
USACE / NAVFAC / AFCEA UFGS-15411N (September 1999)

Preparing Activity: NAVFAC Replacing without revision
NFGS of same number and date

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMLR dated 22 December 2004

SECTION TABLE OF CONTENTS

DIVISION 15 - MECHANICAL

SECTION 15411N

HOSPITAL PLUMBING FIXTURES

09/99

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 GENERAL REQUIREMENTS
 - 1.2.1 Chlorination Chemicals and Other Materials
- 1.3 SUBMITTALS
- 1.4 ELECTRICAL MOTORS, CONTROLLERS, CONTACTORS, AND DISCONNECTS
- 1.5 SAFETY

PART 2 PRODUCTS

- 2.1 DRAINAGE, WASTE, AND VENT (DWV) PIPING
- 2.2 WATER PIPING
- 2.3 INSULATION
- 2.4 FIXTURES, FITTINGS, ACCESSORIES, AND SUPPLIES
 - 2.4.1 Bath, Sitz (Item P0330)
 - 2.4.2 Hand-Held Shower Head
 - 2.4.3 Bathtub, Pier Type (Item P1050)
 - 2.4.4 Rinse Valve, Bedpan (Item P1100)
 - 2.4.5 Fountain, Eyewash (Item P1950)
 - 2.4.6 Fountain, Eyewash/Shower (Item P2050)
 - 2.4.7 Valve, Thermostatic Mixing (Item P2450)
 - 2.4.8 Lavatory, Wrist Control (Item P3450)
 - 2.4.9 Lavatory, Surgeon's (Item P3500)
 - 2.4.10 Sink, Single Bowl (Item P4040)
 - 2.4.11 Sink, Deep, Double Bowl with Drainboard (Item P4220)
 - 2.4.12 Shower, Emergency (Item P5200)
 - 2.4.13 Shower, Deluge, Safety (Item P5210)
 - 2.4.14 Shower, Neuropsychiatric (NP) Patient (Item P5350)
 - 2.4.15 Sink, Service, Disposal, Flushing Rim (Item P6300)
 - 2.4.16 Sink, Service, Disposal, Flushing Rim (Item P6350)
 - 2.4.17 Sink, Surgeon's Scrub-Up (Item P6900)
 - 2.4.18 Scrub Station, Surgical, Automatic (Item P6990)
 - 2.4.19 Trap, Interceptor, Plaster (Item P7500)
 - 2.4.20 Trap, Plaster, Large (Item P7600)
 - 2.4.21 Lavatory, Disturbed Patient (Item P9160)

- 2.4.22 Lavatory, Wheelchair (Item P9180)
- 2.4.23 Floor Drain Attachment (Item P9320)
- 2.4.24 Water Closet, Neuropsychiatric (NP) Patient (Item P9400)
- 2.4.25 Water Closet, Specimen (Item P9520)
- 2.4.26 Cleaner, Whirlpool (Item P9560)

PART 3 EXECUTION

- 3.1 INSTALLATION
- 3.2 DISINFECTION
- 3.3 FIELD TESTING
 - 3.3.1 Water Piping
 - 3.3.2 DWV Piping
 - 3.3.3 Operational Tests
- 3.4 FIELD INSPECTION
- 3.5 SCHEDULE

-- End of Section Table of Contents --

USACE / NAVFAC / AFCEA UFGS-15411N (September 1999)

Preparing Activity: NAVFAC Replacing without revision
NFGS of same number and date

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated 22 December 2004

SECTION 15411N

HOSPITAL PLUMBING FIXTURES

09/99

NOTE: This guide specification covers the requirements for hospital plumbing fixtures.

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).

Use of electronic communication is encouraged.

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.

NOTE: Project requirements may require supplemental hospital plumbing fixtures added to the paragraphs contained herein. Other medical equipment shall be as specified in Division 11, "Equipment."

NOTE: The following information shall be shown on the project drawings:

1. Location and type of each hospital plumbing fixture.
2. Typical details for attaching wall hung fixtures to walls.
3. Size and dimensions of each fixture.

PART 1 GENERAL

1.1 REFERENCES

NOTE: Issue (date) of references included in
project specifications need not be more current than
provided by the latest guide specification. Use of
SpecsIntact automated reference checking is
recommended for projects based on older guide
specifications.

