UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2021
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SECTION 11 72 13

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05/20

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USACE / NAVFAC / AFCEC / NASA	UFGS-11 72 13 (May 2020)
Preparing Activity: NAVFAC	Superseding UFGS-11 72 13 (April 2006)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2021
****

SECTION 11 72 13

MEDICAL EQUIPMENT, MISCELLANEOUS
05/20

****
NOTE: This guide specification covers the requirements for miscellaneous medical equipment.

This Section refers to Section 11 70 00 GENERAL REQUIREMENTS FOR MEDICAL AND DENTAL EQUIPMENT for general requirements; always include Section 11 70 00 when this Section is used.

Adhere to UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable item(s) or insert appropriate information.

Remove information and requirements not required in respective project, whether or not brackets are present.

Comments, suggestions and recommended changes for this guide specification are welcome and should be submitted as a Criteria Change Request (CCR).
****

****
NOTE: On the drawings, show:

1. Location of equipment.

2. Height of turntable unit and control switch box above finish floor.
****

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

The requirements of Section 11 70 00 GENERAL REQUIREMENTS FOR MEDICAL AND DENTAL EQUIPMENT apply to this Section.

1.2 REFERENCES

****

NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a Reference Identifier (RID) outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

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The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM A1008/A1008M	(2020) Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable
ASTM B221	(2014) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B221M	(2013) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric)
ASTM B819	(2000; R 2011) Standard Specification for Seamless Copper Tube for Medical Gas Systems

INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)

IEC 60601-1	(2012) Medical Electrical Equipment

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

ANSI/NEMA LD 3	(2005) Standard for High-Pressure Decorative Laminates

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 99 (2021) Health Care Facilities Code

1.3 SUBMITTALS

****
NOTE: Review Submittal Description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list, and corresponding submittal items in the text, to reflect only the submittals required for the project. The Guide Specification technical editors have classified those items that require Government approval, due to their complexity or criticality, with a "G." Generally, other submittal items can be reviewed by the Contractor's Quality Control System. Only add a "G" to an item if the submittal is sufficiently important or complex in context of the project.

For Army projects, fill in the empty brackets following the "G" classification, with a code of up to three characters to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

The "S" classification indicates submittals required as proof of compliance for sustainability Guiding Principles Validation or Third Party Certification and as described in Section 01 33 00 SUBMITTAL PROCEDURES.

Choose the first bracketed item for Navy, Air Force, and NASA projects, or choose the second bracketed item for Army projects.
****

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are [for Contractor Quality Control approval.][for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

[Item A1100, Prefabricated Service ICU Column; G[, [_____]]

][Item A1105, Headwall, Prefabricated, ICU, With Equipment; G[, [_____]]

][Item A1107, Rail System, Utility, Gas and Electric; G[, [_____]]

][Item A1110, Headwall, Prefabricated, General, 1-2 bed; G[, [_____]]

][Item A1112, Column, Service, Overhead, Horizontal, Laboratory;G[, [_____]]

][Item A1115, Console, Service, Infant, Prefabricated; G[, [_____]]

][Item A1119, Pedestal, Medical Gas Service, Floor-Mounted; G[, [_____]]

][Item A1120, Column, Service, Prefab, Surgical, Ceiling Mounted; G [, [_____]]

][Item A1122, Column, Equipment Arm, Ceiling Mounted, Surgery; G[, [_____]]

][Item A1180, Scale, Roll On, Built In, 907 kg 2000 Pound Capacity; G [, [_____]]

][Item A1200, Lift System, Overhead, Patient Rooms; G[, [_____]]

][Item A1203 Lift System, Overhead, Bariatric; G[, [_____]]

][Item A1205 Lifts System, Overhead, Patient Room With Bath; G[, [_____]]

][Item A4015, Clock, Elapsed Time, Electric; G[, [_____]]

][Item A6010, Bumper, Wall, Bed Locator; G[, [_____]]

][Item L9711, Table, Autopsy, Stationary-Fixed-Height; G[, [_____]]

][Item L9715, Table, Autopsy, Mbl, w/Stationary Service Center; G[, [_____]]

][Item L9712, Table, Autopsy, Stationary-Elevating; G[, [_____]]

][Item L9720, Station, Pathology, Gross; G[, [_____]]

][Item M5015, Desk, Refraction, w/Sink, 33 by 92 by 25; G[, [_____]]

][Item M5016, Desk, Refraction w/console, w/o Sink; G[, [_____]]

][Item M8075 Lift, Patient, Physical Therapy; G[, [_____]]

][Item M8930 Suspension Unit, Utility, Ceiling, Microsurgery; G[, [_____]]

][Item M9085 Table, Operating, Floor Mounted; G[, [_____]]

][Item R8000, Refrigerator, Morgue, 4 Cadaver, 76 by 73 by 96; G[, [_____]]

][Item R8200, Refrigerated Room, Mortuary, 3 Cart; G[, [_____]]

][Item R8205, Refrigerated Room, Mortuary, 4 Cart; G[, [_____]]

][Item R8210, Refrigerated Room, Mortuary, 5 Cart; G[, [_____]]

][Item R8215, Refrigerated Room, Mortuary, 6 Cart; G[, [_____]]

] Submit detail drawings listed above for each item of equipment that interfaces with other items of equipment or construction.

SD-03 Product Data

[Item A1100, Prefabricated Service ICU column; G[, [_____]]

][Item A1105, Headwall, Prefabricated, ICU, With Equipment; G[, [_____]]

][Item A1107, Rail System, Utility, Gas and Electric; G[, [_____]]

][Item A1110, Headwall, Prefabricated, General, 1-2 Bed; G[, [_____]]

][Item A1112, Column, Service, Overhead, Horizontal, Laboratory; G[, [_____]]

][Item A1115, Console, Service, Infant, Prefabricated; G[, [_____]]

][Item A1119, Pedestal, Medical Gas Service, Floor-Mounted; G[, [_____]]

][Item A1120, Column, Service, Prefab, Surgical, Ceiling Mounted; G [, [_____]]

][Item A1122, Column, Equipment Arm, Ceiling Mounted, Surgery; G[, [_____]]

][Item A1180, Scale, Roll On, Built In, 2000 Pound Capacity; G[, [_____]]

][Item A1200, Lift System, Overhead, Patient Rooms; G[, [_____]]

][Item A1203 Lift System, Overhead, Bariatric; G[, [_____]]

][Item A1205 Lifts System, Overhead, Patient Room With Bath; G[, [_____]]

][Item A4015, Clock, Elapsed Time, Electric; G[, [_____]]

][Item A6010, Bumper, Wall, Bed Locator; G[, [_____]]

][Item L9711, Table, Autopsy, Stationary-Fixed-Height; G[, [_____]]

][Item L9715, Table, Autopsy, Mbl, w/Stationary Service Center; G[, [_____]]

][Item L9720, Station, Pathology, Gross; G[, [_____]]

][Item M5015, Desk, Refraction, w/Sink, 33 by 92 by 25; G[, [_____]]

][Item M5016, Desk, Refraction w/console, w/o Sink; G[, [_____]]

][Item M8075 Lift, Patient, Physical Therapy; G[, [_____]]

][Item M8930 Suspension Unit, Utility, Ceiling, Microsurgery; G[, [_____]]

][Item M9085 Table, Operating, Floor Mounted; G[, [_____]]

][Item R8000, Refrigerator, Morgue, 4 Cadaver, 76 by 73 by 96; G[, [_____]]

][Item R8200, Refrigerated Room, Mortuary, 3 Cart; G[, [_____]]

][Item R8205, Refrigerated Room, Mortuary, 4 Cart; G[, [_____]]

][Item R8210, Refrigerated Room, Mortuary, 5 Cart; G[, [_____]]

][Item R8215, Refrigerated Room, Mortuary, 6 Cart; G[, [_____]]

] Submit catalog numbers, trade names, literature, data sheets, diagrams and other pertinent data for each item of equipment listed above to evaluate performance, function, materials, dimensions and appearance.

SD-04 Samples

[Color/Wood Trim; G[, [_____]]

] SD-06 Test Reports

[Item A1100, Prefabricated Service ICU Column

][Item A1105, Headwall, Prefabricated, ICU, With Equipment

][Item A1107, Rail System, Utility, Gas and Electric

][Item A1110, Headwall, Prefabricated, General, 1-2 bed

][Item A1112, Column, Service, Overhead, Horizontal, Laboratory

][Item A1115, Console, Service, Infant, Prefabricated

][Item A1119, Pedestal, Medical Gas Service, Floor-Mounted

][Item A1120, Column, Service, Prefab, Surgical, Ceiling Mounted

][Item A1122, Column, Equipment Arm, Ceiling Mounted, Surgery

][Item A1180, Scale, Roll On, Built In, 2000 Pound Capacity

][Item A1200, Lift System, Overhead, Patient Rooms

][Item A1203 Lift System, Overhead, Bariatric

][Item A1205 Lifts System, Overhead, Patient Room with Bath

][Item A4015, Clock, Elapsed Time, Electric

][Item A6010, Bumper, Wall, Bed Locator

][Item L9711, Table, Autopsy, Stationary-Fixed-Height

][Item L9715, Table, Autopsy, Mbl, w/Stationary Service Center

][Item L9720, Station, Pathology, Gross

][Item M5015, Desk, Refraction, w/Sink, 33 by 92 by 25

][Item M5016, Desk, Refraction w/Console, w/o Sink

][Item M8075 Lift, Patient, Physical Therapy

][Item M8930 Suspension Unit, Utility, Ceiling, Microsurgery

][Item M9085 Table, Operating, Floor Mounted

][Item R8000, Refrigerator, Morgue, 4 Cadaver, 76 by 73 by 96

][Item R8200, Refrigerated Room, Mortuary, 3 Cart

][Item R8205, Refrigerated Room, Mortuary, 4 Cart

][Item R8210, Refrigerated Room, Mortuary, 5 Cart

][Item R8215, Refrigerated Room, Mortuary, 6 Cart

] Submit field tests and inspections report for each item of equipment listed above signed by authorized official responsible for field tests and inspections.

