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USACE / NAVFAC / AFCEC / NASA UFGS-11 70 00 (May 2011)  
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Preparing Activity: NAVFAC Superseding  
UFGS-11 70 00 (April 2006)

## UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated October 2019

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#### SECTION 11 70 00

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05/11

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### SECTION 11 70 00

#### GENERAL REQUIREMENTS FOR MEDICAL AND DENTAL EQUIPMENT 05/11

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NOTE: This guide specification covers the requirements for general requirements for medical and dental equipment and similar related specialties.

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 \(CCR\)](#).

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NOTE: Specific product requirements are included in the technical sections that make reference to this section.

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NOTE: On the drawings show:

1. Location of equipment
2. Installation layout, details, and space requirements.

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## PART 1 GENERAL

### 1.1 REFERENCES

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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.

#### AMERICAN WATER WORKS ASSOCIATION (AWWA)

AWWA C510 (2017) Double Check Valve Backflow Prevention Assembly

AWWA C511 (2017) Reduced-Pressure Principle Backflow Prevention Assembly

#### FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH (FCCCHR)

FCCCHR List (continuously updated) List of Approved Backflow Prevention Assemblies

#### NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA MG 1 (2018) Motors and Generators

#### NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (2017; ERTA 1-2 2017; TIA 17-1; TIA 17-2; TIA 17-3; TIA 17-4; TIA 17-5; TIA 17-6; TIA 17-7; TIA 17-8; TIA 17-9; TIA 17-10; TIA 17-11; TIA 17-12; TIA 17-13; TIA 17-14; TIA 17-15; TIA 17-16; TIA 17-17 ) National Electrical Code

NFPA 99 (2018; TIA 18-1) Health Care Facilities Code

NFPA 101	(2018; TIA 18-1; TIA 18-2; TIA 18-3) Life Safety Code
SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)	
SMACNA 1981	(2008) Seismic Restraint Manual Guidelines for Mechanical Systems, 3rd Edition
U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)	
21 CFR 701	Cosmetic Labeling
UNDERWRITERS LABORATORIES (UL)	
UL 674	(2011; Reprint Nov 2018) UL Standard for Safety Electric Motors and Generators for Use in Hazardous (Classified) Locations
UL 1067	(2011; Reprint Dec 2015) Electrically Conductive Equipment and Materials for Use in Flammable Anesthetizing Locations
UL 60601-1	(2003; Reprint Apr 2006) Medical Electrical Equipment, Part 1: General Requirements for Safety

## 1.2 LOGISTICAL CLASSIFICATION

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**NOTE: The logistical classification listed in this guide specification follows MIL-STD-1691, "Military Standard Construction and Material for Military Medical and Dental Equipment."**  
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Methods of procurement are defined as follows:

- a. Category A: Contractor furnished and Contractor installed.
- b. Category B: Government furnished and Contractor installed.
- c. Category C: Government furnished and Government installed.
- d. Category D: Other (leased or rented equipment or that obtained under special conditions. Funds will be determined by the using service.)
- e. Category E: Government furnished and contractor installed.  
 (Procurement to be delayed until the latest date feasible that will not interfere with project completion. This will provide the latest model of equipment at the time it is needed.)
- f. Category F: Government furnished and Government installed.  
 (Procurement to be delayed until the latest date feasible that will not interfere with project completion. This will provide the latest model of equipment at the time it is needed.)

Equipment designated Logistical Category ["B"] ["C"] ["E"] ["F"] will be Government provided. For equipment installed by the Government, the

Contractor shall make preparations for installation, as indicated.

### 1.3 SUBMITTALS

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NOTE: Review Submittal Description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project.

The Guide Specification technical editors have designated 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 submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation 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" following a submittal item indicates that the submittal is required for the Sustainability eNotebook to fulfill federally mandated sustainable requirements in accordance with Section 01 33 29 SUSTAINABILITY REPORTING. Locate the "S" submittal under the SD number that best describes the submittal item.

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

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Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.][for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submittals with an "S" are for inclusion in the Sustainability eNotebook, in conformance to Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

#### SD-02 Shop Drawings

##### INSTALLATION Drawings

Submit for equipment items that interface with other pieces of

equipment or construction. Indicate:

Installation layout

Coordination of equipment services

Details of construction and rough-in requirements

Schedule of Contractor-furnished equipment

#### SD-03 Product Data

Contractor-furnished medical and dental materials and equipment

Submit within 60 days after award of contract, but before ordering equipment. Submit names and addresses of manufacturers, item's catalog numbers, trade names, literature, data sheets, diagrams, drawings, and other pertinent data for each referenced item to evaluate performance, dimensions, and appearance of the equipment and materials. Submit [in triplicate] [\_\_\_\_\_] copies of manufacturer's printed specifications and installation requirements.

