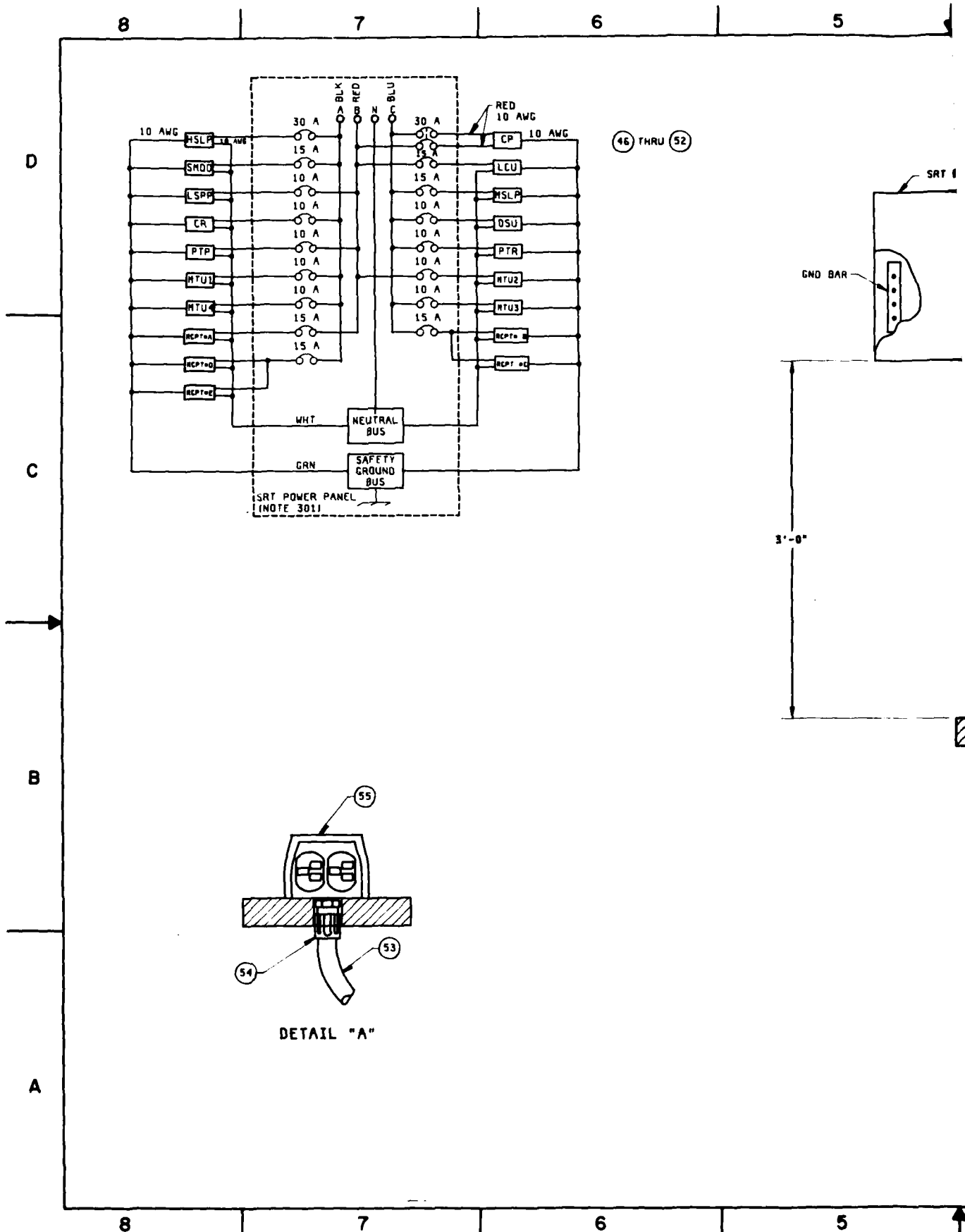
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5

1. ITEM 16 IS THE DATA LINE INTEFACE BOX.







5

4

3

2

1

REVISION			
ZONE	REV	DESCRIPTION	DATE

NOTE:

301. UNLESS OTHERWISE INDICATED ALL POWER WIRING IS NO. 14 AWG.

D

C

B

A

SRT POWER PANEL

BAR

23

56

57

31

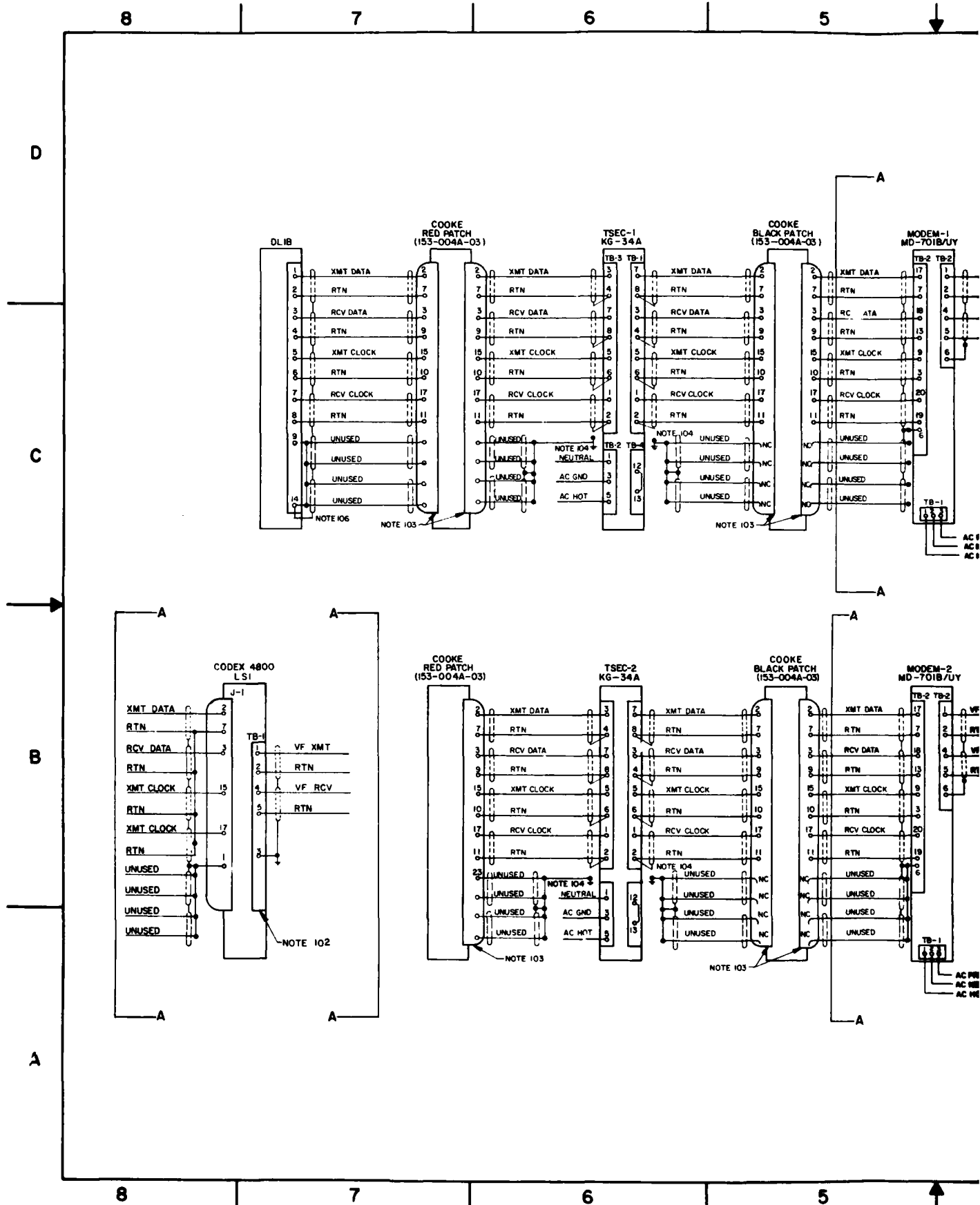
23

FALSE FLOOR

STRUCTURAL FLOOR

SECTION A-A

IDENT NO	STD-SD-0074	SIZE	PSCN NO	DRAWING NO
SHEET 3	OF 3	D	50470	
DRAWN BY	DATE	SCALE	NONE	SHEET
APPROVED BY	DATE			OF



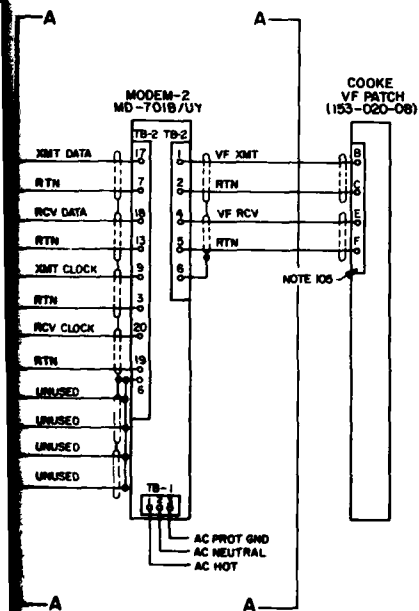
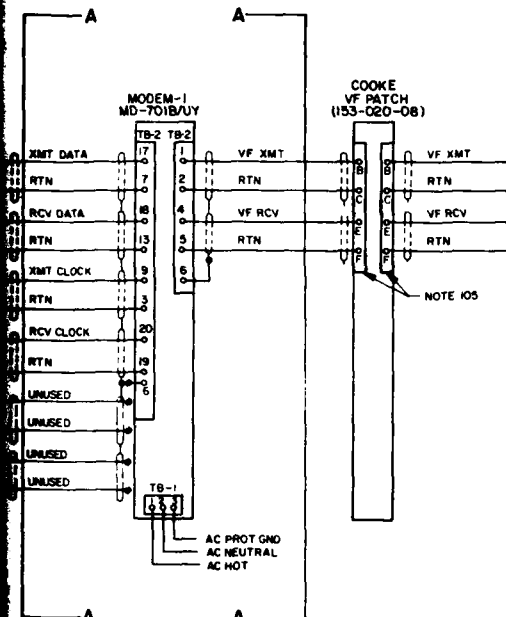
REVISION				
ZONE	REV	DESCRIPTION	DATE	APPROVED
A	1	MINOR REVISIONS	1-1-80	1-1-80

LEGEND:

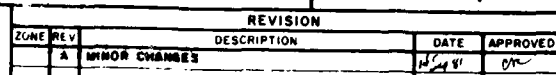
-  INDICATES SHIELDS NOT TERMINATED (SEE NOTE 101)
 NC NOT CONNECTED

NOTES:

- 101 ALL SHIELDS NOT SHOWN TERMINATED SHALL BE CUT BACK AND INDIVIDUALLY INSULATED WITH 1/8" SHRINK TUBING.
- 102 SCREW TERMINAL CONNECTION.
- 103 25 PIN EIA CONNECTOR.
- 104 CONNECT SHIELDS AND SPARE PAIRS TO CHASSIS GROUND.
- 105 7-PIN HEX TYPE CONNECTOR (FEMALE ON CHASSIS), MALE MATING CONNECTORS SUPPLIED WITH PATCH, SOLDER TYPE.
- 106 RETURN ALL SHIELDS AND SPARES TO PIN 14 OF THE DLB.



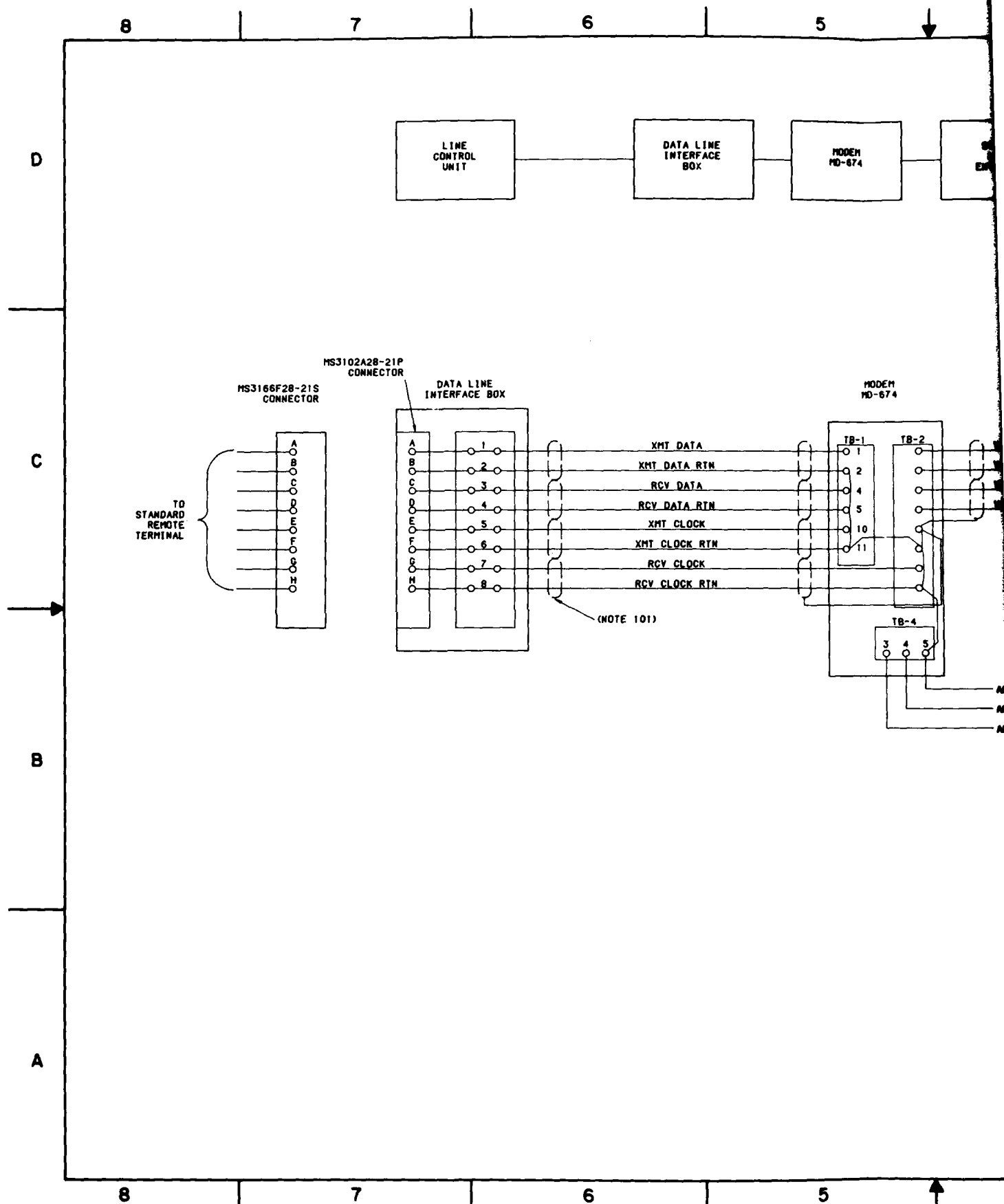
		DRAWN BY	L. BOONHUE	20 DEC 80	INTERCONNECT DIAGRAM (153 PATCH, KG-34, MD-701B, LSI 4800)		
		APPROVED BY		21 DEC 80			
NEXT ASSEMBLY		USED ON		DESIGN ACTIVITY	DWG INDEX NO.	D 50470	DRAWING NO.
DWG INDEX NO.		CCC-CEP-DCO		SCALE	NONE	SHEET 1 OF 1	

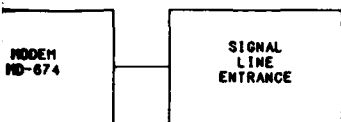


101. 3/4" CONDUIT MAY ENTER BOTTOM OF JUNCTION BOX.
102. RED AND BLACK GROUNDS, FROM THEIR RESPECTIVE SIGNAL GROUND BOXES, MAY BE RUN IN THE RED AND BLACK SIGNAL CONDUITS RESPECTIVELY.
103. USE 3/4" CONDUIT AND 3/4" SHORT ELBOWS CONNECTING TO CRYPTO CASE.
104. DRILL HOLES FOR KG START SIGNAL LEADS AT AUTHORIZED KNOCKOUTS AND MATCH WITH HOLES DRILLED IN JUNCTION BOX.
105. THIS DRAWING SUPERSEDES USACEEIA-CONUS DWG COM-TL-906.
106. SIGNAL WIRING TO TB4 AND ITEMS 5,6,7&9 NOT REQUIRED FOR SRT INSTALLATIONS, INSTALL RED SIGNAL WIRING AS DETAILED FOR BLACK SIGNAL AND NOTE 103.

9	09051L	BOX CONNECTOR, 3/4", TW, T & B 5223	5975-00-802-6531	EA	3
8	02376Z	CONDUIT, METAL, RIGID, ZINC COATED TW, 3/4" SIZE, 10' LONG	5975-00-178-1217	LG	2
7	21629D	LOCKNUT, ELEC CONDUIT, 3/4"-14" SEALING TYPE, GEDNEY SLG-75 S	NSNR	EA	2
6	06619H	NIPPLE, CHASE, 3/4", T & B 1943, INSUL	5975-00-834-6780	EA	2
5	21628C	BOX, JUNCTION, 6" L X 4" W X 3" D, CAST IRON, WITH 6 SCREWS IN COVER	NSNR	EA	1
4	13646F	BRACKET, ANGLE, STEEL, 5" LG, F/U/W TSEC/KG-34, ON057110	5340-00-182-9804	EA	2
3	15097Y	ELBOW, SHORT, 3/4", T & B 4241	5975-00-042-7138	EA	2
2	02600M	RACK, ELEC EQPT PAR METAL RR-197	5975-00-686-0206	EA	1
1	11855H	TSEC/KG-34-3	5810-00-463-3270	EA	1
ITEM	SNL	DESCRIPTION	NSN	UI	QTY

		IDENT NO STD-MS-0004		ORGANIZATION U S ARMY COMMUNICATIONS-ELECTRONICS	
		SHEET 1 OF 1		ENGINEERING INSTALLATION AGENCY	
		DESIGNED BY CORNE		DATE 8 MAY 78	
		DRAWN BY R J LEAL		11 MAY 78	
		CHECKED BY RR		16 May 78	
		APPROVED BY Corne		16 May 78	
		DESIGN ACTIVITY CCG-CED-SEP		INSTALLATION DETAILS TSEC/KG-34	
NEXT ASSEMBLY		USED ON		SIZE PSCM NO D 50470	
DWG INDEX NO.				DRAWING NO SCALE NONE	
				1"  SHEET OF	





REVISION				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	REVISED RCV/XMT TO TB-2	8APR79	
B4	B	CHGD SIG AND SHLD GND TO EARTH GND	7MAY79	
	C	MINOR REVISIONS	20DEC79	
	D	MINOR REVISIONS	30JUL81	

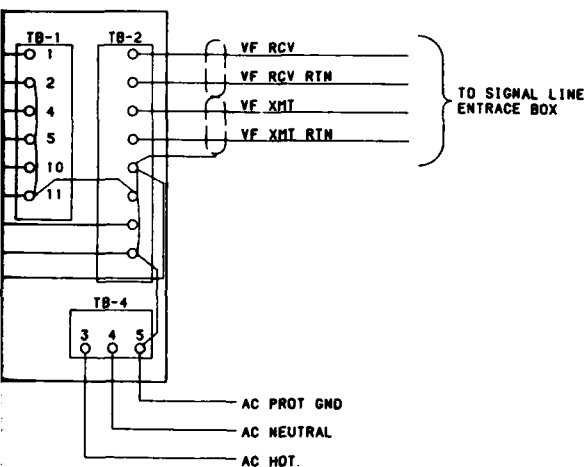
GENERAL NOTES:

1 GROUND ALL UNUSED PAIRS AT ONE END

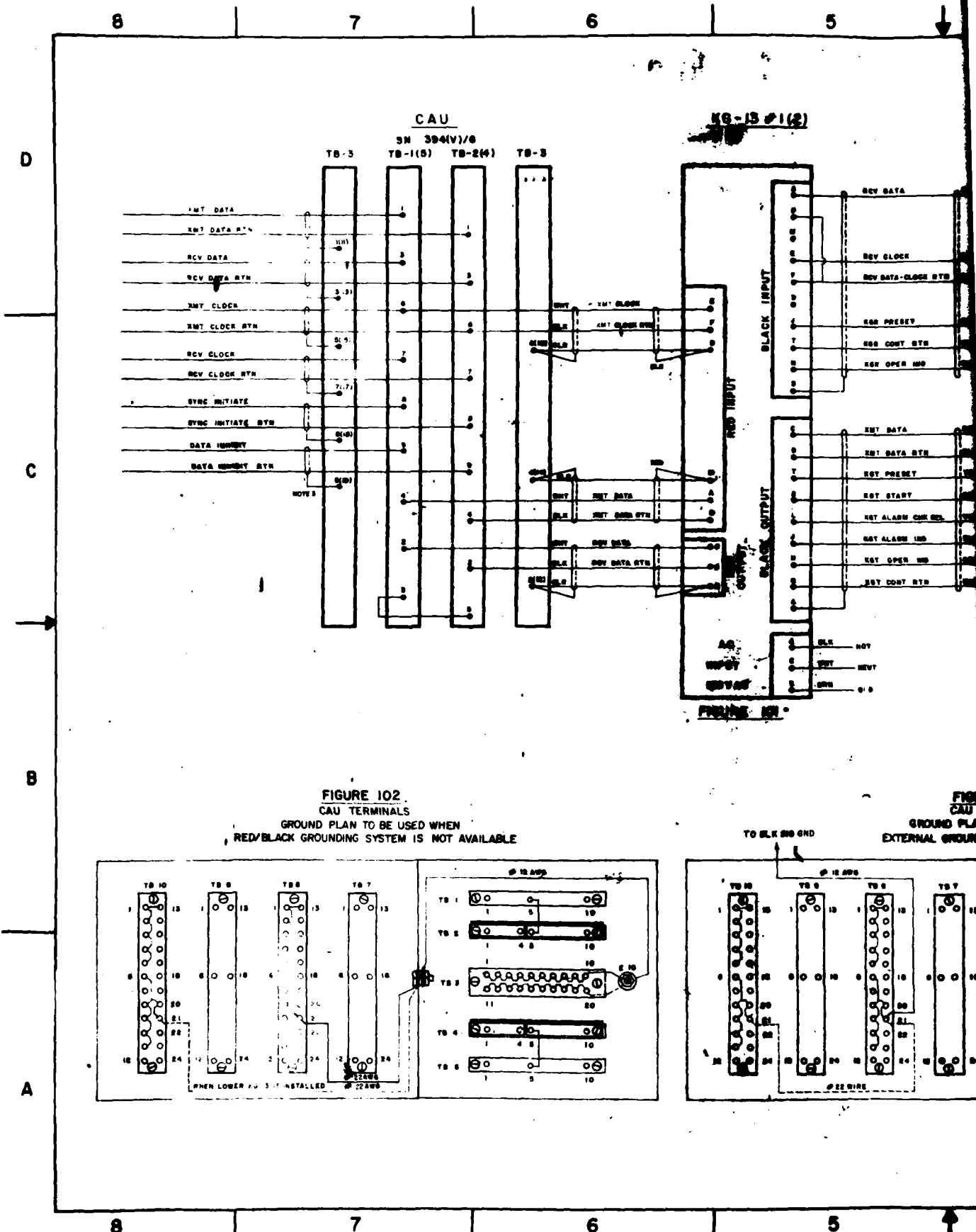
NOTES:

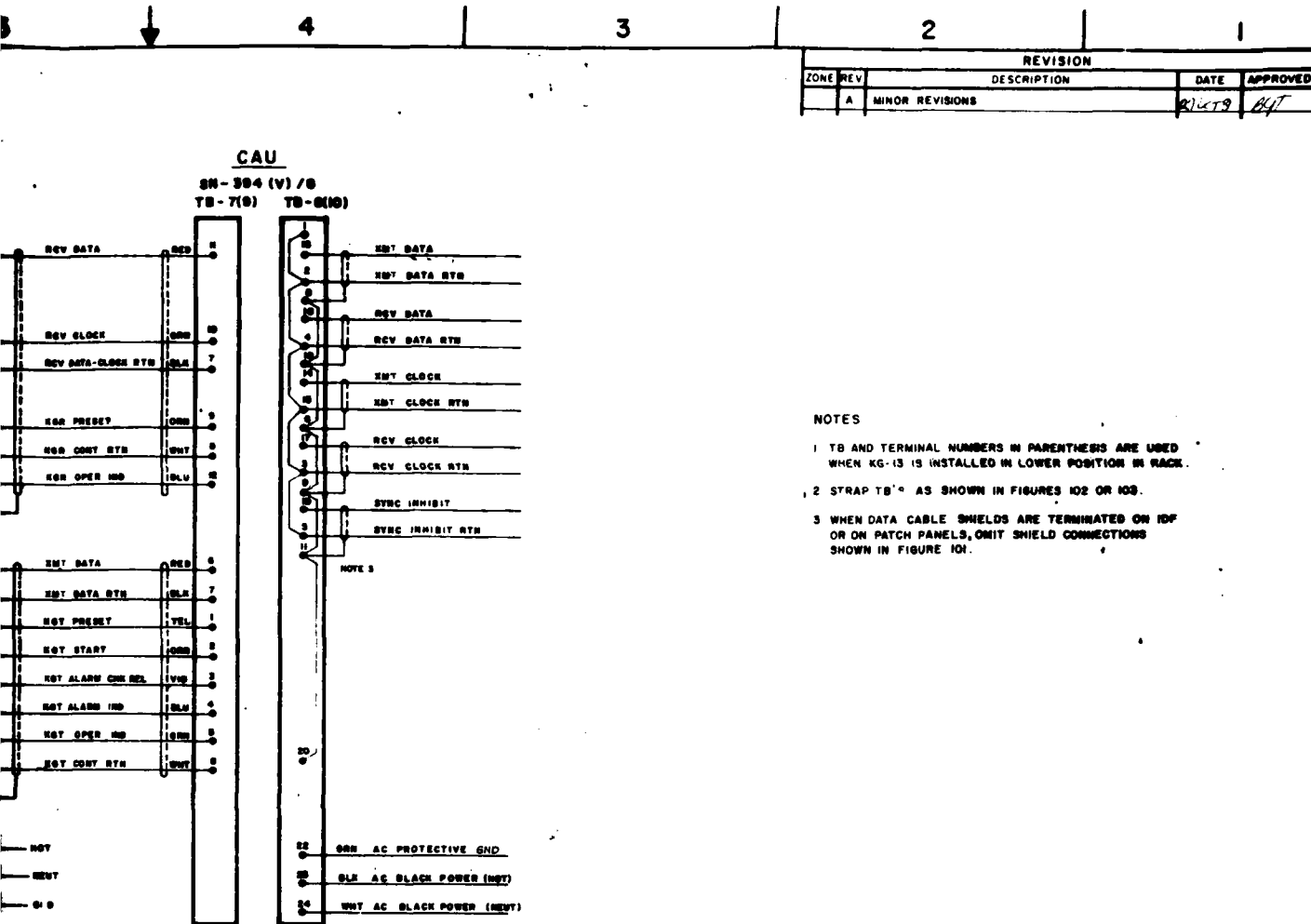
101. ALL SHIELDS NOT SHOWN CONNECTED TO SHIELD GROUND SHALL BE CUT BACK AND INDIVIDUALLY INSULATED. REMOVE APPROXIMATELY 1" OF SHIELD AND PROTECT WITH SHRINK TUBING.

MODEM MD-674



FIND NO	SML	DESCRIPTION	PART NO / NSN	UI	QTY
PARTS LIST					
IDENT NO STD-SD-0029					
U S ARMY COMMUNICATIONS-ELECTRONICS ENGINEERING INSTALLATION AGENCY					
MD-674 NON-SECURE SRT INSTALLATION INTERCONNECT SCHEMATIC					
DESIGNED BY C. MASSENBURG		DATE 5MAY79			
DRAWN BY P. MASSENBURG		DATE 5OCT81			
CHECKED BY C. MASSENBURG		DATE 21JUL81			
APPROVED BY C. MASSENBURG		DATE 21JUL81			
DESIGN ACTIVITY CCC-CED-SMR					
NEXT ASSEMBLY		USED ON			
DWG INDEX NO					
SIZE		FSCM NO		DRAWING NO	
D		50470			
SCALE		NONE		SHEET OF	
		1		1	



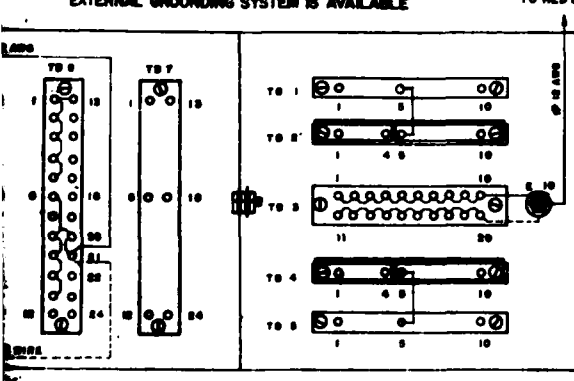


REVISION			
ZONE	REV	DESCRIPTION	DATE
A	1	MINOR REVISIONS	2/14/79

NOTES

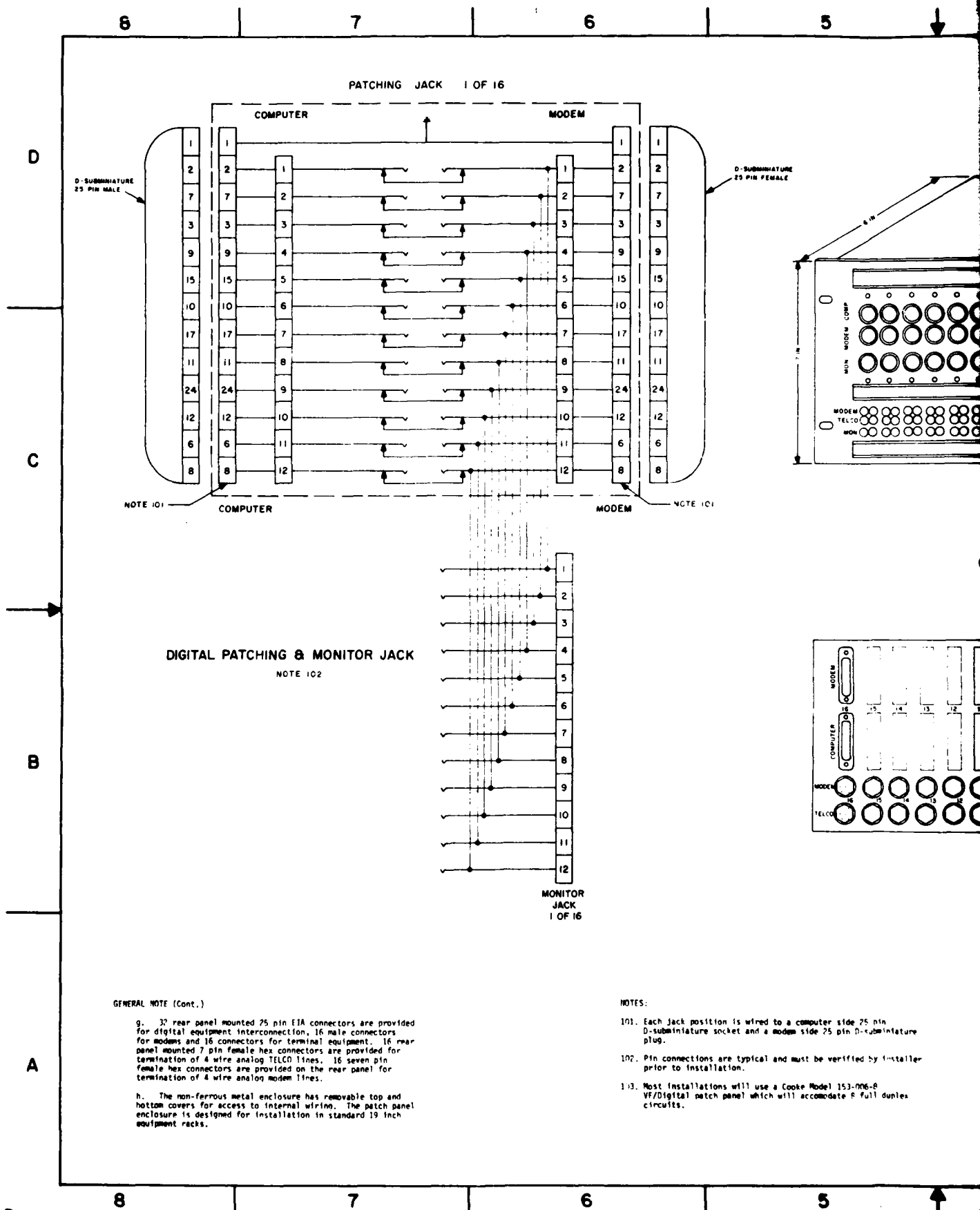
- 1 TB AND TERMINAL NUMBERS IN PARENTHESES ARE USED WHEN KG-13 IS INSTALLED IN LOWER POSITION IN RACK.
- 2 STRAP TB'S AS SHOWN IN FIGURES 102 OR 103.
- 3 WHEN DATA CABLE SHIELDS ARE TERMINATED ON IDF OR ON PATCH PANELS, OMIT SHIELD CONNECTIONS SHOWN IN FIGURE 101.