SD-10 Operation and Maintenance Data

[Item A1100, Prefabricated Service ICU column; G[, [_____]]

][Item A1105, Headwall, Prefabricated, ICU, With Equipment;G[, [_____]]

][Item A1107, Rail System, Utility, Gas and Electric; G[, [_____]]

][Item A1110, Headwall, Prefabricated, General, 1-2 Bed; G[, [_____]]

][Item A1112, Column, Service, Overhead, Horizontal, Laboratory; G[, [_____]]

][Item A1115, Console, Service, Infant, Prefabricated; G[, [_____]]

][Item A1119, Pedestal, Medical Gas Service, Floor-Mounted; G[, [_____]]

][Item A1120, Column, Service, Prefab, Surgical, Ceiling Mounted; G [, [_____]]

][Item A1122, Column, Equipment Arm, Ceiling Mounted, Surgery; G[, [_____]]

][Item A1180, Scale, Roll On, Built In, 2000 Pound Capacity; G[, [_____]]

][Item A1200, Lift System, Overhead, Patient Rooms; G[, [_____]]

][Item A1203 Lift System, Overhead, Bariatric; G[, [_____]]

][Item A1205 Lifts System, Overhead, Patient Room With Bath; G[,

[_____]]

][Item A4015, Clock, Elapsed Time, Electric; G[, [_____]]

][Item A6010, Bumper, Wall, Bed Locator; G[, [_____]]

][Item L9711, Table, Autopsy, Stationary-Fixed-Height; G[, [_____]]

][Item L9715, Table, Autopsy, Mbl, w/Stationary Service Center; G[, [_____]]

][Item L9720, Station, Pathology, Gross; G[, [_____]]

][Item M5015, Desk, Refraction, w/Sink, 33 by 92 by 25; G[, [_____]]

][Item M5016, Desk, Refraction w/Console, w/o Sink; G[, [_____]]

][Item M8075 Lift, Patient, Physical Therapy; G[, [_____]]

][Item M8930 Suspension Unit, Utility, Ceiling, Microsurgery; G[, [_____]]

][Item M9085 Table, Operating, Floor Mounted; G[, [_____]]

][Item R8000, Refrigerator, Morgue, 4 Cadaver, 76 by 73 by 96; G[, [_____]]

][Item R8200, Refrigerated Room, Mortuary, 3 Cart; G[, [_____]]

][Item R8205, Refrigerated Room, Mortuary, 4 Cart; G[, [_____]]

][Item R8210, Refrigerated Room, Mortuary, 5 Cart; G[, [_____]]

][Item R8215, Refrigerated Room, Mortuary, 6 Cart; G[, [_____]]

] Submit Data Package 3, including training requirements, for each item of equipment listed above in accordance with requirements of Section 01 78 23 OPERATION AND MAINTENANCE DATA.[In addition, provide hard copies consisting of two Operator's Manuals and two Service Manuals.]

1.4 WARRANTY

[Provide warranties as specified in this Section.]Refer to Article WARRANTY in Section 11 70 00 GENERAL REQUIREMENTS FOR MEDICAL AND DENTAL EQUIPMENT for [additional] requirements.

PART 2 PRODUCTS

2.1 MATERIALS

Items not specified otherwise must conform to the following requirements:

a. Aluminum alloy: Equivalent in ultimate tensile, yield, and shear strengths to Alloy 6063-T5 or 6063-T6; conforming to ASTM B221M, ASTM B221.

b. Carbon steel: ASTM A1008/A1008M.

c. Laminated plastic: ANSI/NEMA LD 3; colors and patterns as selected by the Contracting Officer from the manufacturer's standard colors and patterns.

d. Stainless steel: Type 301, 302, or 304. Provide satin finish or a minimum No. 3 polished finish for exposed surfaces.

2.2 EQUIPMENT

****
NOTE: Select project-specific equipment items from the list below and delete equipment items not used. Additional equipment items may be added as required to suit project-specific conditions
****

[2.2.1 Item A1100, Prefabricated Service ICU column

Provide floor to ceiling prefabricated service column for equipment placement and support. Provide gas, electrical, and communications outlets mounted to any or all four sides. Provide vertical and horizontal accessory rails as shown in drawings. Approximate size 229 mm by 229 mm 9 inches by 9 inches minimum.

Additional Equipment and Devices (coordinate with drawings)

a. Electrical Receptacles: 20 amp, 125 volt, U.L. listed, "Hospital Grade". Quantity and type as indicated on drawings. Factory pre-wired by the Headwall module manufacturer. Coordinate requirements with applicable Division 26 Sections. Ensure compatibility of plug on equipment to used with these devices. Duplex: NEMA style 5-20R, "Red" color for critical branch power circuits.

b. Ground Receptacles: Integral with unit; 2.93 mm 10 AWG stranded copper wire conductor.

c. Medical Gas/Vacuum Manifold: Pre-assembled gas manifold with oxygen, air, vacuum connections and risers for all other gases.

d. Gas Outlets: Type to match existing in hospital, compatible with existing equipment. Refer to plumbing drawings for quantity of each specific gas outlet.

e. Telephone Provision: Provide telephone and data outlets. Coordinate installation requirements with applicable Division 26 and 27 Sections. Refer to communication drawings for quantity of each outlet.

f. Flat screen monitor holder/bracket.

][2.2.2 Item A1105, Headwall, Prefabricated, ICU, With Equipment

2.2.2.1 Head wall System

Provide a U.L. listed headwall consisting of a horizontal raceways that are surface mounted to the headwall behind the patient bed at specified levels. Electrical (normal or emergency power) services to raceway devices are supplied from a junction box in the wall or from optional vertical chase.

2.2.2.2 Raceways

Must provide for supporting movable ancillary equipment and cabinets. The center raceway provides track for mounting horizontally movable gas blocks. The raceway is low profile of 70 mm 2-3/4 inches deep. Each raceway contains barriers to accommodate any mix of emergency power or communication service desired. Single gang device outlets are spaced at 152 mm 6 inch intervals.

2.2.2.3 Medical Gas Distribution

Must be through a pre-assembled gas manifold located centrally below the (middle) gas raceway. Service to movable secondary gas outlets is through indexed hose assemblies connected to DISS check valves on the pre-assembled gas manifold. Supply to the pre-assembled gas manifold is through copper service drops. Copper drops are located in the wall or a cavity behind the surface mounted service chase. Access to the pre-assembled gas manifold may be accomplished by tilting or removing quick release HPL coved panels installed between the gas (middle) and bumper (bottom) raceways. Panel must cover indexed hose to keep out of view and protect patient from entanglement.

2.2.2.4 Materials

a. Service chase is 114 mm 4-1/2 inches deep by 330 mm 13 inches wide constructed of 1.52 and 0.9 mm 16 and 20 gauge steel box covered with FRL/steel front panels.

b. Horizontal raceway extruded aluminum and FRL covered with 0.91 mm 20 gauge steel.

c. Hose panels high density particle board and coved with FRL - 19 mm 3/4 inch thick.

d. Manifold Type K copper tubing (15.9 mm5/8 inch O.D. oxygen/air - 22.2 mm 7/8 inch O.D. vacuum).

e. Device faceplates - formed 0.51 mm 24 gauge anodized aluminum.

f. Wiring is 2.06 mm 12 gauge for receptacles and 2.06 and 2.59 mm 12 and 10 gauge for grounding.

2.2.2.5 Additional Headwall Equipment and Devices

a. Vacuum bottle Slide: 102 mm 4 inch, one piece extruded aluminum device, clear anodized with stop at the bottom. Slide must accept a 44 mm 1 3/4 inch wide by 3 mm 1/8 inch thick vacuum bottle bracket. Slides extend 381 mm 15 inches from the lower surface of the Headwall Module for use on either side of the bed. Slides swivel upward for storage.

b. Electrical Receptacles: 20 amp, 125 volt, 2 pole, grounding, U.L. listed, "Hospital Grade" duplex receptacles. Quantity as indicated on drawings. Factory pre-wired by the headwall module manufacturer. Coordinate requirements with applicable Division 26 Sections. Ensure compatibility of plug on equipment to used with these devices. Each receptacle cover plate is engraved to indicate the panel board and circuit from which it is served, refer to the electrical drawings for

the engraving schedule. Fill-in the engraved portion with black paint.

1) Duplex: NEMA style 5-20R, "Ivory" color on normal power circuits; "Red" color for critical branch power circuits.