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 NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z358.1 (1998) Emergency Eyewash and Shower Equipment

AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE)

ASSE 1014 (1989) Hand-Held Showers

AMERICAN WATER WORKS ASSOCIATION (AWWA)

AWWA C651 (1999) Disinfecting Water Mains

ASME INTERNATIONAL (ASME)

ASME A112.18.1M (2000) Plumbing Fixture Fittings

ASME A112.19.1M (1994; R 2004) Enameled Cast Iron Plumbing Fixtures

ASME A112.19.2M (2003) Vitreous China Plumbing Fixtures

ASME A112.19.3M (2001) Stainless Steel Fixtures (Designed for Residential Use)

ASME A112.19.5 (1999) Trim for Water-Closet Bowls, Tanks and Urinals

ASME A112.6.1M (1997; R 2002) Floor Affixed Supports for Off-the-Floor Plumbing Fixtures for Public Use

INTERNATIONAL CODE COUNCIL (ICC)

ICC IPC (2003) International Plumbing Code

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910.1200 Hazard Communication

1.2 GENERAL REQUIREMENTS

NOTE: With approval of the Engineering Field Division, Naval Facilities Engineering Command Mechanical Design Branch, use the current Plumbing Code which is recognized by the state in which the project is located.

Sections 15050N BASIC MECHANICAL MATERIALS AND METHODS, and Section 15400N PLUMBING SYSTEMS, apply to this section, with the additions and modifications specified herein. Hospital plumbing includes [removing existing and] [providing new] [and] [modifying existing] hospital plumbing fixtures and related work. [The work also includes providing rough-in and making final plumbing connections to equipment furnished under other sections of this specification.] Provide each system completer and ready for operation. Plumbing systems including fixtures, equipment, materials, installation, and workmanship shall be in accordance with the ICC IPC. In the Plumbing Code referred to herein, the advisory provisions shall be considered to be mandatory, as though the word "shall" had been substituted for the word "should" wherever it appears; reference to the "authority having jurisdiction," the Administrative Authority, the Plumbing Official, Code Official, and the Design Engineer shall be interpreted to mean the Contracting Officer.

1.2.1 Chlorination Chemicals and Other Materials

Submit material safety data sheets to be used at the job site in accordance with OSHA 29 CFR 1910.1200.

1.3 SUBMITTALS

NOTE: Submittals must be limited to those necessary for adequate quality control. The importance of an item in the project should be one of the primary factors in determining if a submittal for the item should be required.

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 projects.

Submittal items not designated with a "G" are considered as being for information only for Army projects and for Contractor Quality Control approval for Navy projects.

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 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Hospital plumbing fixtures

SD-03 Product Data

Fixtures

Fittings

Accessories

Supplies

SD-06 Test Reports

Plumbing system operational tests

Submit field test reports as required in paragraph entitled "Operational Test."

SD-08 Manufacturer's Instructions

Chlorination chemicals and other materials

SD-10 Operation and Maintenance Data

Hospital plumbing fixtures, Data Package 1

Submit in accordance with Section 01781 OPERATION AND MAINTENANCE DATA.

1.4 ELECTRICAL MOTORS, CONTROLLERS, CONTACTORS, AND DISCONNECTS

NOTE: Use when electric motor driven equipment is specified in this section.

Furnish motors, controllers, contactors, and disconnects with their respective pieces of equipment. Controllers and contractors shall have a maximum of 120-volt control circuits, and auxiliary contacts for use with the controls furnished. When motors and equipment furnished are larger

than sizes indicated, the cost of providing additional electrical service and related work shall be included under this section.

1.5 SAFETY

The Contractor shall ensure that employees are trained in the requirements of OSHA 29 CFR 1910.1200 and understand the information contained in the MSDS for protection against toxic and hazardous chemical effects.

PART 2 PRODUCTS

2.1 DRAINAGE, WASTE, AND VENT (DWV) PIPING

Drainage, waste, and vent pipe and fittings shall be as specified in Section 15400N PLUMBING SYSTEMS.

2.2 WATER PIPING

Hot and cold water pipe and fittings shall be as specified in Section 15400N PLUMBING SYSTEMS.