FIGURE 103
CAU TERMINALS
GROUND PLAN TO BE USED WHEN
EXTERNAL GROUNDING SYSTEM IS AVAILABLE



IDENT NO	STD-SD-0034	U.S. ARMY COMMUNICATIONS-ELECTRONICS ENGINEERING INSTALLATION AGENCY
DESIGNED BY	J. PINTER	DATE
DRAWN BY	JW JOHNSTON	DATE
CHECKED BY	SK	DATE
APPROVED BY	SK	DATE
DESIGN ACTIVITY	CCC-CED-SWR	SCALE
NEXT ASSEMBLY	USED ON	DATE
INDEX NO.		

CL-65 14



5

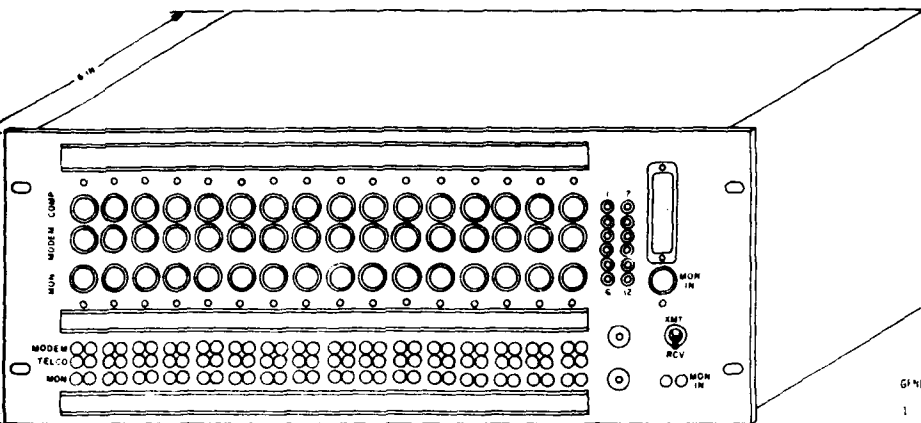
4

3

2

1

REVISION			
ZONE	REV.	DESCRIPTION	DATE
1	1	ORIGINAL DATA FROM STD-SD-0068	12 JUN 81
			24T

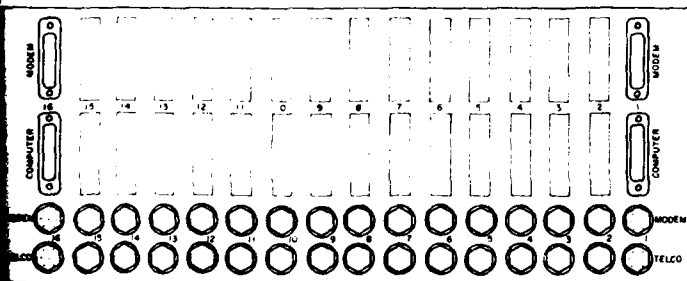


FRONT PERSPECTIVE VIEW

COOKE MODEL 153-006-16 VF/DIGITAL PATCH PANEL

"BLACK"

REAR VIEW

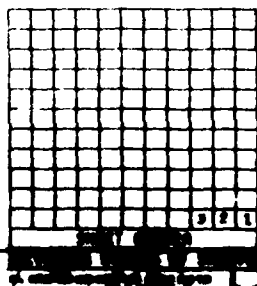


NOTE 103

GENERAL NOTE

- Description: The Cooke Engineering Co. Model 153-006-16 VF/Digital patch panel permits re-routing of signals at both the analog and digital side of modems and flexibility in interconnecting TELCO lines to modems or modems to computer ports.
- Any of 16 full duplex data channels may be patched to any of 16 computer ports. Any of up to 16 four wire TELCO lines may be patched to any of up to 16 modems.
- Normal-through multi-circuit jacks provide interconnection of 12 circuits per channel on the digital side, eliminating patch cords or looping plugs for standard connections. Normal-through tip-ring-sleeve bantam jacks, one pair for send and one pair for receive per channel, provide interconnection on the analog side, eliminating patch cords for standard connections. Monitor jacks, one for send and one for receive, are provided for each channel on the analog side.
- A Cooke DPC-12 12-circuit patch cord inserted in the computer jack of the desired channel disconnects the 12 normal-through circuits and directs the computer signals to the patch cord for connection to an alternate modem line. Similarly the normal-through feature of the tip-ring-sleeve jacks may be disconnected by inserting a tip-ring-sleeve double plug patch cord in the modem jacks allowing the modem 4 wire analog signal to be routed to an alternate TELCO line.
- A DPC-12 patch cord inserted in the modem jack of the desired channel disconnects the 12 normal-through circuits and makes the modem line available for connection to an alternate computer port. Similarly, analog TELCO lines may be routed to the analog side of alternate modems as above.
- A Cooke programmed patch plug inserted in either the computer or modem multi-circuit jack directs the signal patch as programmed.
- The front panel 12 circuit monitor-in jack is internally wired to 12 tip-type test points and a female 25 pin EIA connector mounted on the upper right side of the front panel. Any data channel may be bridged for monitoring or testing without interruption of on-line traffic by patching from the multi-circuit monitor jack of the desired channel to the multi-circuit monitor-in jack with a DPC-12 patch cord. The front panel tip-ring-sleeve monitor-in jacks are internally wired to 2 tip-type test points through a transmit-receive selector switch mounted on the lower right side of the front panel. The analog side of any channel may be bridged for monitoring or testing without interruption of on-line traffic by patching from the tip-ring-sleeve monitor jacks of the desired channel to the monitor-in jacks with a tip-ring-sleeve plug patch cord.

side 25 pin
pin D-subminiature
verified by 1 starter
153-006-16
16x8 Full duplex



NEXT ASSEMBLY
USED ON
OWS INDEX NO.

AE	DESCRIPTION	PART NO / NSN	UI	QTY
PARTS LIST				
STD-SD-0068	U.S. ARMY COMMUNICATIONS-ELECTRONICS ENGINEERING INSTALLATION AGENCY			
1	3	COOKE MULTI CIRCUIT DIGITAL PATCH PANEL MODEL 153-006-16		
DESIGN NO.	CCC-CEC-DCD	SIZE FROM NO.	D 50470	DRAWING NO.
SCALE	NONE	1"		SHEET

A

CL-06-FL

D

C

B

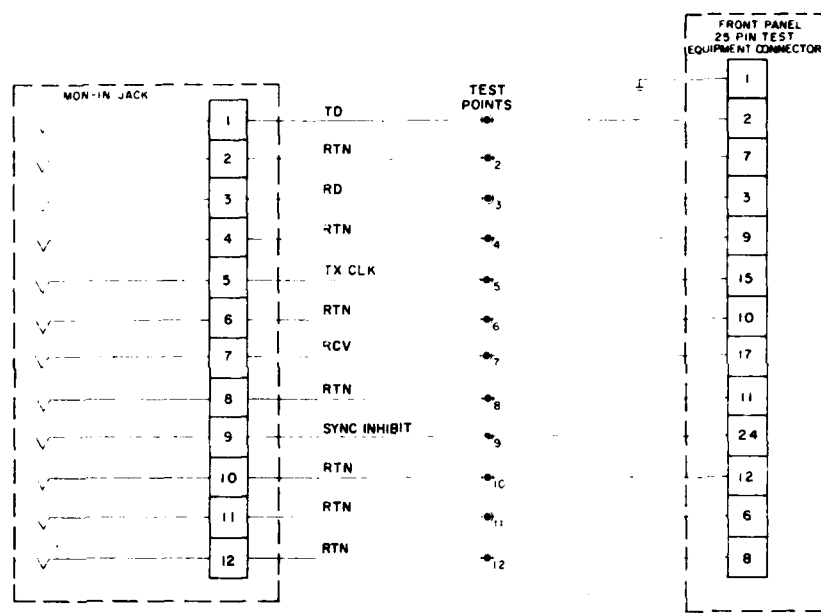
A

8

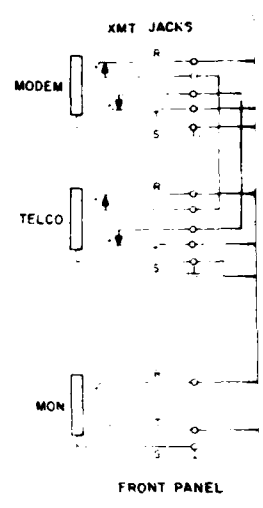
7

6

5



MONITOR IN JACK, TEST POINTS & TEST EQUIPMENT CONNECTOR



FRONT PANEL

25 PIN CONNECTOR	PATCH MODULE CIRCUIT	FUNCTION	COLOR	CODE
6	11	GROUND (SPARES)	YELLOW BLACK	SPARE PAIR W/ SHIELD
2	1	XMT DATA	RED	PR NO 1
7	2	XMT DATA RTN	BLACK	
3	3	RCV DATA	WHITE	PR NO 2
9	4	RCV DATA RTN	BLACK	
15	5	XMT CLOCK	GREEN	PR NO 3
10	6	XMT CLOCK RTN	BLACK	
17	7	RCV CLOCK	BLUE	PR NO 4
11	8	RCV CLOCK RTN	BLACK	
24	9	SYNC INHIBIT	BROWN	PR NO 6
12	10	SYNC INHIBIT RTN	BLACK	
6	11	SHIELDS	PR NO 1,2	SHIELDS
8	12	SHIELDS	PR NO 3,4,6	

DIGITAL PATCH PANEL WIRING ASSIGNMENTS
BLACK PATCH PANEL

NOTE 202

8

7

6

5

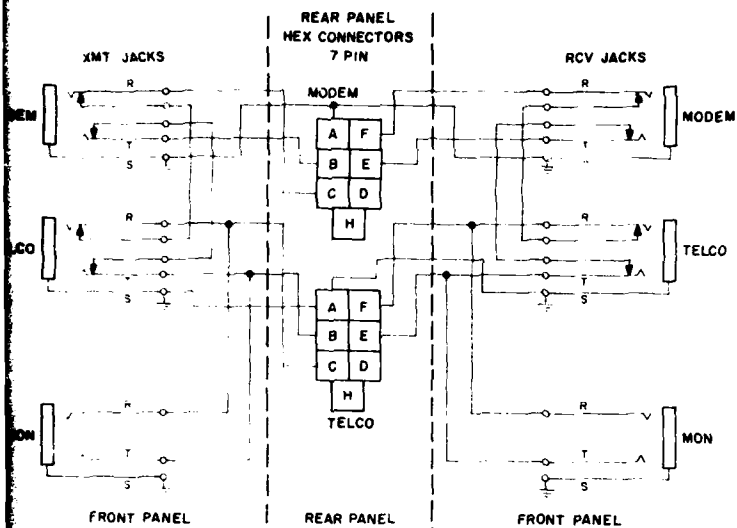
4

3

2

1

REVISION				
LINE	REV	DESCRIPTION	DATE	APPROVED
1	X	ORIGINAL DES. PRG. STD-SD-0068	12 Jun 61	WET



LEGEND:
 T - TIP
 R - RING
 S - SLEEVE
 G - CHASSIS GROUND

VF PATCHING JACKS

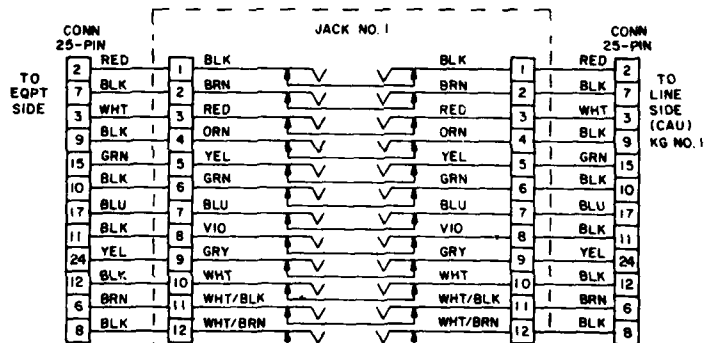
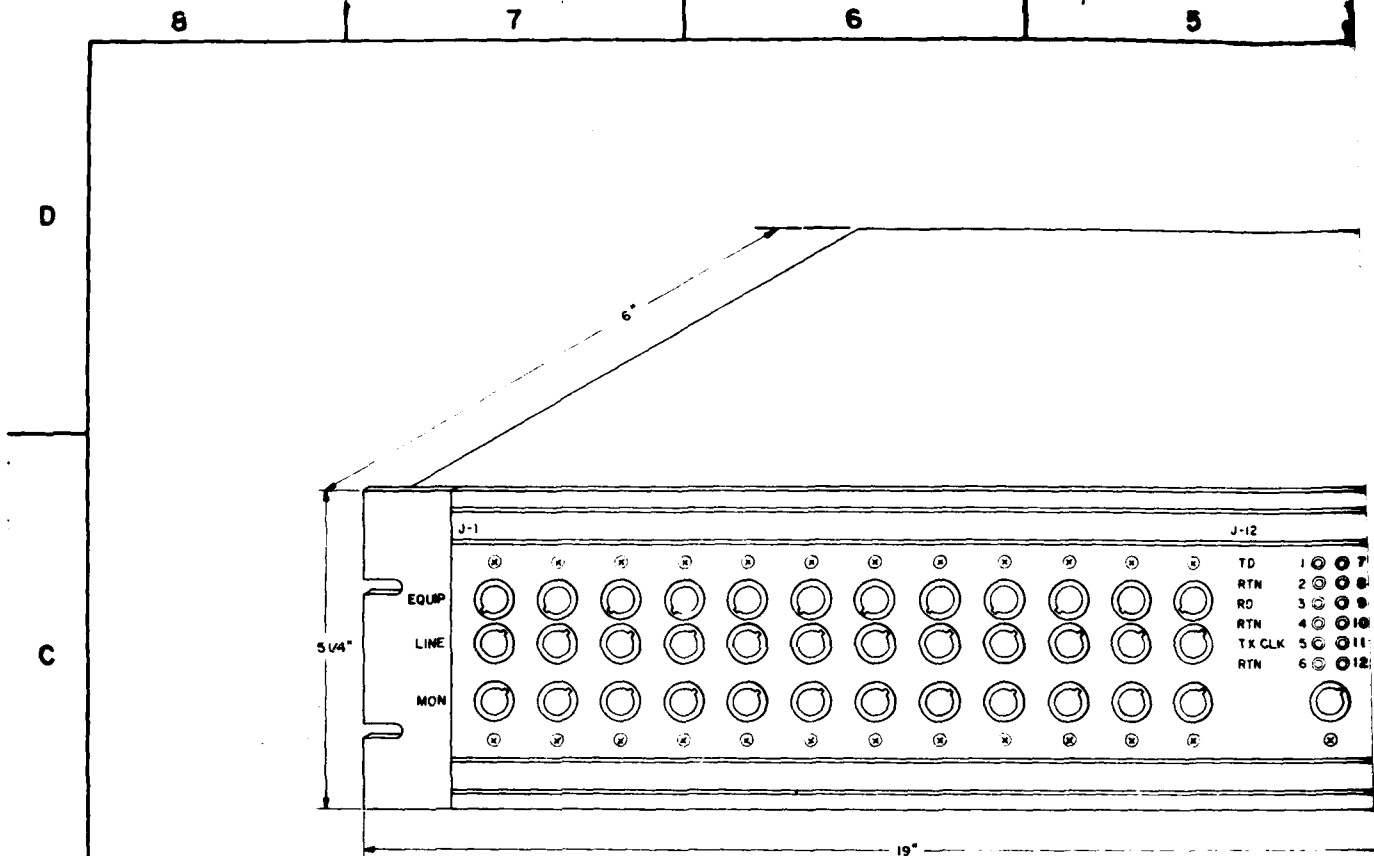
NOTE 101

NOTES:

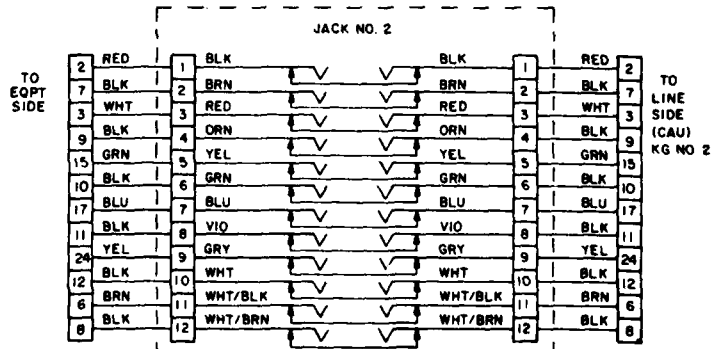
201. PIN CONNECTIONS ARE TYPICAL AND MUST BE VERIFIED BY INSTALLER PRIOR TO INSTALLATION.
202. CABLE PRS NO 1,2 SHIELDS ATTACH TO PIN 6
 CABLE PRS NO.3,4,6 ATTACH TO PIN 24

IDENT NO STD-SD-0068		SIZE PSCM NO D 30470		DRAWING NO	
SHEET 2 OF 3		SCALE NONE		1" UNLESS NOTED	
DRAWN BY		CHECKED BY		SHEET OF	
ENTERED IN USACEM 888					

CL-06-FL



25 PIN EIA CONN	FUNCTION	WIRE
2	TRANSMIT DATA	RED
7	RETURN	BLK
3	RECEIVE DATA	WHT
9	RETURN	BLK
15	TRANSMIT CLOCK	GRN
10	RETURN	BLK
17	RECEIVE CLOCK	BLU
11	RETURN	BLK
6	DATA INHIBIT	YEL
12	RETURN	BLK
24	SYNC INITATE	BRN
8	RETURN	BLK



MON IN JACK
1
2
3
4
5
6
7
8
9
10
11
12

5

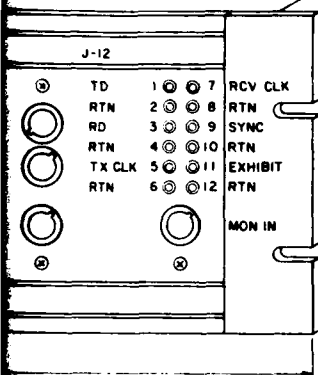
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3

2

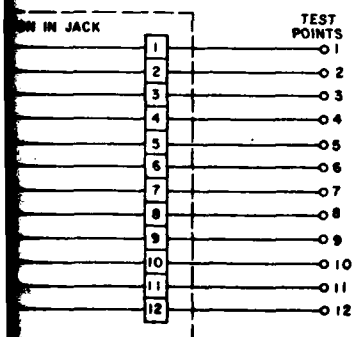
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REVISION			
ZONE	REV	DESCRIPTION	DATE
	X	ORIGINAL DATA FROM STD-SD-0068	12-10-67



COOKE MODEL 153-004A-16
DIGITAL PATCH PANEL
"RED"

FUNCTION	WIRE COLOR	PAIR NO.
TRANSMIT DATA	RED	NO. 1
RETURN	BLK	NO. 1
RECEIVE DATA	WHT	NO. 2
RETURN	BLK	NO. 2
TRANSMIT CLOCK	GRN	NO. 3
RETURN	BLK	NO. 3
RECEIVE CLOCK	BLU	NO. 4
RETURN	BLK	NO. 4
DATA INHIBIT	YEL	NO. 5
RETURN	BLK	NO. 5
SYNC INITIATE	BRN	NO. 6
RETURN	BLK	NO. 6



STD-SD-0068

0100470

SCALE NONE

RECORDS TO

1

2

3

4

5

6

7

8

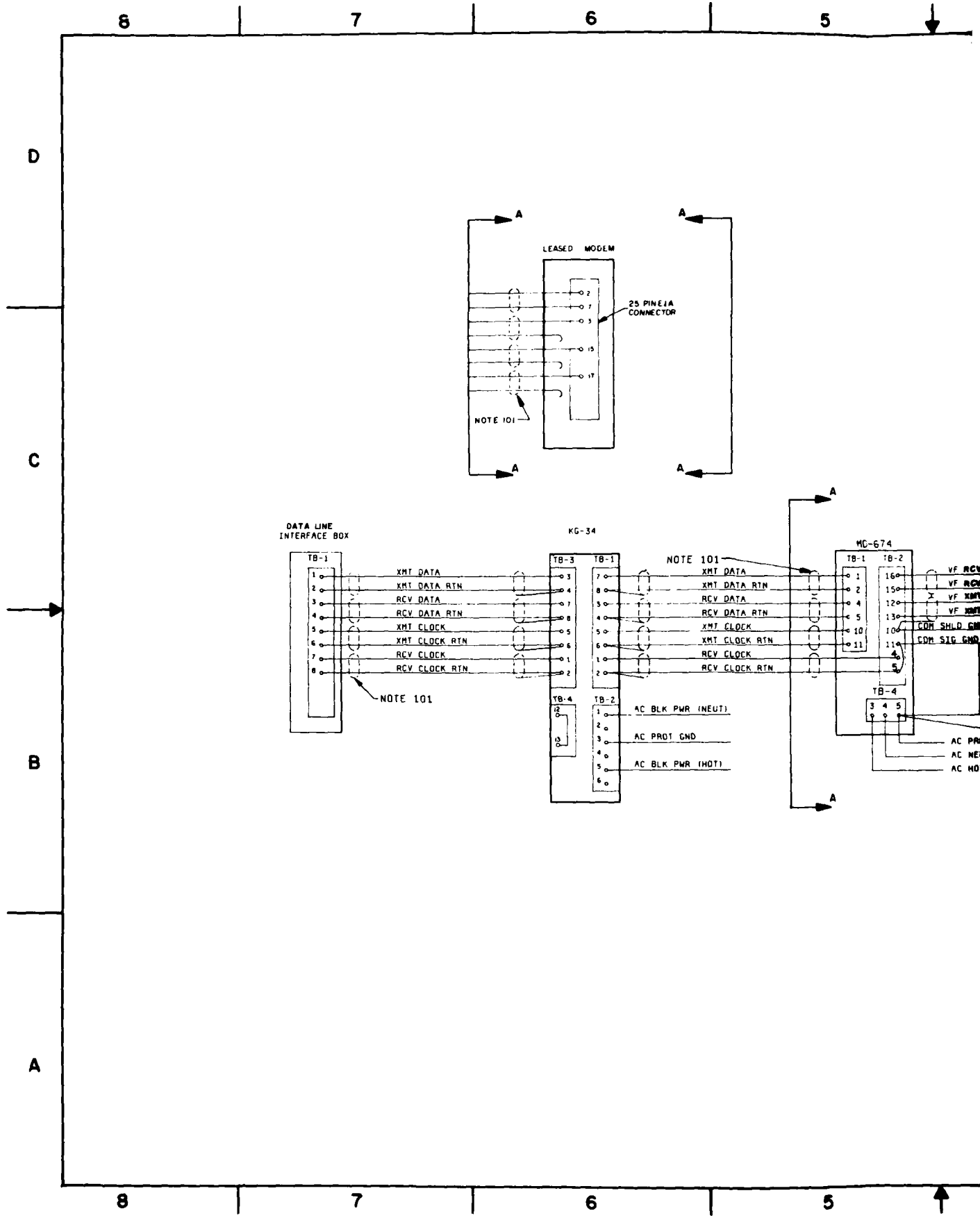
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10

11

12

CL-01-FL



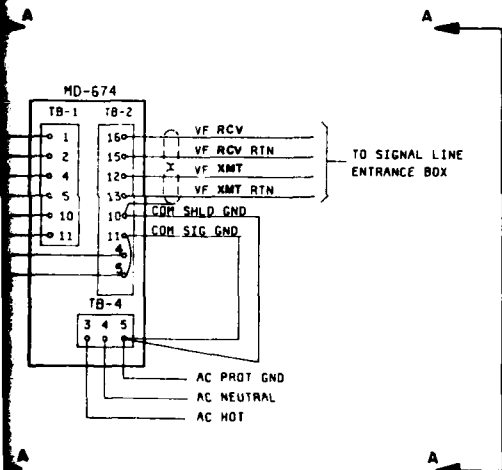
REVISION			
ZONE	REV	DESCRIPTION	DATE
A	1	MINOR CHANGES, REVERSE TB-2 RCV/XMT	8 APR 79

GENERAL NOTES:

1 GROUND ALL UNUSED PAIRS AT ONE END TO THE COMSEC CASE.

NOTES:

101. ALL SHIELDS NOT SHOWN CONNECTED SHALL BE CUT BACK APPROXIMATELY 1" & PROTECTED WITH SHRINK TUBING.



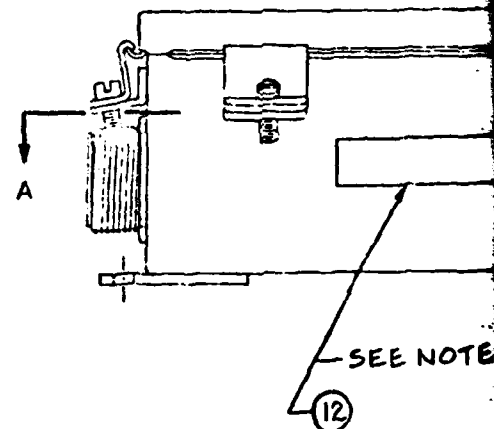
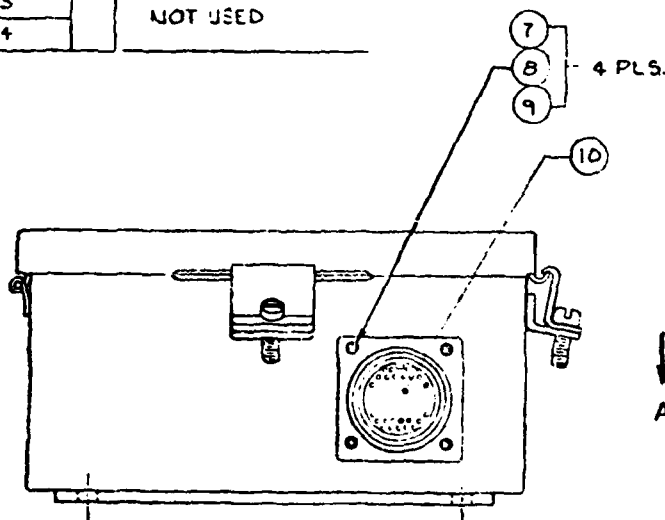
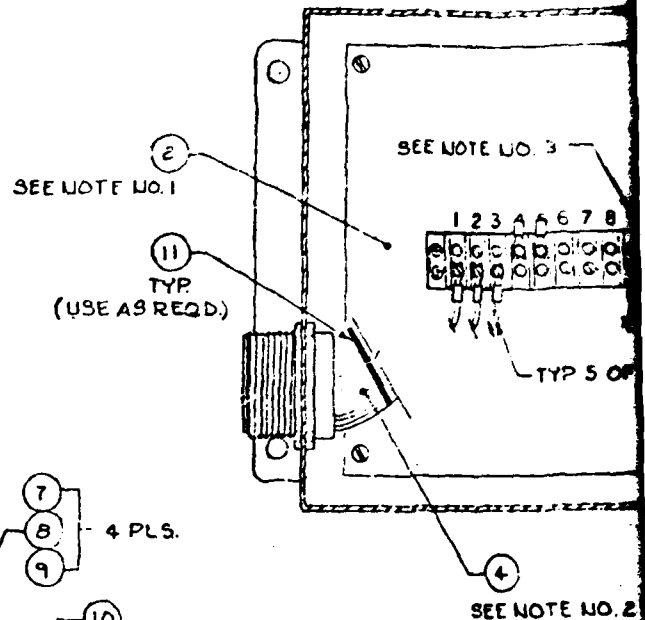
REV	DESCRIPTION	PART NO / NSN	UI	QTY
1	MINOR CHANGES, REVERSE TB-2 RCV/XMT			

STANDARD STD-SD-0028		U S ARMY COMMUNICATIONS-ELECTRONICS ENGINEERING INSTALLATION AGENCY	
SECURE SRT INSTALLATION INTERCONNECT SCHEMATIC			
DESIGNED BY WAGNER	DRAWN BY WAGNER	CHECKED BY WAGNER	APPROVED BY WAGNER
NEXT ASSEMBLY USED ON		DESIGN ACTIVITY CCL CED SWH	
DWG INDEX NO.		SCALE NONE	

THIS DOCUMENT HAS BEEN PURCHASED BY THE GOVERNMENT AND MAY BE REPRODUCED AND USED IN CONNECTION WITH ANY GOVERNMENT PROCUREMENT OR MAINTENANCE OPERATION

NOTE
DATA MARKED WITH AN ASTERISK (*) IS PECULIAR TO A PRIOR MANUFACTURER. IT DOES NOT TAKE PRECEDENCE OVER ANY OTHER DATA ON THIS DRAWING, AND IS NOT CONTRACTUALLY BINDING ON EITHER THE CONTRACTOR OR THE GOVERNMENT.