2) Single: NEMA style 5-20R, "Ivory" color on normal power circuits; "Red" color for critical branch power circuits.

c. Switches and switching arrangements: "Specification" grade 120/277 volt, 20 amp decora framed rocker switches, quiet action. Switch type SP-ST or 3-way as shown on drawings. Proved factory pre-installed and factory pre-wired switches to junction box for external lights. "Ivory" color on normal power circuits; "Red" color for critical branch power circuits. Provide compatible momentary contact switches for activation of the low voltage lighting controller where indicated on the drawings. "Ivory" color on normal power circuits; "Red" color for critical branch power circuits.

d. Telephone/Data Provision: Provide single gang faceplate factory-punched for six 8 position modular, category 5e rated jacks, provide blank inserts for 4 of the openings.

e. Code Blue Station Provision: Coordinate work with Section 27 52 24 NURSE CALL SYSTEM. Headwall module must allow adequate space and make provisions for the nurse call device.

f. Medical Gas/ Vacuum Outlets: Provide and extend the medical gas/vacuum outlets complete with valves and faceplates in locations shown on approved shop drawings. Medical gas/vacuum outlets are quick connect or diameter indexing safety system (DISS) type and of the outlet manufacturer's console model as defined on the approved shop drawing. Copper tubing for extending and manifolding is type K conforming to ASTM B819. Provide all copper tubing free of oil and foreign material. Nitrogen gas must flow through tubing during brazing to prevent carbon deposits. All brazing of joints must be with silver brazing alloy (melting point 538 degree C 1000 degree F minimum). Complete manifolded or extended system must be pressure tested to 1034 kPa 150 psi to ensure gas tight seal. Single gas outlets: 15 mm 1/2 inch nominal I.D. (16 mm5/8 inch O.D.) tubing. Each multiple oxygen and compressed air outlet is manifolded to a tube of 15 mm 1/2 inch nominal I.D. (16 mm5/8 inch O.D.) and multiple vacuum outlets are manifolded to a tube of 16 mm 5/8 inch nominal I.D. (19 mm3/4 inch O.D.). All manifolds and extensions extend into center raceway and are labeled and capped to prevent incorrect hook-up and contamination. Protect all copper tubing from contract with dissimilar metals to prevent galvanic corrosion by plastic bushings. Provide all primary connections to the extended gas outlets. Perform and certify all pressure tests as required by NFPA 99 and contractual documents.

g. Nurse Call Patient Station: Coordinate work with Section 27 52 24 NURSE CALL SYSTEM. Headwall module must allow adequate space and make provisions for the nurse call device.

h. Blank Opening with Faceplates: For future expansion of services, provide blank opening locations as indicated on drawings. Provide one or two gang size openings as noted on drawings. Provide blank faceplates (unpunched of formed aluminum) by headwall module manufacturer.

i. Bed Interface Receptacle: The bed interface receptacle must enable nurse call, television controls and lighting functions to be operated at the patient bed side rail controls. Mount the receptacle in the patient headwall rail system as indicated on the drawings. The receptacle includes 3 cables assembled to a 37 pin receptacle; two of the cables must be long enough to be connected to the nurse call patient station and the third cable must be connected to the low voltage lighting controller.

j. Provide a "Dummy Plug" which is inserted into the receptacle whenever the bed is disconnected. Attach the dummy plug to the face plate with a stainless steel ball chain. Provide a simulator which can be inserted into the interface receptacle and can duplicate the functions of the bedside controls for testing purposes.

k. Color/Wood Trim:[As specified in Section 09 06 00 SCHEDULES FOR FINISHES.][As indicated; colors listed are not intended to limit the selection of equal colors from other manufacturers.]

l. Bed Locator: Provide one set per headwall.

][2.2.3 Item A1107, Rail System, Utility, Gas and Electric

2.2.3.1 Rail System

Provide a U.L. listed headwall consisting of a vertical service chase used in conjunction with a series of 2 horizontal raceways that are surface mounted to the headwall behind the patient bed at specified levels. Provide chase with 3 barrier compartments. Electrical (normal or emergency power) services to raceway devices are supplied from the chase by pre-wired plug connectors. Final electrical connections are made below finished ceiling junction boxes in chase. Low voltage (for example, nurse call, code blue, and monitor). Provide barrier compartment for field routing of cables through service chase to location in raceway via pull strings.

2.2.3.2 Raceways

Must provide for supporting movable ancillary equipment and cabinets. The center raceway provides track for mounting horizontally movable gas blocks. The raceway is low profile of 70 mm 2-3/4 inches deep. Each raceway contains barriers to accommodate any mix of emergency power or communication service desired. Single gang device outlets are spaced at 152 mm 6 inch intervals.

2.2.3.3 Medical Gas Distribution

Must be through a pre-assembled gas manifold located centrally below the (middle) gas raceway. Service to movable secondary gas outlets is through indexed hose assemblies connected to DISS check valves on the pre-assembled gas manifold. Supply to the pre-assembled gas manifold is through copper service drops. Copper drops are located in a cavity behind the surface mounted service chase. Access to the pre-assembled gas manifold may be accomplished by tilting or removing quick release HPL coved panels installed between the gas (middle) and bumper (bottom) raceways. Panel must cover indexed hose to keep out of view and protect patient from entanglement.

2.2.3.4 Materials

a. Service chase is 114 mm 4-1/2 inches deep by 330 mm 13 inches wide constructed of 1.52 and 0.91 mm 16 and 20 gauge steel box covered with FRL/steel front panels.

b. Horizontal raceway is extruded aluminum and FRL covered with 0.91 mm 20 gauge steel.

c. Hose panels are high density particle board and coved with FRL - 19 mm 3/4 inch thick.

d. Manifold Type K copper tubing is (15.9 mm5/8 inch O.D. oxygen/air - 22.2 mm 7/8 inch O.D. vacuum).

e. Device faceplates are formed of 0.51 mm 24 gauge anodized aluminum.

f. Wiring is 2.06 mm 12 gauge for receptacles and 2.06 and 2.59 mm 12 and 10 gauge for grounding.

2.2.3.5 Additional Headwall Equipment and Devices

a. Vacuum bottle Slide: 102 mm 4 inch, one piece extruded aluminum device, clear anodized with stop at the bottom. Slide must accept a 44 mm 13/4 inch wide by 3 mm 1/8 inch thick vacuum bottle bracket. Slides extend 381 mm 15 inches from the lower surface of the headwall module for use on either side of the bed. Slides must swivel upward for storage.

b. Electrical Receptacles: 20 amp, 125 volt, 2 pole, grounding, U.L. listed, "Hospital Grade" duplex receptacles. Quantity as indicated on drawings. Factory pre-wired by the headwall module manufacturer. Coordinate requirements with applicable Division 26 Sections. Ensure compatibility of plug on equipment to used with these devices. Each receptacle cover plate is engraved to indicate the panel board and circuit from which it is served; refer to the electrical drawings for the engraving schedule. Fill in the engraved portion with black paint.

{1) Duplex: NEMA style 5-20R, "Ivory" color on normal power circuits; "Red" color for critical branch power circuits.

(2) Single: NEMA style 5-20R, "Ivory" color on normal power circuits; "Red" color for critical branch power circuits.

c. Switches and switching arrangements: "Specification" grade 120/277 volt, 20 amp decora framed rocker switches, quiet action. Switch type SP-ST or 3-way as shown on drawings. Proved factory pre-installed and factory pre-wired switches to junction box for external lights. "Ivory" color on normal power circuits; "Red" color for critical branch power circuits. Provide compatible momentary contact switches for activation of the low voltage lighting controller where indicated on the drawings.

d. Telephone/Data Provision: Provide single gang faceplate factory-punched for six 8 position modular, category 5e rated jacks, provide blank inserts for 4 of the openings.

e. Code Blue Station Provision: Coordinate work with Section 27 52 24 NURSE CALL SYSTEM. Headwall module must allow adequate space and make

provisions for the nurse call device.

f. Medical Gas/ Vacuum Outlets: Provide and extend the medical gas/vacuum outlets complete with valves and faceplates in locations shown on approved shop drawings. Medical gas/vacuum outlet is quick connect or diameter indexing safety system (DISS) type and of the outlet manufacturer's console model as defined on the approved shop drawing. Copper tubing for extending and manifolding is type K conforming to ASTM B819. Provide all copper tubing free of oil and foreign material. Nitrogen gas must flow through tubing during brazing to prevent carbon deposits. All brazing of joints must be with silver brazing alloy (melting point 538 degree C 1000 degree F minimum). Complete manifolded or extended system must be pressure tested to 150 psi to ensure gas tight seal. Single gas outlets: 15 mm 1/2 inch nominal I.D. (16 mm5/8 inch O.D.) tubing. Each multiple oxygen and compressed air outlet is manifolded to a tube of 15 mm 1/2 inch nominal I.D. (16 mm5/8 inch O.D.) and multiple vacuum outlets are manifolded to a tube of 16 mm 5/8 inch nominal I.D. (19 mm3/4 inch O.D.). All manifolds and extensions extend into center raceway and are labeled and capped to prevent incorrect hook-up and contamination. Protect all copper tubing from contact with dissimilar metals to prevent galvanic corrosion by plastic bushings. Provide all primary connections to the extended gas outlets. Perform and certify all pressure tests as required by NFPA 99 and as indicated.

g. Nurse Call Patient Station: Coordinate work with Section 27 52 24 NURSE CALL SYSTEM. Headwall module must allow adequate space and make provisions for the nurse call device.

h. Blank Opening with Faceplates: For future expansion of services, provide blank opening locations as indicated on drawings. Provide one or two gang size openings as noted on drawings. Blank faceplates (unpunched of formed aluminum) are provided by headwall module manufacturer.

i. Bed Interface Receptacle: The bed interface receptacle must enable nurse call, television controls and lighting functions to be operated at the patient bed side rail controls. Mount the receptacle in the patient headwall rail system as indicated on the drawings. The receptacle includes 3 cables assembled to a 37 pin receptacle, two of the cables must be long enough to be connected to the nurse call patient station and the third cable must be connected to the low voltage lighting controller.

j. Provide a "Dummy Plug" for the receptacle which is inserted into the receptacle whenever the bed is disconnected. The dummy plug is attached to the face plate with a stainless steel ball chain. Provide a simulator which can be inserted into the interface receptacle and duplicate the functions of the bedside controls for testing purposes.

k. Color/Wood Trim:[As specified in Section 09 06 00 SCHEDULES FOR FINISHES.][As indicated; colors listed are not intended to limit the selection of equal colors from other manufacturers.]

l. Bed Locator: Provide one set per headwall.

