

(September 2021)

PERFORMANCE CRITERIA
FOR

SECTION 27 21 00

DATA COMM NETWORK EQUIPMENT
09/21

TABLE OF CONTENTS

GENERAL

1.1 REFERENCE

2.1 DESCRIPTION & MATERIALS

3.1 SUBMITTALS

3.2 QUALITY ASSURANCE

3.3 STANDARDS DEVIATIONS

3.4 DELIVERY, STORAGE AND PROTECTION

3.5 PERFORMANCE VERIFICATION AND ACCEPTANCE TESTING

3.6 WARRANTY

3.7 OPERATIONS AND MAINTENANCE (O & M)

GENERAL

This Performance Criteria (PC) specifies the installation and quality of data communications network equipment.

1.1 REFERENCES

1.1.1 Unified Facilities Criteria (UFC)

Contractor must comply with the following:

- A.** UFC 1-200-01 General Building Requirements
- B.** UFC 3-501-01 Electrical Engineering
- C.** UFC 3-580-01 Telecom Building Cabling Systems Planning and Design
- D.** UFC 4-010-06 Cybersecurity
- E.** UFC 4-510-01 Military Medical Facilities

1.1.2 Military Standard

- A.** MIL-STD 1691 Construction and Material Schedule for Medical, Dental, Veterinary and Medical Research Laboratories

1.1.3 National Fire Protection Association (NFPA)

- A.** NFPA 99 Healthcare Facilities Code
- B.** NFPA 101 Life Safety Code

1.1.4 Military Health System Standards

- A.** Defense Health Agency Standards
 - 1. Building Control Systems Categorization Memorandum
 - 2. Cyber Security Controls for Physically Isolated Systems
 - 3. Cyber Security Controls for Medical Community of Interest (MEDCOI)
 - 4. Server Room, Computer Room, and Telecommunication Room Design Criteria.
 - 5. LAN/WAN Upgrade Cable Installation; Quality Control Guide.
- B.** Department of Defense Standards
 - 1. Department of Defense Instruction (DoDI) Number 8500.01
 - 2. Department of Defense Instruction (DoDI) Number 8510.01
 - 3. Department of Defense Instruction (DoDI) Number 8530.01

1.1.5 Federal Communications Commission (FCC)

- A. FCC Approved RF Communicating Device

1.1.6 Other Standards

- A. Reserved for future

2.1 DESCRIPTION & MATERIALS

All requirements within the MIL-STD-1691 JSN descriptions must be met, as well as the performance guidelines listed in the following descriptions.

2.1.1 General

- A. System and materials used must be UL listed and labeled; must be suitable for the environment in which they are installed.
- B. Seismic Performance: Equipment shall withstand the effects of earthquake motions determined according to [ASCE/SEI 7] [Telcordia GR-63-CORE requirements for Zone 4 Seismic Earthquake Environments] <Insert requirement>.
- C. System must be non-proprietary.
- D. Provide cabling and other balance of system components in accordance with the manufacturer's recommendations and UFGS 27 10 00 – Building Telecommunications Cabling System.
- E. All products that have interoperability capable hardware (i.e., internal storage, data transmission via wireless, ethernet, of USB to PC or server connectivity) must meet DoDI and/or Cybersecurity requirements.
- F. DHA HIT criteria and standards shall be complied with when editing these criteria for new construction projects. Alternate editing for O & M project shall only be permitted at the specific direction of the project delivery team.