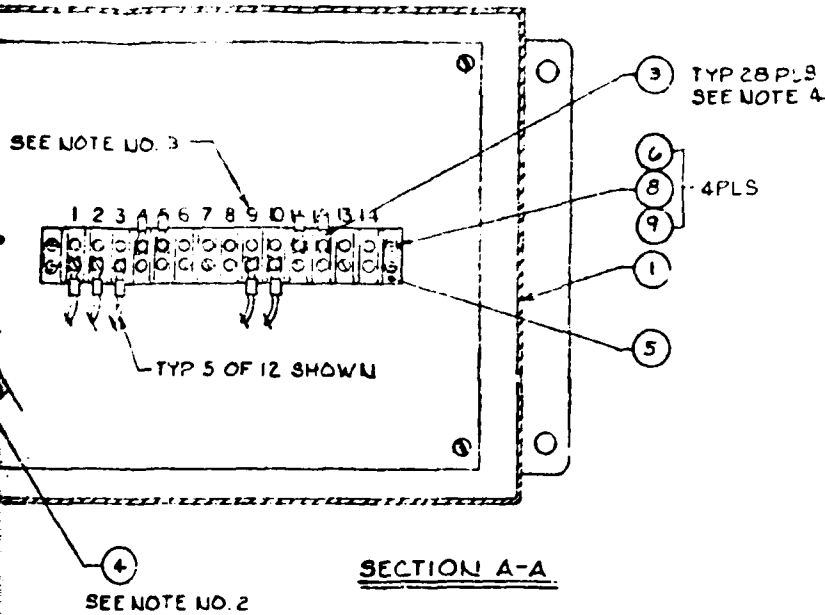
FROM CONNECTOR	TO TERM. STRIP		
PIN A	TB 1		TRANS. DATA
1 B	1 2	PAIR	" " RET.
1 C	3		REC. DATA
1 D	4	PAIR	" " RET.
PIN E	TB 5		TRANS. CLK.
1 F	1 6	PAIR	" " RET.
1 G	7		REC. CLK.
1 H	8	PAIR	" " RET.
PIN J	TB 9		INSTALLED SPARE
1 R	1 10	PAIR	
1 L	11		INSTALLED SPARE
1 M	12	PAIR	
PIN	TB 13		
"	" 14		NOT USED



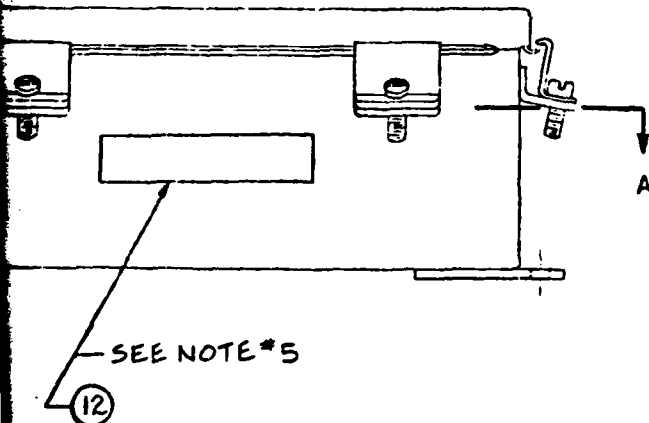
NOTES:

1. PANEL F/N I, MOUNTED ON WELDNUTS IN THE BOX USING HARDWARE FURNISHED WITH THE BOX.
2. USE F I L L TO WIRE BETWEEN CONNECTORS & TERMINAL BOARD AS PER TERMINATION LIST. INDIVIDUALLY TWIST EACH PAIR.
3. MARKING SHALL BE BLACK, STD. GOTHIC, STENCILED $\frac{1}{16}$ IN. HIGH. CHAR. SHALL BE CENTRALLY LOCATED ABOUT AS SHOWN.
4. 12 LUGS TERMINATED DURING ASS'Y. 14 LUGS FOR USE DURING FIELD INSTALLATION.
5. DECAL TO BE CENTRALLY LOCATED ABOUT AS SHOWN.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	GEN REV.	04/24/78	WJ
	B	ADDED F/N 12	11/14/78	WJ
3	C	SEE ADCN	11-80	WJ



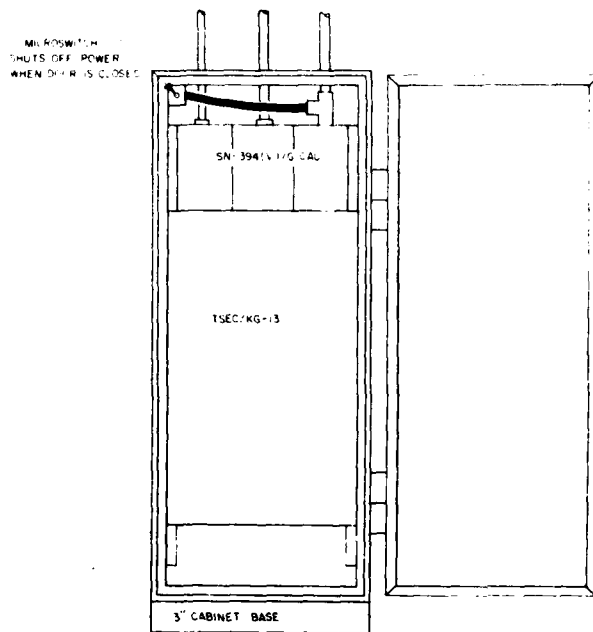
SECTION A-A



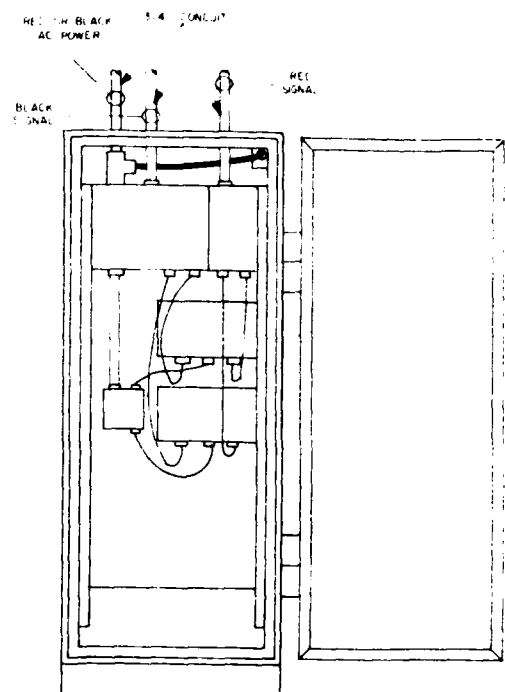
12	1	16250	SAAD-D-40654-2	DECALS (AMME)		
11	6	96906	MS 3567-4-9	STRAP, TIE DOWN	MIL-23190	
10	1		MS 3102R28-2IP	CONN. PLUG, ELECT. 37 PIN	MIL-C-5015	
9	8		MS 35338-41	WASHER, LOCK-SPRING	FF-W-84	
8	8		MS 35649-262	NUT, HEX 6-32	FF-U-936	
7	4		MS 35206-230	SCREW, MACH. PHD. 6x32x1/8 LG	FF-S-92	
6	4	96906	MS 35206-231	SCREW, MACH. PHD. 6x32x1/8 LG	FF-S-92	
5	1	81348	37TB4	TERMINAL BOARD	MIL-T-55164/1	
4	12	16420	BB 414 WHT	WIRE, 22 GA. STD. W-T	MIL-W-878-1522	2
3	28	59730	B14-GFL	TERMINAL LUG, FORK		
2	1	16250	SAAD-D-40631	PANEL, MOUNTING		1
1	1	16250	SAAD-D-40632	SRT DATA LINE INTERFACE BOX		
FIND NO.	QTY REQD.	CODE IDENT.	PART NO. OR IDENTIFYING NO.	DESCRIPTION	SPECIFICATION	NOTE

UNLESS OTHERWISE SPECIFIED:		DEPARTMENT OF THE ARMY SACRAMENTO ARMY DEPOT SACRAMENTO, CALIF 95801	
DIMENSIONS ARE IN INCHES TOLERANCES UNLESS OTHERWISE SPECIFIED:		SRT DATA LINE INTERFACE BOX ASSY	
FRACTIONS DECIMALS ANGLES		D 16250 SAAD-D-40630	
MATERIAL		DATE	
PART ASSY USED ON		REVIEWED	
APPLICATION		APPROVED	
		DATE	

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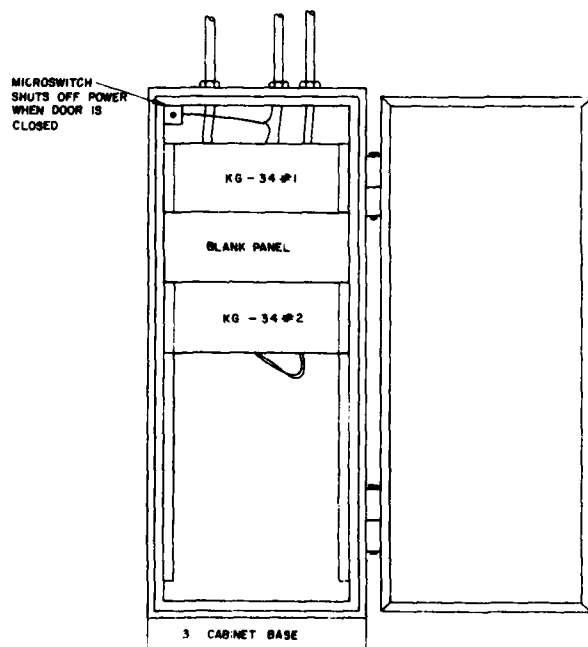


FRONT VIEW
(DOOR OPEN)

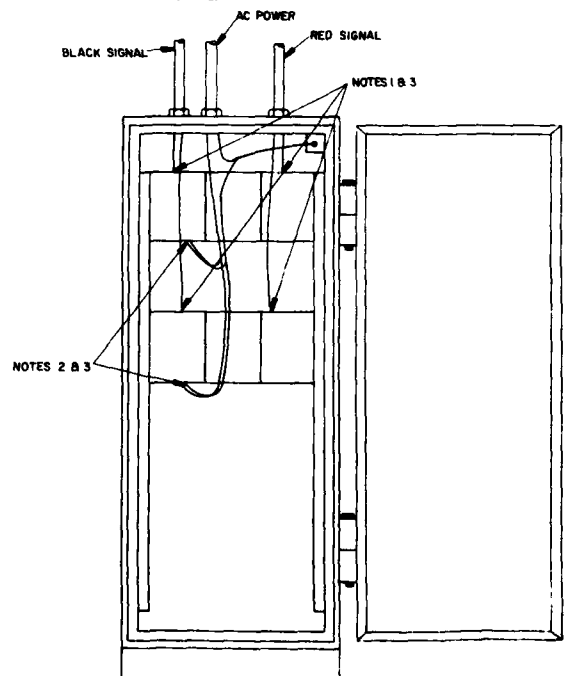


REAR VIEW
(DOOR OPEN)

KG-13 AND SN-394 (V)/G IN SECURITY CABINET



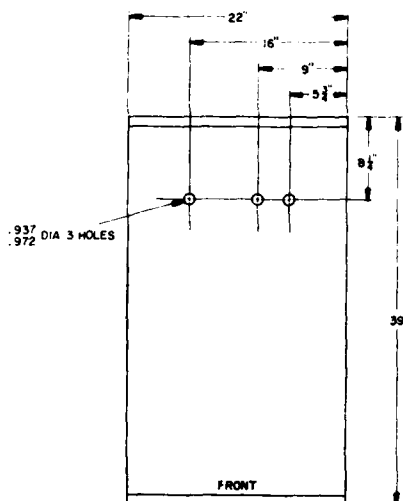
FRONT VIEW
(DOOR OPEN)



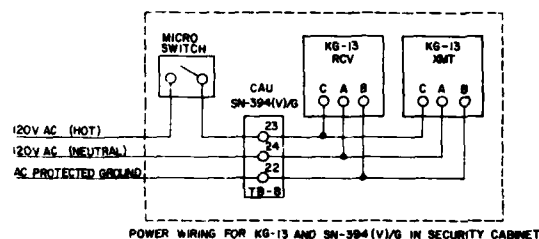
REAR VIEW
(DOOR OPEN)

TWO KG-34'S IN SECURITY CABINET

REVISIONS			
SYM	ZONE	DESCRIPTION	DATE



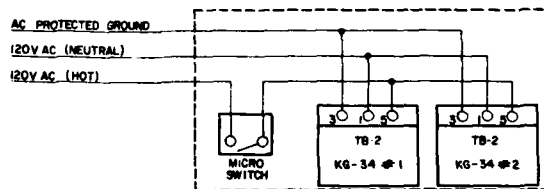
TOP VIEW



POWER WIRING FOR KG-13 AND SN-394(V)/G IN SECURITY CABINET

NOTES

1. DRILL HOLES IN TOP OF CHASSIS TO ACCOMMODATE SIGNAL CABLES
2. DRILL HOLES IN BOTTOM OF CHASSIS TO ACCOMMODATE POWER LINES
3. PROTECT CABLES WITH GROMMETS WHERE THEY ENTER KG-34 CHASSIS
4. ALL CONDUIT IS 3/4"



POWER WIRING FOR KG-34'S IN SECURITY CABINET

		UNLESS OTHERWISE SPECIFIED		ORGANIZATION USACEEIA-CED FORT HUACHUCA, ARIZONA	
		DIMENSIONS ARE IN INCHES TOLERANCE ON FRACTIONS DECIMALS ANGLES		DESIGN BY GIBBONS	
				DRAFTSMAN D A WIESNER	
				CHECKER <i>[Signature]</i>	
				DATE 3 APRIL 1974	
				ORGANIZATION APPROVAL	
				FAB APPROVAL	
NEXT ASSY	USED ON	MATERIAL		CODE IDENT NO. 50470 SIZE D	
APPLICATION		MATERIAL FINISH		COM-CMI3-003	
DO	APPLY PART NO.	MATERIAL FINISH		SCALE 1/2" = 1"	
DO NOT	AS SPECIFIED	FINAL FINISH		SHEET 1 OF 1	

2

8

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7

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B

A

NOTES:

1. THIS PARTS KIT IS DESIGNED TO SPEED CALLOUTS & INSTALLATION OF KG-13(S).
2. THE KG-13(S) & UYK-22 ARE ORDERED ON THE SITE BILL OF MATERIALS. ORDER A DUAL UYK-22 WHEN TWO (2) KG-13(S) ARE TO BE INSTALLED. ADDTNL BRDWR OF F/N 17 USED TO MOUNT.
3. USE F/NS 6, 7, 8, & 16 FOR WIRING. SEE SCHEMATIC, SHT. 3.
4. USE F/N 12 TO PLUG UNUSED ENTRANCE HOLE IN F/N 3 USE IN UPPER OR LOWER AS REQUIRED BY ACTUAL INSTALLATION
5. CONDUIT ENTRANCE FROM OVERHEAD OR BELOW FLOOR DUCT IS OPTL. THE CONDUIT AND FITTINGS OTHER THAN THOSE FURNISHED IN THIS KIT MUST BE SUPPLIED BY THE SITE BILL OF MATERIALS. ALL ITEMS FURNISHED ARE SHOWN IN SOLID LINE. ITEMS SHOWN DASH LINE TO BE FURNISHED IN SITE BILL OF MATERIAL.
6. F/N 2 IS TO BE MOUNTED TO KG-13 CASE GROUND STUD LOCATED AS SHOWN.
7. CABLE SHIELD IS TO BE CONNECTED TO STUD IN BOX USING TERM LUG F/N 3.
8. ON SHEET 3, SCHEMATIC, ALL WIRING IS RUN INSIDE CONDUIT.
9. INSTALLATION OF GROUND SYSTEM CONDUIT IS OPTIONAL AND DEPENDANT ON SITE REQUIREMENTS.
10. CUT CONDUITS TO EXACT LENGTHS REQUIRED.

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2

1

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE

TO MOUNT.

2	27	18857	2-304	CONNECTOR BOX, F/W FLEX CONDUIT 3/4		
2	26	96233	75010223-012	CABLE ASSY SPCL PRP		
2	25	↑	↑	-011	↑	
2	24	↑	↑	-010	↑	
2	23	96233	75010226-003	CABLE ASSY SPCL PRP		
1	22	59730	4241	ELBOW CONDUIT INS F3/4		
5	21	59730	2532	CONNECTOR, FLEX CORD & CABLE		
5	20	98230	CE188939	CABLE ASSY, F.W. SHIELD		7
	19	—	UYK-22	UYK-22, CAU UNIT		2
	18	—	KG-13	KG-13, CRYPTO UNIT		2
26	17	55355	HW-104	SCREW, OKN HD 10-32UNF x 1/2		
20	16	81348	WS 610	SPLICE, CONN		3
1	15	74156	RR-197	RACK, RELAY		
6	14	03743	96TO75	CONNECTOR, EMT 3/4 COMPRESSION		
3	13	15235	LE 27	CONDUIT, 3/4 ELBOW, FORM 7		
1	12	↑	FLG-2	PLUS 3/4 IN		4
3	11	↑	DSS 100	COVER, CND. BOX W/GSKT.		
3	10	15235	270	COVER, F3/4 CONDUIT, FORM 7		
5	9	96906	MS25036-111	TERM LUG 10-16 AWG #6 STUD	MIL-T-7928	
20 FT	8	81349	MW-C-16(19)-J-0	WIRE, STRANDED 16 BK	MIL-W-76	3
20 FT	7	81349	MW-C-16(19)-J-9	WIRE, STRANDED 16 W	MIL-W-76	3
20 FT	6	81349	MW-C-16(19)-J-5	WIRE, STRANDED 16 G	MIL-W-76	3
3 FT	5	81348	57784	CONDUIT-FLEXIBLE-3/4	WW-C9-00	10
2	4	16750	SAAD-C-40658-6	CONDUIT-RIGID EMT 5FT		10
3	3	↑	SAAD-C-40688	CONDUIT BOX, MODIFIED		
2	2	↑	SAAD-C-40686	BRACKET ASSY, CONDUIT		6
1	1	16250	SAAD-D-40684	CIRCUIT BREAKER PANEL ASSY		
QTY	FIND	CODE	PART NO. OR	NOMENCLATURE OR	SPECIFICATION	NOTE
REQD	NC	IDENT	IDENTIFYING NO.	DESCRIPTION		

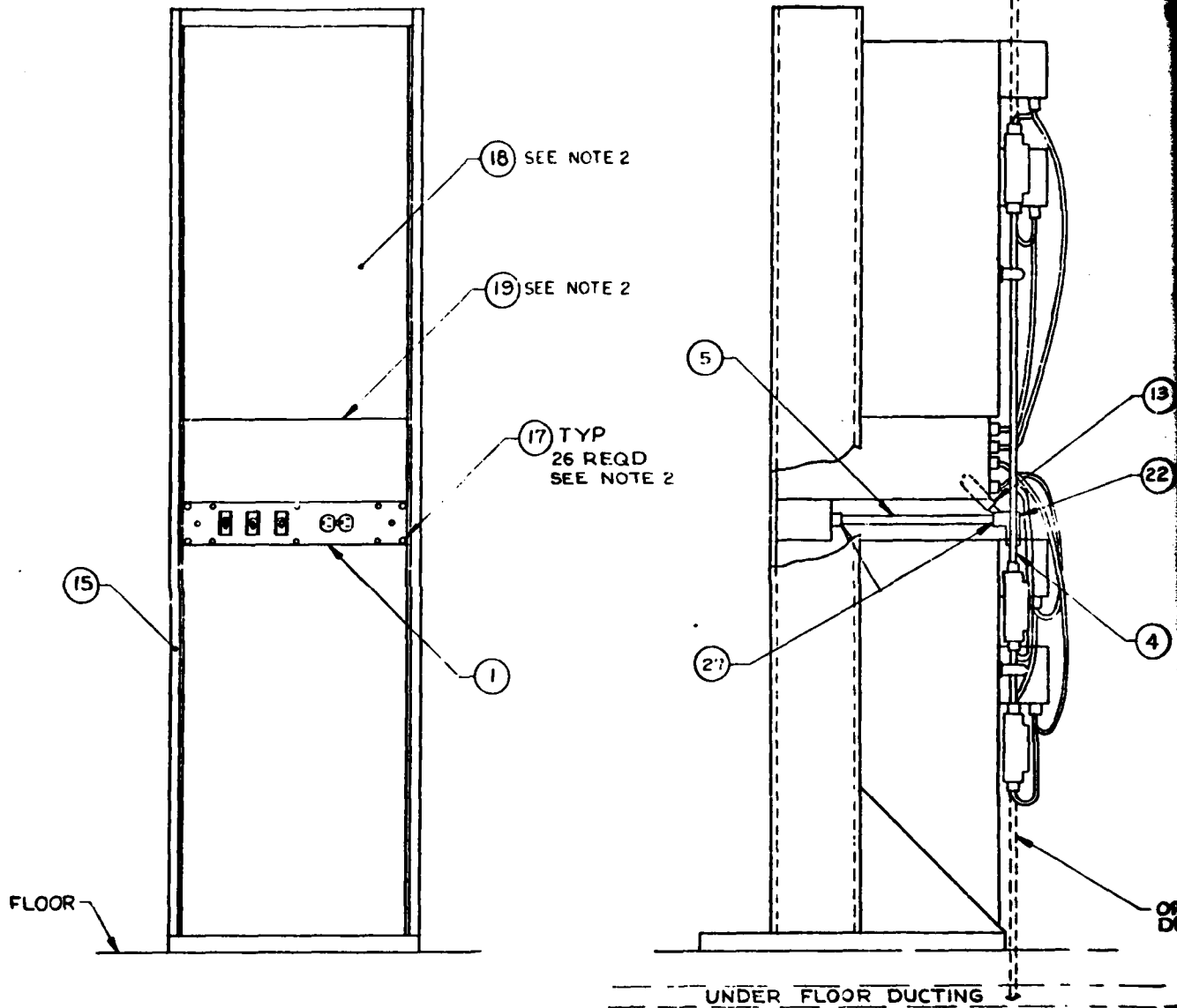
PARTS LIST

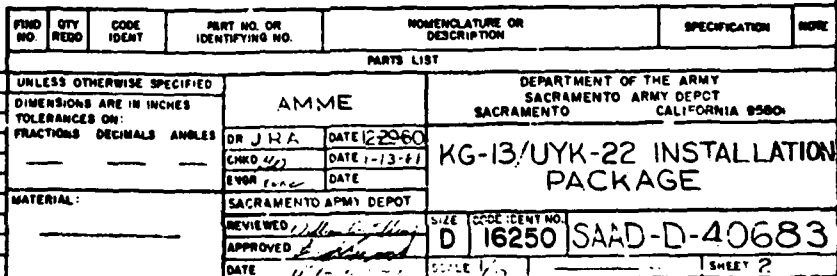
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: FRACTIONS DECIMALS ANGLES — — — — — MATERIAL: ———— FINAL NEXT ASSY USED ON APPLICATION		AMME DR. 24 3/4 MM DATE 1-22-57 CHFD 24 DATE 1-12-81 ENGR 1-2 DATE SACRAMENTO ARMY DEPOT		DEPARTMENT OF THE ARMY SACRAMENTO ARMY DEPOT SACRAMENTO CALIFORNIA 95801	
		KG-13/UYK-22 INSTALLATION PACKAGE REVIEWED: 1-22-57 G.C.H. APPROVED: 1-22-57 DATE 1-22-57		SIZE CODE IDENT NO. D 16250 SAAD-D-40683 SCALE NONE SHEET 1 OF 1	

1 2 0

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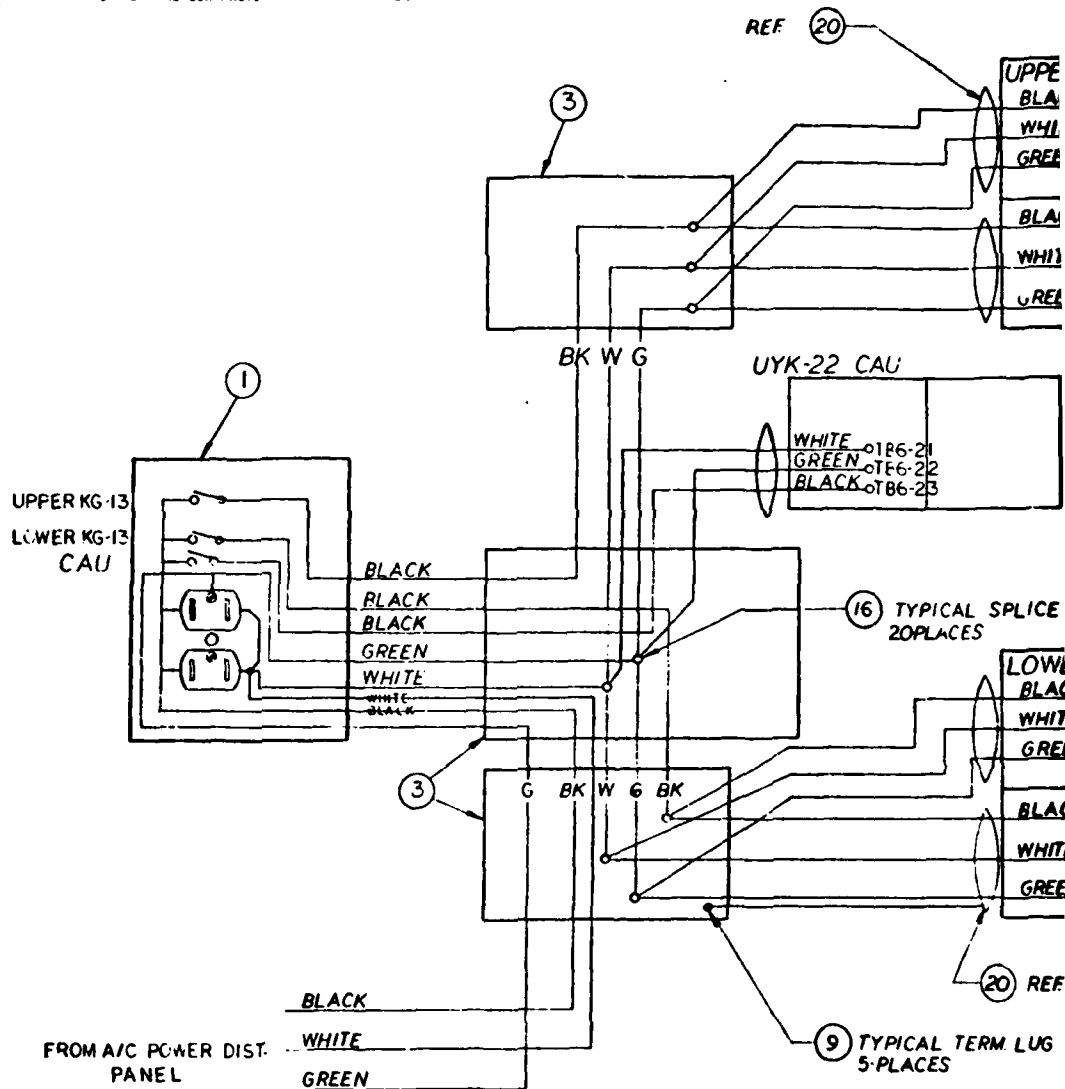
NOTE DATA MARKED WITH AN ASTERISK (*) IS PECULIAR TO A PRIOR MANUFACTURER. IT DOES NOT TAKE PRECEDENCE OVER ANY OTHER DATA ON THIS DRAWING, AND IS NOT CONTRACTUALLY BINDING ON EITHER THE CONTRACTOR OR THE GOVERNMENT.





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SCHEMATIC

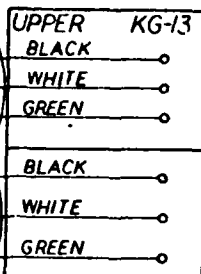
4

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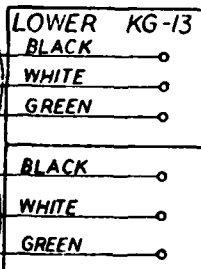
REVISIONS			
ZONE	LTR	DESCRIPTION	DATE
			APPROVED



AU

BT86-21
BT86-22
BT86-23

TYPICAL SPLICE CONNECTOR
20 PLACES



20 REF

TYPICAL TERM LUG
PLACES

EMATIC

PWD NO.	QTY REQD	CODE IDENT.	PART NO. OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	SPECIFICATION	NOTE
PARTS LIST						
UNLESS OTHERWISE SPECIFIED:				DEPARTMENT OF THE ARMY SACRAMENTO ARMY DEPOT SACRAMENTO CALIFORNIA 95801		
DIMENSIONS ARE IN INCHES				AMME DATE 12-3-80 CHKD <i>[Signature]</i> DATE 1-13-81 ENGR <i>[Signature]</i> DATE		
TOLERANCES ON:				KG-13/UYK-22 INSTALLATION PACKAGE		
FRACTIONS DECIMALS ANGLES				SACRAMENTO ARMY DEPOT		
MATERIAL:				REVIEWED <i>[Signature]</i> SIZE CORE IDENT NO. APPROVED <i>[Signature]</i> D 16250 SAAD-D-40683 DATE 4-15-81 SCALE 1/4" = 1" SHEET 3		
FINAL						
NEXT ASSY						
USED ON						
APPLICATION						

WHEN SPECIFYING THIS DRAWING STATE DRAWING NO. AND PART NO. IN LEFT TWO OF ANY ORDER

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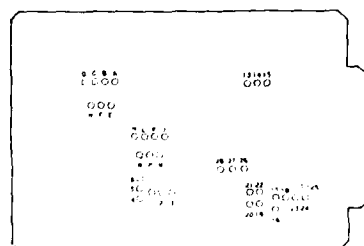
FUNCTION	DETAIL	STRAP
POSITIVE MARK DATA TO TRANSMIT TERMINAL		
TRANSMIT TO SOURCE SELECTION: TERMINAL OR BLACK AREA	BLACK AREA ADDRESS OF TRANSMIT TO 17-18, 24-25	
TRANSMIT TO SYNCHRONOUS TERMINAL	NEGATIVE TRANSITION IN CENTER OF INFORMATION BIT (MIL STD-188) 20-21	
TRANSMIT TO CRYPTID	NEGATIVE TRANSITION IN CENTER OF INFORMATION BIT 14-13	
RESYNC INITIATION AFTER RESTORATION OF CARRIER	UNCONDITIONAL 27-28	

FUNCTION	DETAIL	STRAP
POSITIVE MARK (MIL STD-188)		8-11
NEGATIVE TRANSITION IN CENTER OF INFORMATION BIT (MIL STD-188)		8-11
DATA INHIBIT OUTPUT TO TERMINAL	NOT USED	2-3, 4-5
SYNC INITIATE CONTROL VOLTAGE FROM TERMINAL	GROUND CLOSURE OR NOT USED	10-11, 32-33 15-14
AUTOMATIC SYNC DETECTION (RECOGNITION OF SYNC CODE)	ENABLE AUTOMATIC SYNC DETECTION	30-31
OCCURRENCE OF SYNC CODE IN MESSAGE BLOCK LENGTH (8-BIT CHARACTER)	SELECT LEAST NUMBER OF CHARACTERS GREATER THAN OR EQUAL TO MESSAGE LENGTH: 256 CHARACTERS	256
AUTO SYNC DETECTION (RECOGNITION OF NO DATA TRANSITIONS)	SYNC RECOGNIZE ON STEADY MARK OR ON STEADY SPACE	36-37
SYNC CODE SELECTION	TWO 8-BIT CHARACTER REGISTER TO BE STRAPPED FOR DESIRED SYNC CODE	38-39 (SEE DETAIL A)

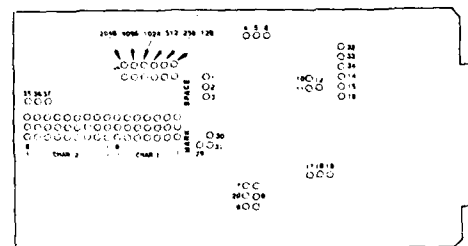
DESCRIPTION
BLACK TRAIL TO MODER
SELECTION TO SOURCE
TRANSMIT TO
BLACK RECORD FROM MODER
SELECTION TO SOURCE
AUTOMATIC SYNC INITIATION OR AUTOMATIC DETECTION
KG-13 FUNCTIONS
RESYNC INITIATION AFTER RESTORATION OF CARRIER
TERMINAL DATA DURING LOSS OF CARRIER

RED A-1 COMPONENT BOARD STRAPPING

RED A-2 COMPONENT BOARD STRAPPING

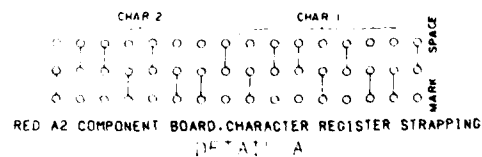


RED A-1 COMPONENT BOARDS
87150000-000/002.STRAPING LOCATIONS



RED A-2 COMPONENT BOARD.
STRAPPING LOCATIONS

NAVALEX 0967 LP-548-3010
T.O. 3155-2UYK22-1



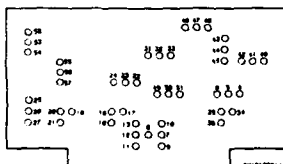
REVISION			DATE	APPROVED
REV.	DESCRIPTION	DATE	APPROVED	
A	REVISED AND REDRAWN	10SEP81		

DESCRIPTION	SECTION	STRAP TERMINAL
BLACK TRANSMIT DATA TO MODEM	POSITIVE MARK (MIL-STD-188)	20-34
SELECTION OF TRANSMIT TB SOURCE	EXTERNAL BIT TIMING FROM MODEM	8-9, 11-12, 50-51
TRANSMIT TB TO MODEM	NEGATIVE TRANSITION IN CENTER OF INFORMATION BIT (MIL-STD-188)	16-18
BLACK RECEIVE DATA FROM MODEM	POSITIVE MARK (MIL-STD-188)	32-31
SELECTION OF RECEIVE TB SOURCE	EXTERNAL FROM MODEM	26-25, 22-23
AUTOMATIC SYNC INITIATION (USING RED A2 AUTOMATIC SYNC DETECTION)	SELECTION OF AUTOMATIC SYNC INITIATION AFTER AUTOMATIC OUT-OF-SYNC DETECTION	41-40
KG-13 CONTROL FUNCTIONS	KG-13	5-4, 20-10, 44-45, 46-47
RESYNC-INITIATION AFTER RESTORATION OF CARRIER	UNCONDITIONAL	52-53
TERMINAL DATA INHIBIT DURING LOSS OF CARRIER	UNCONDITIONAL	55-56

NOTE

101 STRAPPING APPLIES TO TSEC/KG-13

BLACK A-1 COMPONENT BOARD STRAPPING



BLACK A-1 COMPONENT BOARD
87150030-000. STRAPPING LOCATIONS

NAVEX 0967 LP-548-3010
T.O. 3155-2UTK22-1.

SHEET NUMBER	REVISION STATUS OF SHEETS
21	

NEXT ASSEMBLY
DWG INDEX NO.

