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USACE / NAVFAC / AFCEA / NASA            UFGS-11 74 00 (April 2006)  
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Preparing Activity:    NAVFAC            Replacing without change  
   UFGS-11744 (August 2004)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated April 2009

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### SECTION 11 74 00

#### DENTAL EQUIPMENT 04/06

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NOTE: This guide specification covers the requirements for dental equipment including dental operating lights and similar related dental equipment.

Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable items(s) or insert appropriate information.

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

Comments and suggestions on this guide specification are welcome and should be directed to the technical proponent of the specification. A listing of technical proponents, including their organization designation and telephone number, is on the Internet.

Recommended changes to a UFGS should be submitted as a Criteria Change Request (CCR).

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NOTE: TO DOWNLOAD UFGS GRAPHICS

Go to <http://www.wbdg.org/ccb/NAVGRAPH/graphtoc.pdf>.

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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 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 A 167	(1999; R 2004) Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
ASTM A 568/A 568M	(2007a) Standard Specifications for Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for
ASTM B 221	(2008) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B 221M	(2007) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric)
ASTM E 308	(2008) Computing the Colors of Objects by Using the CIE System

#### COMPRESSED GAS ASSOCIATION (CGA)

CGA G-10.1	(2008) Commodity Specification for Nitrogen
CGA G-7.1	(2004) Commodity Specification for Air

### 1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

Conform to the provisions of Section 11 70 00 GENERAL REQUIREMENTS FOR MEDICAL AND DENTAL EQUIPMENT. Provide final utility connections and utility service to equipment under Sections 23 03 00.00 20 BASIC MECHANICAL MATERIALS AND METHODS, 22 00 00 PLUMBING SYSTEMS, 22 60 70 GAS AND VACUUM SYSTEMS FOR HEALTHCARE FACILITIES, 26 00 00.00 20 BASIC ELECTRICAL MATERIALS AND METHODS, and 26 20 00 INTERIOR DISTRIBUTION SYSTEM."

### 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. Submittals should be kept to the minimum required for adequate quality control.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" 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.

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.] The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

Conform to the submittal provisions of Section 11 70 00 GENERAL REQUIREMENTS FOR MEDICAL AND DENTAL EQUIPMENT.

#### SD-02 Shop Drawings

Schedule of dental equipment items

#### SD-03 Product Data

Dust collector base pedestal[; G][; G, [\_\_\_\_]]

Air compressor, dental[; G][; G, [\_\_\_\_]]

Light, dental operating[; G][; G, [\_\_\_\_]]

Utility service center[; G][; G, [\_\_\_\_]]

## PART 2 PRODUCTS

### 2.1 MATERIALS

#### 2.1.1 Stainless Steel

ASTM A 167, Class 301, 302, or 304. Exposed surfaces shall have a No. 4 finish.

#### 2.1.2 Aluminum Alloy

ASTM B 221; provide alloy equivalent in ultimate tensile, yield, and shear strengths to Alloy 6063-T5 or 6063-T6, as applicable.

#### 2.1.3 Carbon Steel

ASTM A 568/A 568M; cold-rolled, stretcher level sheets 1.5 mm thick 16 gage and lighter with a commercial bright finish.

### 2.2 ITEMS

#### 2.2.1 Special Items

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NOTE: Insert a description of the item in the first two blanks, as sufficient to determine the type of product required. Avoid repetition of detailed information which appears in the salient features listed thereafter.  
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[Item \_\_\_\_\_, \_\_\_\_\_]: The unit shall be [\_\_\_\_\_]. Include the following:

[a. \_\_\_\_\_]

#### 2.2.2 Dust Collector, Base Pedestal

Provide a cabinet-enclosed, floor-mounted type suitable for use with grinding and polishing hoods in dental laboratories. Include the following:

- a. A capacity for at least four hoods.
- b. A self-contained, 220-volt, 60 hertz (Hz), 750 watt one-horsepower (hp) electric motor.
- c. Overall dimensions: Approximately 625 mm 25 inches high by 1050 mm 42 inches long by 375 mm 15 inches wide.
- d. Filters: Permanent (cleanable) type; 99 percent-high efficiency.
- e. Cabinet design: Removable snap-on panels for easy access to filters; equipped with a footpedal shaker on the outside.
- f. Ductwork from collector unit to hoods: Include flexible links, branch connectors, and end caps.
- g. Exhaust: Vented to the exterior of the building.