2.3 INSULATION

Insulation shall be as specified in Section 15080N MECHANICAL INSULATION.

2.4 FIXTURES, FITTINGS, ACCESSORIES, AND SUPPLIES

NOTE: Mounting heights, clearances, access, operating devices, insulation, and accessories for hospital plumbing fixtures shall comply with Chapter 18, Provisions for the Physically Handicapped, in Department of Defense Construction Criteria Manual 4270.1-M.

All products shall conform to the publications listed. Provide control stop valves on each supply to each fixture. The finish of fittings, accessories, and supplies exposed to view shall be chromium-plated. Fixture fittings and trim shall conform to ASME A112.18.1M and ASME A112.19.5, as applicable. Centerset faucets shall be top-mounted with inlets on not greater than 100 mm 4 inch centers. Separate faucets and combination supply fittings shall have inlets on 200 mm 8 inch centers. Zinc-alloy or plastic handles will not be permitted for faucets and valves. [Provide special roughing-in for wheelchair fixtures.] All fixture dimensions specified are nominal.

2.4.1 Bath, Sitz (Item P0330)

ASME A112.19.2M, vitreous china, [wall] [pedestal] mounted sitz bath having overall dimensions of 685 mm 27 inches long by 585 mm 23 inches wide with height of back 535 mm 21 inches and height of rim 355 mm 14 inches to 405 mm 16 inches above the floor. Provide with water supply assembly, exposed thermostatic mixing valve with thermometer, vacuum breaker, [attached water supply] [1.50 meters5 feet of reinforced rubber hose and wall hook,] [hand-held shower head] 40 mm 1 1/2 inch pop-up waste with operating mechanism at the top of the fixture, [removable overflow] tailpiece with adjustable cast brass P-trap, and integral overflow fitting.

2.4.2 Hand-Held Shower Head

ASSE 1014, [fixed] [adjustable] spray hand-held shower head with swivel fitting, [pushbutton flow control,] 1525 mm 60 inch minimum flexible [chrome plated copper alloy] [polished stainless steel] hose and in-line vacuum breaker [wall bracket to mount hand spray] [[635 mm] [25 inch] [____]] [grab bar with sliding spray holder that locks at any height] to allow the use of the unit as either a hand-held spray or a fixed shower head.

2.4.3 Bathtub, Pier Type (Item P1050)

ASME A112.19.1M, acid-resisting enameled cast iron for mounting on [masonry] [enameled cast iron] base; 1675 mm 66 inches long by 760 mm 30 inches wide by 460 mm 18 inches deep; with the rim 710 mm 28 inches, including base, above the floor. Provide with built-in shampoo fitting, pop-up drain fitting, elevated vacuum breaker, over-rim diverter spout, spray nozzle with 1.50 meters 5 feet of reinforced rubber hose and wall hook, and supply valves.

2.4.4 Rinse Valve, Bedpan (Item P1100)

Wall mounted self-closing [hand operated] [hinged pedal action foot control] mixing valve with integral stops. Rinse valve shall be provided with [cold] [hot] [hot and cold] water volume control, elevated vacuum breaker, 1.25 meters 4 feet of flexible hose, spray nozzle with wall hook, and [loose key supply] [screwdriver] stop valves.

2.4.5 Fountain, Eyewash (Item P1950)

ANSI Z358.1, floor mounted, hand operated type. Provide with quick opening, 15 mm 1/2 inch chrome plated copper alloy full-flow valves, twin eyewash heads with pop-off dust covers, stainless steel eyewash receptor, and drain.

2.4.6 Fountain, Eyewash/Shower (Item P2050)

ANSI Z358.1, pedestal mounted, twin eyewash heads with pop-off dust covers, stainless steel receptor, 15 mm 1/2 inch chrome plated copper alloy hand operated stay open ball valve, and hand spray unit. Provide hand spray unit with hose guide bracket, wall mounting flange, 1.75 meters 6 feet of coiled reinforced hose with minimum burst strength of 1725 kPa (gage) 250 psig, noncorrosive spray head, and hand squeeze valve with hold open feature.

2.4.7 Valve, Thermostatic Mixing (Item P2450)

Thermostatic mixing valve, assembly with washout hose. To be used with portable whirlpool equipment. Thermostatic valve to maintain temperature between 21 and 43 degrees C 70 and 110 degrees F, with a flow rate of 0.50 to 1.25 liters per second 10 to 20 gallons a minute.