2.1.2 19-Inch Equipment Racks

- A. Description: [Two-] [and] [four-] post racks with threaded rails designed for mounting telecommunications equipment. Width is compatible with EIA/ECIA 310-E, 19-inch (482.6-mm) equipment mounting with an opening of 17.72-inches (450-mm) between rails.
- B. General Requirements:
 - 1. Frames: Modular units designed for telecommunications terminal support and coordinated with dimensions of unit to be supported.
 - 2. Material: [Extruded Steel] [Extruded aluminum] [Sheet steel] [Sheet Aluminum].
 - 3. Finish: Manufacturer's standard, baked-polyester powder coat.
 - 4. Color: [Black] <Insert color>.
- C. Floor-Mounted Racks:
 - 1. Overall Height: [72 inches (1828.8 mm)] [84 inches (2133.6 mm)] [As indicated on drawings] <Insert value>.
 - 2. Overall Depth: [23 inches (584.2 mm)] [29 inches (736.6 mm)] <Insert value>.
 - 3. Upright Depth: [3 inches (76.2 mm)] [6 inches (152.4 mm)] <Insert value>.
 - 4. Two-Post Load Rating: [200 lb (91 kg)] [400 lb (181 kg)] <Insert value>.
 - 5. Four-Post Load Rating: [1000 lb (454 kg)] [2000 lb (907 kg)] <Insert value>.
 - 6. Number of Rack Units per Rack: [38] [42] [45] [52] [58] [As indicated on drawings] <Insert value>.
 - a. Numbering: [Every] [Every five] rack units, on interior of rack.
 - 7. Threads: [10-32] [12-24] [Universal square].
 - 8. Vertical and horizontal management channels, top and bottom cable troughs, grounding lug, [and a power strip].
 - 9. Base shall have a minimum of four mounting holes for permanent attachment to floor.
 - 10. Top shall have provisions for attaching cable tray of ceiling.
 - 11. Self-leveling.
 - 12. Equipment Racks 72" high or greater shall be braced to the wall structure to avoid tipping hazards.
- D. Wall-Mounted Racks:
 - 1. Height: [18 inches (457.2 mm)] [22 inches (558.8 mm)] [As indicated on drawings] <Insert value>.
 - 2. Depth: [23 inches (584.2 mm)] [29 inches (736.6 mm)] <Insert value>.
 - 3. Load Rating: [150 lb (65 kg)] [200 lb (91 kg)] <Insert value>.
 - 4. Number of Rack Units per Rack: [8] [12] [22] [As indicated on drawings] <Insert value>.
 - 5. Threads: [10-32] [12-24] [Universal square].
 - 6. Wall Attachment: Four mounting holes.
 - 7. Equipment Access: Integral swing.

E. Cable Management:

1. Metal, with integral wire retaining fingers.
2. Baked-polyester powder coat finish.
3. Vertical cable management panels shall have front and rear channels, with pass through holes allowing front to back cable paths with covers.
4. Provide horizontal crossover cable manager at the top of each relay rack, with a minimum height of two rack units each.

2.1.3 19-Inch Equipment Cabinets

A. Description: Manufacturer-assembled four-post frame enclosed by side and top panels and front and rear doors, designed for mounting telecommunications equipment. Width is compatible with EIA/ECIA 310-E, 19-inch (482.6-mm) equipment mounting with an opening of 17.72 inches (450 mm) between rails.

B. General Cabinet Requirements:

1. Modular units designed for telecommunications terminal support and coordinated with dimensions of units to be supported.
2. Material: [Extruded steel] [Extruded aluminum] [Sheet steel] [Sheet aluminum].
3. Finish: Manufacturer's standard, baked-polyester powder coat.
4. Color: [Black] <Insert color>.

C. Modular Freestanding Cabinets:

1. Overall Height: [72 inches (1828.8 mm)] [78 inches (1991.1 mm)] [84 inches (2133.6 mm)] [As indicated on drawings] <Insert value>.
2. Overall Depth: [23 inches (584.2 mm)] [29 inches (736.6 mm)] [47 inches (1200 mm)] <Insert value>.
3. Load Rating: [3000 lb (1362 kg)] <Insert value>.
4. Number of Rack Units per Rack: [38] [42] [45] [52] [58] [As indicated on drawings] <Insert value>.
 - a. Numbering: [Every] [Every five] rack units, on interior of rack.
5. Threads: Universal square.
6. Removable and lockable side and top panels.
7. Hinged and lockable front and rear doors.
8. Adjustable feet for leveling.
9. Screened ventilation openings in roof and rear door.
10. Cable access provisions in roof and base.
11. TGB.
12. [Rack] [Roof]-mounted, 550-cfm (260-L/s) fan with filter. Note: Hot-aisle containment design solution does NOT require roof-mounted fans.
13. Power strip.
14. All cabinets keyed alike.

D. Modular Wall Cabinets:

1. Height: [18 inches (457.2 mm)] [22 inches (558.8 mm)] [As indicated on drawings] <Insert value>.
2. Depth: [23 inches (584.2 mm)] [29 inches (736.6 mm)] <Insert value>.
3. Load Rating: [150 lb (65 kg)] [200 lb (91 kg)] <Insert value>.
4. Number of Rack Units per Rack: [8] [12] [22] [As indicated on drawings] <Insert value>.
5. Threads: Universal square.
6. Lockable front [and rear] doors.
7. Louvered side panels.
8. Cable access provisions top and bottom.
9. Grounding lug.
10. [Rack] [Roof]-mounted, 250-cfm (118-L/s) fan.
11. Power strip.
12. All cabinets keyed alike.