#### SD-04 Samples

Manufacturer's standard color charts for medical and dental equipment; G[, [\_\_\_\_\_]]

#### SD-06 Test Reports

Factory inspection

Submit [three] [\_\_\_\_\_] copies of the test reports required or specified and performed by an approved laboratory.

#### SD-07 Certificates

Medical and dental equipment deviations

Medical and dental equipment substitutions

Backflow preventers Certificate of Full Approval

#### SD-10 Operation and Maintenance Data

Medical and dental equipment, Data Package 3; G[, [\_\_\_\_\_]]

Submit in accord with Section 01 78 23 OPERATION AND MAINTENANCE DATA. Submit manual data for each unit of equipment furnished for the project.

### 1.4 QUALITY ASSURANCE

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**NOTE: The qualifications clause in this guide specification has been approved by NAVFACENGCOM in accordance with the requirements of Naval Facilities Acquisition Supplement (NFAS). NFAS can be found at the following link:**

[https://portal.navfac.navy.mil/portal/page/portal/navfac/navfac\\_forbusiness](https://portal.navfac.navy.mil/portal/page/portal/navfac/navfac_forbusiness)  
The paragraph in this guide specification may be  
used without any other NAVFACENGCOM approval or  
request for waiver.

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#### 1.4.1 Materials and Equipment

Materials and equipment shall 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 shall have been in commercial or industrial use under similar circumstances and of similar size for 2 years prior to the bid opening.

#### 1.4.2 Alternative Service Record

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.

#### 1.4.3 Service Support

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

#### 1.4.4 Manufacturer's Nameplate

Each piece of equipment shall have the manufacturer's name, address, model number, and serial number utility ranges or capacities, including voltage and amperage rating if electrically powered on the nameplate, securely affixed in a conspicuous place. The name of only the distributing agent on the plate is not acceptable.

#### 1.4.5 Factory Inspection

Arrange and perform all factory inspections required by the technical sections of the specification, unless otherwise specified. Report these inspections in the daily report to the Government inspector.

#### 1.4.6 Product Qualifications

The products specified by the technical sections of the specification establish standards for each item.

#### 1.4.7 Design Parameters

Equipment furnished shall meet each of the following parameters specified in the technical sections.

- a. Size of equipment
- b. Function of equipment
- c. Standard and listed accessories



- d. Equipment controls and performance of equipment
- e. Construction of equipment.

#### 1.5 STANDARDS COMPLIANCE

Submit one of the following as evidence of proof of conformance for materials or equipment specified to conform to the standards of organizations such as the American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), National Electrical Manufacturers Association (NEMA), ASME INTERNATIONAL (ASME), American Gas Association (AGA), Air Conditioning and Refrigeration Institute (ARI), and Underwriters Laboratories (UL).

- a. If an organization uses a label or listing to indicate compliance with a particular standard, the label or listing will be acceptable evidence, unless otherwise specified in the individual sections.
- b. In lieu of the label or listing, submit a certificate from an independent testing organization which is competent to perform acceptable testing and is approved by the Contracting Officer. The certificate shall state that the item has been tested in accordance with the specified organization's test methods and that the item conforms to the specified organization's standard.
- c. For materials and equipment whose compliance with organizational standards or specifications is not regulated by an organization using its own listing or label as proof of compliance, submit a certificate of compliance from the manufacturer for approval, identifying the manufacturer, product, and referenced standard and certification stating that the product conforms to the requirements of the project specification and the referenced standards listed.

#### 1.6 STANDARDS [DEVIATIONS](#)

Submit for approval a record of deviations from the following standards established for the specified product, before ordering equipment.

- a. Size of equipment
- b. Function of equipment
- c. Standard and listed accessories
- d. Equipment controls and performance of equipment
- e. Construction of equipment.

#### 1.7 [SUBSTITUTIONS](#)

Submit before ordering equipment.

- a. Size: Layouts shall be based on the unit specified. If the size of a substituted unit differs from the item specified and is accepted, submit to the Contracting Officer for approval a revised layout, design calculations, drawings, and specifications for changes in the building to accommodate the substituted equipment.

b. Function: Additional functions and accessories of substituted equipment will not be considered as an improvement over the unit specified. If such functions are standard equipment of a substituted item but the function is not desired by the Government, then it shall be at the discretion of the Government to either have the Contractor completely remove that function from the unit, if the unit is otherwise acceptable, or allow the Contractor to retain that function on the unit under the following conditions:

- (1) The function is fully operational and its performance complies with the terms and conditions of this specification, including product quality and warranty;
- (2) The function shall in no way eliminate or modify those functions required by the Government on the specified unit. Refinement in control or accessibility of the substituted unit will be considered an improvement over the specified unit.

c: Appearance: Only the following aesthetic qualities of design will be considered an improvement:

- (1) Uniformity of finish
- (2) Variety of finish selections
- (3) Compatibility with substituted item.