][2.2.4 Item A1110, Headwall, Prefabricated, General, 1-2 Bed

2.2.4.1 Head Wall System

Provide a U.L. listed headwall consisting of a horizontal raceways that are surface mounted to the headwall behind the patient bed at specified levels. Electrical (normal or emergency power) services to raceway devices are supplied from a junction box in the wall or from optional vertical chase.

2.2.4.2 Raceways

Must provide for supporting movable ancillary equipment and cabinets. The center raceway provides track for mounting horizontally movable gas blocks. The raceway is low profile of 70 mm 2-3/4 inches deep. Each raceway contains barriers to accommodate any mix of emergency power or communication service desired. Single gang device outlets are spaced at 152 mm 6 inch intervals.

2.2.4.3 Medical Gas Distribution

Must be through a pre-assembled gas manifold located centrally below the (middle) gas raceway. Service to movable secondary gas outlets is through indexed hose assemblies connected to DISS check valves on the pre-assembled gas manifold. Supply to the pre-assembled gas manifold is through copper service drops. Copper drops are located in the wall or a cavity behind the surface mounted service chase. Access to the pre-assembled gas manifold may be accomplished by tilting or removing quick release HPL coved panels installed between the gas (middle) and bumper (bottom) raceways. Panel must cover indexed hose to keep out of view and protect patient from entanglement.

2.2.4.4 Materials

a. Service chase is 114 mm 4-1/2 inches deep by 330 mm 13 inches wide constructed of 1.52 and 0.91 mm 16 and 20 gauge steel box covered with FRL/steel front panels.

b. Horizontal raceway is extruded aluminum and FRL covered with 0.91 mm 20 gauge steel.

c. Hose panels are high density particle board and coved with FRL - 19 mm 3/4 inch thick.

d. Manifold is Type K copper tubing (15 mm5/8 inch O.D. oxygen/air - 22 mm 7/8 inch O.D. vacuum).

e. Device faceplates are formed of 0.51 mm 24 gauge anodized aluminum.

f. Wiring is 2.06 mm 12 gauge for receptacles and 2.32 and 2.93 mm 12 and 10 gauge for grounding.

2.2.4.5 Additional Headwall Equipment and Devices: Coordinate with Drawings

a. Vacuum bottle Slide: 102 mm 4 inch, one piece extruded aluminum device, clear anodized with stop at the bottom. Slide must accept a 44 m 1-3/4 inch wide by 3 mm 1/8 inch thick vacuum bottle bracket. Slides extend 381 mm 15 inches from the lower surface of the Headwall Module for use on either side of the bed. Slides swivel upward for

storage.

b. Electrical Receptacles: 20 amp, 125 volt, 2 pole, grounding, U.L. listed, "Hospital Grade" duplex receptacles. Quantity as indicated on drawings. Factory pre-wired by the headwall module manufacturer. Coordinate requirements with applicable Division 26 Sections. Ensure compatibility of plug on equipment to used with these devices. Each receptacle cover plate is engraved to indicate the panel board and circuit from which it is served, refer to the electrical drawings for the engraving schedule. Fill in the engraved portion with black paint.

   (1) Duplex: NEMA style 5-20R, "Ivory" color on normal power circuits; "Red" color for critical branch power circuits.

   (2) Single: NEMA style 5-20R, "Ivory" color on normal power circuits; "Red" color for critical branch power circuits.

c. Switches and switching arrangements: "Specification" grade 120/277 volt, 20 amp decora framed rocker switches, quiet action. Switch type SP-ST or 3-way as shown on drawings. Proved factory pre-installed and factory pre-wired switches to junction box for external lights. "Ivory" color on normal power circuits; "Red" color for critical branch power circuits. Provide compatible momentary contact switches for activation of the low voltage lighting controller where indicated on the drawings.

d. Telephone/Data Provision: Provide single gang faceplate factory-punched for six 8 position modular, category 5e rated jacks, provide blank inserts for 4 of the openings.

e. Code Blue Station Provision: Coordinate work with Section 27 52 24 NURSE CALL SYSTEM. Headwall module must allow adequate space and make provisions for the nurse call device.

f. Medical Gas/ Vacuum Outlets: Provide and extend the medical gas/vacuum outlets complete with valves and faceplates in locations shown on approved shop drawings. Medical gas/vacuum outlet is quick connect or diameter indexing safety system (DISS) type and of the outlet manufacturer's console model as defined on the approved shop drawing. Copper tubing for extending and manifolding is type K conforming to ASTM B819. Provide all copper tubing free of oil and foreign material. Nitrogen gas must flow through tubing during brazing to prevent carbon deposits. All brazing of joints must be with silver brazing alloy (melting point 538 degree C 1000 degree F minimum). Complete manifolded or extended system must be pressure tested to 1034 kPa 150 psi to ensure gas tight seal. Single gas outlets are 13 mm 1/2 inch nominal I.D. (16 mm5/8 inch O.D.) tubing. Each multiple oxygen and compressed air outlet is manifolded to a tube of 13 mm 1/2 inch nominal I.D. (16 mm5/8 inch O.D.) and multiple vacuum outlets are manifolded to a tube of 16 mm 5/8 inch nominal I.D. (19 m3/4 inch O.D.). All manifolds and extensions extend into center raceway and are labeled and capped to prevent incorrect hook-up and contamination. Protect all copper tubing from contract with dissimilar metals to prevent galvanic corrosion by plastic bushings. Provide all primary connections to the extended gas outlets. Perform and certify all pressure tests as required by NFPA 99 and as indicated.

g. Nurse Call Patient Station: Coordinate work with Section 27 52 24 NURSE CALL SYSTEM. Headwall module must allow adequate space and make

provisions for the nurse call device.

h. Blank Opening with Faceplates: For future expansion of services, provide blank opening locations as indicated on drawings. Provide one or two gang size as noted on drawings. Blank faceplates (unpunched of formed aluminum) are provided by headwall module manufacturer.

i. Bed Interface Receptacle: The bed interface receptacle must enable nurse call, television controls and lighting functions to be operated at the patient bed side rail controls. Mount the receptacle in the patient headwall rail system as indicated on the drawings. The receptacle includes 3 cables assembled to a 37 pin receptacle; two of the cables must be long enough to be connected to the nurse call patient station and the third cable must be connected to the low voltage lighting controller.

j. Provide a "Dummy Plug" which is inserted into the receptacle whenever the bed is disconnected. Attach the dummy plug to the face plate with a stainless steel ball chain. Provide a simulator which can be inserted into the interface receptacle and can duplicate the functions of the bedside controls for testing purposes.

k. Color/Wood Trim:[As specified in Section 09 06 00 SCHEDULES FOR FINISHES.][As indicated; colors listed are not intended to limit the selection of equal colors from other manufacturers.]

l. Bed Locator: Provide one set per headwall.

][2.2.5 Item A1112, Column, Service, Overhead, Horizontal, Laboratory

Ceiling mounted horizontal laboratory service column. Must provide housing for gas, electrical, communications outlets, lighting and ventilation. Must be a U.L. listed, pre-wired and pre-plumbed.

Construct of steel with powder finish.

Approximate Size: 914 mm to 2438 mm 36 inches to 96 inches long by 610 mm 24 inches wide by 457 mm to 1372 mm 18 to 54 inches high. Must be configurable to join sections together for continuous runs.

][2.2.6 Item A1115, Console, Service, Infant, Prefabricated

2.2.6.1 Rail System

Provide a U.L. listed headwall consisting of a vertical service chase used in conjunction with a series of horizontal raceways that are surface mounted to the headwall behind the infant bed at specified levels. Chase must have 3 barrier compartments. Electrical (normal or emergency power), services to raceway devices are supplied from the chase by pre-wired plug connectors. Final electrical connections are made below finished ceiling junction boxes in chase. Low voltage (for example, nurse call, code blue, and monitor). Provide barrier compartment for field routing of cables through service chase to location in raceway via pull strings.

2.2.6.2 Raceways

Must provide for supporting movable ancillary equipment and cabinets. The center raceway provides track for mounting gas blocks. The raceway is low profile of 70 mm 2-3/4 inches deep. Each raceway contains barriers to

accommodate any mix of emergency power or communication service desired.

2.2.6.3 Medical Gas Distribution

Must be through a pre-assembled gas manifold located centrally below the (middle) gas raceway. Service to movable secondary gas outlets is through indexed hose assemblies connected to DISS check valves on the pre-assembled gas manifold. Supply to the gas manifold is through copper service drops. Copper drops are located in a cavity behind the service mounted service chase. Access to the pre-assembled gas manifold may be accomplished by tilting or removing quick release HPL coved panels installed between the gas (middle) and bumper (bottom) raceways. Panel must cover indexed hose to keep out of view and protect patient from entanglement.

2.2.6.4 Console/counter

Approximate Size Range: 1118 mm 44 inches wide by 610 mm 24 inches deep by 991 mm 39 inches high. Refer to drawings for exact size and configuration.