2.4.8 Lavatory, Wrist Control (Item P3450)

ASME A112.19.2M, wall mounted, 510 mm 20 inches long by 460 mm 18 inches wide, vitreous china, slab type. Provide with combination faucets with 100 mm 4 inch wrist control handles, gooseneck spout with aerator, open drain with perforated strainer, [angle] [straight] stops, and 32 mm 1 1/4 inch cast brass adjustable P-trap with tailpiece.

2.4.9 Lavatory, Surgeon's (Item P3500)

ASME A112.19.2M, wall mounted, vitreous china, front overflow, 710 mm 28 inches long by 510 mm 20 inches wide by 90 mm 3 5/8 inches deep, with integral back and instrument trays. Provide with combination faucets, 100 mm 4 inch wrist control handles, gooseneck spout with spray, open drain with perforated strainer, [angle] [straight] stops, and 32 mm 1 1/4 inch cast brass adjustable P-trap with tailpiece.

2.4.10 Sink, Single Bowl (Item P4040)

ASME A112.19.3M, stainless steel, Type 302, 18 gage, satin finish, countertop type, polished rim, sound dampened, 635 mm 25 inches long by 560 mm 22 inches wide by 190 mm 7 1/2 inches deep, three faucet holes. Provide with combination faucet, gooseneck spout, aerator, 100 mm 4 inch wrist control handles, cup strainer, 40 mm 1 1/2 inch brass tailpiece, and 40 mm 1 1/2 inch cast brass P-trap.

2.4.11 Sink, Deep, Double Bowl with Drainboard (Item P4220)

ASME A112.19.3M, stainless steel, Type 304, 18 gage, polished finish, sound dampened, ledge-back with [right hand] [left hand] [double] drainboard. Provide with combination faucet, swing spout, aerator, 100 mm 4 inch wrist control handles, cup strainers, 40 mm 1 1/2 inch brass tailpieces and 40 mm 1 1/2 inch cast brass P-trap. Size of sink shall be [_____] [as indicated].

2.4.12 Shower, Emergency (Item P5200)

ANSI Z358.1; stainless steel ceiling shower with 200 mm 8 inch self-cleaning head [with integral flange for flush mounting]. Provide with a 25 mm one inch slow closing, self-closing valve operated by [a heavy chain extending to and attached to the floor] [pull rod]. The shower head shall provide not less than 1.60 liters per second (L/s) 25 gallons per minute (gpm) at 207 kPa 30 pounds per square inch of pressure.

2.4.13 Shower, Deluge, Safety (Item P5210)

ANSI Z358.1; complete combination emergency station consisting of a free-standing drench shower; self-cleaning, nonclogging eye and face wash with 15 mm 1/2 inch quick opening, hand or foot operated, copper alloy, full-flow valves; and stainless steel eye and face wash receptor with twin eyewash heads with pop-off covers. Provide a chrome-plated brass 25 mm one inch stay-open ball valve operated by a stainless steel pull rod for the drench shower.

2.4.14 Shower, Neuropsychiatric (NP) Patient (Item P5350)

Vandal-proof shower with thermostatic mixing valve, in cabinet, set to deliver maximum 41 degrees C 105 degrees F hot water. Shower head shall be designed for prison use. Shower shall have smooth surfaces with no projections that can be used as a catch or hook. Shower shall have a flat back arranged for bolting directly to the wall and shall be tapped for 15 mm 1/2 inch pipe connection to a tempered water line. The shower head shall have a tamperproof removable face not less than 90 mm 3 1/2 inches in diameter, shall be not less than 1.75 meters 6 feet above the floor, and shall deliver the spray within a one meter 3 foot circle.

2.4.15 Sink, Service, Disposal, Flushing Rim (Item P6300)

Vitreous china pedestal type, 510 by 510 mm 20 by 20 inches, with flushing rim and siphon jet flushing action. Service sink shall have a 40 mm 1 1/2 inch top inlet spud and a minimum rim to floor height of 460 mm 18 inches, with stainless steel rim guards on front and both sides, and elongated open-front seat, and ANSI large diaphragm (not less than 66.70 mm 2.625 inches upper chamber inside diameter at the point where the diaphragm is sealed between the upper and lower chambers), nonhold open flush valve of chrome plated copper alloy, including vacuum breaker and angle (control-stop) valve with back check.