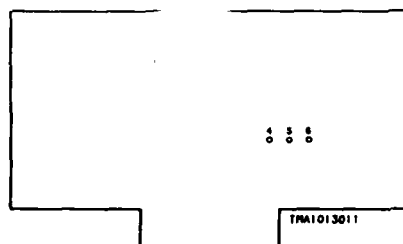
REV	SML	DESCRIPTION	PART NO / NSN	UI	QTY
PARTS LIST					
CENT NO STD-SD-0052			U S ARMY COMMUNICATIONS-ELECTRONICS ENGINEERING INSTALLATION AGENCY		
DRAWN BY E. HOOKER			AN/UYK-22 STRAPPING FOR SYNC OPERATION OF SRT		
CHECKED BY P. MUSERELLI					
APPROVED BY					
DESIGN/ACTIVITY CCC-CEC-DCD					
SHEET FROM NO D 50470			DRAWING NO		
SCALE NONE			SHEET OF		

ENTERED IN USA/TTC/LG

D

DESCRIPTION	OPTION	STRAP TERMINALS
KG-13/KG-30 CONTROL FUNCTIONS	KG-13	3-1.5-6.7-8

BLACK A2 COMPONENT BOARD STRAPPING



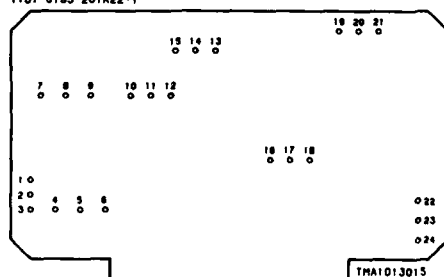
BLACK A2 COMPONENT BOARD. STRAPPING LOCATIONS

C

DESCRIPTION	OPTION	STRAP TERMINALS
KG-13/KG-30 CONTROL FUNCTION	KG-13	2-3 5-6 8-7 11-10 14-15 17-16 20-19
RESYNC-INITIATION AFTER RESTORATION OF CARRIER	UNCONDITIONAL	23-24

BLACK A3 COMPONENT BOARD STRAPPING

HAVEFLEX 0967 LP-548-3010
T.O. 3185-20TK22-1

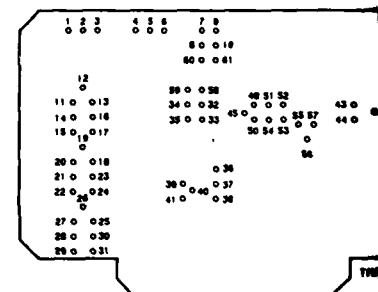


BLACK A3 COMPONENT BOARD.STRAPPING LOCATIONS

A

DESCRIPTION	OPTION
REMOTE ALARM OUTPUT CONTROL VOLTAGE	NOT REQUIRED
LOSS-OF-CARRIER CONTROL VOLTAGE FROM MODEM (REMOTE SYNC INHIBIT)	GROUND CLOSURE OR NOT REQUIRED (SEE NOTE 201)
REMOTE ALARM RESET INPUT CONTROL VOLTAGE	NOT REQUIRED
KG-13/KG-30 CONTROL FUNCTIONS	KG-13

BLACK A4 COMPONENT BOARD STRAPPING



BLACK A4 COMPONENT BOARD.STRAPPING LI

DESCRIPTION	OPTION
PRIMARY POWER INPUT STRAPPING AT POWER TRANSFORMER T1 (ON BLACK MODULE CHASSIS)	115-VOLT AC INPUT

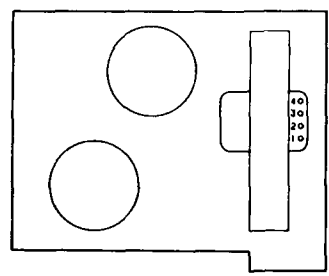
PRIMARY POWER SUPPLY STRAPPING

REVISION			
DATE	DESCRIPTION	DATE	APPROVED
A	REVISED AND REDRAWN		

NOTES:

201. MEASURE VOLTAGE AND IF NOT PROPER OPTION REFER TO TABLE 2-6 OF TECHNICAL MANUAL FOR CAU.

OPTION	STRAP TERMINAL
NOT REQUIRED	2-1.5-4
GROUND CLOSURE OR NOT REQUIRED (SEE NOTE 201)	7-8.9-10 39-40
NOT REQUIRED	32-33.34-35 37-38
13	12-13 15-14 16-17 19-18 22-21 23-24 26-27 30-31 29-18 42-44 49-50 51-52 54-53 56-55



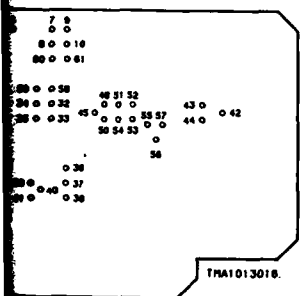
THA1013002

PRIMARY POWER SUPPLY.STRAPPING LOCATIONS

INVENT BOARD STRAPPING

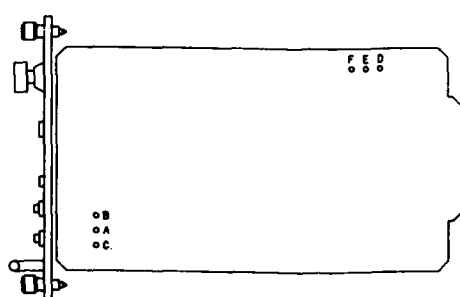
DESCRIPTION	OPTION	STRAP TERMINALS
NOISE INTEGRATOR CIRCUIT	ENABLED	E-F
EXTERNAL TIMING REFERENCE INPUT	ENABLED	A-C

SYNC CLOCK COMPONENT BOARD STRAPPING



THA1013018

BOARD.STRAPPING LOCATIONS

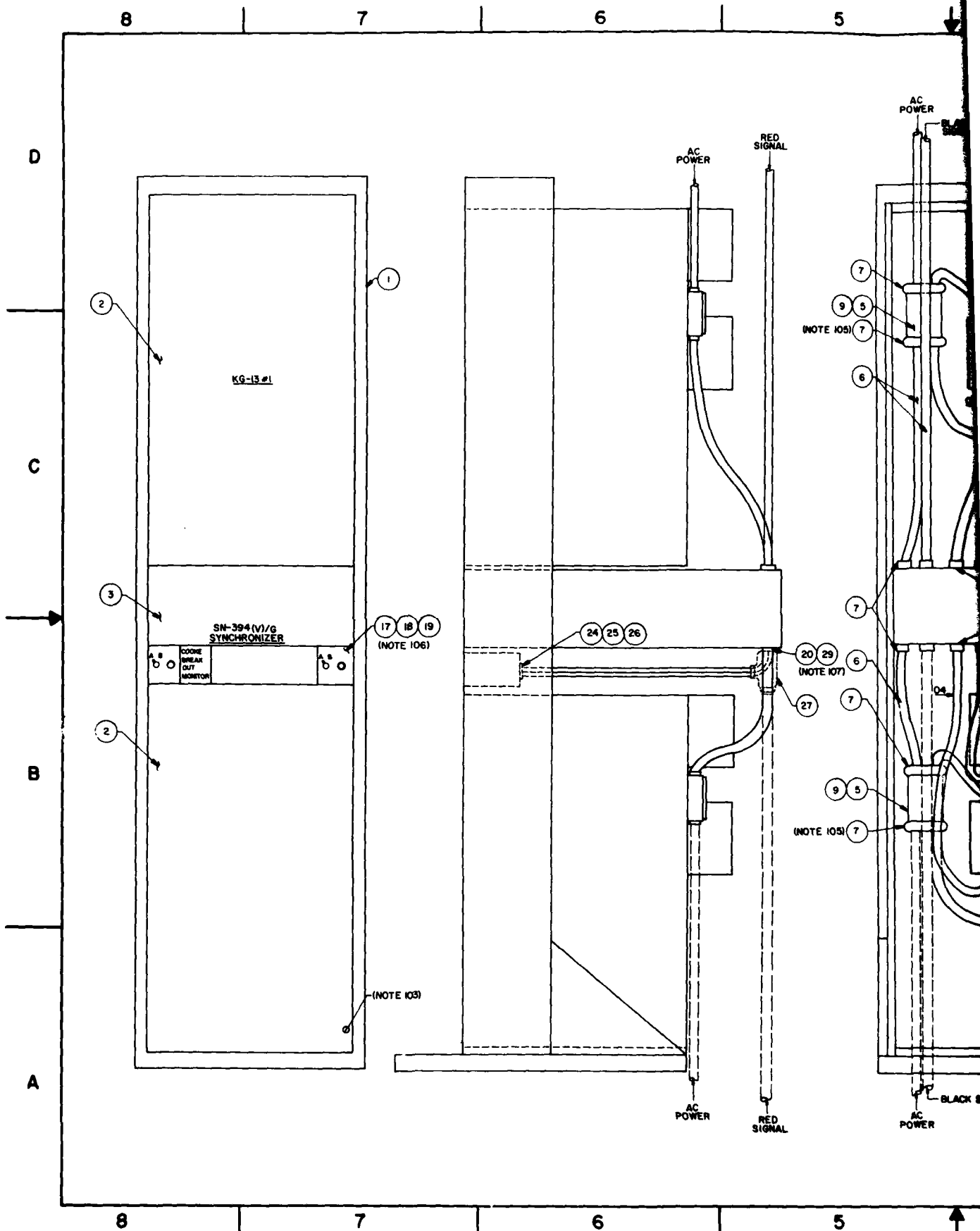


SYNC CLOCK COMPONENT BOARD STRAPPING

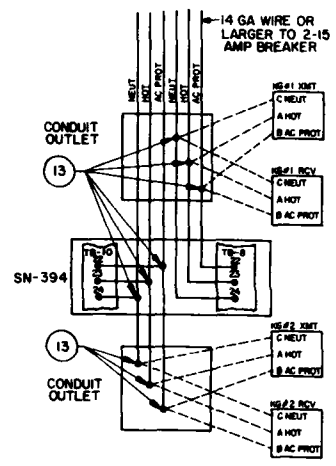
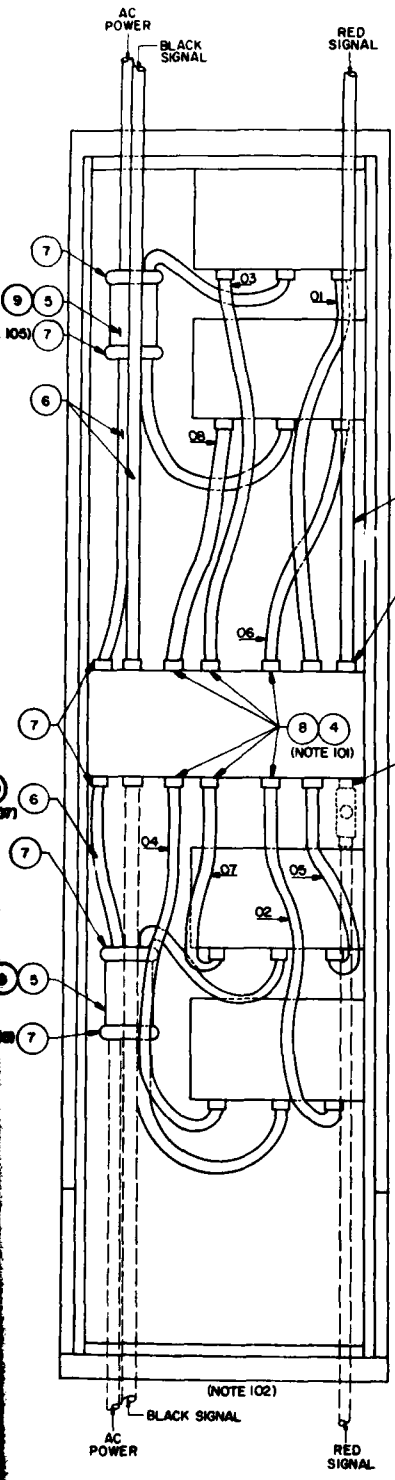
OPTION	STRAP TERMINALS
1-VOLT AC INPUT	1-2.3-4

SUPPLY STRAPPING

IDENT NO STD-SD-0052		SIZE FROM NO D 50470	DRAWING NO
SHEET 2 OF 2		SCALE	1" = 1"
DRAWN BY E. OROZCO		DATE	
APPROVED BY		SHEET	OF
ENTERED IN USACIA LDB			



REVISION			
NO.	RE.	DESCRIPTION	DATE



DETAIL "A"
AC POWER WIRING
NOTE 104

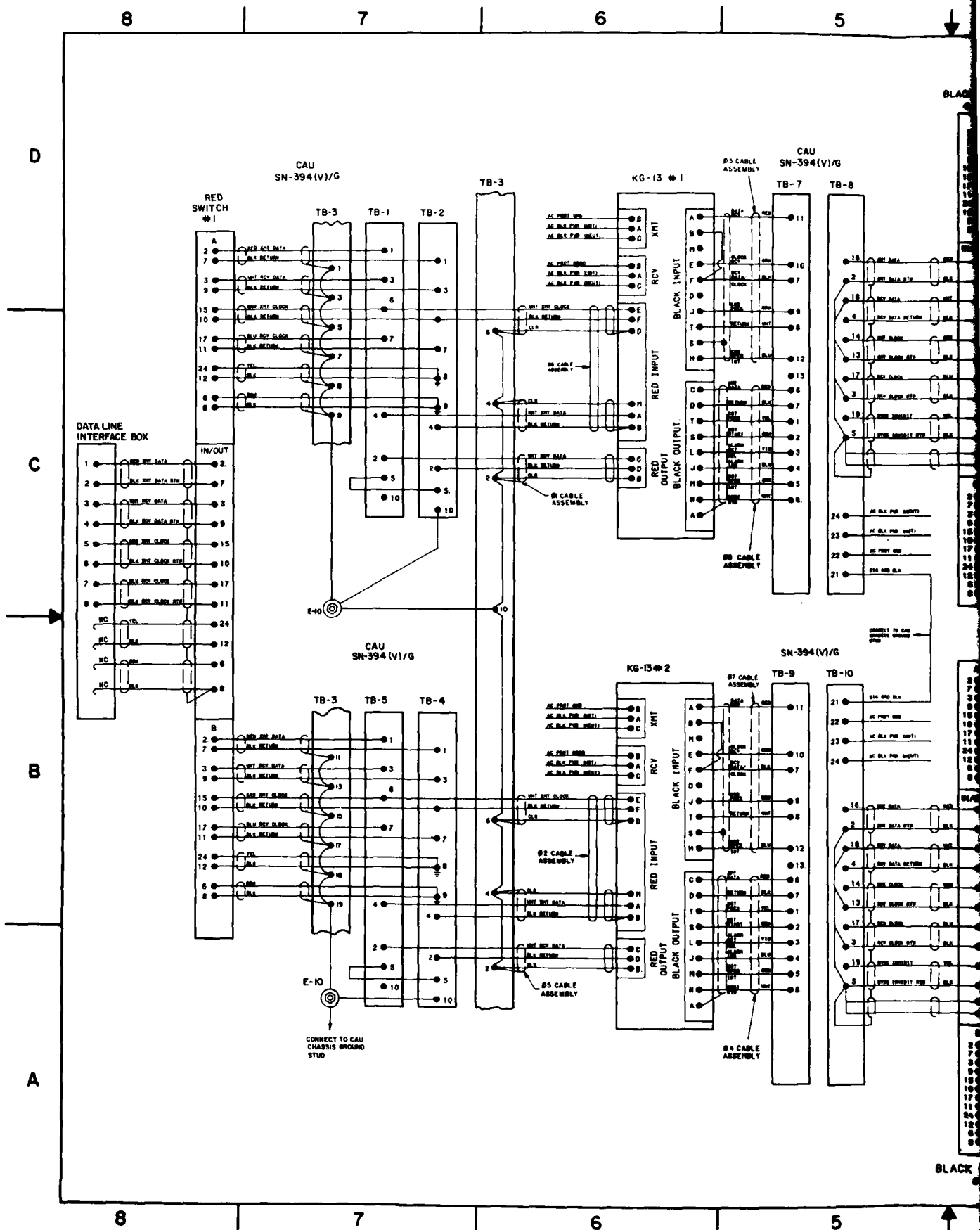
TABLE 1			
CABLE NO.	LENGTH (IN.)	NO. OF COND.	KG-13 CONN.
SM-D-549672-01	36	2	RCV RED OUTPUT
02	36	4	XMT RED INPUT
03	36	6	RCV BLK INPUT
04	36	8	XMT BLK OUTPUT
05	27	2	RCV RED INPUT
06	27	4	XMT RED INPUT
07	27	6	RCV BLK INPUT
SM-D-549672-08	27	8	XMT BLK OUTPUT

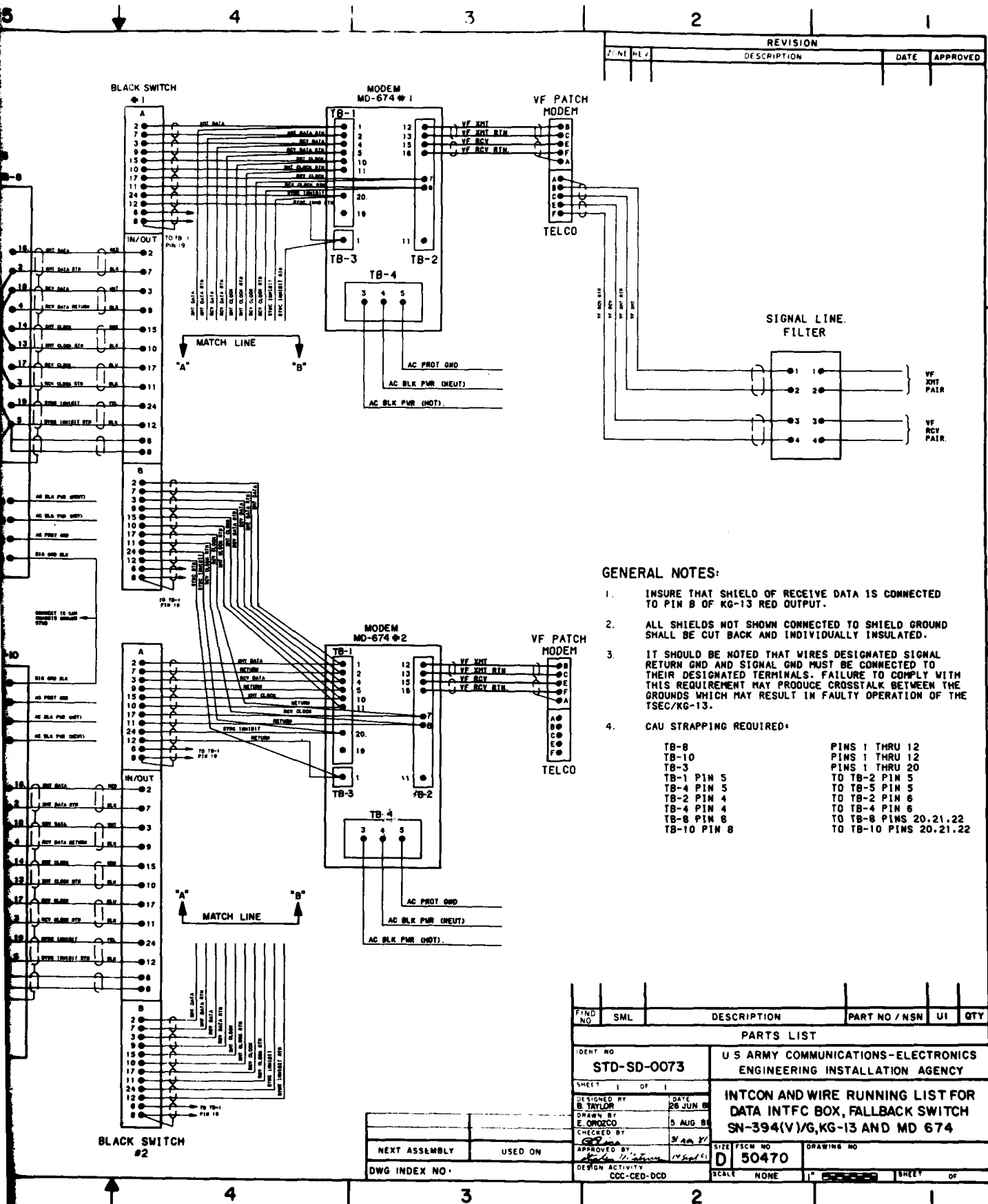
NOTES:

- 101. ALL SIGNAL CABLES LISTED IN TABLE 1 SHOULD BE PROVIDED WITH ITEM 4. NUMBERS NEXT TO CABLE REFER TO UNDERLINED NUMBERS IN TABLE 1.
- 102. DASHED LINES INDICATE RAISED FLOOR INSTALLATION.
- 103. ITEMS 13 AND 14 SHALL BE USED TO SECURE EQUIPMENT TO RR-197 RACK.
- 104. AC POWER CONDUIT SHALL CONTAIN 6 CONDUCTORS. WIRING SHALL BE IN ACCORDANCE WITH DETAIL "A".
- 105. DRILL HOLE IN CONDUIT OUTLET TO MATCH STUD ON REAR OF KG-13 AND USE EXISTING NUT TO SECURE CONDUIT OUTLET (FSCD2).
- 108. SECOND FALLBACK SWITCH IN ITEM 17 WILL BE USED FOR SPARE. WILL NOT BE WIRED IN.
- 107. 3 SIX PAIR CABLES TO FALLBACK SWITCH EXIT CAU THROUGH ITEM 29. ADD ITEM 27 FOR RAISED FLOOR INSTALLATION.

29	12158C	CONNECTOR, STRAIN RELIEF, 3/4" HUB, .375 TO .500 CABLE RANGE	5975-00-926-7424	EA	1
20	11080M	OUTLET, ELECT. CONDUIT TYPE LL 3/4"	6075-00-666-2768	EA	1
27	02779G	OUTLET, ELECT. CONDUIT TYPE T 3/4" W/COVER	5975-00-839-5322	EA	1
26	12722F	SHIELD, ELECTRICAL CONNECTOR 25 PIN DB 51226-1	5935-00-401-6454	EA	3
25	13721D	CONNECTOR PLUG, ELECT 25 PIN MS 24308/4-3 ITT CANNON #DBMA-25P MALE	5935-00-489-9999	EA	1
24	13722F	CONNECTOR, RECEPTACLE, ELECT. 25 PIN ITT CANNON #DBMA-25S MS24304B12-3	5935-00-410-9250	EA	2
23	03540K	WIRE, ELEC THW 14 AWG BLK.	6145-00-050-7405	FT	AR
22	03535S	WIRE ELEC THW 14 AWG GRN.	6145-00-191-2571	F1	AR
21	03509A	WIRE ELEC, THW 14 AWG WHT	6145-00-184-5348	FT	AR
20	11502G	CABLE, SP ELEC, 22 AWG SOLID INDIV. SHLD BELDEN 8768, 6 PAIR	6145-00-866-2306	FT	AR
19	26613D	RACK ADAPTER, FLUSH MOUNT, 5 BLANK PANELS	NSNR	EA	1
18	25870K	BREAKOUT BOX RACK MOUNTED	NSNR	EA	1
17	27127A	RS 232 FALLBACK SWITCH WITH MONITOR, RACK MOUNT.	NSNR	EA	2
16	052560	CONNECTOR BOX 3/4" F/M W/ FLK CONDUIT	6075-00-901-7411	EA	1
15	037200	CONDUIT 3/4" PLASTIC COVERED STEEL	NSNR	FT	10
14	14568D	WASHER, FINISHING, #10	5305-00-595-7887	MD	1
13	06421J	SCREW, RACK DYAL-10-32 X 3/4"	5305-00-937-4487	EA	30
12	07467K	STRAP, TIE DOWN NS-3367 4-9 1/2 AN-PC 100 GA	6075-00-737-6183	MD	1
11	15016X	TERMINAL LUG #4 STOD-16-14 AWG AC PHR PG-50	5940-00-615-8073	EA	1
10	07250X	WIRE JOINT PT-86M	5940-00-348-9228	EA	9
9	08312H	COVER CONDULET DSS100	5975-00-532-6385	EA	2
8	20198B	ADAPTER, NIPPLE 3/4-20-EX8P	5975-00-068-8894	EA	8
7	09051L	CONNECTOR, BOX 3/4	5975-00-802-6531	EA	57
6	02376Z	CONDUIT 3/4" X 10' ENT	5975-00-178-1217	EA	5
5	13504G	OUTLET, CONDUIT FSCD-2	5975-00-903-8853	EA	2
4	12829D	CABLE ASSY-BREEZE 4882	NSM	EA	8
3	08993N	SYNC, ELECT SN-394 (V)/O DUAL	5895-00-237-1093	EA	1
2	03192D	TSEC/KG-13	5810-00-863-8816	EA	2
1	02600D	RACK-RR-197	5975-00-688-0206	EA	1

IDENT NO STD-SD-0072		U S ARMY COMMUNICATIONS-ELECTRONICS ENGINEERING INSTALLATION AGENCY	
DESIGNED BY B. TAYLOR 26 JUL 81		TYP CONDUIT INST DUAL FCTN ELEC SYNC SN-394 (V)/O CAU, KG-13 & FALLBACK SW IN A RR 197 RACK	
CHECKED BY B. KAVANAGH 4 AUG 81		SIZE FSCM NO D 50470	
APPROVED BY [Signature] 21 JAN 81		DRAWING NO	
DESIGN ACTIVITY CCC-CED-DCD		SCALE 1/4" = 1"	
NEXT ASSEMBLY		USED ON	
DWG INDEX NO.		SHEET OF	





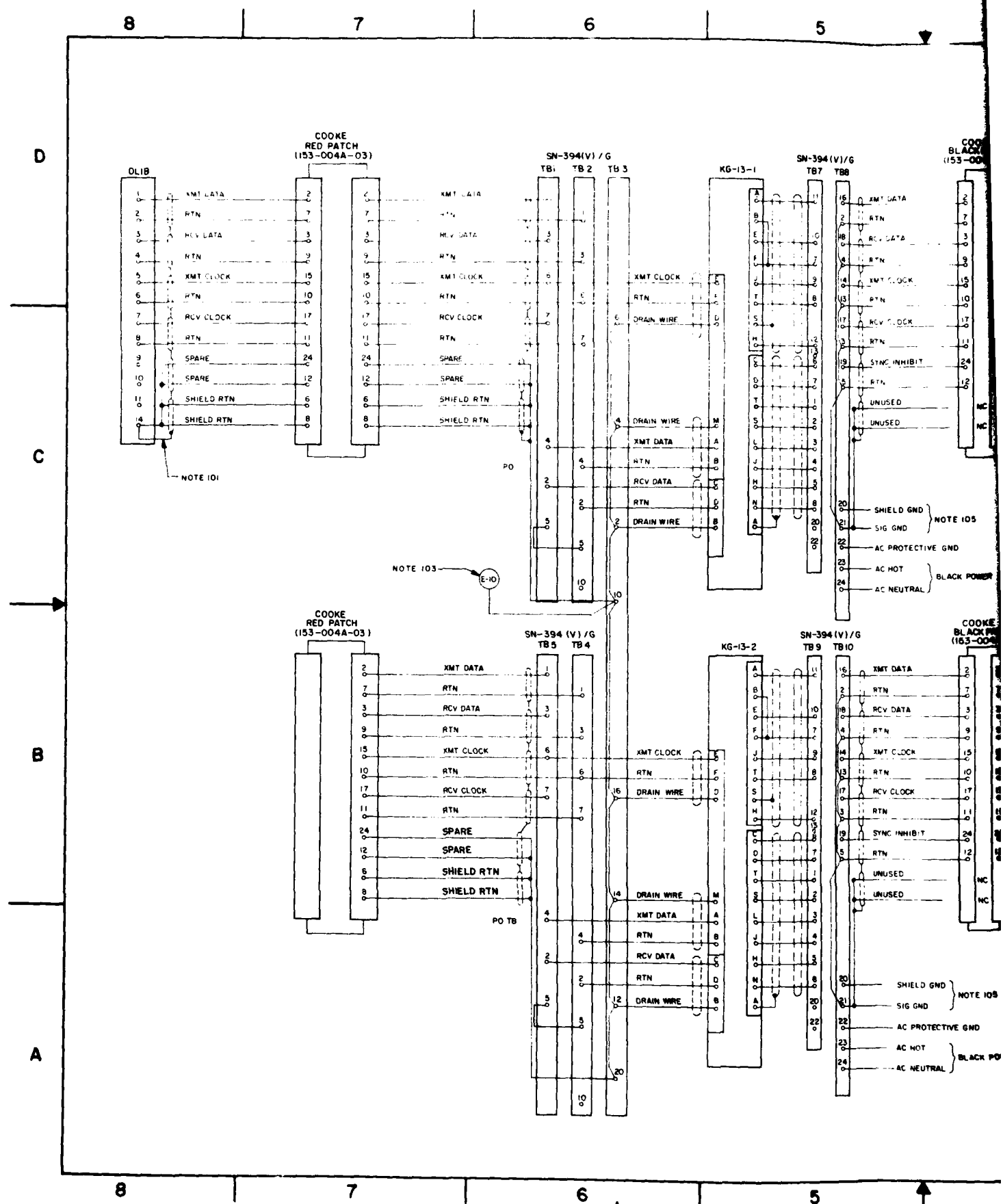
REVISION			
ZONE	REV	DESCRIPTION	DATE
			APPROVED

GENERAL NOTES:

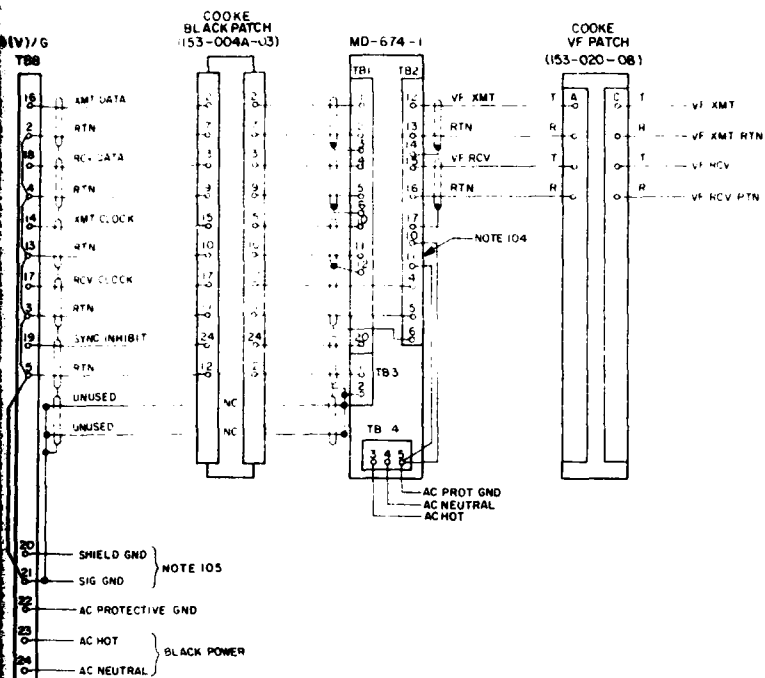
1. INSURE THAT SHIELD OF RECEIVE DATA IS CONNECTED TO PIN B OF KG-13 RED OUTPUT.
2. ALL SHIELDS NOT SHOWN CONNECTED TO SHIELD GROUND SHALL BE CUT BACK AND INDIVIDUALLY INSULATED.
3. IT SHOULD BE NOTED THAT WIRES DESIGNATED SIGNAL RETURN GND AND SIGNAL GND MUST BE CONNECTED TO THEIR DESIGNATED TERMINALS. FAILURE TO COMPLY WITH THIS REQUIREMENT MAY PRODUCE CROSSTALK BETWEEN THE GROUNDS WHICH MAY RESULT IN FAULTY OPERATION OF THE TSEC/KG-13.
4. CAU STRAPPING REQUIRED:

TB-8	PINS 1 THRU 12
TB-10	PINS 1 THRU 12
TB-3	PINS 1 THRU 20
TB-1 PIN 5	TO TB-2 PIN 5
TB-4 PIN 5	TO TB-5 PIN 5
TB-2 PIN 4	TO TB-2 PIN 6
TB-4 PIN 4	TO TB-4 PIN 6
TB-8 PIN 8	TO TB-8 PINS 20,21,22
TB-10 PIN 8	TO TB-10 PINS 20,21,22

FIND NO	SML	DESCRIPTION	PART NO / NSN	UI	QTY
PARTS LIST					
IDENT NO		U S ARMY COMMUNICATIONS-ELECTRONICS ENGINEERING INSTALLATION AGENCY			
STD-SD-0073		INTCON AND WIRE RUNNING LIST FOR DATA INTFC BOX, FALLBACK SWITCH SN-394(V)/G, KG-13 AND MD 674			
SHEET 1 OF 1		DESIGNED BY B. TAYLOR DATE 26 JUN 81			
DRAWN BY E. ORZCO		5 AUG 81			
CHECKED BY		M. A. V.			
APPROVED BY		D 50470			
DESIGN ACTIVITY		SCALE NONE			
CCC-CED-DCD		DRAWING NO			
DWG INDEX NO.		SHEET OF			