### 2.2.3 Air Compressor, Dental

Provide an air compressor capable of providing compressed air and meeting the following criteria:

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NOTE: Specify sufficient cfm of compressed air to satisfy the flow requirements of the combined equipment served under operational conditions.  
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- a. Capacity: Capable of providing [\_\_\_\_\_] liters per minute (lpm) cubic feet per minute (cfm) of compressed air at a residual pressure of 650 kilopascals 80 pounds per square inch (psi).
- b. Isolation: Mount pumps and similar vibrating and noise-producing components on the isolator.
- c. Electrical service characteristics: [120/208 volts, [single] [three]-phase] [240 volts, [single] [three]-phase], [60] [50] Hz.
- d. Quality of air:

#### CONTAMINANT

#### LIMIT

Water Dry to a pressure dewpoint of 2 degrees C at a minimum of 720 kilopascals (CGA G-7.1)

Condensed hydrocarbons A maximum of 0.1 part per million (ppm) by weight or 0.1 milligram per liter (CGA G-10.1)

Permanent particulates Less than 1.0 ppm by weight or 1.0 milligram per liter (CGA G-10.1)

#### CONTAMINANT

#### LIMIT

Water Dry to a pressure dewpoint of 35 degrees F at a minimum of 90 pounds per square inch gage (psig) (CGA G-7.1)

Condensed hydrocarbons A maximum of 0.1 part per million (ppm) by weight or 0.1 milligram per liter (CGA G-10.1)

Permanent particulates Less than 1.0 ppm by weight or 1.0 milligram per liter (CGA G-10.1)

### 2.2.4 Light, Dental Operating

Provide a twin lamphead (open reflector-type) suspended on a counterbalanced arm from a corrosion-resistant finish carriage that rides on a ceiling track. Include the following:

- a. Ceiling track: For surface mounting to a finished ceiling. The track shall be approximately 1980 mm 78 inches long.
- b. Carriage: Track-mounted; to travel silently and smoothly along ceiling track length without binding and to stop without drifting.

- c. Light bulb: Quartz-halogen; 12 volt; rated to exceed a 1,800 hour lifespan.
- d. On/off switch: Yoke-mounted; elongated bar, toggle-type.
- e. Lighthead: The lighthead shall be light in weight and shall be easily positioned. The lighthead shall feature a multifaceted reflector or other suitable means of simulating a multipoint light source to minimize the effect of blocking shadows. The lighthead shall be adjustable to illuminate all areas of the oral cavity. The lighthead shall be capable of being positioned at all points within the base of a spherical segment whose radius is equal to a 90 degree solid angle located at the imaginary center of the oral cavity and whose axis is coincident with a sagittal axis through the imaginary center with the patient reclined in a dental chair (chair back positioned at 45 degrees).
- f. Illumination intensity: The light shall feature a minimum of three intensity settings. The lowest intensity shall be 8600 to 12,900 lux 800 to 1,200 footcandles, and the highest intensity shall be a minimum of 21,500 lux 2,000 footcandles at the specified optimum focal length between 625 and 800 mm 25 and 32 inches from the oral cavity.
- g. Color properties: The light shall be capable of providing a color-corrected natural white light suitable for critical shade discrimination characterized by a correlated color temperature in the range from 3,800 to 5,500 degrees Kelvin (K) with a broad spectrum output containing all visible wavelengths. The emitted light shall have ASTM E 308 color within an area described by a rectangle on the CIE diagram with the range of coordinates describing the rectangle defined by the following U and V prime (') values.

<u>U'</u>	<u>V'</u>
0.2350	0.4975
0.2250	0.5225
0.1998	0.4925
0.2158	0.4700

- h. Light bulb replacement: The light bulb shall be field replaceable without tools or with a tool supplied by the manufacturer of the light. If a tool is supplied by the manufacturer of the light, there shall be a means of attaching the tool to the control arm of the light.
- i. Electrical characteristics: 120 volts; single-phase; 60 Hz.
- j. Enameled components: Finish enameled components in a light manufacturer's standard color.
- k. Mounting hardware: Include all mounting hardware to ensure that the track and light are securely mounted.

#### 2.2.5 Utility Service Center

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NOTE: Utility Service Center shall be used in conjunction with Item D8255, Dental Delivery System, a Government-furnished and -installed item. Transfer the template to the project drawings; in doing so, delete the words "Sketch No. 11744-1," but retain the title of the template.

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Install utilities indicated on "Dental Delivery System Utility Connection Template D7090 - Utility, Center Dental." Provide manual shutoff valves, one each for the air and water supply. Both valves shall be compatible with the specified inlet pipes, and both valves shall have a 20 mm 3/8 inch compression fitting on the outlet.

### PART 3 EXECUTION

#### 3.1 INSTALLATION

Conform to the installation provisions of Section 11 70 00 GENERAL REQUIREMENTS FOR MEDICAL AND DENTAL EQUIPMENT, for the items specified herein. Install the items specified herein at the locations indicated on the drawings.

#### 3.2 FIELD QUALITY CONTROL

##### 3.2.1 Inspection

Examine each item for visual defects and conformance to specifications.

##### 3.2.2 Tests

Test each item to ensure that the equipment is operational and conforms to specifications.

-- End of Section --