2.2.6.5 Materials

a. Service chase is approximately 114 mm 4-1/2 inches deep by 356 mm 14 inches wide constructed of 1.52 and 0.91 mm 16 and 20 gauge steel box covered with HPL/steel front panels.

b. Horizontal raceway is extruded aluminum and HPL covered with 0.91 mm 20 gauge steel.

c. Hose panels are high density particle board and covered with HPL - 19 mm 3/4 inch thick.

d. Manifold is type K copper tubing 16 mm 5/8 inch O.D. oxygen/air 22 mm 7/8 inch O.D. vacuum).

e. Device faceplates are formed 0.51 mm 24 gauge anodized aluminum.

f. Wiring is 2.06 mm 12 gauge for receptacles and 2.06 and 2.59 mm 12 and 10 gauge for grounding.

g. Approximate Size: 1118 mm 44 inches wide by 610 mm 24 inches deep.

2.2.6.6 Rail System

Provide with devices and equipment as indicated on the drawings.

2.2.6.7 Additional Headwall Equipment and Devices

a. Electrical Receptacles: 20 amp, 125 volt, U.L. listed, "Hospital Grade." Quantity and type as indicated on drawings. Factory pre-wired by the headwall module manufacturer. Coordinate requirements with applicable Division 26 Sections. Ensure compatibility of plug in equipment to be used with these devices. Each receptacle cover plate is engraved to indicate the panel board and circuit from which it is served, refer to electrical drawings for the engraving schedule. Fill in the engraved portion with black paint.

(1) Duplex: NEMA style 5-20R, "Ivory" color on normal power circuits: "Red" color for critical branch power circuits.

(2) Single: NEMA style 5-20R, "Ivory" color on normal power circuits: "Red" color for critical branch power circuits.

b. Ground Receptacles: Integral with unit; 10 AWG stranded copper wire conductor.

c. Telephone/Data Provision: Provide a single gang faceplate factory-punched for six 8 position modular, category 5e rated jacks, provide blank inserts for 4 of the openings.

d. Code Blue Emergency Call Button: Switch button and plate. Coordinate work with nurse call requirements. Allow adequate space and provide raceway to accommodate code blue wire pulls to nurse call back box headwall module.

e. Nurse Call Station: Provide nurse call equipment. Coordinate work with Section 27 52 24 NURSE CALL SYSTEM. Headwall module must allow adequate space and make provisions for nurse call. Include backbox and conduit to accommodate all nurse call wiring and nurse call remote jack for servicing access area of module.

f. Blank Opening with Faceplates: For future expansion of services, provide blank opening locations as indicated on drawings. Provide one or two gang size as are noted on drawings. Blank faceplates (unpunched of formed aluminum) provided by headwall module manufacturer.

g. Monitor Equipment Provisions: Provide raceway to service junction box for monitor wires and faceplates for monitor connection box. Factory install power receptacles, signal connection backbox and conduit for wire pulls. Provide monitor channel for monitor mounting.

h. Switches and switching arrangements: "Specification" grade 120 volt, 20 amp decora framed rocker switches, quiet action. Switch type SP-ST or 3-way as shown on drawings. Factory pre-installed and factory pre-wired switches to lights.

i. Vacuum slides as indicated on the drawings.

][2.2.7 Item A1119, Pedestal, Medical Gas Service, Floor-Mounted

Floor mounted prefabricated service pedestal. Must be UL listed and provide housing for gas and electrical outlets. Construct of Type 304 stainless steel with No. 4 satin finish. Provide with removable top for access. Gas outlets can be mounted on sides of pedestal.

Approximate Sizes: 254 mm 10 inches by 508 mm 20 inches by 305 mm to 457 mm 12 to 18 inches high.

][2.2.8 Item A1120, Column, Service, Prefab, Surgical, Ceiling Mounted

Ceiling mounted surgical prefabricated service column. Must provide housing for gas, electrical, and communications outlets, with positive pneumatic braking system locks at each joint, friction brakes. Motorized retractable column. Construct upper and lower sections of shroud of 1.59 mm 16 gauge Type 304 stainless steel with a No. 4 satin finish, including a removable access panel, stainless steel ceiling collar, a steel mounting plate equipped with console gas outlets above the ceiling line. Gas

outlets can be mounted on both sides or bottom of column. Provide provisions for up 10 gas outlets. Electrical outlets can be added to any or all four sides of the column. Fully retracted length from ceiling is 914 mm 36 inches.

2.2.8.1 Additional Equipment and Devices

a. Electrical Receptacles: 20 amp, 125 volt, U.L. listed, "Hospital Grade". Quantity and type as indicated on drawings. Factory pre-wired by the Headwall module manufacturer. Coordinate requirements with applicable Division 26 Sections. Ensure compatibility of plug on equipment to used with these devices. Duplex: NEMA style 5-20R, "Red" color for critical branch power circuits.

b. Ground Receptacles: Integral with unit; 2.59 mm 10 AWG stranded copper wire conductor.

c. Medical Gas/Vacuum Manifold: Pre-assembled gas manifold with oxygen, air, vacuum connections and risers for all other gases.

d. Gas Outlets: Type to match existing in hospital, compatible with existing equipment. Refer to plumbing drawings for quantity of each specific gas outlet.

e. Telephone Provision: Provide telephone and data outlets. Coordinate installation with requirements of applicable Division 26 and 27 Sections. Refer to communication drawings for quantity of each outlet.

][2.2.9 Item A1122, Column, Equipment Arm, Ceiling Mounted, Surgery

Ceiling mounted prefabricated equipment articulating service column. Must provide for equipment placement and support. Provide gas, electrical, and communications outlets mounted to any or all four sides. Must accommodate a minimum of 12 gas outlets and 18 electrical duplex outlets. Provide three shelves and vertical accessory rails. Pneumatic moving and braking system. Provide range of motion up to 330 degrees with each arm.

Approximate Size: 584 mm to 940 mm 23 to 37 inches tall.

2.2.9.1 Additional Equipment and Devices

a. Electrical Receptacles: 20 amp, 125 volt, U.L. listed, "Hospital Grade". Quantity and type as indicated on drawings. Factory pre-wired by the Headwall module manufacturer. Coordinate requirements with applicable Division 26 Sections. Ensure compatibility of plug on equipment to used with these devices. Duplex: NEMA style 5-20R, "Red" color for critical branch power circuits.

b. Ground Receptacles: Integral with unit; 2.59 mm 10 AWG stranded copper wire conductor.

c. Medical Gas/Vacuum Manifold: Pre-assembled gas manifold with oxygen, air, vacuum connections and risers for all other gases.

d. Gas Outlets: Type to match existing in hospital, compatible with existing equipment. Refer to plumbing drawings for quantity of each specific gas outlet.

e. Telephone Provision: Provide telephone and data outlets. Coordinate installation with requirements of applicable Division 26 and 27 Sections. Refer to communication drawings for quantity of each outlet.

f. Flat screen monitor holder/bracket.

g. Optional second arm.

][2.2.10 Item A1180, Scale, Roll On, Built In, 2000 Pound Capacity

Provide recessed, flush mounted roll on scale, 1219 48 inches wide by 1219 mm 48 inches deep by 76 mm 3 inches high. Scale must have 907 kg 2,000 pound capacity. Standard powder coating. Provide unit with wall mounted digital weight indicator; weighing and counting indicator must have 4 button keypad, dual weighing units, green LED display. 115 VAC, single phase with Battery backup.

][2.2.11 Item A1200, Lift System, Overhead, Patient Rooms

Provide ceiling mounted patient bedroom lift consisting of a motor driven lift unit that traverses on an "H" ceiling mounted track system.

a. Ceiling mounted track system: High strength extruded aluminum in manufacture's standard profile and thickness to support lifting capacity indicated for lift unit. Provide track shapes and accessories as required to provide a complete system in layout indicated on drawings.

b. Lift unit: Construct unit of a steel frame system (1000 kg2205 pounds tested) driven by a gear reduced high torque motor. Unit must be in compliance with IEC 60601-1 Standard (or comparable UL).

(1) Lifting capacity: 249 kg 550 pounds minimum.

(2) Maximum lift range: 2438 mm 96 inches.

(3) Safety features:

(a) Emergency stopping device.

(b) Current limiter for circuit protection in case of overload

(c) Safety device that stops the motor to lift when batteries are low.

(d) Emergency lowering device, mechanical and electrical

(e) Control of lift strap

(f) Cut off angle: 45 degrees along the rail; 10 degrees across the rail.

(g) Hand held remote control

(h) Quick release trolley

(i) Entire external system (e.g. track, motor, strap, hanger) must be able to be cleaned according to infection control standards

without the loss of strength and integrity of the system.

(j) Control unit: Dual control - hand control and on the motor.

(k) Continuous charging option.

(l) IQ technology

c. Spreader bar

(1) 6 point with spring loaded locking clips to secure sling loops

(2) Spreader bar must work for all lift and transfer tasks. 272 kg 600 pound

d. Batteries

(1) The batteries must be of deep discharge construction and must be non-proprietary.

(2) System must be capable of using batteries of same voltage and amp rating by different manufacturers without voiding the warranty.

e. Charger

(1) Charger input: 100-240 Vac 60 Hz

(2) Charger output: 27 Vdc, 1A max

(3) Continuous charge charging system.

f. Other system requirements:

(1) The system must operate in a smooth, consistent manner without and fast, slow or jerky starts and stops.

(2) Emergency lowering shall not require any special tools.