E. Cable Management:

1. Metal, with integral wire retaining fingers.
2. Baked-polyester powder coat finish.
3. Vertical cable management panels shall have front and rear channels, with covers.
4. Provide horizontal crossover cable manager at the top of each relay rack, with a minimum height of two rack units each.
- 5.

2.1.4 Power Strips

A. Power Strips: Comply with UL 1363.

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
2. Rack mounting, with [detachable] [integral] flanges.
3. Height: [1] <Insert number> RU.
4. Housing: [Metal] <Insert material>.
5. [Six] >Insert number<, 2 x L6-30 per rack in TR closet and 4 x 20A, 210-VAC, NEMA WD 6, Configuration 5-20R receptacles. For four post server rooms racks have 60% 2 x L6-30R and 40% 4 x L6-30R receptacles.
6. [Front] [Rear]-facing receptacles.
7. LED indicator lights for power and protection status.
8. LED indicator lights for reverse polarity and open outlet ground.
9. Circuit Breaker and Thermal Fusing: When protection is lost, circuit opens and cannot be reset.
10. Circuit Breaker and Thermal Fusing: Unit continues to supply power if protection is lost.
11. [Close-coupled, direct plug-in] [Cord connected with 15-foot (4.5-m) line cord].
12. Rocker-type on-off switch illuminated when in on position.
13. Surge Protection: UL 1449, Type 3.
 - a. Maximum Surge Current, Line to Neutral: [27 kA] [72 kA] <Insert value>.
 - b. Protection modes shall be line to neutral, line to ground, and neutral to ground.
 - c. UL 1449 Voltage Protection Rating for line to neutral and line to ground shall be [600 V] <Insert value> and [500 V] <Insert value> for neutral ground.

B. Power strips are provided by DHA HIT for Server Rooms and DHA LAN/WLAN for TR closets.

2.1.5 Optical Fiber Cable Hardware

A. Standards:

1. Comply with Fiber Optic Connector Intermateability Standard (FOCIS) criteria of TIA-604 series.
2. Comply with TIA-568-C.3.
3. Plenum rated patch cords and assemblies.

B. Cross-Connects and Patch Panels: Modular panel housing multiple-numbered, duplex cable connectors.

1. Number of Connectors per Field: [One] <Insert number> for each fiber of cable or cable assigned to field, plus spares and blank positions adequate to suit specified expansion criteria.

C. Patch Cords: Factory-made, single-fiber and dual-fiber cables in 36-inch (900-mm) lengths.

D. Connector Type: [Type SC complying with TIA-604-3-B,] [Type ST complying with TIA-604-2-B,] [Type LC complying with TIA-604-10-B,] [Type MT-RJ complying with TIA-604-12,] [Type MPO complying with TIA-604-5-D,] <Insert type> connectors.

E. Plugs and Plug Assemblies:

1. Male: color-coded modular telecommunications connector designed for termination of a single optic fiber cable.
2. Insertion loss not more than [0.25] [0.75] <Insert number> dB.
3. Marked to indicate transmission performance.

F. Jacks and Jack Assemblies:

1. Female: quick-connect, simplex and duplex; fixed telecommunications connector designed for termination of a single optical fiber cable.
2. Insertion loss not more than [0.25] [0.75] <Insert number> dB.
3. Marked to indicate transmission performance.
4. Designed to snap-in to a patch panel.

2.1.6 Twisted Pair Cable Hardware

A. Description: Hardware designed to connect, splice, and terminate twisted pair copper communications cable.

B. General Requirements for Twisted Pair Cable Hardware:

1. Comply with the performance requirements of [Category 5e] [Category 6] [Category 6a] [Category 7].
2. Comply with TIA-568-C.2, IDC type, with modules designed for punch-down caps or tools.
3. Cables shall be terminated with connecting hardware of same category or higher.

C. Source Limitations: [Obtain twisted pair cable hardware from single source from single manufacturer.] [Obtain twisted pair cable hardware from same manufacturer as twisted pair cable, from single source.]

D. Connecting Blocks:

1. 110-style IDC for Category 5e.