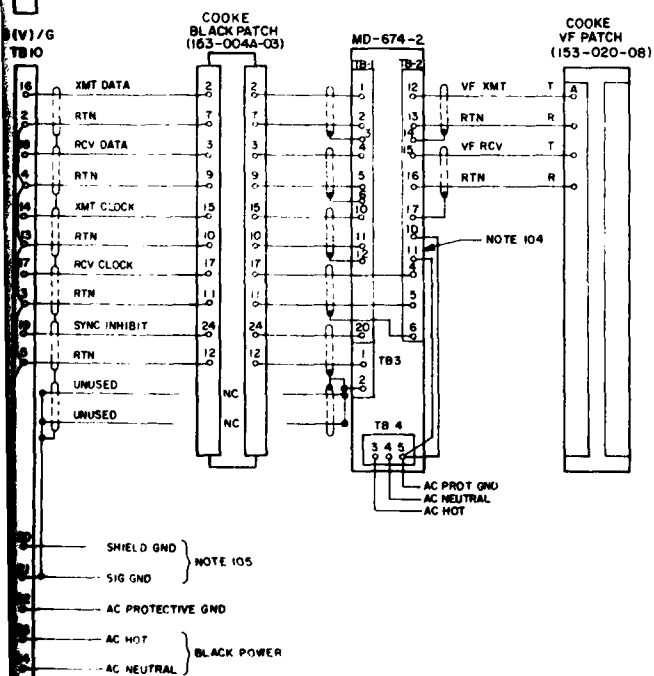
REVISION			
NO.	DESCRIPTION	DATE	APPROVED



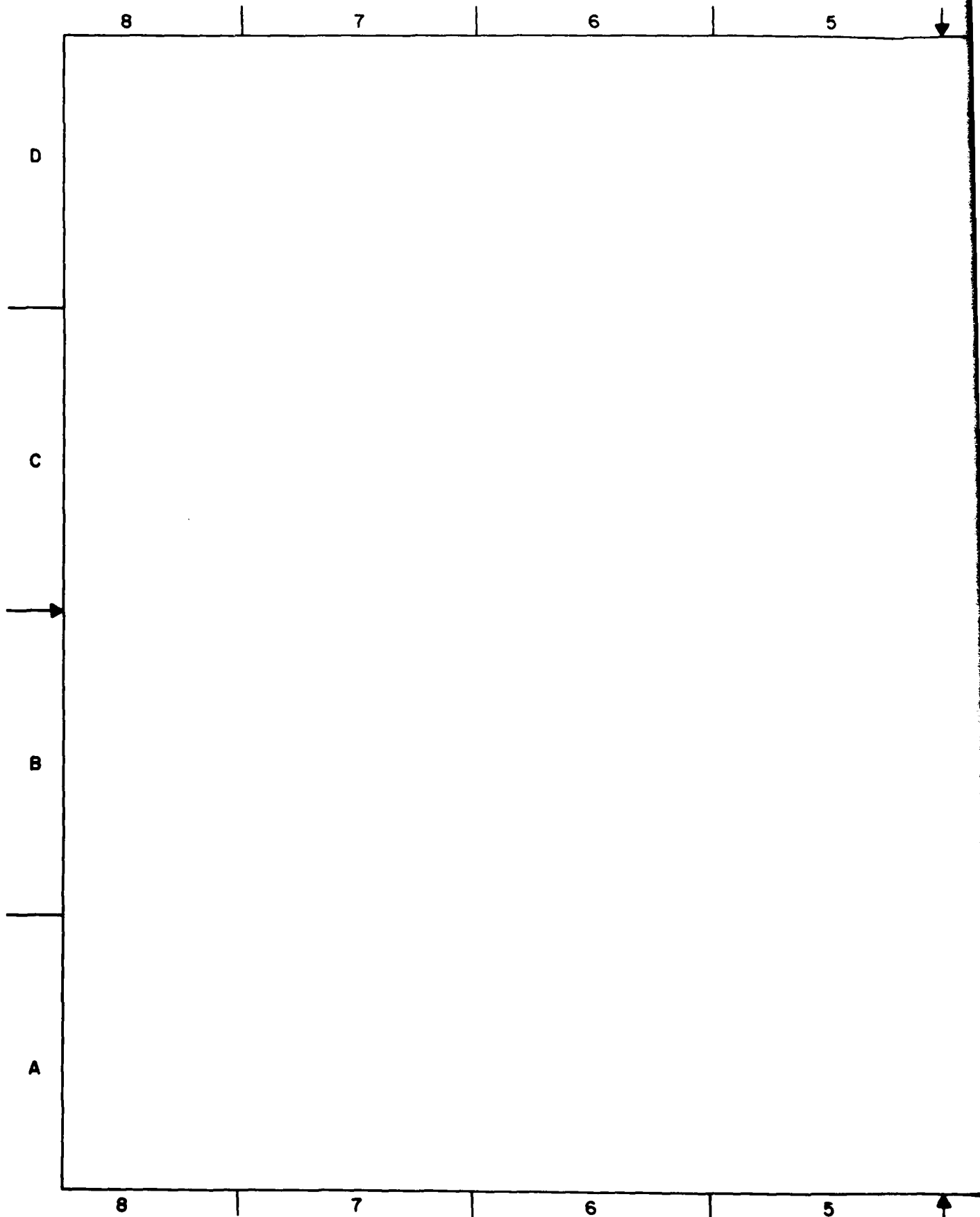
NOTES:

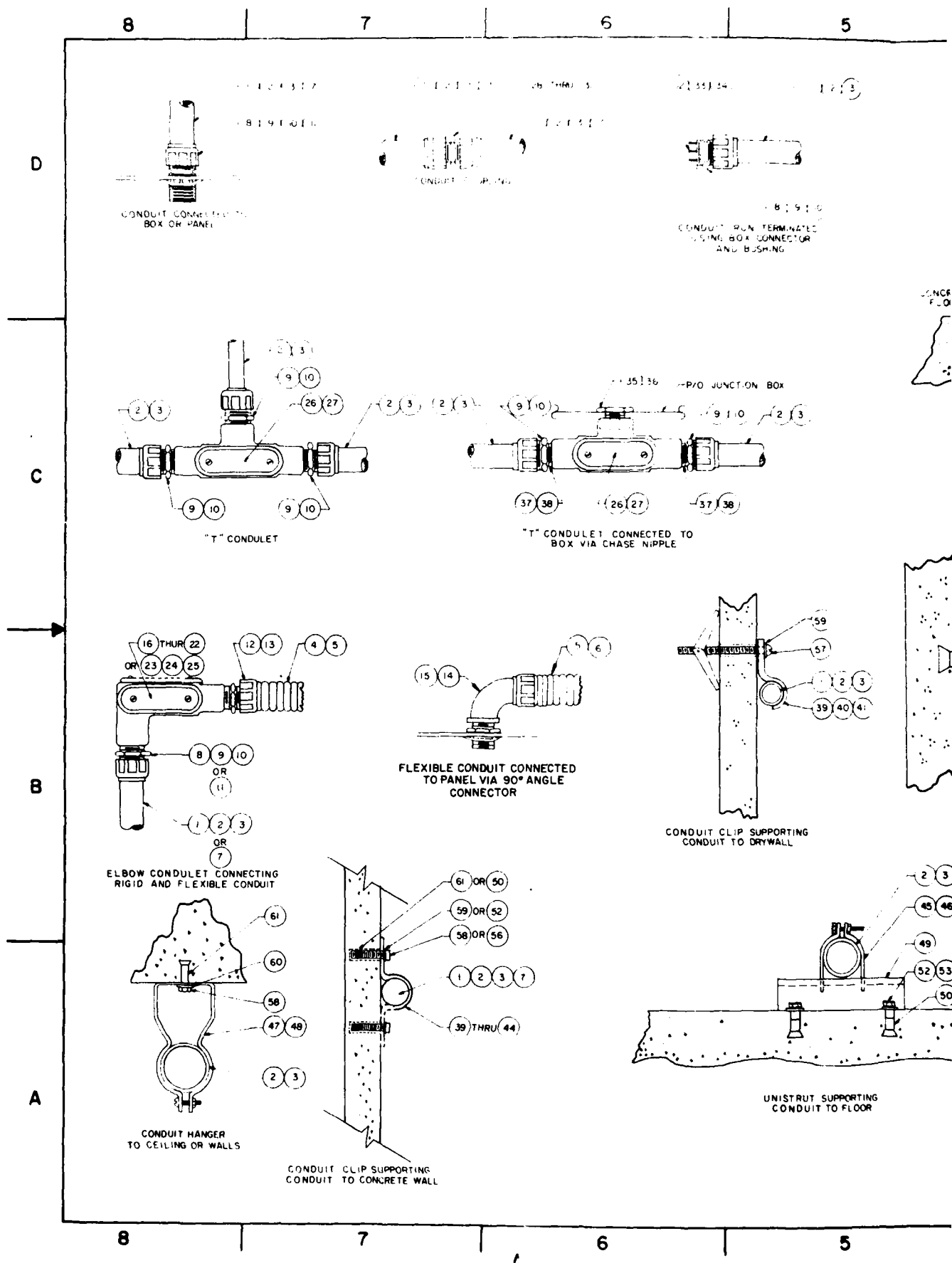
- 101 SHIELDS SHALL BE WIRED TO TERMINAL 14 OF THE DL1B AND RETURNED TO RED GROUND VIA AN UNUSED WIRE (NOT UNUSED PAIR). SHIELDS AT THE RED PATCH END SHALL BE TIED BACK AND INSULATED.
- 102 GROUND ALL UNUSED PAIRS AT ONE END.
- 103 JUMPER TERMINAL E-10 TO CHASSIS GROUND STUD WHEN A STATION GROUND IS NOT AVAILABLE.
- 104 TERMINALS 10 AND 11 (TB-2) SHALL BE STRAPPED WITH SEPARATE WIRES TO TERMINAL 5 (TB-4) BY INSTALLERS.
- 105 PIN 20 B-21, TB-8+10 SHALL BE CONNECTED WITH SEPARATE WIRES TO THE CHASSIS GROUND STUD.
- 106 STRAPPING TO BE DONE BY INSTALLER (ON CAU):

FROM	TB NO	PIN NO	TO	TB NO	PIN NO
	1	5		2	5
	4	5		5	5
	3	2		3	4,6,10,12
	3	12		3	14,16,20
	8	2,3,4,5		8	13
	10	2,3,4,5		10	13



SYMBOL	DESCRIPTION	PART NO / NSN	U1	QTY
PARTS LIST				
STANDARD NO STD-SD-0067		U.S. ARMY COMMUNICATIONS-ELECTRONICS ENGINEERING INSTALLATION AGENCY		
DESIGNED BY B. TAYLOR DRAWN BY PETE MUSERELLI CHECKED BY J. J. J.		STANDARD REMOTE TERMINAL INTERCONNECT DIAGRAM (153 PATCH, KG-13, MD-674 MODEM)		
NEXT ASSEMBLY		USED ON		SIZE D 50470
DWG INDEX NO.		DESIGN ACTIVITY CCC-CED-DCD		SCALE NONE

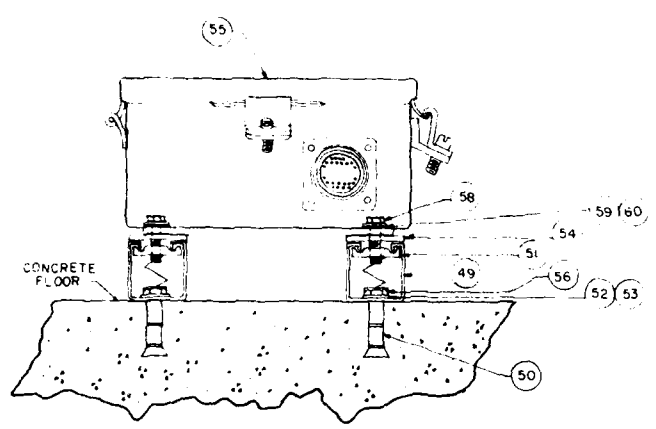




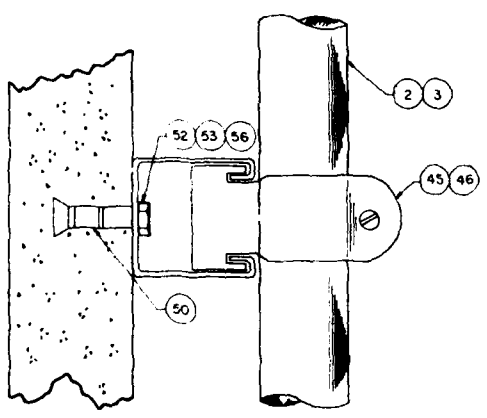
5 4 3 2 1

REVISION			
NO.	DESCRIPTION	DATE	APPROVED
C	SHEET 1 WAS SHEET 1 B2, DWG WAS 1 OF 2	14 SEPT 81	ABR

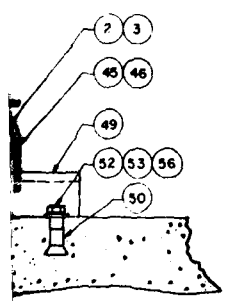
3



DATA INTERFACE BOX
TO FLOOR
MOUNTING DETAILS



UNISTRUT SUPPORTING
CONDUIT TO WALL



D

C

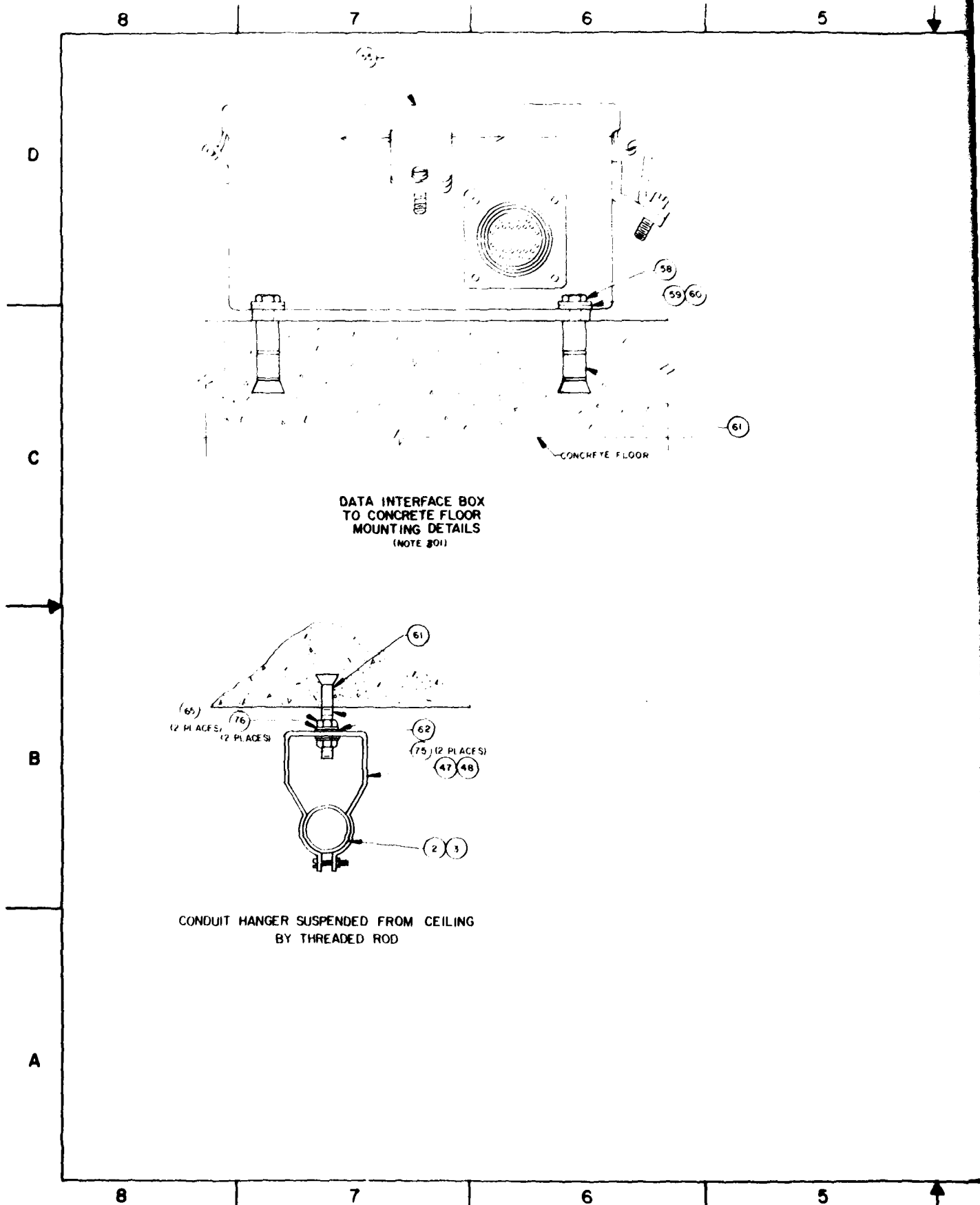
B

A

IDENT NO	STD-SD-0069	SIZE FROM NO	D 50470	DRAWING NO	
SHEET	2 OF 3	SCALE	NONE	SHEET	OF
DRAWN BY	S. BAKER	APPROVED BY			

4 3 2 1

2



4 3 2 1

REVISION			
ZONE	REV	DESCRIPTION	DATE
C		ADDED DETAIL & REDRAWN DWG HAS 2 OF 2	13 AUG 81
			APPROVED <i>APR</i>

NOTES:

301 USE THIS METHOD WHEN SUB-FLOOR CLEARANCE IS MINIMAL

D

C

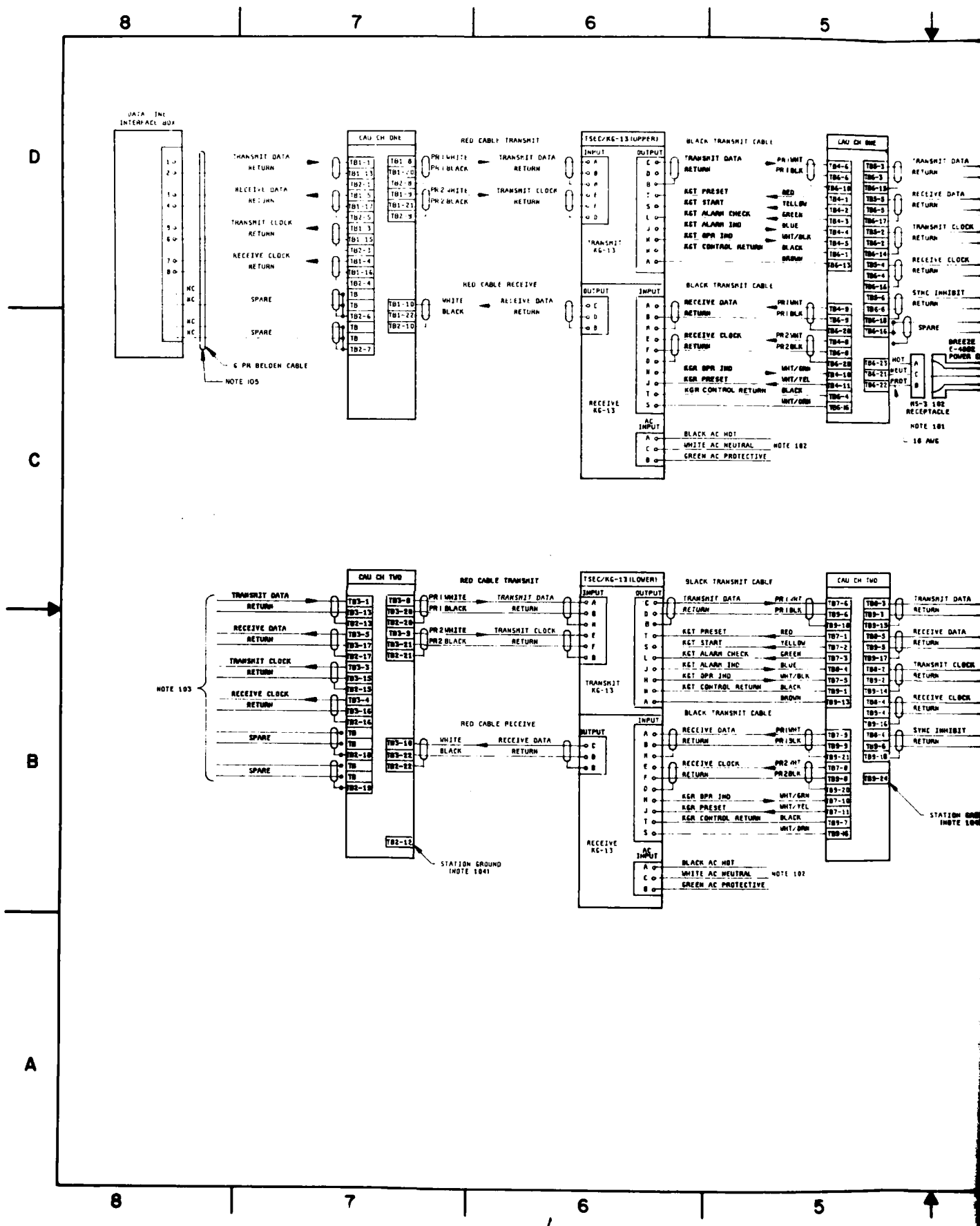
B

A

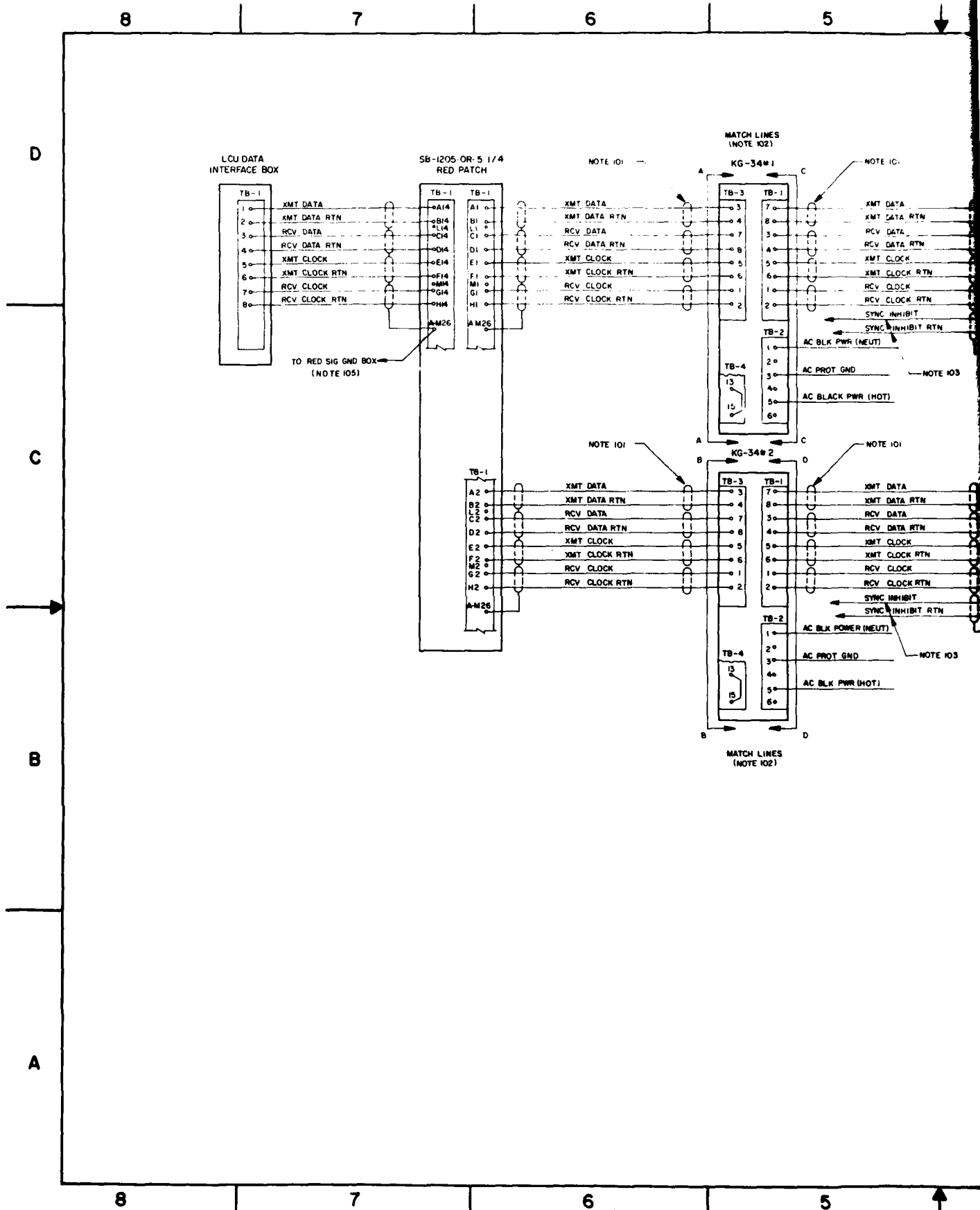
IDENT NO STD-SD-0069		SIZE PCH NO	DRAWING NO
SHEET 3 OF 3		D	
DRAWN BY T. DALEY		SCALE NONE	1" ~~SPACING~~
APPROVED BY <i>[Signature]</i>			SHEET OF

4 3 2 1

2



5		4		3		2		1	
						REVISION			
ZONE		REV		DESCRIPTION		DATE		APPROVED	



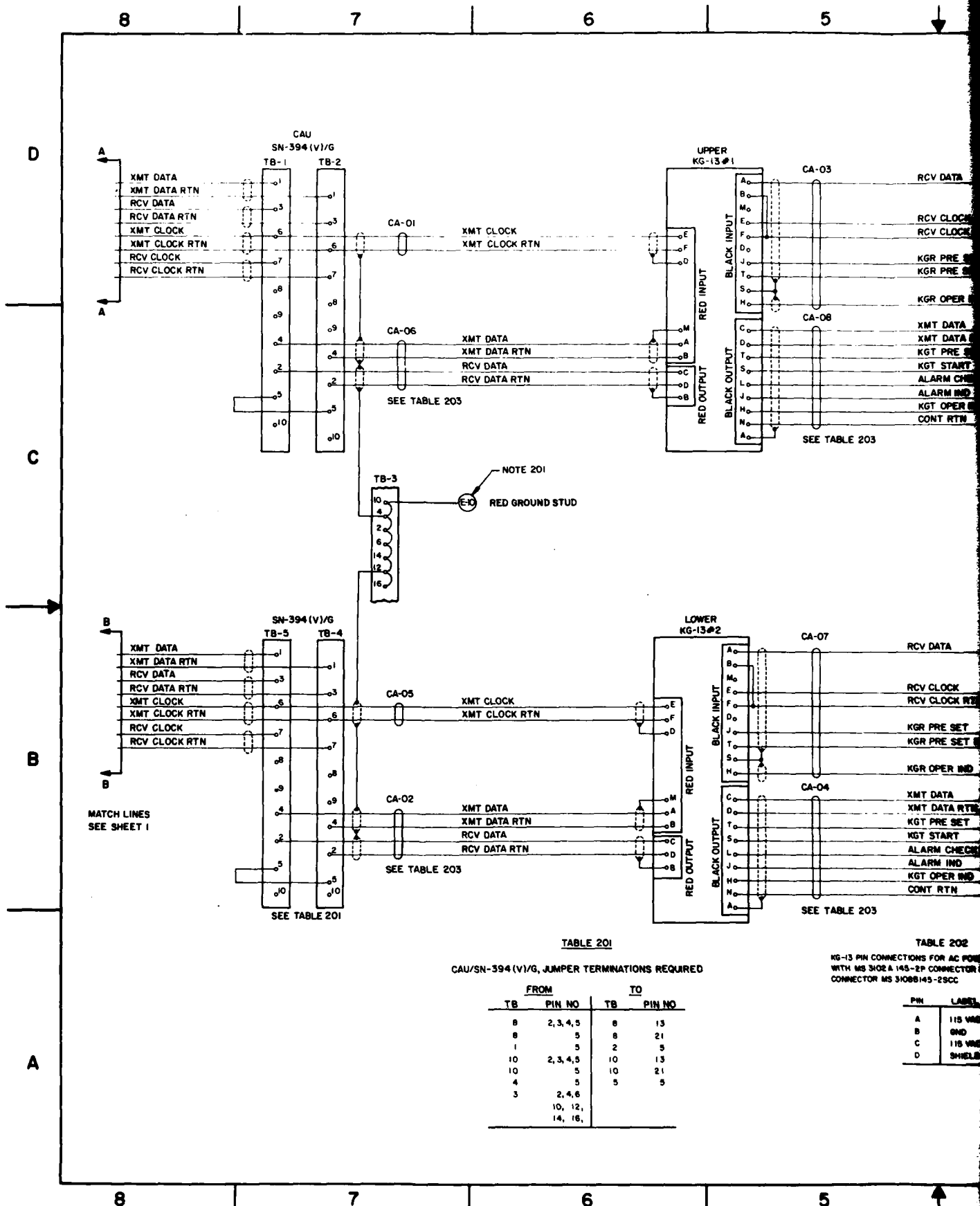


TABLE 201

CAU/SN-394(V)/G, JUMPER TERMINATIONS REQUIRED

FROM		TO	
TB	PIN NO	TB	PIN NO
8	2, 3, 4, 5	8	13
8	5	8	21
1	5	2	5
10	2, 3, 4, 5	10	13
10	5	10	21
4	5	5	5
3	2, 4, 6		
	10, 12, 14, 16,		

TABLE 202

KG-13 PIN CONNECTIONS FOR AC POWER WITH MS 3402A 145-2P CONNECTOR CONNECTOR MS 3408B/45-25CC

PIN	LABEL
A	115 VAC
B	0V
C	115 VAC
D	SHIELD

5

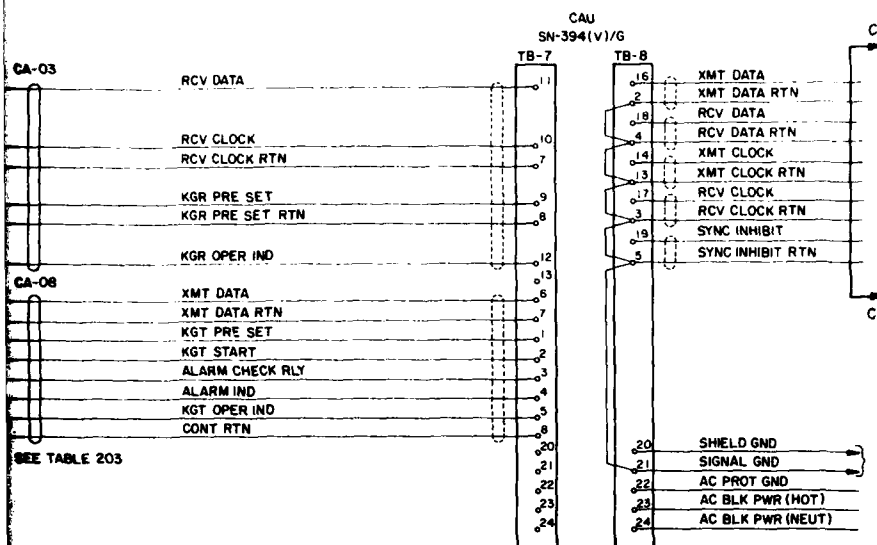
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3

2

1

REVISION			
DATE	DESCRIPTION	DATE	APPROVED



NOTES:

- 201 CONNECT E-10 (RED GROUND STUD) TO THE CHASSIS GROUND STUD WHEN A RED STATION GROUND IS NOT AVAILABLE
- 202 CONNECT TERMINALS SEPARATELY TO THE CHASSIS GROUND STUD WHEN A BLACK STATION GROUND IS NOT AVAILABLE

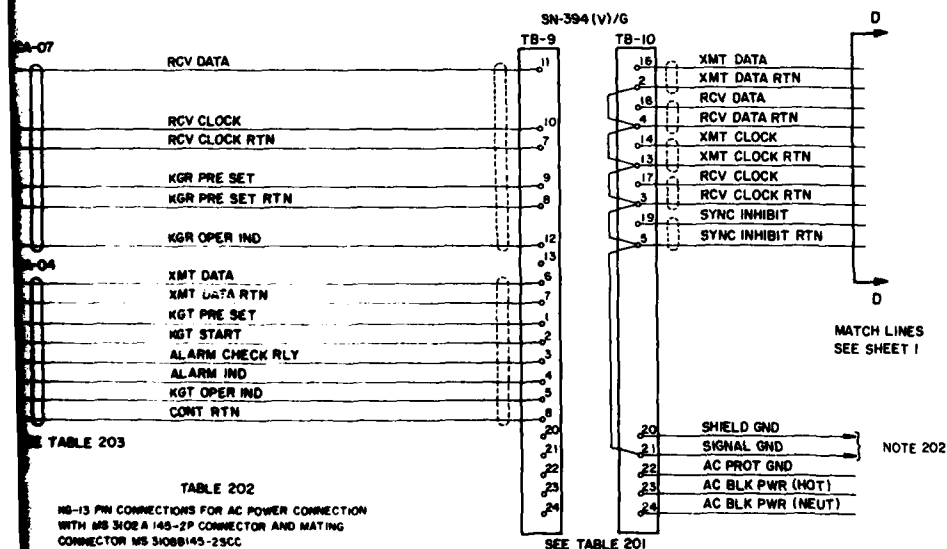


TABLE 202

HS-13 PIN CONNECTIONS FOR AC POWER CONNECTION
WITH MS 3102A 145-27 CONNECTOR AND MATING
CONNECTOR MS 3108B145-25CC

PH	LABEL
A	115 VAC
B	GND
C	115 VAC
D	SHIELD

UPPER
KG-13LOWER
KG-13TABLE 203
CAU SIG/CONT CABLES *

SML	CABLE NUMBER	NSN
15810C	SM-D-546972-08	5995-00-933-6844
15811D	" -06	" -6846
15809C	" -03	" -6849
15808B	" -01	" -6851
12652B	" -04	" -6848
12654D	" -07	" -6845
12651A	" -02	" -6850
12653C	" -05	" -6847