(3) Capable of adding scale to system. Capable of integrated scale.

g. Installation:

(1) Install ceiling mounted patient lift system as in accordance with manufacturer's instructions and under supervision of manufacturer's qualified representative.

(2) Contractor must provide all labor, materials, equipment, shipping and ancillary costs required for installation.

h. Test:

(1) Conduct a performance test on each lift system to show that the patient lift system equipment and control devices operate properly an in accordance with the design and specification requirements.

(2) Contractor must provide certifications for each lift system with the room number and building including a date and time and load test.

(3) Equipment certified after install. Certification must include weight test of maximum lift capacity plus 25 percent at the attachment point, otherwise 100 percent SWL. If the system fails, Contractor must make all necessary adjustments and re-test within 7 business days.

i. Warranty:

(1) Provide motor with a two year warranty from date of final acceptance of the work. The warranty includes all travel and shipping costs associated with any warranty repair. Refer to Article WARRANTY in Section 11 70 00 GENERAL REQUIREMENTS FOR MEDICAL AND DENTAL EQUIPMENT for additional requirements.

][2.2.12 Item A1203, Lift System, Overhead, Bariatric

Ceiling mounted patient bedroom lift consisting of a motor driven lift unit that traverses on an "H" ceiling mounted track system.

a. Ceiling mounted track system: High strength extruded aluminum in manufacture's standard profile and thickness to support lifting capacity indicated for lift unit. Provide track shapes and accessories as required to provide a complete system in layout indicated on drawings.

b. Lift Unit: Construct unit of a steel frame system (1000 kg2205 pounds tested) driven by a gear reduced high torque motor. Unit must be in compliance with IEC 60601-1 Standard (or comparable UL).

(1) Lifting capacity: 454 kg 1000 pounds minimum.

(2) Maximum lift range: 2438 mm 96 inches

(3) Safety features:

(a) Emergency stopping device.

(b) Current limiter for circuit protection in case of overload

(c) Safety device that stops the motor to lift when batteries are low.

(d) Emergency lowering device, mechanical and electrical

(e) Control of lift strap

(f) Cut off angle: 45 degrees along the rail; 10 degrees across the rail.

(g) Hand held remote control

(h) Quick release trolley

(i) Entire external system (e.g. track, motor, strap, hanger) must be able to be cleaned according to infection control standards without the loss of strength and integrity of the system.

(j) Control unit: Dual control - hand control and on the motor.

(k) Continuous charging option.

(l) IQ technology

c. Spreader bar

(1) 6 point with spring loaded locking clips to secure sling loops

(2) Spreader bar must work for all lift and transfer tasks. 272 kg 600 pound

d. Batteries

(1) The batteries must be of deep discharge construction and must be non-proprietary.

(2) System must be capable of using batteries of same voltage and amp rating by different manufacturers without voiding the warranty.

e. Charger

(1) Charger input: 100-240 Vac 60 Hz

(2) Charger output: 27 Vdc, 1A max

(3) Continuous charge charging system.

f. Other system requirements:

(1) The system shall operate in a smooth, consistent manner without and fast, slow or jerky starts and stops.

(2) Emergency lowering shall not require any special tools.

(3) Capable of adding scale to system. Capable of integrated scale.

g. Installation:

(1) Install ceiling mounted patient lift system as per manufacturer's instructions and under supervision of manufacturer's qualified representative.

(2) Contractor must provide all labor, materials, equipment, shipping and ancillary costs required for installation.

h. Test:

(1) Conduct a performance test on each lift system to show that the patient lift system equipment and control devices operate properly an in accordance with the design and specification requirements.

(2) Contractor must provide certifications for each lift system with the room number and building including a date and time and load test.

(3) Equipment certified after install. Certification must include weight test of maximum lift capacity plus 25 percent at the attachment point, otherwise 100 percent SWL. If the system fails, Contractor must make all necessary adjustments and re-test within

7 business days.

i. Warranty:

(1) Provide motor with a two year warranty from date o final acceptance of the work. The warranty includes all travel and shipping costs associated with any warranty repair. Refer to Article WARRANTY in Section 11 70 00 GENERAL REQUIREMENTS FOR MEDICAL AND DENTAL EQUIPMENT for additional requirements.

][2.2.13 Item A1205, Lift System, Overhead, Patient Room with bath

Provide ceiling mounted patient bedroom lift consisting of a motor driven lift unit that traverses on an "H" ceiling mounted track system.

a. Ceiling mounted patient toilet lift consisting of an "I" ceiling mounted track system

b. Ceiling mounted track system: High strength extruded aluminum in manufacture's standard profile and thickness to support lifting capacity indicated for lift unit. Provide track shapes and accessories as required to provide a complete system in layout indicated on drawings.

c. Lift unit: Construct unit of a steel frame system (1000 kg2205 pounds tested) driven by a gear reduced high torque motor. Must be in compliance with IEC 60601-1 Standard (or comparable UL).

(1) Lifting capacity: 249 kg 550 pounds minimum.

(2) Maximum lift range: 2438 mm 96 inches

(3) Safety features:

(a) Emergency stopping device.

(b) Current limiter for circuit protection in case of overload

(c) Safety device that stops the motor to lift when batteries are low.

(d) Emergency lowering device, mechanical and electrical

(e) Control of lift strap

(f) Cut off angle: 45 degrees along the rail; 10 degrees across the rail.

(g) Hand held remote control

(h) Quick release trolley

(i) Entire external system (e.g. track, motor, strap, hanger) must be able to be cleaned according to infection control standards without the loss of strength and integrity of the system.

(j) Control unit: Dual control - hand control and on the motor.

(k) Continuous charging option.

(l) IQ technology

d. Spreader bar

(1) 6 point with spring loaded locking clips to secure sling loops

(2) Spreader bar must work for all lift and transfer tasks. (272 kg600 pound)

e. Batteries

(1) The batteries must be of deep discharge construction and must be non-proprietary.

(2) System must be capable of using batteries of same voltage and amp rating by different manufacturers without voiding the warranty.

f. Charger

(1) Charger input: 100-240 Vac, 60 Hz

(2) Charger output: 27 Vdc, 1A max

(3) Continuous charge charging system.

g. Other system requirements:

(1) The system must operate in a smooth, consistent manner without and fast, slow or jerky starts and stops.

(2) Emergency lowering shall not require any special tools.

(3) Capable of adding scale to system. Capable of integrated scale.

h. Installation:

(1) Install ceiling mounted patient lift system in accordance with manufacturer's instructions and under supervision of manufacturer's qualified representative.

(2) Contractor must provide all labor, materials, tolls, equipment, shipping and ancillary costs required for installation.

i. Test:

(1) Conduct a performance test on each lift system to show that the patient lift system equipment and control devices operate properly an in accordance with the design and specification requirements.

(2) Contractor must provide certifications for each lift system with the room number and building including a date and time and load test.

(3) Equipment certified after install. Certification must include weight test of maximum lift capacity plus 25 percent at the attachment point, otherwise 100 percent SWL. If the system fails, contractor will make all necessary adjustments and re-test within 7 business days.

j. Warranty:

(1) Provide motor with a two year warranty from date of final acceptance of the work. The warranty includes all travel and shipping costs associated with any warranty repair. Refer to Article WARRANTY in Section 11 70 00 GENERAL REQUIREMENTS FOR MEDICAL AND DENTAL EQUIPMENT for additional requirements.

][2.2.14 Item A4015, Clock, Elapsed Time, Electric

Clock/Timer must be combination four digit time of day clock, elapsed time indicator or date display. 12 or 24-hour format. Electrical requirements: 120 volt, 60 Hz, single phase. Digits must be 13 mm 1/2 inch, vacuum fluorescent blue/green in color on black background, with readability beyond 6.1 m 20 feet and a viewing angle greater than 60 degree either side of normal viewing place. External line voltage power loss of less than 60 seconds must not effect time-of-day, elapsed time or day settings to permit transfer between standard line voltage power source and critical branch line voltage power source. Clock/timer internal power source must not be replaceable battery type and must maintain time accuracy during external loss. Remote control for all functions except Self-Test and Code Blue. Approximate size: 114 mm 4-1/2 inches high by 229 mm 9 inches wide by 64 mm 2-1/2 inches deep.

][2.2.15 Item A6010, Bumper, Wall, Bed Locator

Bed locator wall bumper. Construct of rigid vinyl over heavy gauge aluminum. Approximate size: 1270 mm 50 inches long by 610 mm 24 inches high. Depth: 64 mm to 127 mm 2-1/2 inches to 5 inches.

][2.2.16 Item L9711, Table, Autopsy, Stationary-Fixed-Height

Provide stationary autopsy table on pedestal. Construct the stationary service center of Type 304 welded and polished No. 4 stainless steel. Equip pedestal with mounting flanges. Provide unit with integrated sink, waste disposer, grid plates and perimeter downdraft. Factory install plumbing and electrical with single point connections. Provide GFCI duplex receptacle with waterproof cover. Provide backflow protection. Provide heavy duty 1/2 horsepower with switch. Sink size approximately: 356 mm by 305 mm by 203 mm 14 inches by 12 inches by 8 inches deep with spray hose assembly with cold water control valve, nozzle and 3.05 m 10 foot of flexible house. Mixing faucet with gooseneck spout and wrist blades. Provide with integral downdraft ventilation. Provide four grid plates constructed of 1.27 mm 18-gauge, Type 304 stainless steel with No. 4 finish, perforated and removable. Overall approximate size: 813 mm 32 inches wide by 2642 mm 104 inches long by 889 mm 35 inches high.