2. 66-style IDC for Category 5e.
 3. 110-style IDC for Category 6.
 4. 110-style IDC for Category 6a.
 5. 110-style IDC for Category 7.
 6. Provide blocks for the number of cables terminated on the block, plus [25] <Insert number> percent spare, integral with connector bodies, including plugs and jacks where indicated.
- E. Cross-Connect:** Modular array of connecting blocks arranged to terminate building cables and permit interconnection between cables.
1. Number of Terminal per Field: [One] <Insert number> for each conductor in assigned cables.
- F. Patch Panel:** Modular panels housing numbered jack units with IDC-type connectors as each jack location for permanent termination of pair groups of installed cables.
1. Features:
 - a. Universal T568A and T568B wiring labels.
 - b. Labeling areas adjacent to conductors.
 - c. Replaceable connectors.
 - d. 24 or 48 ports.
 2. Construction: 16-gauge steel mountable on 19-inch (483 mm) equipment racks.
 3. Number of Jacks per Field: One for each four-pair [cable indicated] [conductor group of indicated cables, plus spares and blank positions adequate to suit specified expansion criteria].
- G. Patch Cords:** Factory-made, four-pair cables in [36-inch (900-mm)] [48-inch (1200-mm)] <Insert length> lengths; terminated with an eight-position modular plug at each end.
1. Patch cords shall have bend-relief-compliant boots and color-coded icons to ensure performance. Patch cords shall have latch guards to protect against snagging.
 2. Patch cords shall have color-colored boots for circuit identification.
 3. Plenum rated patch cords and plug assemblies (trunks).
- H. Plug and Plug Assemblies:**
1. Male; eight position; color-coded modular telecommunications connector designed for termination of a single four-pair, 100-ohm, unshielded or shielded twisted pair cable.
 2. Standard: Comply with TIA-568-C.2.
 3. Marked to indicate transmission performance.
- I. Jacks and Jack Assemblies:**
1. Female; eight position; modular; fixed telecommunications connector designed for termination of a single four-pair, 100-ohm, unshielded or shielded twisted pair cable.
 2. Designed to snap-in to a patch panel.
 3. Standard: Comply with TIA-568-C.2.
 4. Marked to indicate transmission performance.

2.1.7 UPS Systems

- A. Description:** Self-contained, battery backup device and accessories that provide three-phase electrical power in the event of failure or sag in the normal power system.
- B. Electronic Equipment:** Solid-state devices using hermetically sealed, semiconductor elements. Devices include rectifier-charger, inverter, static bypass transfer switch, and system controls.
- C. Enclosures:** Comply with NEMA 250, Type 1, unless otherwise noted.
- D. Configuration:** [Single-cabinet] [Multicabinet] [Field-assembled, Multicabinet] modular style units.
- E. Control Assemblies:** Mount on modular plug-ins, readily accessible for maintenance.
- F. Electrical Components, Devices, and Accessories:** Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- G. Seismic-Restraint Design:** UPS assemblies, subassemblies, and components (and fastenings and supports, mounting, and anchorage devices for them) shall be designed and fabricated to withstand static and seismic forces.
- H. Output Circuit Neutral Bus, Conductor, and Terminal Ampacity:** Rated phase current times a multiple of 1.73, minimum.

2.1.8 Battery

- A. Description:** Valve-regulated, recombinant, lead-calcium units, factory assembled in an isolated compartment of UPS cabinet, complete with battery disconnect switch.
 1. Arrange for drawout removal of battery assembly from cabinet for testing and inspecting.

- B. Description: Flooded, lead-calcium, heavy-duty industrial units in styrene acrylonitrile containers. Mount on [two-tier,] [three-tier,] acid-resistant, painted steel racks. Assembly includes battery disconnect switch, intercell connectors, hydrometer syringe, and thermometer with specific gravity-correction scales.
- C. Description: Flooded cell, heavy-duty, industrial, NiCd units in polypropylene containers. Mount on [two-tier,] [three-tier,] acid-resistant, painted steel racks, complete with battery disconnect switch and intercell connectors.
- D. Description: Valve-regulated, heavy-duty, industrial, recombinant, pocket plate design, NiCd units in polypropylene containers, complete with battery disconnect switch and intercell connectors.
 1. Factor assembled in an isolated compartment of UPS cabinet.
 2. Mount on [two-tier,] [three-tier,] acid-resistant, painted steel racks.
 3. Arrange for drawout removal of battery assembly from cabinet for testing and inspecting.
- E. Seismic-Restraint Design: Battery racks, cabinets, assemblies, subassemblies, and components (and fastenings and supports, mounting, and anchorage devices for them) shall be designed and fabricated to withstand static and seismic forces.