* NOTE: CABLES SUPPLIED WITH CAU

IDENT NO
STD-SD-0064

DATE
17

APPROVED BY
[Signature]

SIZE
D 50470SCALE
NONE

DRAWING NO

SHEET
OF

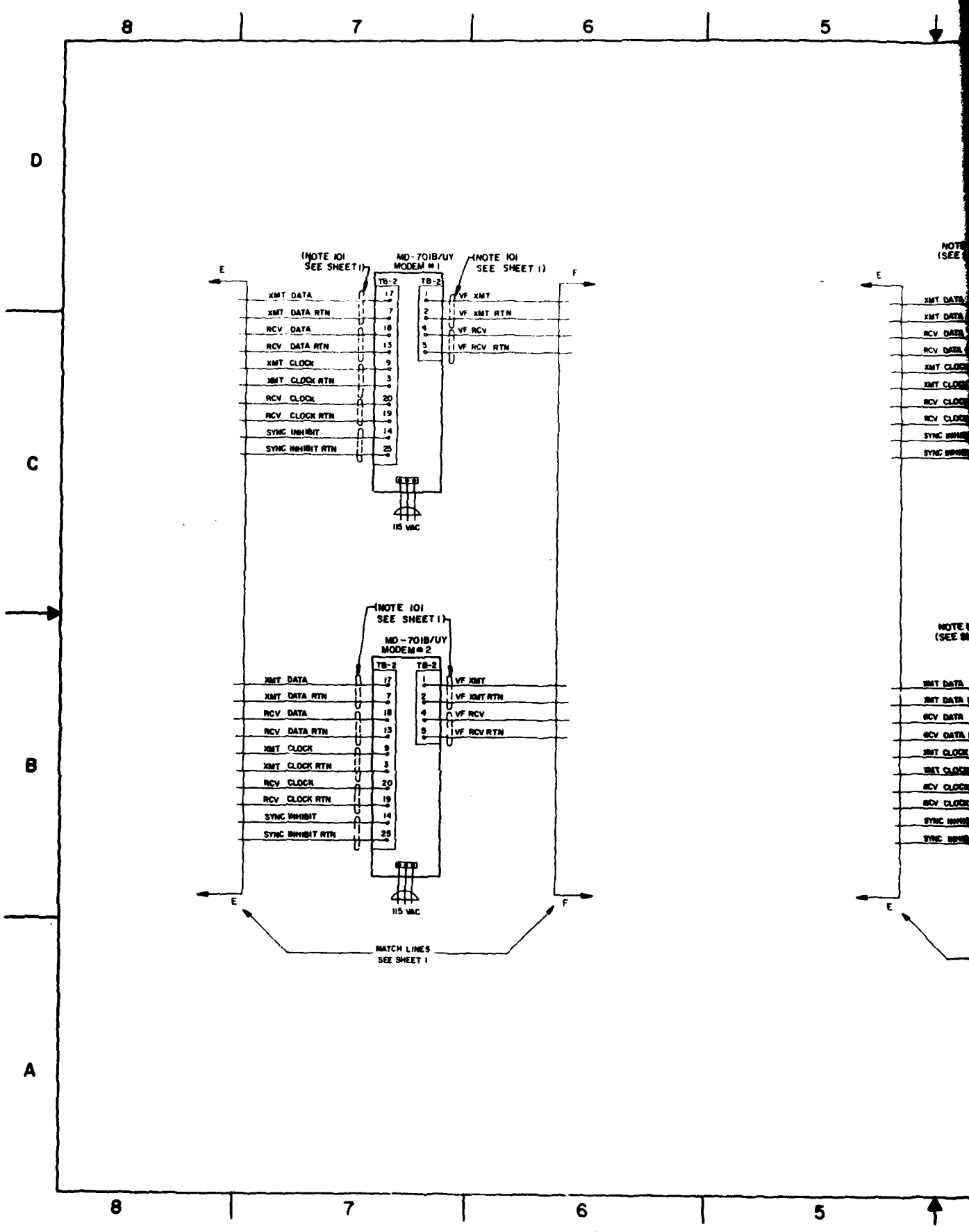
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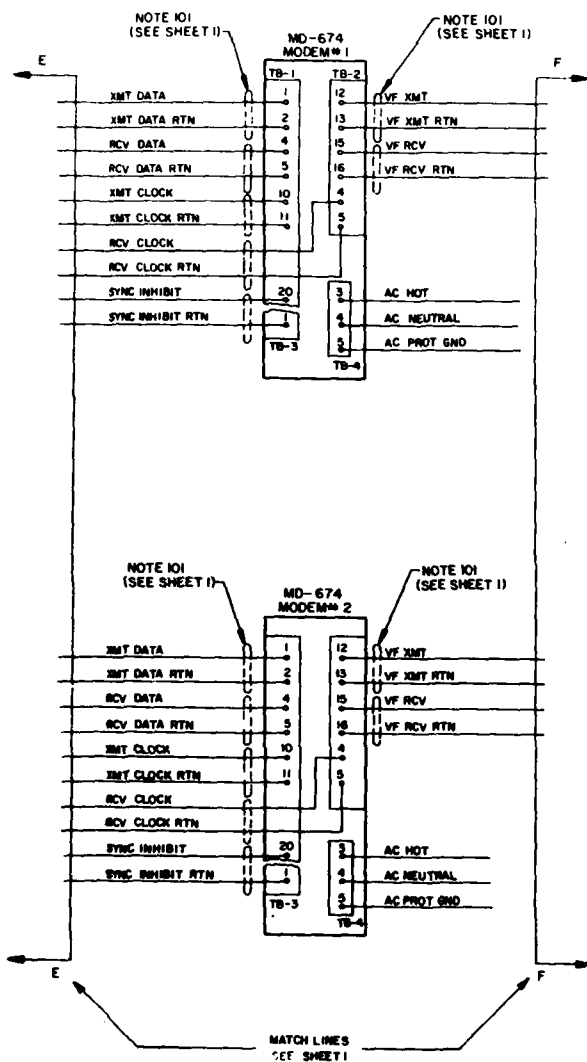
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1

2



REVISION				
ZONE	REV	DESCRIPTION	DATE	APPROVED



IDENT NO STD-SD-0064		SIZE PCHM NO D 50470	SHADING NO
SHEET 3 OF 3		SCALE NONE	SHEET OF
DRAWN BY: GOODALE		APPROVED BY: [Signature]	

11 89 14

SECTION 5. BILL OF MATERIALS

5.1 GENERAL. A master bill of materials (BOM) is provided as a guide in ordering the material to accomplish installation of the SRT. Items are identified by systems material list (SML) number and/or national stock number (NSN). When both of these numbers are not available, the manufacturer's part number and item description are provided. The number of configurations in which the SRT can be installed makes it impractical to provide separate drawings and separate BOM's for each type of installation. Similarly, the areas in which the installations are made can be of various types of construction. Project engineers for each engineering installation package (EIP) must site adapt each SRT installation using the requisite items listed in the master BOM.

7263k/ **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			
STANDARD REMOTE TERMINAL (SRT)		DATE	PAGE NO	NO OF PAGES	
TELE NUMBER SEIP 041			1	19	
ITEM NO.	STOCK NUMBER	NOMENCLATURE	UNIT	TOTAL REQ FOR PROJECT	AVAILABLE IN COMMAND
1	7025-00-J04-1539 (23133Z)	LINE CONTROL UNIT (LCU), W51" X D38" X H45", 115 VAC, 9.0A, 1035 WATTS, 3600 BTU/HR, 650 LBS	EA	AR	
2	7025-00-J04-1540 (23134A)	LOW SPEED PAGE PRINTER (LSPP), W34" X D30" X H39", 115V AC, 3.3A, 375 WATTS, 1285 BTU/HR, 200 LBS	EA	AR	
3	7025-00-J04-1541 (23135B)	MEDIUM SPEED LINE PRINTER (MSLP), W30" X D40" X H42", 115V AC, 7.0A, 800 WATTS, 2740 BTU/HR, 210 LBS	EA	AR	
4	7025-00-J04-1542 (23136C)	HIGH SPEED LINE PRINTER (HSLP), W36" X D40" X H46", 115 VAC, 20A, 1950 WATTS, 6760 BTU/HR, 460 LBS	EA	AR	
5	7025-00-J04-1544 (23138E)	CARD READER (CR), W30" X D28" X H50", 115VAC. 5.5A, 600 WATTS, 2050 BTU/HR, 200 LBS	EA	AR	
6	7025-00-J04-1543 (23137D)	CARD PUNCH (CP) MODEL 1, W51" X D36" X H44", 115/220 VAC, 40/20A, 4400 WATTS, 12,000 BTU/HR, 800 LBS	EA	AR	
7	7025-00-J04-5116 (08345M)	CARD PUNCH (CP) MODEL 2, W45" X D28" X H41", 115/220 VAC, 40/20A, 4400 WATTS, 12,000 BTU/HR, 800 LBS	EA	AR	
8	7025-00-J04-1547 (23141L)	OPTICAL SCAN UNIT (OSU), W26" X D30" X H34", 115VAC, 4.8A, 550 WATTS, 1500 BTU/HR, 300 LBS	EA	AR	
9	7025-00-J04-1549 (23143J) 7025-00-J04-3805 (23144Z) 7025-00-J04-3806 (27712C) 7025-00-J04-1548 (23142K)	MAGNETIC TAPE UNIT (MTU), W23" X D24" H60", 115VAC, 3.0A 350 WATTS, 1200 BTU/HR, 200 LBS: A. MTU (9 TRK, 1600 CPI) B. MTU (9 TRK, 800 CPI) C. MTU (7 TRK, 550/800 CPI) D. MTU (7 TRK, 200/550 CPI)	EA EA EA EA EA	AR AR AR AR AR	

TELECOMMUNICATIONS DEVELOPMENT PROJECT -- BILL OF MATERIALS

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7263k/

LOCATION

STANDARD REMOTE TERMINAL (SRT)

TELEPHONE

SEIP 041

UNIT IDENT CODE

DATE

PAGE NO

NO OF PAGES

2

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ITEM NO	STOCK NUMBER	NOMENCLATURE	UNIT	TOTAL REQ FOR PROJECT	AVAILABLE IN COMMAND	NO OF PAGES
10	7025-00-J04-1545 (28141Q)	PAPER TAPE EQUIPMENT: PAPER TAPE READER (PTR), W28" X D24" X H60", 115VAC, 3.0A, 690 WATTS, 1180 BTU/HR, 250 LBS	EA	AR		
11	7025-00-J04-1602 (26077M)	PAPER TAPE PUNCH (PTP), W28" X D24" X H60", 115VAC, 3.0A, 690 WATTS, 1180 BTU/HR, 250 LBS	EA	AR		
12	5935-00-259-1656 (21564D)	STORAGE MODULE DISK DRIVE (SMDD), W21" X D36" X H39", 115VAC 12A, 720 WATTS, 2460 BTU/HR, 370 LBS	EA	AR		
13	5935-00-552-2773 (12197K)	CABLE, ASSEMBLY, 01-LLL**, 14 CONDUCTOR, 22AWG SHIELDED CABLE, MS3106A20-27S CONNECTOR FOW OPTICAL SCAN UNIT. ACA PART NO. 202190-L	FT	AR		
14	5935-00-518-9479 (29649D)	CABLE ASSEMBLY, 02-LLL**, 37 CONDUCTOR, 22AWG SHIELDED CABLE, MS3106A28-21S CONNECTOR FOW HSLP, MSLP, LSLP, PTR, PTP AND DIFB. ACA PART NO. 202232-L	FT	AR		
15	5935-00-504-3178 (30796G)	CABLE ASSEMBLY 03-LLL**, 48C, 22AWG SHIELDED CABLE, MS-3106A36-10S CONNECTOR FOW CR, CP, MTU AND SMDD. ACA PART NO. 202233-L	EA	AR		
16	5975-00-020-5094 (20808H)	CABLE ASSEMBLY 04-LLL** FOR DISK DRIVE, 48C, 22AWG SHIELDED CABLE, MS-3106A36-10SW CONNECTOR. ACA PART NO. 202235	EA	AR		
17	5810-00-863-9816 (01392N)	** PREFAB CABLES - MUST BE ORDERED TO THE EXACT LENGTH BOX, HOFFMAN, 10 IN X 8 IN X 4 IN, RFI SHIELDED, A-1008 CIRFI CAT #4527 W/BRACKET, TERMINAL BLOCK STRIP AND CONNECTOR MS-3102A28-21P TSEC/KG-13, ELECTRONIC KEY GENERATOR (\$3713.00)	EA	AR		

DA 3071-R

EDITION OF 1 IS OBSOLETE

AD-A111 906

ARMY COMMUNICATIONS-ELECTRONICS ENGINEERING INSTALLAT--ETC F/8 17/2
STANDARD ENGINEERING INSTALLATION PACKAGE, STANDARD REMOTE TERM--ETC(U)
OCT 81
USACEEIA-SEIP-041

UNCLASSIFIED

NL

2 of 2
NL 906



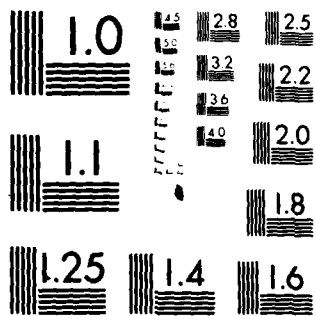
END

DATE

FILED

4-82

NTIC



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A

7263k/ TELECOMMUNICATIONS DEVELOPMENT PROJECT — BILL OF MATERIALS						
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LOCATION		UNIT IDENT CODE				
STANDARD REMOTE TERMINAL (SRT)						
TELER NUMBER						
SEIP 041						
ITEM NO.	STOCK NUMBER	NOMENCLATURE	UNIT	TOTAL REQ FOR PROJECT	AVAILABLE IN COMMAND	NO OF PAGES
18	5810-00-463-3270 (11855H)	T-SEC KG-34-3 ELECTRONIC KEY GENERATOR	EA	AR	3	19
19	5805-00-X79-3654 (27452M)	KG-13 INSTALLATION PACKAGE GP I	EA	AR		
20	5805-00-X79-3655 (27453L)	KG-13 INSTALLATION PACKAGE GP II	EA	AR		
21	5805-01-036-1103 (14116C)	PATCH PANEL, DIGITAL COOKE ENG MDL 153-004A-16 (1285.49)	EA	AR		
22	5805-00-J04-3325 (27105A)	PATCH PANEL, DIGITAL MODULAR COOKE ENG MDL 153-002C-02 (262.60)	EA	AR		
23	153-004A-03 COOKE (23752C)	PATCH PANEL, COOKE 153-004A-03 COMES W/THREE MODULES (DIGITAL) (\$990.00)	EA	AR		
24	153-006-08 COOKE (27131Y)	PATCH PANEL, COOKE 153-006-08 COMES W/8 MODULES. (DIGITAL & V.F.) (\$1387.00)	EA	AR		
25	153-020-08 COOKE (27357Z)	PATCH PANEL, COOKE, 153-020-08 COMES W/8 MODULES (V.F. ONLY) (\$517.36)	EA	AR		
26	(DO NOT ORDER)	CABLE 11 PR SOLID, (BELDEN 709038753)	FT	AR		
27	(DO NOT ORDER)	CABLE 2 PR SOLID, (BELDEN 709039302)	FT	AR		
28	(DO NOT ORDER)	CABLE 2 PR STRANDED, (BELDEN 709039744)	FT	AR		
29	5995-00-784-9197 (14224A) (DO NOT ORDER)	CABLE ASSEMBLY, 8.083 FT, SP3 STANDARD CONDUCTORS, 18AWG, PRI INSUL PLASTIC COVERING ALL CONDS, RUBBER, J	EA	AR		

7263k/ TELECOMMUNICATIONS DEVELOPMENT PROJECT -- BILL OF MATERIALS
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LOCATION		UNIT IDENT CODE				
STANDARD REMOTE TERMINAL (SRT)		DATE		PAGE NO.	NO. OF PAGES	
TELER NUMBER SEIP 041				4	19	
ITEM NO.	STOCK NUMBER	NOMENCLATURE	UNIT	TOTAL REQ FOR PROJECT	AVAILABLE IN COMMAND	REQUIRED
30	5805-00-920-7159 (06017Z)	CLOCK MODULE GROUP, DA8072G W/ORG REPAIR PARTS PKG FUW MD-674 MODEM-1 PER MD-674 (325.00)	EA	AR		
31	5805-00-933-2515 (06054P)	MODEM SUBASSEMBLY MX-7379/G F/U/W MD-674(P)/G. 1200 BAUD (835.00)	EA	AR		
32	5805-00-963-4888 (06819Z)	MODEM, 150/1200 BAUD, MD-674(P)/G, W/ORG REPAIR PARTS PKG (710.00)	EA	AR		
33	5895-00-257-1093 (08993N)	SYNCHRONIZER, ELECTRICAL, SN394(V) 2/G DUAL FUNCTION. FUW 2 KG-13S. (6332)	EA	AR		
34	5805-00-926-2597 (06050J)	MODEM, SUB ASSY MX-7375/G F/U/W MD-674 (P)/G. 600 BAUD (200.00)	EA	AR		
35	7025-00-878-8316 (08701Z)	MODEM, MD-701B/U/Y (\$4800.00)	EA	AR		
36	5820-01-081-2340 (21219A)	MODEM, 4800 BAUD W/RACK MOUNT OPTION (DIGITAL SIDE USES 25 PIN CONN; AUDIO SIDE USES SCREW TERM. 5/16" IN HIGH) 8 1/2" WIDE 18" DEEP 115V +10% OR 230 +10%	EA	AR		
37	5895-01-022-0742 (25882J)	AN/U/YK-22 (CAU-1100)(V) CRYPTO AUXILLARY UNIT SINGLE, FUW KG-13 ONLY (NOT NORMALLY USED)	EA	AR		
38	5895-01-022-0248 (25833Z)	AN/U/YK-22 (CAU-1200)(V) CRYPTO AUXILLARY UNIT DUAL, FUW KG-13 ONLY (NOT NORMALLY USED)	EA	AR		
39	5895-01-025-0508 (25880L) 58951-01-036-2531 (DO NOT ORDER) 5895-01-006-3635 (DO NOT ORDER)	AN/U/YK-22 (CAU-2100)(V) CRYPTO AUXILLARY UNIT SINGLE, FUW KG-13 OR KG-30 SERIES CRYPTO A. PWR SUP DIR (RED) FUW AN/U/YK-22 B. SYNC CNTRL DIR (RED) FUW AN/U/YK-22	EA EA EA	AR AR AR		

DA FORM 3071-R

EDITION OF 1 AUG 72 IS OBSOLETE.

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7263k/ LOCATION		UNIT IDENT CODE		PAGE NO.		NO. OF PAGES	
STANDARD REMOTE TERMINAL (SRT)		DATE		5		19	
TELER NUMBER SEIP 041							
ITEM NO.	STOCK NUMBER	NOMENCLATURE	UNIT	TOTAL REQ FOR PROJECT	AVAILABLE IN COMMAND	REQUIRED	
	5895-01-036-2532 (DO NOT ORDER)	C. PC CARDS DIR (BLK) FUM AN/UYK-22	EA	AR			
	5895-01-006-3638 (DO NOT ORDER)	D. TIMER CNTR DIR (BLK) FUM AN/UYK-22	EA	AR			
	5895-01-006-3630 (DO NOT ORDER)	E. PWR CNTRCD DIR (BLK) FUM AN/UYK-22	EA	AR			
	5895-01-006-3639 (DO NOT ORDER)	F. CNTRL PCCD DIR (BLK) FUM AN/UYK-22	EA	AR			
	5895-01-012-9229 (DO NOT ORDER)	G. BL PWR SUP DIR (BLK) FUQ AN/UYK-22	EA	AR			
	6625-01-010-0256 (DO NOT ORDER)	H. EXT CARD DIR (PWR) FUM AN/UYK-22	EA	AR			
	6625-01-010-0225 (DO NOT ORDER)	I. EXT CARD DIR FUM AN/UYK-22	EA	AR			
	5995-00-X79-1384 (DO NOT ORDER)	J. INCON CABLE FUM AN/UYK-22	EA	AR			
40	5895-01-027-6927 (25881K)	AN/UYK-22 (CAU-2200)(V) CRYPTO AUXILIARY UNIT DUAL, FUM KG-13 OR KG-30 SERIES CRYPTO	EA	AR			
41	7501-0226-009 (28722A) 7501-0226-010 (28721A) 7501-0226-011 (28720J) 7501-0226-012 (28719W)	RED RE: BLE FUM UYK-22 AND KG-13 BLACK REC CABLE FUM UYK-22 AND KG-13 RED TRANS CABLE FUM UYK-22 AND KG-13 BLACK TRANS CABLE FUM UYK-22 AND KG-13	EA	AR			
42	5975-00-686-0206 (02600D)	RACK, ELEC EQUIP RR197 (\$104.18)	EA	AR			
43	0084A806 (25321J)	BOX JUNCTION, 8X6X3-1/2 IN HOFFMAN P/N A-806 CHRFI (11.95)	EA	AR			

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ITEM NO.	STOCK NUMBER	NOMENCLATURE	EA	AR	EA	AR	EA	AR	EA
44	MOLSER SAFE CO. DRWG J22371 (20837D)	SECURITY CABINET, CLOSED DOOR OPERATION, SINGLE DOOR, FORCED AIR COOLING, F/U/W KG-34 T/SEC, REAR ACCESS HOLES, AS MODIFIED BY USACEEIA DRAWING STD. MC-0004 (MODIFIED BY SAAD PRIOR TO SHIPMENT)	EA	AR	EA	AR	EA	AR	EA
45	85005 SP 128A-FL (28167M)	PANEL, SIDE, FLAT (FUW MODEM CABINET) (50.13)	EA	AR	EA	AR	EA	AR	EA
46	5995-00-162-0481 (03183P)	CORD, PATCHING, CONSISTS OF P3E CORD 2 FT LG E/W 310 BLACK SHELL PLUGS WECO P/N 3P7D (4.23)	EA	AR	EA	AR	EA	AR	EA
47	5820-01-014-7070 (13745F)	CORD, PATCH, 12 CIRCUIT, 36 IN LG COOKE ENG P/N DPC-12-36 FUW COOKE 153 SERIES PATCH PANEL (\$33.50)	EA	AR	EA	AR	EA	AR	EA
48	02002DPC-12-12 (27100M)	CORD, PATCH, 12 CIRCUIT, 12 IN LG COOKE ENG P/N DPC-12-12 FUW COOKE 153 SERIES PATCH PANEL (\$40.60)	EA	AR	EA	AR	EA	AR	EA
49	5995-00-518-1534 (13061P)	CORD, PATCH, 12 CIRCUIT, 24 IN LG COOKE ENGR P/N DPC12-24 FUW COOKE 153 SERIES PATCH PANEL (\$42.18)	EA	AR	EA	AR	EA	AR	EA
50	5935-00-192-4760 (25268A)	PLUG, TELEPHONE, PJ 055B (0.83)	EA	AR	EA	AR	EA	AR	EA
51	5995-00-162-0884 (27119D)	CORD, PATCHING, 3 FT	EA	AR	EA	AR	EA	AR	EA
52	5995-00-246-9791 (26229E)	CORD, PATCH, 3 COND, 2 FT ADC P/N PJ-82 FUW COOKE 153 AND SB 1205 SERIES PATCH PANELS (5.43)	EA	AR	EA	AR	EA	AR	EA
53	5995-00-089-4500 (08021R)	CORD, PATCH, 3 COND, 4 FT ADC P/N PJ-84 FUW COOKE 153 AND SB 1205 SERIES PATCH PANELS (\$4.98)	EA	AR	EA	AR	EA	AR	EA
54	154-000-01 COOKE (27127A)	RS 232 FALLBACK SWITCH W/O MONITOR. RACK MOUNT. BACK CONNECTIONS; 2 MALE 1 FEMALE (98.60)	EA	AR	EA	AR	EA	AR	EA

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EDITION OF 1

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55	154-12M-01 COOKE (26611B)	RS 232 FALLBACK SWITCH WITH MONITOR, RACK MOUNT. BACK CONNECTIONS; 2 MALE, 1 FEMALE (\$129.60)	EA	AR	
56	154-00-RT COOKE (26613D)	RACK ADAPTER, FLUSH MOUNT, 5 BLANK PANELS. (25.60)	EA	AR	
57	154-00M-01 COOKE (25870K)	BREAKOUT BOX (12 CIRCUIT JACK W/12 TEST POINTS) RACK MOUNTED (145.60)	EA	AR	
58	153-004M-02 COOKE (25871J)	TWO CHANNEL VF PATCH BOX (FOR TWO FDX CHANNELS WITH MONITORS; 7 PIN HEX CONNECTORS ON BACK) (152.40)	EA	AR	
59	5995-00-102-1494 (13048B)	CABLE ASSY TELE 3 COND DOUBLE PLUG. 24 IN LONG ADC (70674) #PJ 764 (FUV 153 006) (\$5.67)	EA	AR	
60	5995-00-246-9792 (26230M)	PATCH CORD, THREE COND, SHIELDED, SINGLE PLUG, 6FT LONG, LONG FRAME TYPE (5.83)	EA	AR	
61	5306-00-939-9598 (03117D)	ROD, CONTINUOUS THREAD, 3/8-16 X 72 IN LONG P/N HL93 3-8-6 (1.30)	LG	AR	
62	5305-00-527-5396 (08389M)	SCREW, MACH 10-32X $\frac{1}{2}$ RHS (.1900 IN DIA) MS 35222-63 FOR FASTENING EQUIPMENT TO RACK AND CABINET FACES. (0.02)	EA	AR	
63	5975-00-504-3569 (27415C)	SCREW, FATCHD BRACKET TO KG-34 AND CABINETS FOR RACK MT. 8 REMD PER KG-34 INSTL	EA	AR	
64	5306-00-884-8787 (27183R)	BOLT, MACHINE, HEX HD 3/8-16 X 1 IN MS 35355-64 (.07)	EA	AR	
65	5306-00-209-3721 (26972Z)	BOLT, TOGGLE 1/4 IN-20 X 3 IN SPRING WING TYPE R. H. FF-B-588 BOX = 50 BOLTS (\$3.70)	BX	AR	

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66	5306-00-042-6920 (07083K)	BOLT, MACH, 1/4-20 X 1 1/2 IN LONG SQ HD (0.03)								EA	AR		19
67	5310-00-568-0326 (00578F)	NUT, CLAMPING S, 3/8-16 NCZ THD, W/LONG RETAINING SPRING, F/U/W 1-5/8 IN H CONTINUOUS SLOT CHANNEL UNISTRUT P/N P-1008 (.39)								EA	AR		
68	5310-00-934-9751 (07485Y)	NUT, HEX, 10-32 MS-35650-302 (0.69)								HD	AR		
69	5310-00-331-9466 (00562A)	NUT, W/LONG RETAINING SPRING, 1/4-20, CAD PLT STL UNISTRUT P/N P-1006-1420 (.40)								EA	AR		
70	5310-00-454-0542 (17597L)	NUT, CLIP, 10-32, 0.218 IN DIA BOLT CLEARANCE HOLE (0.16)								EA	AR		
71	5310-00-820-9410 (27191K)	WASHER, FLAT, RD, 3/8 ID X 7/8 OD CD PLT STL .050 THR P/N SP4-300-225 (.11)								EA	AR		
72	5310-00-809-4058 (26243L)	WASHER, FLAT, RD, 1/4 IN CD PLT STL MS 27183-10 (.43)								HD	AR		
73	5310-00-582-5965 (06228B)	WASHER, LOCK, SPLIT, .250 ID X .363 OD CD PLT STL MS 35-388-44 (.38)								HD	AR		
74	5310-00-637-9541 (00586C)	WASHER, LOCK, SPLIT, STEEL, 0.375 ID X 0.688 OD, CAD PLT MS 35-338-46 (.59) (FUW 3/8 IN BOLT)								HD	AR		
75	5340-00-754-4560 (00740C)	SHIELD, EXPANSION, F/ 3/8-16 MACH BOLT, 0.563 IN HOLE, FOR POWER TOOL, INST SELF DRILLING. P/N 3425 BX = 50 EA (14.30)								BX	AR		
76	5340-00-678-4641 (00737A)	SHIELD, EXPANSION, PHILLIPS RED HEAD, F/U/W 1/4-20 BOLT (\$4.20)								HD	AR		

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77	5935-01-012-3080 (10098Z)	CONNECTOR, RECEPT, ELEC, 2 CONNECTING MATING ENDS, STRAIGHT SHAPE NONLOCKING, 2 FL U-HOLLOW, 4 FL FLAT 15 AMP AA MATERIAL A/A WC 00596D7 (.86)	EA	AR	
78	5935-00-401-6454 (12722F)	SHIELD, ELECTRICAL CONNECTOR, 25 PIN P/N DB 51226-1 (.88)	EA	AR	
79	5935-00-489-9999 (13721D)	CONNECTOR, PLUG, ELEC. 25 PIN MS 24308/4-3 ITT CRIMP CANNON #DBMA-25P MALE (\$3.36)	EA	AR	
80	5935-00-410-9250 (13722E)	CONNECTOR, RECEPTACLE, ELEC 25 PIN ITT CANNON #DBMA-25S MS 2430812-3 (6.62)	EA	AR	
81	5940-00-914-8708 (08223N)	CONNECTOR, F/U/W 3-12 AWG WIRE T&B P/N PT-70 (0.03)	EA	AR	
CTL	CONDUIT				
82	5975-00-087-0758 (05207D)	CONDUIT, METAL, FLEXIBLE, 3/4 IN SIZE ZINC PLATED STL INNER WALL, POLYBIVYL OUTER WALL 1.040 IN OD (T&B TYPE EF) (0.40)	FT	AR	
83	5975-00-178-1217 02376Z)	CONDUIT, METAL, RIGID, ZINC COATED, THINWALL, 3/4 IN SIZE LG=10 FT WWC563 (1.62)	LG	AR	
84	5975-00-178-1218 (02377A)	CONDUIT, METAL, RIGID, ZINC COATED, THINWALL, 1 IN SIZE, 10 FT LENGTH WWC563 (3.00)	LG	AR	
85	5975-00-178-1216 (02375J)	CONDUIT, METAL, RIGID, ZINC COATED, THINWALL, 1/2 IN, 10 FT LENGTH (1.23)	LG	AR	
86	5975-00-983-5239 (18788Z)	CONDUIT, FLEX, 1/2 IN LIQUID TIGHT TYPE EF S/S GRAYBAR ELECTRIC (93.82) COIL = 200 FT	CL	AR	
87	5975-00-178-1221 (02380P)	CONDUIT, METAL, RIGID, 2 IN ZINC COATED, 10 FT LENGTH (\$4.39)	LG	AR	

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88	5975-00-178-1220 (02379C)	CONDUIT, METAL, EMT, 1.5" ST MATL, 10" LG, WWC 563	LG	AR					
89	5975-00-802-6531 (09051L)	BOX CONNECTOR, ELEC, 3/4 IN THINWALL CONDUIT G002 T&B P/N 5223 (.38)	EA	AR					
90	5975-00-179-0099 (02387Z)	BOX CONNECTOR, ELEC, 1 IN THINWALL STRAIGHT TYPE G002 T&B P/N 5323 (.24)	EA	AR					
91	5975-00-983-9229 (07459A)	BOX CONNECTOR, ELEC, 1/2 IN FLEXIBLE CONDUIT STEEL T&B P/N 5332 (.73 OR EQUAL)	EA	AR					
92	5975-00-801-7411 (05250Q)	BOX CONNECTOR, ELC 3/4 IN STRAIGHT TYPE FOR FLEXIBLE CONDUIT TB 5333 (.91)	EA	AR					
93	5975-00-899-0235 (26610A)	BOX CONNECTOR, ELEC 3/4 IN CONDUIT SIZE 3/4 IN KNOCKOUT SIZE 90 DEG ANGLE TYPE MALLEABLE IRON DESIGNATED FOR FLEX MATTALIC CONDUIT SEC TO CONN BY LAND NUT. T&B P/N 5253 (1.34)	EA	AR					
94	5975-00-179-0098 (02386J)	BOX CONNECTOR, ELEC, 1/2 IN THINWALL COMPRESSION TYPE T&B P/N 5121 (.11)	EA	AR					
95	5975-00-905-0948 (07458Z)	BOX, CONNECTOR, ELEC, 2 IN THINWALL, STRAIGHT INSULATED. T&B P/N 5623 (2.74)	EA	AR					
96	5975-00-926-7424 (12158C)	CONNECTOR, STRAIN RELIEF, 3/4 IN HUB, .375 TO .5 IN CABLE RANGE, T&B P/N 2532 (0.79)	EA	AR					
97	5975-00-904-6222 (02806B)	BOX CONNECTOR, 90 DEGREE, LIQUID TIGHT F/U/W 3/4 IN FLEX (1.09)	EA	AR					
98	5975-00-100-8730 (71665E)	BOX, CONNECTOR F/RIGID MTAL TW	EA	AR					