][2.2.17 Item L9712, Table, Autopsy, Stationary-Elevating

Provide height adjustable autopsy table on pedestal. Construct the height adjustable service center of Type 304 welded and polished No. 4 stainless steel. Equip pedestal with mounting flanges. Height must be adjustable by a hydraulic mechanism, capable of lifting maximum of 227 kg 500 pounds approximately 203 mm 8 inches. Provide unit with integrated sink, waste disposer, grid plates and perimeter downdraft. Factory install plumbing and electrical with single point connections. Provide GFCI duplex receptacle with waterproof cover. Provide backflow protection. Provide heavy duty 1/2 horsepower waste disposer with switch. Sink size

approximately: 356 mm by 305 mm by 203 mm 14 inches by 12 inches by 8 inches deep with spray hose assembly with cold water control valve, nozzle and 3.05 m 10 foot of flexible house. Mixing faucet with gooseneck spout and wrist blades. Provide with integral downdraft ventilation. Provide four grid plates constructed of 1.27 mm 18-gauge, Type 304 stainless steel with No. 4 finish, perforated and removable. Overall approximate size: 813 mm 32 inches wide by 2462 mm 104 inches long by 889 mm 35 inches high.

][2.2.18 Item L9715, Table, Autopsy, Mbl, w/Stationary Service Center

Provide mobile autopsy table with stationary service center. Construct the mobile autopsy table of Type 304 welded and polished stainless steel. Provide with a hand crank to adjust pitch position, a lower rollout tray. Legs are 38 mm 1-1/2 inch square stainless steel, and all swivel casters are 203 mm 8 inches with locks and wheel brakes. Approximate size: 610 mm 24 inches wide by 2438 mm 96 inches long. Height adjustable up to 953 mm 37-1/2 inches high.

The stationary service center is equipped with operator work facilities. Construct of Type 304 welded and polished stainless steel. Provide unit with the legs, feet, sink basin, drainboards and back splash, including water powered vacuum generator with built in vacuum breaker, water service control, mixing faucet, sink faucet, table flushing system, dissecting trays, water proof electrical outlet, switches and lighting. Approximate size: 2438 mm wide by 711 mm deep by 864 mm 96 inches wide by 28 inches deep by 34 inches high.

][2.2.19 Item L9720, Station, Pathology, Gross

Provide pathology gross station. Unit size: 1219 mm 48 inches wide by 711 mm 28 inches deep by 232 mm 80 inches high. Provide unit with height adjustable stand with extruded aluminum frame and stainless steel shelf and back panel.

Power Requirements: 115 volt, 60 Hz. Two hospital grade duplex ground fault circuit interrupter receptacles.

Duct adaptor for connection to facility exhaust. Fume removal must be quiet, measuring less than 65 decibels.

Sink is 406 mm 16 inches wide by 305 mm 12 inches deep by 203 mm 8 inches high with rapid positive drain. Vacuum breaker protected cold water faucet with hands free infrared signal with manual override capability. Provide hand spray unit with stainless steel head. Dissection board must slope into sink, and faucet must include wrist blades. Provide paper towel holder above sink.

Microprocessor must be included for clock time and filter replacement alarm.

Provide three removable perforated grid plates on the flat stainless steel work surface.

Provide unit with magnetic tool bar, integral centimeter rulers, tea strainer, paper towel dispenser, side mounted magnifier lamp, and splash shield.

2.2.19.1 Exhaust System

Hood must be rated to provide 30.48 m/minute 100 feet per minute face velocity across hood with an quantity of 11.3 cm/m 400 CFM. Maximum air static pressure loss must not exceed 0.37 kPa 1.15 inches H20 W.G. Provide electronic airflow status monitoring system mounted to front of hood. Provide monitoring system with an electronic analog gage indicating actual face velocity, pilot lights indicating (green) normal operating status, and (red) alarm; low exhaust flow status. Furnish with 20 amp dry type contacts; one set for normal status, and one set for alarm status for use by laboratory airflow control system. Furnish with normal and alarm pilot lights, 65 db chime alarm and push to silence button.

][2.2.20 Item M5015, Desk, Refraction, w/Sink, 33 by 92 by 25

Provide ophthalmic refraction desk with control systems and sink cabinet. Provide unit with three rechargeable instrument wells, two accessory switches, five switch control panel for interior room lights with separate on/off dimmer control for room lights, trial lens drawer with full suspension, in-direct ophthalmoscope control with hanger and overhead lamp. Sink cabinet must include stainless steel sink, gooseneck faucet with wrist blades. Approximate size: 2235 mm 88 inches wide by 508 mm 20 inches deep / 813 mm 32 inches deep by 813 mm 32 inches high. Electrical: 120 Volts, 15 amp, 60 HZ. Cabinet must not be constructed separately by millwork manufacturer.

][2.2.21 Item M5016, Desk, Refraction w/console, w/o Sink

Provide ophthalmic refraction desk with control systems. Provide unit with three rechargeable instrument wells, two accessory switches, separate on/off dimmer control for room lights, trial lens drawer, in-direct ophthalmoscope control with hanger and overhead lamp. Approximate size: 1473 mm 58 inches wide by 508 mm 20 inches deep / 813 mm 32 inches deep by 813 mm 32 inches high. Electrical: 120 Volts, 15 amp, 60 HZ. Cabinet must not be constructed separately by millwork manufacturer.

][2.2.22 Item M8075, Lift, Patient, Physical Therapy

Provide physical therapy patient lift. Construct of passivated stainless steel, bolted to the floor with heavy duty base. Unit to provide 181 kg 400 pound minimum lifting capacity. Provide adjusted padded headrest, seat with lumbar support, polyethylene swing out footrest with non-slip surface, flip up outer arm, and adjustable height control valve.

][2.2.23 Item M8930 Suspension Unit, Utility, Ceiling, Microsurgery

Provide microsurgery ceiling suspension arm consisting of a ceiling mounted column with a power supply unit and a hydraulic control/pumping system. The unit to have a track or ceiling plate providing free movement with hand or foot switch. Provide power supply and hydraulic control system as required in drawings.

][2.2.24 Item M9085 Table, Operating, Floor mounted

Provide floor mounted operating table. Construct table top, side rails and base column of stainless steel. Table top is divided symmetrically divided and can be adjusted using plug in modules. Electromechanical controls, controlled gentle start up, hand controller to return to last patient position, controller to store up to 10 patient positions, support

plates to be removed without tools, dual arm support section and hybrid cushioning with electrical discharging capacity. Electo-powered drive provides longitudinal shift with back plate up or down and leg plates up or down. Approximate size: 2057 mm 81 inches long by 584 mm 23 inches wide.

][2.2.25 Item R8000, Refrigerator, Morgue, 4 Cadaver, 76 by 73 by 96

Provide four cadaver mortuary refrigerators. The exterior front must be 0.032 Type 304 stainless steel with a No. 4 finish. Construct top, sides and back shall be 0.4 mm 26 gauge stucco embossed aluminum.

Approximate Size: 1829 mm 72 inches wide by 2438 mm 96 inches deep by 2007 mm 79 inches high.

Insulation: 102 mm 4 inch foamed in place urethane (UL listed, Class 1).

Doors: Four 686 mm 27 inches by 559 mm 22 inches, flush style with magnetic gasket.

Lighting: Four door controlled light switch and one vaporproof light.

Refrigeration: Condensing unit, 0.56 kw 3/4 hp air cooled with R404 refrigerant. Cooling unit - automatic off-cycle. Operating temperature 3.3 degrees C 38 degrees F.

Electrical: 208/230 volts, 50/60 Hz, single phase.

][2.2.26 Item R8200, Refrigerated Room, Mortuary, 3 Cart

Provide walk-in 3 cart mortuary refrigerated room. The exterior front must be 0.032 Type 304 stainless steel with a No. 4 finish. Construct top, sides and back 0.4 mm 26 gauge stucco embossed aluminum. Operating temperature of: 3.9 degrees C 39 degrees F.

Approximate Size: 2946 mm 116 inches wide (front) by 2692 mm 106 inches deep (side) by 2616 mm 103 inches high.

Doors: 1219 mm 48 inches wide by 1981 mm 78 inches high swing out type. Magnetic gasket must be provided on both sides and top of door. Hinges must be polished chrome, strap type with cam-left hinges. Door latch must be polished chrome with provisions for locking and a safety release to prevent entrapment of personnel within the box. View window: approximately 356 mm by 356 mm 14 inch by 14 inch.

Insulation: 102 mm 4 inch foamed in place Class 1 foam.

Exterior Ramp: Heavy usage roll-in traffic ramp. It must provide flush entrance, have non-skid strips and fasten to front of the walk-in floor. Ramp must be as wide as the door and 660 mm 26 inches deep minimum.

Lighting: One pre-installed vapor proof light must be provided.

Provide for 3 cart capacity. Provide a one manual cadaver lift, three carriers and three stainless steel trays.

Refrigeration: Air cooled condensing unit, welded hermetic compressor. Condensing unit must be UL listed. Refrigeration system must be factory assembled and pre-charged. Provide unit with evaporator mounting kit,

sight glass, expansion valve, liquid line filter drier and control. R404 Refrigerant.

Electrical: 208 volts, 60 Hz, single phase

][2.2.27 Item R8205, Refrigerated Room, Mortuary, 4 Cart

Provide walk-in 4 cart mortuary refrigerated room. The exterior front must be 0.032 type 304 stainless steel with a No. 4 finish. Top, sides and back must be 0.4 mm 26 gauge stucco embossed aluminum. Operating temperature: 3.9 degrees C 39 degrees F.