#### 1.8 CERTIFICATE OF FULL APPROVAL

Submit a Certificate of Full Approval from the Foundation of Cross-Connection Control and Hydraulic Research (FCCCHR), University of Southern California, attesting that the design, size and make of each backflow preventer has satisfactorily passed the complete sequence of performance testing and evaluation for the respective level of approval. Certificate of Provisional Approval will not be acceptable.

#### 1.9 PACKAGING, STORAGE AND PROTECTION

##### 1.9.1 Packaging

Package each piece of equipment to ensure protection from damage during shipment and delivery. Legibly indicate on the exterior of each container or crate, the shipping address and a brief description of its contents. Outside of the container, fasten a waterproof envelope containing a packing list and complete instructions for uncrating and setting the equipment in place.

##### 1.9.2 Storage and Protection

During storage and until completion and acceptance by the Contracting Officer, protect materials and equipment from damage. Before acceptance by the Contracting Officer, remove all protective coverings, thoroughly clean the inner and outer surfaces, and ensure that the equipment is free from defects.

## PART 2 PRODUCTS

### 2.1 MATERIALS

Materials not specified otherwise shall be of the same quality used for the intended purpose in commercial practice. Equipment, materials, and articles incorporated in the work shall be new. Any deviations or substitutions shall be reported before ordering equipment.

### 2.2 EQUIPMENT

#### 2.2.1 Safety

Medical and dental equipment shall meet the requirements of OSHA 21 CFR 701, NFPA 101, and UL 60601-1. In lieu of UL approval, consideration will be given to certified test reports from an approved laboratory meeting UL 60601-1 requirements.

#### 2.2.2 Anesthetizing Areas

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**NOTE: Verify applicability of NFPA requirements to the project. Meet the requirements of UL 1067 for use in flammable anesthetizing locations.**  
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Areas in which an anesthetic is administered include [\_\_\_\_\_]. Electrical devices, controls, and related equipment shall meet the requirements of [NFPA 70 for Class 1, Group C] [NFPA 99] [UL 1067] for the atmosphere in these areas.

#### 2.2.3 Electrical Motors

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**NOTE: Conform to UL 674 if motors and generators are used in hazardous locations.**  
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Unless otherwise shown, equipment with motors of 375 watts 1/2 horsepower or less shall be suitable for operation from a 120-volt, single-phase, 60 Hz supply. Motors shall be of sufficient size for the duty to be performed and shall not exceed the nameplate rating when driven equipment is operating at specified capacity under the most severe conditions. Fractional horsepower motors shall conform to [NEMA MG 1] [UL 674].

#### 2.2.4 Backflow Preventers

Reduced pressure principle type conforming to the applicable requirements of AWWA C510, AWWA C511 and FCCCHR List.

### 2.3 COMPONENTS

#### 2.3.1 Mechanical

Components, such as piping, valves, and controls, shall conform to the requirements specified in Section 22 00 00 PLUMBING SYSTEMS.

### 2.3.2 Electrical

Provide components of equipment and systems, such as motors, starters, and controls as specified for complete operable systems. Extended voltage-range motors are prohibited. Provide interconnecting wiring for components of packaged equipment as an integral part of the equipment. Provide interconnecting power wiring and conduit for field-erected equipment and control wiring and conduit shall be as specified in Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM. Motor control equipment forming part of the motor control centers or switchgear assemblies and the necessary conduit and wiring connecting such assemblies, centers, or other power sources to the equipment shall be as specified in Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM.

## PART 3 EXECUTION

### 3.1 EXAMINATION

Before laying out the equipment, inspect the site of work. Report to the Contracting Officer damage to the building, including piping and wiring systems related to and affecting the installation of the equipment.

### 3.2 PROTECTION

Make provisions to prevent electrolysis where dissimilar metal parts are welded or otherwise fastened together.

### 3.3 INSTALLATION

Set and connect the equipment plumb and true to level in accordance with the manufacturer's instructions and recommendations. Attach items and accessories. Make connections between equipment and other work in a neat manner, and install the equipment so as not to damage other work.

#### 3.3.1 Mounting

Mount the equipment according to SMACNA 1981 seismic restraints guidelines.

#### 3.3.2 Operation

Provide all items necessary to make equipment operational.

### 3.4 FIELD INSPECTION

Notify the Contracting Officer 5 days before the scheduled inspection. Perform acceptance inspection of the finished work with the Contracting Officer to examine each item to ensure that the equipment is operational.

### 3.5 CLEANING AND ADJUSTING

Clean and adjust equipment. Lubricate moving parts, and test the equipment in accordance with the manufacturer's instructions. Clean the medical equipment, both inside and outside. Ensure that equipment is free from defects.

### 3.6 OPERATING AND MAINTENANCE DATA

Attach a copy of the operation and maintenance data for each piece of equipment to its respective equipment.

-- End of Section --