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99	5975-00-655-2775 (27219E)	OUTLET, ELEC CONDUIT, TYPE LL, 1 IN THICKWALL CROUSE-HINDS P/N LL37 W/COVER (EST. 3.25 OR EQUAL)	EA	AR		
100	5975-00-839-5322 (02779G)	OUTLET, ELEC CONDUIT, TYPE T, 3/4 IN THICKWALL CROUSE-HINDS P/N T27 W/COVER (3.12 OR EQUAL)	EA	AR		
101	5975-00-839-5324 (02783G)	OUTLET, ELEC CONDUIT, TYPE T, 1 IN THICKWALL CROUSE-HINDS P/N T37 W/COVER (3.01 OR EQUAL)	EA	AR		
102	5975-00-644-3171 (26994Z)	OUTLET, ELEC CONDUIT, TYPE LB, 3/4 IN THICKWALL W/COVER (1.88)	EA	AR		
103	5975-00-284-9044 (02528W)	OUTLET, THREADED, ELEC CONDUIT, 1 IN SIZE TYPE LB CROUSE-HINDS P/N WC586 W/COVER (3.30 OR EQUAL)	EA	AR		
104	5975-00-655-2769 (07088P)	OUTLET, ELEC CONDUIT, TYPE LL, 3/4 IN THICKWALL W/COVER (2.16)	EA	AR		
105	5975-00-681-4068 (02667E)	REDUCER 1-1/2 TO 1/2 IN. EMT TO FLEX CONDUIT, RE51	EA	AR		
106	5975-00-655-2767 (02633D)	OUTLET, ELEC CONDUIT, TYPE LR, 3/4 IN THINWALL APPLETON P/N LRL 751-1 HAS 2 OPENINGS, COMES W/ONLY ONE COVER (2.01)	EA	AR		
107	5975-00-655-2768 (02634E)	OUTLET, ELEC, CONDUIT, TYPE LL, 2 IN THICKWALL CROUSE-HINDS P/N LL-67 W/COVER (7.10)	EA	AR		
108	5975-00-610-5819 (27221M)	OUTLET, ELEC, CONDUIT, TYPE LB, 2 IN THICKWALL CROUSE-HINDS P/N LB-67 W/COVER	EA	AR		
109	5975-00-903-8853 (13504G)	OUTLET, ELEC CONDUIT, FSC02, 3/4 IN (5.54)	EA	AR		
110	5975-00-232-7644 (30731H)	OUTLET, CND, LB 57, STYLE, 1.5", CH	EA	AR		

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111	5975-00-655-2772 (02638W)	OUTLET, CND, LR 57, STYLE, 1.5", CH	EA	AR		
112	5975-00-610-5825 (11285J)	OUTLET, CND, LL 57, STYLE, 1.5", CH	EA	AR		
CTL	COUPLINGS, CONDUIT					
113	5975-00-179-0302 (05164Y)	COUPLING ELEC CONDUIT 3/4 IN THINWALL G002 (.36)	EA	AR		
114	5975-00-179-0095 (05165N)	COUPLING, ELEC CONDUIT, 1 IN THINWALL COMPRESSION TYPE (.62)	EA	AR		
115	5975-00-665-3158 (10102D)	COUPLING, ELEC CONDUIT, 1/2 IN THINWALL COMPRESSION TYPE (.19)	EA	AR		
116	5975-00-661-1002 (02644D)	COUPLING, ELEC CONDUIT, 2 IN THINWALL T&B P/N 5620 (2.23)	EA	AR		
117	5975-00-J04-6998 (30739F)	COUPLING, ELEC CONDUIT, 1.5" CH MW 1654	EA	AR		
118	5975-00-020-5093 (05110N)	COVER, CONDULET SHEET STEEL FOR STANDARD DUPLEX FLUSH RECEPTACLE (1.49)	EA	AR		
119	5975-00-234-6779 (10690K)	BUSHING, PLASTIC, INSULATING, 1/2 IN (.05)	EA	AR		
120		DELETE				
121	5975-00-578-2859 (05238B)	BUSHING, INSULATING, PLASTIC, 1 IN (.07)	EA	AR		

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122	5975-00-642-8502 (05307E)	NIPPLE, CONDUIT, CHASE 1 IN SIZE (.30)	EA	AR	13	19
123	5975-00-877-4848 (06842Z)	REDUCER, 1 TO 3/4 IN, TYPE RETHREADED CROUSE-HINDS P/N RE-32 (.20)	EA	AR		
124	5975-00-435-0350 (09862N)	ELBOW, 90 DEG, 1 IN ELEC CONDUIT, GALV, W/REMOVABLE CAP FOR PULLING APPLETON P/N PFFL100 (4.44 OR EQUAL)	EA	AR		
125	5975-00-962-9882 (11040M)	BUSHING, INSULATING, PLASTIC, 3/4 IN TB P/N 223 (.05)	EA	AR		
126	5975-00-158-8487 (02836W)	COVER, BLANK, SHEET STEEL, F/1 IN CONDUIT OUTLET, TYPE C, L, LB, T CROUSE-HINDS P/N 370 (.66 OR EQUAL)	EA	AR		
127	5340-00-184-1709 (02915D)	HANGER CONDUIT, 1 IN THICKWALL OR THINWALL BOLT SIZE - 1/4 IN BOLTS NOT INCLUDED (.14)	EA	AR		
128	5340-00-184-1713 (07444L)	HANGER, CONDUIT, 3/4 IN THICKWALL OR THINWALL. BOLT HOLES ARE 1/4 IN. BOLTS NOT INCLUDED (.13)	EA	AR		
129	5340-00-190-6803 (20787H)	STRAP, PIPE, 2 HOLE 3/4 IN EMT (.30)	EA	AR		
130	5340-00-247-5039 (00679H)	STRAP, RETAINING, 1 HOLE, 3/4 IN THINWALL SZ MINERALLAC P/N 145 (.04 OR EQUAL)	EA	AR		
131	5340-00-853-4773 (05027Z)	CLAMP, PIPE, F/1 IN EMT, 1.163 IN OD, 2 PCS, GALV STEEL, W/SCREW AND NUT, F/USE W/1-5/8 IN CONTINUOUS SLOTTED CHANNEL (.50)	EA	AR		
132	5340-00-925-2282 (11660Z)	STRAP, RETAINING, 1 HOLE, 1 IN THINWALL (2.50) BOX = 50 EA	BX	AR		

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133	5340-00-J04-3985 (27921C)	STRAP, RETAINING, F/UW 1.5" ST MATA. 1 HOLE, TB 4163			AR	EA			
134	5340-00-946-4815 (07063X)	STRAP, RETAINING F/U/W 1IN EMT (2.50) BOX = 50 EA			AR	BX			
135	5340-00-924-1683 (12165J)	STRAP, RETAINING, 1 HOLE, F/U/W 1/2" EMT T&B P/N4159 MS 51956-1 (\$1.85)			AR	HD			
136	5975-00-926-7505 (05080L)	ELBOW, LONG, 90 DEG, 3/4" EMT (1.81)			AR	EA			
137	5975-00-284-6655 (08274R)	REDUCER, 3/4 TO 1/2 THINWALL CROUSE-HINDS P/N RE21 (.16)			AR	EA			
138	5340-00-925-2279 (15081J)	STRAP, RETAINING, ONE HOLE, F/U/W 2" EMT (9.30)			AR	BX			
139	5975-00-158-8485 (02845G)	COVER, CONDUIT OUTLET, 2 IN, CROUSE HINDS P/N 670 (1.23)			AR	EA			
140	5975-00-042-7138 (15097Y)	ELBOW, 90 DEG, SHORT, INSULATED, 3/4 IN, T&B P/N 4241 (1.72)			AR	EA			
141	5340-00-853-4772 (05026J)	CLAMP, PIPE, F/3/4 IN EMT F/U/W CONTINUOUS SLOTTED CHANNEL UNISTRUT P/N P 1427B (0.46)			AR	EA			
142	5340-00-190-6805 (00648Z)	STRAP, PIPE, TWO HOLE, FOR EMT, 1 IN, MS 21314-11, 50 PER BOX (3.30)			AR	BX			
143	6145-00-866-2306 (11502G)	CABLE, SP ELEC, 6 PR, 22 AWG, SOLID INDIV SHLD PRS W/DRAIN WIRE EACH PR. BELDEN 8768 (.30) (.394 IN OD)			AR	FT			
144	30463E4882 (12829D)	CABLE ASSY, 24 IN LG, 3 COND, SHIELDED BREEZE P/N E4882 (127.80)			AR	EA			

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CTL	WIRE					
145	6145-00-184-5348 (03509A)	WIRE, ELEC, THW, SOLID 14 AWG WHT, 600V THERM INSUL	FT	AR		
146	6145-00-191-2571 (03535D)	WIRE, ELEC, THW, SOLID, GRN, 14 AWG, 600V THERM INSUL	FT	AR		
147	6145-00-050-7405 (03540K)	WIRE, ELEC, THW, SOLID, BLK, 14 AWG, 600V THERM INSUL	FT	AR		
148	6145-00-990-2998 (30736C)	WIRE, ELEC THW, SOLID, RED, 10 AWG, 600V THERMOPLASTIC INSUL	FT	AR		
149	6145-00-990-3000 (30737D)	WIRE, ELEC THW, SOLID, WHT, 10 AWG, 600V THERMOPLASTIC INSUL	FT	AR		
150	6145-00-466-2587 (30735B)	WIRE, ELEC THW, SOLID, GRN, 10 AWG, 600V THERMOPLASTIC INSUL	FT	AR		
151	6145-00-466-2589 (12816B)	WIRE, ELEC THW, SOLID, BLU, 10 AWG, 600V THERMOPLASTIC INSUL	FT	AR		
152	5310-00-879-6494 (06618G)	WASHER, FLAT SQUARE SHAPE 1-5/8 X 1-5/8 X 1/4 IN THICK, FUM 3/8 BOLT. UNISTRUT P/N P-1063 (.14 OR EQUAL)	EA	AR		
153	5340-00-693-2401 (00754F)	CHANNEL, CONTINUOUS SLOT, STEEL STRUCTURAL FRAMING, STRAIGHT SECTION, 1-5/8 IN W, 1-5/8 IN H, 10 FT LG, 16 GAUGE, SINGLE SLOTTED FACE (UNISTRUT P/N P2000) (10.50)	EA	AR		
154	96195P1377 (27260R)	'U' SHAPE FITTING 7/8". UNISTRUT P/N P1377 (4.15)	EA	AR		
155	5970-00-296-0788 (07260J)	REDUCER BUSHING, 1.5 IN TO 3/4 IN, CH, RE52	EA	AR		
156	3439-00-269-9610 (00011Z)	SOLDER, TIN ALLOY, 1/16 IN. DIA. 60% TIN 40% LEAD 1LB. SPOOL (5.60)	LB	AR		

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

7263k/ LOCATION		UNIT IDENT CODE			
STANDARD REMOTE TERMINAL (SRT)		DATE	TOTAL REQ FOR PROJECT	AVAILABLE IN COMMAND	NO OF PAGES
TELER NUMBER SEIP 041				16	19
ITEM NO	STOCK NUMBER	NOMENCLATURE	UNIT		REQUIRED
157	5940-00-636-5593 (22476C)	TERMINAL LUG, INSULATED 22-16 AWG, SOLDERLESS FLANGE-FORKED TONGUE #4-6 STUD AMP INC TYPE 34541 FSCM 00779. FUM AN/UYK-22 SN-394 TERMINATIONS (.56 OR EQUAL) (PG = 25)	PG	AR	
158	5970-00-945-2849 (06836E)	TUBING SHINKABLE PLASTIC 3/16 IN SIZE FIT 105-3-16 (.26)	FT	AR	
159	5970-00-815-1295 (25366Z)	INSULATION SLEEVING, ELEC, SHRINKABLE, 1/4 IN X 4 FT (.07)	FT	AR	
160	5975-00-074-2072 (07456K)	STRAP TIE DOWN T AND B TY25M 6.3 IN LG. BUNDLE DIAMETER .0625 TO 1 3/4 IN 50 LBS HDLG CAP (WHITE PLASTIC) (1.03)	HD	AR	
161	5975-00-906-2414 (08206J)	TY-RAP, NR 10 SCREW SIZE T&B P/N TY 35M (.03 OR EQUAL)	EA	AR	
162	7510-00-634-2941 (06638E)	TAPE, PRESSURE SENSITIVE ADHESIVE PLASTIC BACKING, OPAQUE, MOISTURE VAPOR RESISTANT, FUNGUS INSERT, 3 IN ID OF CORE, RED 1 IN WD X 36 YDS (4.52)	RO	AR	
163	8010-00-901-1060 (21013C)	PAINT, LT GREY, SEMI-GLOSS, 1 QT CAN 26307 (18.60)	GL	AR	
164	8020-00-245-4517 (27268J)	BRUSH, PAINT, 3 IN X 3-1/4 IN NYLON BRISTLE, HIGH GRADE (2.65)	EA	AR	
165	9905-00-353-3869 (07147L)	TAG, CABLE MARKER 360/PKG WECO P/N SD 97-218A (6.00)	PG	AR	
166	5970-00-419-4291 (11723H)	TAPE, ELEC, VINYL, 3/4 IN X 108 FT, MIL-I-24391 RO=108 FT (.82)	RO	AR	
167	5970-00-812-2967 (08648B)	TUBING, HEAT SHRINKABLE, 1/2 IN M23053/5-108-0 (.09)	FT	AR	

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TELECOMMUNICATIONS DEVELOPMENT PROJECT — BILL OF MATERIALS

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7263k/ LOCATION		UNIT IDENT CODE	
STANDARD REMOTE TERMINAL (SRT)		DATE	PAGE NO. 17
TELECOMMUNICATIONS DEVELOPMENT PROJECT — BILL OF MATERIALS		NO. OF PAGES 19	
SEIP 041			
ITEM NO	STOCK NUMBER	NOMENCLATURE	UNIT
168	4020-00-498-9565 (00039F)	TWINE, VEG FIBER, 6 PLIES, 48 LB BREAKING STRENGTH (6.50)	LB
169	5970-00-812-2974 (10398C)	INSULATION SLEEVING, ELEC, SHRINKABLE, 3/32 IN DIA M2305315-103-0 (.05)	FT
170	5970-00-812-2969 (20827E)	INSULATION SLEEVING, ELEC, SHRINKABLE, 1/8 IN DIA FIT221 1-BLACK (.06)	FT
171	5940-00-549-1984 (25889F)	TERMINAL LUG, SOLDERLESS, 14 TO 6 AWG DOSSERT CORP P/N G35-1 PG=10 EA (GROUND WIRE LUG) (1.91 OR EQUAL)	PG
172	5975-00-954-6641 (05120Y)	SLIDE, ASSY, SHELF, 19" WIDTH PAR BS 1980 (51.59)	EA
173	5975-00-224-7014 (02921F)	HOOK, PATCH CORD HOLDING 649599A (0.85)	EA
174	85005SH-18A (27278K)	SHELF, EQUIPMENT, EMCOR (15.14)	EA
175	5975-00-043-0778 (18789A)	SHELF, WRITING BUD # SA-1719 HG (20.53)	EA
176	5935-01-047-5230 (19488M)	SHIELD AND CLAMP ASSEMBLY, CBL, NO. 3, PLASTIC (2.21)	EA
177	5940-00-615-6073 (15016A) DO NOT ORDER*	TERMINAL LUG, SPADE, #14 AWG. MS 25036-152 AC POWER WIRING FOR CAU PG-50 (1.00)	PG
178	5340-00-182-9804 (13646F)	BRACKET, ANGLE, 5 IN (FUW KG-34: 2 PER KG-34) (98230) ON057110 (SEE ITEM AFTER 50 THIS BOM) (4.90)	EA

7263k/ LOCATION STANDARD REMOTE TERMINAL (SRT) TELER NUMBER SEIP 041							UNIT IDENT CODE		
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.									
							DATE	PAGE NO.	NO. OF PAGES
								18	19
ITEM NO	STOCK NUMBER	NOMENCLATURE	UNIT	TOTAL REQ FOR PROJECT	AVAILABLE IN COMMAND	REQUIRED			
		*ITEMS MARKED AS "DO NOT ORDER" ARE NOT STOCKPILED BY THE DEPOT. IF AN ITEM SO MARKED IS REQUIRED FOR AN INSTALLATION, SPECIAL COORDINATION MUST BE MADE BEFORE ORDERING							
179	5975-00-937-4504 (00873D)	PANEL, BLANK, ALUMINUM, 19 IN X <u>12-1/4</u> IN X 1/8 IN THICK (4.25) (\$4.25)	EA	AR					
180	5975-00-686-2541 (08712Z)	PANEL, BLANK, ALUMINUM, 19 IN X <u>3-1/2</u> IN X 1/8 IN THICK	EA	AR					
181	5975-00-234-4868 (23067Z)	PANEL, BLANK, ALUMINUM, 19 IN LG X <u>10-1/2</u> IN W X 1/8 IN THICK, GREY FINISH (2.00)	EA	AR					
182	5975-00-937-4583 (00879Z)	PANEL, BLANK, ALUMINUM, 19 IN LG X <u>1-3/4</u> IN W X 1/8 IN THICK, GREY FINISH	EA	AR					
183	5975-00-975-4448 (15288K)	PANEL, BLANK, ALUMINUM, 19 IN LG X <u>5-1/4</u> IN W X 1/8 IN THK, GREY FINISH	EA	AR					
184	5975-00-685-9791 (02406H)	PANEL, BLANK, ALUMINUM, 19 IN LG X <u>7</u> IN W X 1/8 IN THK	EA	AR					
185	5975-00-937-4582 (08373R)	PANEL, BLANK, ALUMINUM 19 IN X <u>17 1/2</u> IN X 1/8 IN THK, GREY (6.00)	EA	AR					
186	5805-00-X79-3650 (27450Y)	BAY CAB FRAME ASSY GP I	EA	AR					
187	5805-00-X79-3651 (27451N)	BAY CAB FRAME ASSY GP II	EA	AR					
188	5805-00-X79-3652 (27443K)	MODEM CABINET ASSY GP I	EA	AR					

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7263k/ 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							
STANDARD REMOTE TERMINAL (SRT)		DATE		PAGE NO.		NO. OF PAGES			
TELER NUMBER				19		19			
SEIP 041									
ITEM NO.	STOCK NUMBER	NOMENCLATURE	UNIT	TOTAL REQ FOR PROJECT	AVAILABLE IN COMMAND	REQUIRED			
189	5805-00-X79-3653 (27016Z)	MODEM CABINET ASSY GP II	EA	AR					
190	162500-40642	WALL MOUNT INSTL - MD-674 MODEM	EA	AR					
191	5975-00-J04-6999 (21628C)	BOX, JUNCTION, 6"L X 4"W X 3"D, CAST IRON, WITH 6 SCREWS SCREWS IN COVER	EA	AR					
192	5975-00-834-6780 (06619H)	NIPPLE, CHASE, 3/4", T&B 1943, INSUL	EA	AR					
193	5975-00-J04-6993 (21629D)	LOCKNUT, ELEC CONDUIT, 3/4" - 14" SEALING TYPE, GEDNEY SLG-75S	EA	AR					
194	5310-00-595-7687 (14568D)	WASHER, FINISHING #10	HD	AR					
195	5975-00-068-8694 (18913D)	ADAPTER, NIPPLE, 3/4 - 20 EX6P	EA	AR					
196	5975-00-539-6365 (08312M)	COVER, CONDULET DSS100	EA	AR					
197	5975-00-681-3180 (06932B)	COVER, BLANK, 1 1/2", #570, CH	EA	AR					
198	5935-00-J04-6997 (30738E)	CONNECTOR, 1 1/2", STRAIGHT, CH, CGK 5915	EA	AR					
199	5810-00-J04-6616 (30223F)	INSTALLATION PACKAGE, KG-13/VYK-22 (SAAD-D-40683)	EA	AR					

SECTION 6. QUALITY ASSURANCE PROCEDURES

6.1 General. The quality assurance (QA) procedures for this SEIP have been developed in accordance with the provisions and criteria of CCR 702-1-2. The QA program specified, will be implemented to provide assurance that the specified equipment and facilities have been installed in accordance with the requirements and criteria of this SEIP and are acceptable for use by the operating agency.

6.2 References. The following references apply to this QA program:

a. USACC Regulation Number 702-1-2, 17 January 1980, "USACC quality Assurance Program for Engineering, Installation and Acceptance of Communications-Electronics Equipment and Systems."

b. US Army Communications-Electronics Engineering Installation Agency (USACEEIA) Regulation Number 702-1, 17 January 1980, "USACEEIA Quality Assurance and Testing Program."

c. USACEEIA Regulation Number 702-2, 1 January 1979, "Preparation of Documentation for Test and Evaluation of Communications-Electronics Materiel."

d. USACEEIA Regulation Number 702-3, 16 January 1980, "Role of the Test Director."

e. USACEEIA Regulation Number 702-4, 11 March 1980, "Quality Assurance During Onsite Installation."

f. US Army Communications-Electronics Installation Battalion (USACEI-Bn) Pamphlet 105-3, 1 February 1978, 105-3, "USACEI Bn Communications-Electronics Installation Planning and Implementation Guide."

g. US Air Force Technical Order (AFTO) Series 31-10-2 through 31-10-29, "Standard Installation Practices."

h. Category III Operational and Acceptance Test Plan, 30 April 1980, Astronautics Corporation of America (ACA).

i.. Modular AUTODIN Terminal Equipment (MATE) Onsite Test Plan, Publication Number CCC-TED-79-TP-065, October 1979, USACEEIA, Test and Evaluation Directorate.

j. System Acceptance Test Plan for SRT-SA-GENSER OCRE, 15 August 1980, ACA.

6.3 Quality Assurance Program. The QA program is a planned and systematic approach for assessing quality during installation and acceptance and for early correction of any discrepancies or deficiencies revealed through inspection and test. The QA functions will begin at the earliest stages of project implementation and end only after all possible corrective actions are completed, and the equipment is released to the operating or user agency. QA functions are to be performed by personnel operating independently from those charged with the engineering or involved in the installation. Under the program, these functions are divided among three participating organizations: (1) the test agency, (2) the installation agency, and (3) the operating agency.

6.3.1 Test Agency. The test agency will be responsible for performing QA and acceptance testing. As the manager of the QA program for this project, the test agency will commence project planning as soon as tasked. The test agency QA representative (QAR)/test director is responsible for periodic QA inspections and acceptance test in accordance with management provisions of CCCR 702-3 and this SEIP. These QA inspections and tests will be performed at the discretion of the test agency for the purpose of assessing the effectiveness of the QC effort by the installation agency, initiating corrective actions as appropriate, and determining the extent to which the installation adheres to quality requirements. Acceptance testing is conducted in accordance with section 7 to determine if the installed equipment complies with the technical requirements of this SEIP and is suitable for the intended application. At the earliest stages of the project initiation, the test agency will appoint a QAR/test director. For project continuity and effective management, a single individual should be assigned both roles. This will assure that the QA and test efforts are fully integrated and the following actions are expeditiously accomplished:

a. Implement the QA concepts and requirements identified in this SEIP.

b. Assure that the participating agencies and organizations are thoroughly familiar with their respective roles in support of QA, QC, and testing.

c. Validate QC and installation efforts for compliance with stated requirements through the use of project oriented reports, project status review, onsite inspections, etc. When an inadequacy is found in the installation agency's QC effort, the procedures of CCCR 702-1, will be applied. Follow-up actions will be monitored and those discrepancies or differences which cannot be resolved in a timely manner will be brought to the attention of higher authority.

d. Identify representatives by recording the necessary information on USACEEIA Form 113-R, Cognizant Agency, Command, and Facility QA Points of Contact (fig. 6-1). This form becomes a part of the project files and will be updated as necessary to assure orderly project execution. The dissemination of this information to the participants in the QA program is encouraged.

e. Perform a final QA inspection using USACEEIA Form 111-R, Quality Assurance Checklist (fig. 6-2), tailored to the specifics of this effort. This SEIP and USAF TO's shall be the evaluation criteria for site inspection. This inspection will consist of thorough visual and mechanical observations of the installed materiel, QC records, and other factors to evaluate the acceptability and quality of the work performed.

f. Conduct acceptance tests in accordance with the provisions of section 7 of this SEIP, the subsidiary documents specified therein, and CCCR 702-3. If the results of any test are unsatisfactory, corrective action shall be initiated through onsite engineering and installation and operational participants. In the absence of such representation, corrective action will be initiated through channels. The QAR/test director shall retest after corrective actions have been completed and verify that discrepancies were corrected. After satisfactory resolution, he may resume acceptance tests. If test discrepancies cannot be resolved by onsite personnel, the QAR/test director will: (1) Reject the equipment and/or installation and terminate testing until the problem is corrected or resolved, or (2) Attempt to complete the acceptance tests noting the discrepancies and deficiencies as exceptions on USACEEIA Form 98-R, Technical Acceptance Recommendation (TAR). The participating agencies and organizations will be notified of these discrepancies and deficiencies at the earliest practical date.

g. Record and analyze test results, determine acceptability of the installed equipment, summarize findings and distribute the TAR to the designated participants. Prepare a final test report in accordance with CCCR 702-2. Project tasking documents will usually provide the distribution requirements. The acceptance test report will note installation and operational exceptions and recommend corrective actions to be taken by the responsible and participating agency(ies). The test report will document project completion. Subsequent correction of exceptions will be documented by separate correspondence or supplemental test reports, as determined by the QAR/test director or test agency.

6.3.2 Installation Agency. The installation agency will be responsible for conducting QC and debugging. In accordance with CCCR 702-4, the installation agency will designate a QC representative (QCR) who will establish and maintain a QC system. The QC system will assure that assessments of quality are conducted in accordance with established procedures and that the results of the agency's QC inspections and

COGNIZANT AGENCY, COMMAND, AND
FACILITY QA POINTS OF CONTACT
(CCCR 702-2)

	<u>Individual POC</u>	<u>Bldg. No.</u>	<u>Rm. No.</u>	<u>Phone No.</u>	<u>Name of Agency</u>
<u>Installation:</u>					
Team Leader	_____	_____	_____	_____	_____
Assistant Team Leader	_____	_____	_____	_____	_____
Quality Control	_____	_____	_____	_____	_____
<u>Quality Assurance Agency:</u>					
Representative	_____	_____	_____	_____	_____
Testing Activity	_____	_____	_____	_____	_____
<u>Operating Agency:</u>					
Representative	_____	_____	_____	_____	_____
Site Commander	_____	_____	_____	_____	_____

USACEEIA FM 113-R
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Figure 6-1. QA Points of Contact.

SEIP 041

QUALITY CONTROL CHECKLIST - INSTALLATION (CCCR 702-2)		PAGE 1 OF 7 PAGES		
		DATE (Day, Mo, Year)		
SITE	LOCATION	QUALITY CONTROL REPRESENTATIVE (QCR)		
PROJECT NAME		TASK NO.		
A. <u>General Safety Practice</u>		YES	NO	NA
1. Are goggles being worn when using grinding machines?				
2. Are sharp edges left on frame or duct work?				
3. Are all hand tools properly used?				
4. Are electric power tools properly grounded?				
5. Are ground wires securely attached?				
B. <u>Floor Plan Layout</u>				
1. Are layout plans in accordance with drawings?				
2. Was layout plan completed before equipment was moved into area?				
C. <u>Erecting and Mounting</u>				
1. Is equipment laid out in accordance with floor plan drawing?				
2. Are equipment bays leveled and plumbed within tolerances?				
3. Has proper spacing been provided between equipment racks?				
4. Are base angles of frames secured to floor in proper location?				
5. Are all cabinets flush mounted and plumbed?				
6. Has finish of equipment, cabinets, and racks been touched up?				
7. Are bolts and screws free from stripped threads and defaced heads?				

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Figure 6-2. QC Checklist - Installation.

QUALITY CONTROL CHECKLIST - INSTALLATION (CCCR-702-2)		PAGE 2 OF 7 PAGES		
		YES	NO	NA
8. Have sufficient clearances been provided between apparatus for heat dissipation?				
9. Are terminal blocks aligned on distributing frames?				
10. Has equipment been installed in cabinets or racks in accordance with face layouts?				
11. Are all nuts and bolts securely tightened?				
12. Are exposed or cut ends of metal filed smooth and painted?				
D. Cable Racks				
1. Location of cable racks:				
a. Are cable racks located in accordance with cable plan drawing?				
b. Does height of cable racks conform to height above floor as indicated on cable plan drawing?				
c. Are cable racks located so that clearance is provided for installation and maintenance of ultimate equipment?				
d. Are cables located so they are not subject to damage due to exposure or other detrimental conditions?				
2. Assembly of cable racks:				
a. Are long sections of cable racks used where possible?				
b. Have clamping details been altered other than where necessary to avoid interference?				
c. Are open ends of cable racks properly closed?				
d. Are vertical cable racks properly terminated on floors?				
3. Support of cable racks:				
a. Are cable racks properly supported and fastened?				
b. Are cable racks installed so that no excessive load or binding is imposed on the equipment?				

Figure 6-2. QC Checklist - Installation (Continued).

QUALITY CONTROL CHECKLIST - INSTALLATION (CCCR-702-2)		PAGE 3 OF 7 PAGES		
		YES	NO	NA
c. Are horizontal cable racks supported on approximately 5 feet centers but not to exceed 6 feet?				
d. Has support been provided within 3 feet of free end of cable rack?				
e. Are cable racks braced where necessary to prevent sway?				
E. Running Cable				
1. Are cable runs made in accordance with cable running list?				
2. Are oval shaped switchboard cables placed on edge?				
3. Are cables twisted or crossed on cable rack?				
4. Do cables conform to the bending radii and position at turns or bends?				
5. Is protection provided where cable sheaths contact rough or sharp edges or metal?				
6. Are cables turned off over side of cable racks formed with minimum allowable radii?				
7. Are cables turned off rack horizontally and then up?				
8. Do cables to the distributing frame enter on the vertical side?				
9. Are cables serving the horizontal side of a distributing frame secured to the transverse arms near the vertical upright?				
10. Are cable tags properly prepared and in accordance with the cable running list?				
11. Are cable tags secured at each end of cable run?				
12. Have cable tags been removed upon completion of verification and termination?				
13. Are cable butts located as near as practicable to the point where the first wires turn out?				
14. Are cable butts properly treated?				

Figure 6-2. QC Checklist - Installation (Continued).

QUALITY CONTROL CHECKLIST - INSTALLATION (CCCR-702-2)		PAGE 4 OF 7 PAGES		
		YES	NO	NA
15. Is insulation of wires undamaged at butt location?				
16. Are unused and spare wires protected at butt location?				
F. <u>Securing Cable</u>				
1. Is starting stitch properly made and placed?				
2. Is required Kansas City stitch properly made?				
3. Are first and succeeding layers of cable properly secured?				
4. Are cables secured at every cable rack cross strap?				
5. When cable butt is between securing devices, are cables secured together with an appropriate stitch?				
6. Are lock stitches properly made and spaced?				
7. Are splices in twine properly made?				
G. <u>Sewed Forms</u>				
1. Is proper size twine used for the diameter of the form?				
2. Are proper number of strands used?				
3. Are stitches properly spaced?				
H. <u>Butting and Stripping</u>				
1. Are proper tools used for butting and stripping of cable?				
2. Are cable butts properly dressed?				
3. Is proper distance maintained from cable butt to fanning strip?				
I. <u>Fanned Forms</u>				
1. Are cables fanned and connected to the left side of vertical mounted terminal blocks and to the bottom of horizontal terminal blocks?				
2. Are conductors in fanned forms not twisted and bunched?				

Figure 6-2. QC Checklist - Installation (Continued).