2.1.9 Switches Local Area Network (LAN)

- A. Switches are procured and installed only by DHA HIT. Any deviation from this must be agreed by DHA HIT.

2.1.10 Modular Switching

- A. Modular Switching are procured and installed only by DHA HIT. Any deviation from this must be agreed by DHA HIT.

3.1 SUBMITTALS

3.1.1 Submittals required for government review

- A. **Submittal requirements are outlined in [Division 01] [PWS SOW] []**
- B. [Product Information must include manufacturer's installation instructions, sizing (including required clearance for access and maintenance), utility requirements, isometric drawings, tagged floorplans showing placement for count accountability and accessories/options/consumables list.]
- C. **All submittals require Government approval prior to procurement. Submit all listed items herein, with information sufficient to show full compliance with the criteria. Submit all product selections for review and approval, including but not limited to materials, finishes, colors, options, accessories, and complimentary products. Provide for review all warranties and service contracts and any available extended warranty or service options.**
- D. Samples: Furnish material samples and full range of color selection options for all items that offer material and color selections.
- E. Submit and highlight all applicable options for Government review for all items which optional accessories are provided.
- F. [Joint Interoperability Test Command (JTIC) Approval Documentation.]

3.2 QUALITY ASSURANCE

3.2.1 Materials and Equipment

- A. Materials and equipment must be standard products of a manufacturer regularly engaged in the manufacture of products which are of a similar material, design, and workmanship and are offered for sale on the commercial market through advertisements, manufacturer's catalogs, or sales brochures. The products must have been in commercial or industrial use under similar circumstances and of similar size for 2 years prior to selection for approval/procurement. Products must be supportable for at least three years after government acceptance.

3.2.2 Alternative Service Record

- A. Products having less than a 2-year field service record will be acceptable if a certified record of the manufacturer's factory or laboratory tests demonstrating performance compliance is provided to the Contracting Officer.

3.2.3 Service Support

- A. Equipment items must be supported by service organizations located near the equipment installation, able to service the equipment on a regular basis and respond to emergency calls throughout the warranty period.

3.2.4 Manufacturer's Nameplate

A. Each item of equipment must have an attached nameplate that is securely affixed in a conspicuous space. A nameplate listing only the name of the distributing agent is not acceptable. The nameplate must contain the following fields in English:

1. Manufacturer's name and address
2. Model and Serial Number
3. Item's utility ranges and/or capacities
4. Voltage, amperage, and applicable Underwriters Laboratory (UL) or Conformité Européenne (CE) rating if electrically powered
5. Date of manufacture

3.2.5 Factory Inspection

A. Arrange and perform all quality control and quality assurance inspections required by the technical sections of the criteria, unless otherwise specified. Report these inspections in the daily report to the Government inspector.

3.2.6 Product Qualifications

A. The products specified in the technical sections of this criteria establish standards for each item.

3.2.7 Design Parameters

A. It is not the intention of this Criteria to limit consideration to products of specific manufacturers. The product standards establish the characteristics for which submitted items of equipment will be reviewed and approved by the Government. Equipment furnished must meet each of the following parameters specified in the technical sections:

1. Size of equipment
2. Function of equipment
3. Standard and listed accessories and options
4. Equipment controls and performance of equipment
5. Construction of equipment
6. Finish

3.3 STANDARDS DEVIATIONS

3.3.1 Reporting and Submission for Approval

A. Submit for approval a record of deviations from the standards listed in section (3.2.7.A.) established for each specified product, before ordering equipment.

3.4 DELIVERY, STORAGE AND PROTECTION

3.4.1 Packaging and Transporting

A. Each unit of equipment must be placed in a substantial shipping container or crate for safe transportation to final destination. The shipping container or crate for heavy equipment must be on skid construction to facilitate handling by lift equipment.

3.4.2 Packing List

A. Clearly and legibly indicate on exterior of each container or crate the shipping address and a brief description of contents. Fasten to outside of container a packing list and complete instructions for uncrating equipment and setting it in place. Protect such information in a weatherproof envelope.