Approximate Size: 2896 mm 114 inches wide (front) by 4877 mm 192 inches deep (side) by 2616 mm 103 inches high.

Doors: 1219 mm 48 inches wide by 1981 mm 78 inches high swing out type. Magnetic gasket must be provided on both sides and top of door. Hinges must be polished chrome, strap type with cam-left hinges. Door latch must be polished chrome with provisions for locking and a safety release to prevent entrapment of personnel within the box. View window: approximately 356 mm by 356 mm 14 inch by 14 inch.

Insulation: 102 mm 4 inch foamed in place Class 1 foam.

Exterior Ramp: Heavy usage roll-in traffic ramp. It shall provide flush entrance, have non-skid strips and fasten to front of the walk-in floor. Ramp shall be as wide as the door and 660 mm 26 inches deep minimum.

Lighting: One pre-installed vapor proof light shall be provided.

Provide for 4 cart capacity.

Provide a one manual cadaver lift, two, two tier carriers and four stainless steel trays.

Refrigeration: Air cooled condensing unit, welded hermetic compressor. Condensing unit must be UL listed. Refrigeration system must be factory assembled and pre-charged. Provide unit with evaporator mounting kit, sight glass, expansion valve, liquid line filter drier and control. R404 refrigerant.

Electrical: 208 volts, 60 Hz, single phase.

][2.2.28 Item R8210, Refrigerated Room, Mortuary, 5 Cart

Provide walk-in 5 cart mortuary refrigerated room. The exterior front shall be 0.032 type 304 stainless steel with a No. 4 finish. Top, sides and back shall be 0.4 mm 26 gauge stucco embossed aluminum. Operating temperature: 3.9 degrees C 39 degrees F.

Approximate size: 2896 mm 114 inches wide (front) by 4877 mm 192 inches deep (side) by 2616 mm 103 inches high. Doors: 1219 mm 48 inches wide by 1981 mm 78 inches high swing out type. Magnetic gasket shall be provided on both sides and top of door. Hinges shall be polished chrome, strap type with cam-left hinges. Door latch shall be polished chrome with provisions for locking and a safety release to prevent entrapment of personnel within the box. View window: approximately 356 mm by 356 mm 14 inch by 14 inch.

Insulation: 102 mm 4 inch foamed in place Class 1 foam.

Exterior Ramp: Heavy usage roll-in traffic ramp. It must provide flush entrance, have non-skid strips and fasten to front of the walk-in floor. Ramp must be as wide as the door and 660 mm 26 inches deep minimum.

Lighting: One pre-installed vapor proof light must be provided.

Provide for 5 cart capacity. Provide a one manual cadaver lift, three two tier carriers and five stainless steel trays.

Refrigeration: Air cooled condensing unit, welded hermetic compressor. Condensing unit must be UL listed. Refrigeration system must be factory assembled and pre-charged. Provide unit with evaporator mounting kit, sight glass, expansion valve, liquid line filter drier and control. R404 refrigerant.

Electrical: 208 volts, 60 Hz, single phase.

][2.2.29 Item R8215, Refrigerated Room, Mortuary, 6 Cart

Provide walk-in 6 cart mortuary refrigerated room. The exterior front must be 0.032 Type 304 stainless steel with a No. 4 finish. Top, sides and back must be 0.4 mm 26 gauge stucco embossed aluminum. Operating temperature: 4 degrees C 39 degrees F.

Approximate Size: 4115 mm 162 inches wide (front) by 4877 mm 192 inches deep (side) by 2616 mm 103 inches high.

Doors: 1219 mm 48 inches wide by 1981 mm 78 inches high swing out type. Magnetic gasket must be provided on both sides and top of door. Hinges must be polished chrome, strap type with cam-left hinges. Door latch must be polished chrome with provisions for locking and a safety release to prevent entrapment of personnel within the box. View window: approximately 356 mm by 356 mm 14 inch by 14 inch.

Insulation: 102 mm 4 inch foamed in place Class 1 foam.

Exterior Ramp: Heavy usage roll-in traffic ramp. It must provide flush entrance, have non-skid strips and fasten to front of the walk-in floor. Ramp must be as wide as the door and 660 mm 26 inches deep minimum.

Lighting: One pre-installed vapor proof light must be provided.

Provide for 6 cart capacity. Provide a one manual cadaver lift, three two tier carriers and six stainless steel trays.

Refrigeration: Air cooled condensing unit, welded hermetic compressor. Condensing unit must be UL listed. Refrigeration system must be factory assembled and pre-charged. Provide unit with evaporator mounting kit, sight glass, expansion valve, liquid line filter drier and control. R404 refrigerant.

Electrical: 208 volts, 60 Hz, single phase.

]PART 3 EXECUTION

3.1 EXAMINATION

After becoming familiar with all details of the work, verify all dimensions in the field, and advise the Contracting Officer of any discrepancy before performing the work.

3.2 INSTALLATION

Install equipment at locations indicated in accordance with manufacturer's printed installation instructions, Section 11 70 00 GENERAL REQUIREMENTS FOR MEDICAL AND DENTAL EQUIPMENT, and approved detail drawings. Submit detail drawings specifically prepared to illustrate required work for each item of equipment that interfaces with other items of equipment or construction, including, but not limited to, installation layout, coordination of equipment services, [drain piping connections,] [complete electrical wiring and control diagrams,] and details of construction and rough-in requirements. Furnish and install necessary items such as framing, mounting hardware and trim shall be furnished and installed as required for the type of equipment furnished.

3.3 ADJUSTING

Following installation, adjust flows, timers, levelers, and similar components and operation devices as appropriate. After testing, and before acceptance, examine equipment to ensure that adjustments are correct and that any additional adjustments deemed necessary during product testing, have been incorporated.

3.3.1 Ceiling Mounted Patient-Life Systems

Install tracks level and plumb, according to manufacturer's written instructions.

a. Support track directly from overhead supplementary framing using manufacturer's standard supports, anchors, and fasteners at intervals required by lifting capacity indicated, but not less than 914 mm 36 inches o.c.

b. Brace direct-to-structure track supports where distance between suspended ceiling and anchors is more than 457 mm 18 inches.

c. Provide supports at each track end, splice, and tangent point of each corner.

d. Install track accessories, splices, end caps, connectors, coupling and joining devices, and other accessories as required for a secure and operational installation.

3.4 UTILITIES

3.4.1 Service Runs

Connect service runs from equipment to building services as indicated.

3.4.2 Dissimilar Metal Connectors

Provide connections between ferrous and nonferrous metallic pipe with

dielectric waterways and flanges. Provide dielectric waterways with temperature and pressure rating equal to or greater than that specified for the connecting piping. Provide waterways with metal connections on both ends suited to match connecting piping. Internally line dielectric waterways with an insulator specifically designed to prevent current flow between dissimilar metals. Dielectric flanges meet the performance requirements described herein for dielectric waterways.

3.5 MANUFACTURER'S FIELD SERVICES

Provide the services of a manufacturer's representative [, in conjunction with] [, in addition to] [the Contractor's Equipment Planner,][and] [the Contractor's Biomedical Equipment Technician,] [the Government's Biomedical Equipment Technician,] who is experienced in the installation, adjustment, and operation of the equipment specified, and responsible for supervising the installation, adjustment, and testing of the equipment.

3.6 FIELD TESTS AND INSPECTIONS

3.6.1 Before Testing

Clean pipes, equipment and components of grease, dirt, stains, and other foreign materials.

3.6.2 Testing

Perform testing in accordance with manufacturer's written instructions. Unless otherwise approved by the Contracting Officer, test all items of equipment to ensure that they are operational and installation conforms to specification requirements. Hydrostatically test piping system at pressure of 1.5 times system operating pressure with water at temperature not exceeding 38 degrees C 100 degrees F. Before test, remove or isolate gage traps and apparatus that may be damaged by that pressure. Install calibrated test gage in system to observe any loss of pressure. Close off system and maintain test pressure for not less than one hour. Inspect joints and equipment connections for leaks. Retest and make repair until no further leaks are observed. Each test report must indicate compliance with specified performance criteria and the final position of controls.

3.6.3 Inspection

Examine each item for visual defects and conformance to specifications.

3.7 CLEANING

3.7.1 For Final Acceptance

Remove labels, fingerprints, and clean all surfaces both inside and out. Tightly cover and protect fixtures and equipment against rust, dirt, water, and chemical or mechanical injury.

3.7.2 Marred Surfaces Exposed-to-View

Refinish marred exposed surfaces that affect appearance, such as both interior and exterior cabinet finishes, to match the adjacent finishes, like new; replace components that cannot be refinished in this manner.

3.7.3 Concealed Marred Surfaces

Refinish marred surfaces exposed to atmosphere, where such surfaces do not affect product's appearance but do affect resistance to elements, such as galvanized pipes and insulation, to equal resistance performance as the unmarred surfaces.

3.8 TRAINING

3.8.1 Training Course

Conduct training course for operation staff as designated by the Contracting Officer. Start the training period, for a total of [_____] hours of normal working time, after systems are functionally complete but prior to final acceptance. The field instructions must include all of the items contained in the approved operations and maintenance data, as well as demonstrations of routine maintenance operations. Notify Contracting Officer at least 14 days prior to date of the training course.

[3.8.1.1 Government's Biomedical Equipment Technician Training

Include operator's training for one Biomedical Equipment Technician (BMET) for each procured equipment item.

] -- End of Section --