QUALITY CONTROL CHECKLIST - INSTALLATION (CCCR-702-2)		PAGE 5 OF 7 PAGES		
		YES	NO	NA
3. Are fanned forms straight and taut from butt location to fanning strip?				
4. Is length of skimmers correct?				
5. Has color code been properly followed?				
6. Are spare wires disposed of properly?				
J. <u>Stenciling</u>				
1. Is equipment correctly identified and stenciled in accordance with floor plan drawings?				
2. Are designations correctly located?				
3. Are corrected size designations used on particular types of apparatus or equipment?				
K. <u>Strapping</u>				
1. Are straps properly placed?				
2. Is correct type of strap wire used?				
3. Does insulation extend to terminal?				
4. Are straps placed so as to not interfere with operation of apparatus?				
5. Is removal of apparatus not blocked?				
6. Are designations not obscured?				
L. <u>Connecting and Soldering</u>				
1. Is soldering clamp used when connecting wires?				
2. Are connections made on terminal in proper manner?				
3. Is all soldering done with standard resin core solder?				
4. Are connections secure and free of foreign substances?				
5. Have all unsightly flux and excess globules of solder been removed?				
6. Is insulation on skimmers not burnt or otherwise damaged?				

Figure 6-2. QC Checklist - Installation (Continued).

QUALITY CONTROL CHECKLIST - INSTALLATION (CCCR-702-2)		PAGE 6 OF 7 PAGES		
		YES	NO	NA
7. Do skinners on connected terminals not exceed 1/16 in?				
8. Are all conductors given a continuity test after connection is made?				
M. <u>Transistor Soldering Techniques</u>				
1. Is caution exercised to assure that excessive heat does not destroy transistors?				
2. Are safeguards in effect to prevent leakage current at the end of an electrical soldering iron from destroying transistors?				
N. <u>Wrapped Connections</u>				
1. Are wrapped connections applied only on suitable terminals?				
2. Are connections essentially straight and free of angular bends or cramps?				
3. Are the required number of turns in contact with the terminal in accordance with criteria for gauge of wire used?				
4. Are wrapped connectors soldered where applicable?				
O. <u>Cross Connections</u>				
1. Are jumpers properly routed at distribution frame?				
2. Do jumpers have sufficient slack after connection?				
3. Are conductors not twisted between fanning strip and terminal?				
4. Does twist remain in conductors beyond rear of fanning strip?				
5. Are jumpers properly dressed?				
6. Has excess solder been removed from terminals?				

Figure 6-2. QC Checklist - Installation (Continued).

QUALITY CONTROL CHECKLIST - INSTALLATION (CCCR-702-2)		PAGE 7 OF 7 PAGES		
		YES	NO	NA
P. <u>Equipment and Signal Grounds</u> Are equipment and signal ground installed in accordance with applicable codes and standards and in accordance with installation drawings?				
Q. <u>Conduit</u> 1. Are burrs removed from conduit after cutting? 2. Is bending radii in accordance with AFTO 31-10-12? 3. Are there no more than four 90 degree bends in a single conduit run? 4. Does number of conductors in conduit conform to AFTO 31-10-12? 5. Are conduits supported at proper intervals? 6. Have all fittings been tightened after installation?				
R. <u>Ducts (RF Shieldings)</u> 1. Are hangers for overhead ducts mounted first? 2. Is proper type mallet used in assembly? 3. Are flange sections cleaned before installation?				
S. <u>Coaxial Cables</u> Is cable inspected for possible damage prior to installation?				

Figure 6-2. QC Checklist - Installation (Continued).

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follow-on actions are adequately recorded. USACEEIA Form 112-R (fig. 6-3) may be used for this purpose. The records are to be made available for review and evaluation by the Test Agency's QAR/Test Director. the snakedown checkouts are to be satisfactorily completed and necessary corrections made prior to offering the equipment for acceptance testing. The installation activity's QC system must meet all procedures contained in USACEI Bn Pam 105-3. The installation agency will designate a QAR, who will assure that the following action are expeditiously performed:

a. Assure that QC procedures are effectively applied on this installation and establish reporting requirements consistent with this project, the SEIP, and all policies. Assure that discrepancies relating to the installation are resolved and corrected at the earliest possible point in the installation effort.

b. Assure the QC inspection records and installation documentation are maintained onsite and readily available to the QAR/test director. When the onsite effort is completed, the QC documentation shall be placed in the project files and maintained for 1 year.

c. Assure the availability of test equipment onsite to perform debugging tests in conjunction with participating elements. The operating agency is to supply test equipment when it is common to operations and maintenance (O&M) functions.

d. Assure the debugging is satisfactorily completed and all corrective actions are completed prior to starting acceptance test.

e. Provide the QAR/test director with a statement of readiness when the installation will be ready to start acceptance tests. The notice will be given not less than 15 days prior to the scheduled start of acceptance tests to allow the QAR/test director to coordinate test support and complete travel arrangements.

f. Assure that the QCR and an adequate complement of personnel, as necessary, remain onsite to assist in the final QA inspection and acceptance test.

6.3.3 Operating Agency. The operating agency will designate a representative early in the project but no later than the start of installation. This representative will assure that the following actions are taken and expeditiously completed:

a. Provide administrative and typing support.

b. Serve as interface between the operating agency and the installation and QA/test personnel.

QUALITY ASSURANCE INSPECTION CHECKLIST - INSTALLATION (CCCR 702-2)		PAGE 1 OF 11 PAGES		
		DATE (Day, Mo, Year)		
SITE		LOCATION		
PROJECT NAME		TASK NO.		
REFERENCED T.O. FOR QUALITY OBSERVATIONS FOLLOW MAIN PARAGRAPHS				
		YES	NO	NA
A. <u>Drawings and Specifications</u> (AFTO 31-10-3, 31-10-9, 31-10-27, 31-10-29)				
1. Are floor plan drawings available?				
2. Are equipment location drawings available?				
3. Are face layout drawings of equipment in bays available?				
4. Are drawings for distribution frame block assignments available?				
5. Are pin connections on terminal blocks shown on drawings?				
6. Is stenciling of terminal blocks shown on drawings?				
7. Are drawings of power distribution equipment available?				
8. Are wire sizes indicated on drawings?				
9. Are schematic diagrams of circuit types to be installed included in drawings?				
10. Are drawings of site grounding systems available?				
11. Are drawings showing arrangement of cable racks, ducts, and trenches available?				
12. Do specifications contain list of reference material required by installers?				
13. Do specifications contain cable running list for power distribution?				
14. Do specifications contain cable running list for signal cabling?				

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Figure 6-3. QA Inspection Checklist - Installation.

QUALITY ASSURANCE INSPECTION CHECKLIST - INSTALLATION (CCCR 702-2)		PAGE 2 OF 11 PAGES		
		YES	NO	NA
15. Do specifications contain cable running list for RF cabling?				
16. Do specifications contain detailed information on grounding?				
17. Do specifications contain details on all special instructions for installers?				
18. Do drawings reference all applicable items on BOM?				
B. <u>Tools and Equipment</u> (AFTO 31-10-29)				
1. Is equipment damaged or unserviceable?				
2. Are all installation materials on hand and serviceable?				
3. Are all tools necessary for completion of the job on hand?				
4. Is all test equipment needed for test and checkout of installation available?				
C. <u>General Safety Practice</u> (AFTO 31-10-29)				
1. Are goggles being worn when drilling and grinding?				
2. Are sharp edges left on frame or duct work?				
3. Are all hand tools properly used?				
4. Are electric power tools properly grounded?				
D. <u>Floor Plan Layout</u> (AFTO 31-10-9, 31-10-29)				
1. Are equipment layout plans in accordance with drawings?				
2. Was layout plan completed before equipment was moved into area?				
E. <u>Erecting and Mounting</u> (AFTO 31-10-29)				
1. Is equipment laid out in accordance with floor plan drawing?				

Figure 6-3. QA Inspection Checklist - Installation (Continued).

QUALITY ASSURANCE INSPECTION CHECKLIST - INSTALLATION (CCCR 702-2)		PAGE 3 OF 11 PAGES		
		YES	NO	NA
2. Are equipment bays level and plumbed within tolerances?				
3. Has proper spacing been provided between equipment racks?				
4. Are base angles of frames secured to floor in proper location?				
5. Are all cabinets flush mounted and plumbed?				
6. Has finish of equipment, cabinets, and racks been touched up?				
7. Are bolts and screws free from stripped threads and defaced heads?				
8. Have sufficient clearances been provided between apparatus for heat dissipation?				
9. Are terminal blocks aligned on distribution frames?				
10. Has equipment been installed in cabinets or racks in accordance with face layouts?				
11. Are all nuts and bolts securely tightened?				
12. Are exposed or cut ends of metal filed smooth and painted?				
13. Have lock and flat washers been used?				
14. Is the C-E equipment BOM available at the facility?				
15. Has the C-E equipment been inventoried and discrepancies posted?				
16. Is all required C-E equipment at the site?				
17. Is all C-E equipment installed?				
F. <u>Cable Racks</u> (AFTO 31-10-6)				
1. Location of cable racks:				
a. Are cable racks located in accordance with cable plan drawing?				

Figure 6-3. QA Inspection Checklist - Installation (Continued).

QUALITY ASSURANCE INSPECTION CHECKLIST - INSTALLATION (CCCR 702-2)		PAGE 4 OF 11 PAGES		
		YES	NO	NA
b. Does height of cable racks conform to height above floor as indicated on cable plan drawing?				
c. Are cable racks located so that clearance is provided for installation and maintenance of ultimate equipment?				
d. Are cable racks located so cables are not subject to damage or exposure or other detrimental conditions?				
2. Assembly of cable racks:				
a. Are long sections of cable racks used where possible?				
b. Have clamping details been altered other than where necessary to avoid interference?				
c. Are open ends of cable racks properly closed?				
d. Are vertical cable racks properly terminated on floors?				
3. Support of cable racks:				
a. Are cable racks properly supported and fastened?				
b. Are cable racks installed so that no excessive load or binding is imposed on the equipment?				
c. Are horizontal cable racks supported on approximately 5 feet centers but not to exceed 6 feet?				
d. Has support been provided within 3 feet of free end of cable rack?				
e. Are cable racks braced where necessary to prevent sway?				
G. <u>Running Cable</u> (AFTO 31-10-13)				
1. Are cable runs made in accordance with cable running list?				
2. Are cables twisted or crossed on cable rack?				

Figure 6-3. QA Inspection Checklist - Installation (Continued).

QUALITY ASSURANCE INSPECTION CHECKLIST - INSTALLATION (CCCR 702-2)	PAGE 5 OF 11 PAGES		
	YES	NO	NA
3. Do cables at turns or bends conform to the bending radii and position?			
4. Is protection provided where cable sheaths contact rough or sharp edges or metal?			
5. Are cables which are turned off over side of cable racks formed with minimum allowable radii?			
6. Are cables turned off rack horizontally and then up?			
7. Do cables to the distribution frame enter on the vertical side?			
8. Are cables serving the horizontal side of a distribution frame secured to the transverse arms near the vertical upright?			
9. Are cable tags properly prepared and in accordance with the cable running list?			
10. Are cable tags secured at each end of cable run?			
11. Have cable tags been removed upon completion of verification and termination?			
12. Are cable butts located as near as practicable to the point where the first wires turn out?			
13. Are cable butts properly treated?			
14. Is insulation of wires undamaged at butt location?			
15. Are unused and spare wires protected at butt location?			
H. <u>Securing Cable</u> (AFTO 31-10-2, 31-10-13)			
1. Is starting stitch properly made and placed?			
2. Is required Kansas City stitch properly made?			
3. Are first and succeeding layers of cable properly secured?			

Figure 6-3. QA Inspection Checklist - Installation (Continued).

QUALITY ASSURANCE INSPECTION CHECKLIST - INSTALLATION (CCCR 702-2)		PAGE 6 OF 11 PAGES		
		YES	NO	NA
4. Are cables secured at every cable rack cross strap?				
5. When cable butt is between securing devices, are cables secured together with an appropriate stitch?				
6. Are lock stitches properly made and spaced?				
7. Are splices in twine properly made?				
I. <u>Sewed Forms</u> (AFTO 31-10-13)				
1. Is proper size twine used for the diameter of the form?				
2. Are proper number of strands used?				
3. Are stitches properly spaced?				
J. <u>Butting and Stripping</u> (AFTO 31-10-13)				
1. Are proper tools used for butting and stripping of cable?				
2. Are cable butts properly dressed?				
3. Is proper distance maintained from cable butt to fanning strip?				
K. <u>Fanned Forms</u> (AFTO 31-10-2)				
1. Are cables fanned and connected to the left side of vertical mounted terminal blocks and to the bottom of horizontal terminal blocks?				
2. Are conductors in fanned forms twisted and bunched?				
3. Are fanned forms straight and taut from butt location to fanning strip?				
4. Is length of skimmers correct?				
5. Has color code been properly followed?				
6. Are spare wires disposed of properly?				
L. <u>Stenciling</u> (AFTO 31-10-27, 31-10-29)				
1. Is equipment correctly identified and stenciled in accordance with floor plan drawings?				

Figure 6-3. QA Inspection Checklist - Installation (Continued).

QUALITY ASSURANCE INSPECTION CHECKLIST - INSTALLATION (CCCR 702-2)		PAGE 7 OF 11 PAGES		
		YES	NO	NA
2. Are designations located correctly?				
3. Are correct size designations used on particular types of apparatus or equipment?				
M. <u>Strapping</u> (AFTO 31-10-16)				
1. Are straps properly placed?				
2. Is correct type of strap wire used?				
3. Does insulation extend to terminal?				
4. Are straps placed so as not to interfere with operation of apparatus?				
5. Is removal of apparatus blocked?				
6. Are designations of apparatus obscured?				
N. <u>Connecting and Soldering</u> (AFTO 31-10-7)				
1. Is soldering clamp used when connecting wires?				
2. Are connections made on terminal blocks in proper manner?				
3. Is all soldering done with standard rosin core solder?				
4. Are connections secure and free of foreign substances?				
5. Has all unsightly flux and excess globules of solder been removed?				
6. Is insulation on skinners burnt or otherwise damaged?				
7. Do skinners on connected terminals exceed 1/16 in?				
8. Are all conductors given a continuity test after connection is made?				
O. <u>Wrapped Connections</u> (AFTO 31-10-7)				
1. Are wrapped connections applied only on suitable terminals?				
2. Are connections essentially straight and free of angular bends or crimps?				

Figure 6-3. QA Inspection Checklist - Installation (Continued).

QUALITY ASSURANCE INSPECTION CHECKLIST - INSTALLATION (CCCR 702-2)		PAGE 8 OF 11 PAGES		
		YES	NO	NA
3. Are the required number of turns in contact with the terminal in accordance with criteria for gauge of wire used?				
4. Are wrapped connectors soldered where applicable?				
P. <u>Cross Connections</u> (AFTO 31-10-11)				
1. Are jumpers properly routed at distribution frame?				
2. Do jumpers have sufficient slack after connection?				
3. Are conductors twisted between fanning strip and terminal?				
4. Does twist remain in conductors beyond rear of fanning strip?				
5. Are jumpers properly dressed?				
6. Has excess solder been removed from terminals?				
Q. <u>Equipment and Signal Grounds</u> (AFTO 31-10-24, 31-10-29)				
Are equipment and signal grounds installed in accordance with applicable codes and standards and in accordance with installation drawings?				
R. <u>Conduit</u> (AFTO 31-10-12)				
1. Are burrs removed from conduit after cutting?				
2. Is bending radii of conduit adequate?				
3. Are there more than four 90-degree bends in a single conduit run?				
4. Does number of conductors in conduit conform?				
5. Are conduits supported at intervals not exceeding 6 feet?				
6. Have all fittings been tightened after installation?				

Figure 6-3. QA Inspection Checklist - Installation (Continued).

QUALITY ASSURANCE INSPECTION CHECKLIST - INSTALLATION (CCCR 702-2)		PAGE 9 OF 11 PAGES		
		YES	NO	NA
S. <u>Ducts (RF Shieldings)</u> (AFTO 31-10-12, 31-10-13)				
1. Are hangers for overhead ducts mounted first?				
2. Is proper type mallet used in assembly?				
3. Are flange sections cleaned before installation?				
T. <u>Coaxial Cables</u> (AFTO 31-10-14)				
1. Is cable inspected for possible damage prior to installation?				
2. Where required, is cable sewed in same manner as signal cable?				
3. Is butting and stripping done in same manner as signal cable?				
4. Do cable tags remain on coaxial cable from antenna to RF patch or equipment?				
5. Is support spacing of cables installed as prescribed (3 ft for cable 1-5/8 in or smaller and 5 ft for cables 1-11/16 in or greater)?				
6. Does bending radii of cables meet prescribed standards of the T.O.?				
U. <u>Waveguides and Antennas</u> (AFTO 31R-10-5, CEEIA PAM 105-3)				
1. Are waveguides stored in a horizontal manner and away from heavy objects?				
2. Are waveguides inspected for possible damage prior to installation?				
3. Are waveguides cleaned in the proper manner prior to installation?				
4. Are hangers installed every 5 feet as prescribed?				
5. Do waveguide bends conform to T.O. criteria?				
6. Are antennas and reflectors mounted as prescribed heights?				
7. Are antennas oriented to the prescribed azimuth?				

Figure 6-3. QA Inspection Checklist - Installation (Continued).

QUALITY ASSURANCE INSPECTION CHECKLIST - INSTALLATION (CCCR 702-2)		PAGE 10 OF 11 PAGES		
		YES	NO	NA
V. <u>Outside Plant Inspection</u> (AFTO 31R-10-5, 31-10-5, 31-10-3, 31-10-10, 31-10-21, 31-10-24, 31-10-28)				
1. Are antenna tower locations proper?				
2. Are footings or pads prepared prior to concrete pour?				
3. Have concrete pours for footings and pads been accomplished in accordance with specified criteria?				
4. Has proper cure time been achieved prior to mounting steel?				
5. Is the tower constructed in accordance with the specified criteria, drawings, etc?				
6. Are the antenna supports, anchors, pedestals, etc., properly installed in accordance with established criteria?				
7. Are supporting structures, guy wires, tower lighting kits (when required), termination boxes, and baluns included and properly installed in accordance with established criteria?				
8. Are antennas properly mounted and aligned?				
9. Were antenna reflectors properly aligned prior to mounting the feed horn?				
10. Are antenna curtains for rhombic and log periodics properly installed?				
11. Are transmission lines, coaxial cables, waveguides, etc., properly installed?				
12. Has tower and supporting structure been painted in accordance with established criteria?				
13. Are waveguides, cable runs, etc., properly installed and protected?				
W. <u>Power Buildings</u> (AFTO 31-10-3, 31-10-29)				
1. Are power buildings and pads properly located and installed?				

Figure 6-3. QA Inspection Checklist - Installation (Continued).

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[illegible]

Figure 6-3. QA Inspection Checklist - Installation (Continued).

- c. Assist in resolution of discrepancies and deficiencies.
- d. Provide O&M personnel to assist on an as-required basis.
- e. Provide a representative to witness the acceptance test and sign the TAR.
- f. Provide test equipment as agreed upon in the PCL.

6.4 Special Considerations.

6.4.1 Interruptions. Any inspection that is interrupted because of equipment malfunction shall be restarted at a point determined appropriate by the QAR/test director.

6.4.2 Substitutions. Spare equipment may be substituted for malfunctioning equipment with the approval of the QAR/test director. Any repaired equipment shall be retested. During acceptance tests, no piece of equipment, including cables, conduit, etc., may be changed or adjusted without the approval of the QAR/test director.

6.4.3 Corrections or Modifications of Documentation. Site plans, specifications, SEIPs, drawings etc., are to be acquired by QC, QA, and test personnel prior to commencement of their respective work effort. Any drawing discrepancies noted shall be corrected using yellow markings to record deletions, red markings to record additions, and blue markings for notes to the draftsman. The designated installation agency representative will deliver a copy of the marked-up drawings to the onsite USACEEIA project engineer, and in the absence of an engineer, to: Commander, HQ USACEEIA, ATTN: CCC-CED, Fort Huachuca, AZ 85613. In all cases, a complete set of marked-up drawings will be left onsite to be maintained by the operating agency.

SECTION 7. ACCEPTANCE TEST AND PROCEDURES

7.1 General. This section contains the test procedures and states the special conditions which apply to shakedown and checkout and acceptance tests. Onsite tests are performed to determine if the designated SRT configuration has been installed correctly, performs in accordance with the technical requirements of this SEIP and subsidiary documents, and is operationally suitable for the intended application.

7.2 Testing.

7.2.1 Snakedown Test and Checkout. Functional tests will be conducted by the USACEI-Bn for the purpose of assuring that the equipment is aligned and operable and the installation is in accordance with the engineering documentation. These tests and checkouts will be conducted in coordination with personnel of the operating agency (the user) using applicable technical bulletins and technical manuals available. These tests will be conducted prior to the USACEI Bn offering the installation for acceptance tests. As stated in section 6, the USACEI Bn is to anticipate the installation completion date and will notify the test agency of this completion not less than 15 days in advance of scheduled date.

7.2.2 Onsite Acceptance Tests. Onsite acceptance testing will be accomplished by the test director in accordance with the Category III Operational and Acceptance Test Plan, 23 August 1977. These tests will be preceded by a thorough QA inspection in accordance with the requirements of section 6. Tests will be conducted in a normal operating environment. Abnormal ambient conditions (e.g., temperature, humidity, or barometric pressure) during any test will be noted with detailed remarks included with the test results. The test director will determine if any retesting is required. The operating agency will provide personnel to operate and maintain the equipment during tests. USACEI Bn will provide personnel, if available, to assist the test director in the conduct of tests and measurements.

7.2.3 Test Equipment. A complete listing of the required test equipment is contained in the appropriate technical manuals. Although the USACEI Bn is responsible for assuring that the required complement of test equipment is available for installation, inspection and test purposes, this test equipment should be available from the onsite resources.

7.2.4 Technical Acceptance Recommendation (TAR). Based on the QA inspections, QC reports and documentation, and acceptance test results the test director will determine the acceptability of the work effort. Prior to actual rejection, if the circumstances so warrant, the test director will attempt to coordinate his determination with the HQ

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USACEEIA, the operating agency, and the USACSA DPM. The test director will prepare and distribute the TAR in accordance with the requirements of section 8. Preparation of the TAR will be accomplished onsite immediately following acceptance tests.

7.2.5 Test Results. When one or more tests fail to meet requirements, the test director will determine which portion(s) of the test was affected and which portions of the equipment or facility is to be retested. All deficiencies will be corrected, or, if not corrected, the deficiencies will be reported on the TAR and in the final test report.

7.2.6 Final Test Report. The test agency will prepare and distribute a test report in accordance with USACEEIA Regulation 702-2 as amended by the individual SEIP and tasking documents. Copies of the completed TAR will be included.

SECTION 8. COMPLETION CERTIFICATION

8.1 General. The results of the quality assurance inspections and acceptance test specified in section 6, and 7 of this SEIP will be documented onsite by the QAR/test director using USACEEIA Form 98-R, Technical Acceptance Recommendation (TAR) (fig. 8-1). The purpose of the TAR is to record significant project information to include the scope of the effort, results and conclusions of the requisite inspections and tests, exceptions to the technical requirements, and recommendations regarding acceptance with or without exceptions or rejection of the work effort. The TAR also provides participants the opportunity to indicate agreement or disagreement with the inspection and test assessments and for user consent to accept the installed equipment. Additional information on TAR usage and instructions for completion are provided in CCCR 702-2.

8.2 Distribution. A copy of the TAR will be provided to the signing participants and the operating agency. The original copy will be maintained in the test agency project files and copies will be included in the test report.

8.3 Waivers. Waivers to include command approvals for individual installations will be recorded in the TAR with copies attached to define and clarify deviations from this SEIP.

1

This Technical Acceptance Recommendation is executed by the on-site representatives of the installation, test, and operating agencies. It does not constitute official acceptance of the project but does certify that the MAJOR ITEMS INSTALLED AND DOCUMENTATION PROVIDED are as stated herein. This document further certifies that the project has been installed and performs satisfactorily in accordance with the requirements listed under REFERENCES, except as noted under EXCEPTIONS and REMARKS. Upon execution of this Technical Acceptance Recommendation, USACE/IA considers this project complete, except for such follow-on action as may be necessary to clear the EXCEPTIONS stated herein.

1 Jan 79 Replaces HQ USACEEIA CCC-TED-QA FM 98 which is obsolete.

2

TECHNICAL ACCEPTANCE RECOMMENDATION (INSTALLED EQUIPMENT) (CCCR 702-2)		PAGE 2 OF 6 PAGES	
		DATE (DAY, MO, YEAR)	
PROJECT/CONTRACT NUMBER	TITLE	LOCATION	
MAJOR EQUIPMENT INSTALLED/RELOCATED			
BOM ITEM NO.	DESCRIPTION	PART NUMBER/FSN	QUANTITY

Figure 8-1. Technical Acceptance Recommendation (Continued).

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TECHNICAL ACCEPTANCE RECOMMENDATION (DOCUMENTATION) (CCCR 702-2)		PAGE 3 OF 6 PAGES
		DATE (DAY, MO, YEAR)
PROJECT/CONTRACT NUMBER	TITLE	LOCATION
PROJECT DOCUMENTATION PROVIDED		
REFERENCE DOCUMENTATION	TITLE	NO. OF COPIES

Figure 8-1. Technical Acceptance Recommendation (Continued).

TECHNICAL ACCEPTANCE RECOMMENDATION (EXCEPTIONS) (CCCR 702-2)		PAGE 4 OF 6 PAGES
		DATE (DAY, MO, YEAR)
PROJECT/CONTRACT NUMBER	TITLE	LOCATION
EXCEPTIONS ENGINEERING ☐ INSTALLATION ☐ OTHER ☐		SUGGESTED ACTION AGENCY

Figure 8-1. Technical Acceptance Recommendation (Continued).

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[illegible]

Figure 8-1. Technical Acceptance Recommendation (Continued).

TECHNICAL ACCEPTANCE RECOMMENDATION (CERTIFICATION)		PAGE 6 OF 6 PAGES
		DATE (DAY, MO, YEAR)
PROJECT/CONTRACT NUMBER	TITLE	LOCATION
CERTIFICATION Acceptance tests and Quality Assurance inspections are complete for equipment installed under this project.		
WITHOUT EXCEPTIONS ☐ WITH NOTED EXCEPTIONS ☐		
INSTALLATION AGENCY	SIGNATURE AND TITLE	
	PRINTED	
OPERATING AGENCY	SIGNATURE AND TITLE	
	PRINTED	
TEST AGENCY	SIGNATURE AND TITLE	
	PRINTED	
ACCEPTANCE Equipment herein certified successfully installed and tested, is accepted for operation.		
OPERATING COMMAND	SIGNATURE	
	TITLE	

Figure 8-1. Technical Acceptance Recommendation (Continued).

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TECHNICAL ACCEPTANCE RECOMMENDATION (SUMMARY)

INSTRUCTIONS
TECHNICAL ACCEPTANCE RECOMMENDATION (TAR)

1. Entries on the data sheets are to be typed whenever possible to insure legibility and provide a quality, fully legible product when reproduced. If a typewriter is not available, the forms may be completed by printing with black ink in block letters to insure legibility. The instructions for completion of this form follow on a block-by-block basis.

2. Pages are to be sequentially numbered to show both the individual page number and the total number of pages constituting the completed TAR. Additionally, each page will be identified by the date and project/contract number in the appropriate blocks.

3. Instructions for completion of the TAR are delineated in the following subparagraphs and will be adhered to:

a. DATE: Enter the day, month, and year of completion for this action (e.g., 1 January 1979).

b. PROJECT/CONTRACT NUMBER: Enter the appropriate project or contract number. If this is a subproject or part of a subproject, provide all necessary information (i.e., IIP milestone number(s), subproject number(s) as well as subdivision(s) to same).

c. TITLE: Enter the project name or title.

d. LOCATION: Enter the geographic location where the project was installed.

e. FACILITY: Enter the name of the facility and other pertinent identifying information.

f. TEST DIRECTOR: Enter the name, title, and grade of the Test Director or Quality Assurance Representative assigned to this project.

g. OPERATING AGENCY: Enter the name, symbol, and complete mailing address of the organization having O&M responsibility for this project, system, or equipment installation.

h. ENGINEERING AGENCY: Enter the name, symbol, and complete mailing address of the organization having engineering cognizance and responsibility.

i. INSTALLATION AGENCY: Enter the name, symbol, and complete mailing address of the organization having been tasked to install the TAR material.

j. TESTING AGENCY: Enter the name, symbol, and complete mailing address of the Quality Assurance and Testing organization tasked for this project.

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k. PROJECT DESCRIPTION: Enter a brief and concise description of the project to which the TAR applies.

1. MAJOR EQUIPMENT INSTALLED/RELOCATED: List the major items of equipment installed or relocated in accordance with the project requirements. Enter the Bill of Material (BOM) line item number, material description, assigned part number or federal stock number, and the quantity of each major item. Components, assemblies, and subassemblies configured into a major item as listed in SB 700-20 or CCP 700-20 should also be recorded. Additional pages, numbered in sequence, may be added as required.

m. DOCUMENTATION: Enter the document identification (i.e., drawing number, technical manual number, etc.), title, and the quantity of each document provided to the operating unit as part of the project.

n. EXCEPTIONS:

(1) Upon completion of installation and testing, any exceptions to the project requirements which require corrective action will be listed. Include complete identification of each missing item. Exceptions must be based on the specified requirements of the project, supportable through the test results or other valid documentation, fully described, and precisely identified.

(2) The appropriate exception block must be annotated and separate sheets should be used for each category of exception.

(3) The Test Director will also enter the suggested action agency for each exception, recognizing that the Test Director may not always be in a position to determine the final action agency.

(4) For facilities that are becoming partially operational, identify installation agency actions remaining for project completion. In this situation, the TAR will show the tests that have been made, but will be identified as a partial record. A final TAR will be prepared after installation and testing of all remaining project equipment.

o. REMARKS: The remarks section may be used to provide any additional information on or in support of a recommendation, commendation, or criticism in relation to the project installation, engineering, or testing. Entries may include:

(1) Shortcomings which do not require corrective action (not considered an exception).

(2) Recommendations for improving projects of a similar nature.

(3) Identification of support items that have not been accomplished, and a description of any activity in progress by the operating agency to satisfy the requirement.

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(4) A description of test results with the performing agency and date(s) accomplished.

(5) A statement to the effect that the installation agency will forward final "as built" drawings when completed.

(6) A description of the AC power system with identification of source and backup capability.

(7) A statement to indicate that a list of excess material was provided the operating command for final disposition or to identify material that was excess to the project.

p. CERTIFICATION: Enter the signatures and certification that the project was installed, tested, and accepted for operation with or without exceptions as applicable.

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(CCC-CED)

FOR THE COMMANDER:

OFFICIAL:

R. K. BOWERS
Colonel, Signal Corps
Deputy Commander

Ted M. Murray

TED M. MURRAY
CPT, Signal Corps
Executive Officer

DISTRIBUTION:
Special

- HQ USACEEIA
- 3 - CCC-CED-STD
- 5 - CCC-CED-DCD
- 4 - CCC-CED-TED
- 5 - USACEI Bn
- 2 - USACC-WESTON, Fort Shafter, HI 96851
- 5 - USACEEIA Installation Detachment-Korea, ATTN: CCCK-IN, APO SF 96301
- 15 - USACEEIA-CONUS, ATTN: CCN-PRSO-S-TS (Tech Ref Cen), Fort Ritchie, MD 21719
- 10 - USACEEIA-EUR, APO New York 09056
- 10 - USACEEIA-PAC, APO San Francisco 96557
- 2 - US Army Air Traffic Control Activities, Fort Huachuca, AZ 85613
- 10 - US Army Signal Corps and School, Fort Gordon, GA 31905
- 2 - US Army Materiel Development and Readiness Command, ATTN: CCCN-PI-P, Washington, DC 20315
- 5 - 5th Signal Command, APO New York 09056
- 5 - 7th Signal Command, Fort Ritchie, MD 21719
- 5 - US Army Communications Command, ATTN: CC-OPS-PP, Fort Huachuca, AZ 85613
- 2 - US Army Training and Doctrine Command, ATTN: ATCE, Fort Monroe, VA 23351
- 2 - US Army Forces Command, ATTN: AFCE, Fort McPherson, GA 30330
- 2 - Defense Communications Agency, Technical Library Center, Code 205, Washington, DC 20305
- 12 - Defense Documentation Center, Cameron Station, Alexandria, VA 22134
- 4 - 1st Signal Brigade USACC-Korea, APO San Francisco 96218
- 2 - USACC Agency-Japan, APO San Francisco 96343
- 5 - USACEEIA

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