3.4.3 Protection

A. Properly protect all materials and equipment from injury and damage during storage, installation, and acceptance.

3.5 INSTALLATION, VERIFICATION AND ACCEPTANCE TESTING

3.5.1 Qualifications of Installers and Inspectors

- A. If required by product warranty, use installers that are approved and licensed by the manufacturer. When required to complete installation, all electricians and plumbers used must be bonded and licensed in the project's jurisdiction.
- B. [Company specializing in installing the products specified in this section must have a minimum 5 years of documented experience.]
- C. [Company specializing in installing the products specified in this section must be within 200 miles or 4 hours travel time.]

3.5.2 Installation, Operation, Testing and Certification

- A. Products must be delivered in manufacturer's original packaging with manufacturer's installation instructions. Include clearly marked project reference.
- B. Prior to installation, thoroughly examine the equipment, materials, and components for both visual defects and conformance with criteria.
- C. Install all equipment in compliance with manufacturer's written instructions and installation procedures.
- D. After installation, the equipment must be inspected and tested under operating conditions. If the equipment fails an inspection or test, such defects/failures must be corrected. Upon correction of defects/failures, inspect and retest all affected functions related directly and indirectly to the defect or failure. Corrections, replacement, and retesting must be made at no additional expense to the Government.
- E. Provide all items necessary to make equipment fully functional.
- F. Provide appropriately trained personnel to energize, commission, inspect, electrical safety check, calibrate, certify, and provide all required technical testing for equipment and systems. Contractor must provide documentation, test reports and certification documentation attesting that the equipment is properly installed, functional, safe, calibrated, and ready for its intended use.
- G. An equipment item will be considered defective if it cannot be made to meet all established criteria consistent with the activities listed in section (F).
- H. Provide two sets of special tools, software, and any other item/s for each equipment [item] [item type] if required for maintenance and/or future reconfiguration of the item.
- I. Contractor to supply all start-up supplies for medical equipment for a fully operational installation. Contractor must supply to the Government a listing of all needed supplies for ongoing equipment operation for each item of equipment requiring additional supplies for operation.
- J. Engage a factory-authorized service representative to train Government's staff and maintenance personnel to adjust, operate, and maintain medical equipment.
- K. [Confirm functionality of required interfaces to other systems and networks.]

3.6 WARRANTY

3.6.1 Minimum Requirements

- A. Warranty requirements are outlined in [Division 01] [PWS SOW] [___].
- B. [Provide manufacturer's written warranty for all items listed. Provide warranty for a minimum of (1) year against defects in materials and workmanship. Warranty must provide for material, labor and all associated replacement and/or repair costs required to provide for a fully operational equipment replacement or repair. Submit manufacturers and installers standard service contract beyond the warranty period for Government review. Warranty must be transferrable to the final owner without risk of being voided. All warranty certification and documentation must be provided to the final owner after date of acceptance.]
- C. Provide routine warranty service in accordance with manufacturer's warranty requirements, for a period of [12 months (minimum)] [___] after the open for business date. Perform work during regular working hours. Perform service only by factory trained personnel. Maintain a maintenance log of all service orders performed during the warranty period.

3.7 OPERATIONS AND MAINTENANCE (O & M)

3.7.1 Provide the following to the final owner

- A. Provide O & M data for all FFE-LVS as outlined in [Division 01] [PWS SOW] [____].
- B. Upon completion of equipment installation, furnish [two (2)] copies of operators/service/maintenance manuals for each type of equipment which will require service or maintenance
- C. Each manual must contain operating instructions and information required for performing periodic maintenance on the equipment. Each service manual must include an illustrated parts breakdown which identifies each part of the unit with manufacturer's part number, wiring diagrams, and a list of necessary service parts, tools, and equipment needed to support maintenance requirements.
- D. Accessory Catalogs: Upon completion of the Project, furnish two copies of the manufacturer's catalogs containing optional accessory items available for all equipment relative to the procured equipment/system delivered herein.
- E. Provide instruction video for cleaning and maintenance, when available.
- F. Provide cleaning requirements for all items to prevent void of warranty.
- G. [Provide contact information for Repair Technician or Emergency Repair Company]
- H. Provide contact information to [Logistics, Pharmacy, Laboratory, and Biomedical Equipment Services.]
- I. Train designated staff in the operation and maintenance of the provided equipment/system. Provide two training sessions for equipment/system users and two training sessions for maintenance personnel scheduled to accommodate shift work. [Provide training certificates that can be executed up to eleven months after the system is installed, in order to provide a refresher course for each group of trainees.] Provide DVD copy of the training with the O & M data.

--End of Section--