2.4.16 Sink, Service, Disposal, Flushing Rim (Item P6350)

Vitreous china, wall mounted, service sink with flushing rim and blowout flushing action, 560 mm 22 inches wide, 660 mm 26 inches long, 270 mm 10 1/2 inches deep, and integral 120 mm 4 3/4 inches high, with elongated open-front seat, and ANSI large diaphragm (not less than 66.70 mm 2.625 inches upper chamber inside diameter at the point where the diaphragm is sealed between the upper and lower chambers), nonhold-open flush valve of chrome plated copper alloy, including vacuum breaker and angle (control-stop) valve with back check, wall mounted combination faucet with renewable seats, 150 mm 6 inch brass handles, plain end spout with bucket hook, screwdriver stops, fork brace, and stainless steel rim guards on front and both sides.

2.4.17 Sink, Surgeon's Scrub-Up (Item P6900)

Vitreous china, wall mounted scrub-up sink having overall dimensions of 760 mm 30 inches long by 560 mm 22 inches wide by 250 mm 10 inches deep with integral back 150 mm 6 inches high. Provide with [knee control] [self-closing foot control] mixing valve, gooseneck spout with 50 mm 2 inch spray, 250 mm 10 inches above sink rim, perforated strainer, 40 mm 1 1/2 inch tailpiece, and 40 mm 1 1/2 inch cast brass P-trap with cleanout plug.

2.4.18 Scrub Station, Surgical, Automatic (Item P6990)

Wall mounted, 14 gage, Type 304, welded stainless steel scrub sink with [2][3][4] automatic scrub stations. Provide each station with volume regulator, thermostat controlled water temperature selector, solid state electronic timer with automatically timed scrub period, gooseneck spout with full arm wash/rinse spray, automatic water shut-off, built-in detergent dispenser, foot controls, perforated strainer, 40 mm 1 1/2 inch tailpieces, and 40 mm 1 1/2 inch cast brass P-trap. Plastic splash shields shall be provided between scrub stations. Temperature controls and timing devices shall be watertight and enclosed to prevent tampering. Provide 15 mm 1/2 inch lines with hot and cold water at a pressure between 138 kPa 345 kPa 20 psi 50 psi and 120 volt, 60 hertz, single phase power to an internal junction box.

2.4.19 Trap, Interceptor, Plaster (Item P7500)

Cast iron sediment interceptor with side inlet; sealed side outlet; bolted, removable, gasketed cover; removable galvanized basket having lift bars; cast-iron removable inlet baffle; removable bronze screens; and cleanout at bottom for installation on floor or flush with floor.

2.4.20 Trap, Plaster, Large (Item P7600)

Gray cast-iron body 355 mm 14 inches long by 355 mm 14 inches wide by 406 mm 16 inches high, with white porcelain-enamel inside and outside, clamps, cage of galvanized material, brass screens, and 50 mm 2 inch inlet and outlet connections fitted with hood seal.

2.4.21 Lavatory, Disturbed Patient (Item P9160)

Vitreous china with integral faucet and soap dish, drain outlet, and drinking nozzle, with self-closing, push button, hot and cold water faucets.

2.4.22 Lavatory, Wheelchair (Item P9180)

ASME A112.19.2M, wall mounted, vitreous china, 510 mm 20 inches long by 685 mm 27 inches wide, slab type provided with [combination] [centerset] lavatory faucets, gooseneck spout, 100 mm 4 inch wrist control handles, open drain with perforated strainer, [angle] [straight] stops, and 32 mm 1 1/4 inch cast brass adjustable P-trap with tailpiece.

2.4.23 Floor Drain Attachment (Item P9320)

With automatic trap primer on the outlets of floor drains in hydro-therapy rooms. Floor drain attachment shall be [50] [80] [100] mm [2] [3] [4] inch cast iron with 15 mm 1/2 inch threaded inlet tapping and [threaded] [caulk] outlet. Automatic trap primer shall be cast bronze with 15 mm 1/2 inch [threaded] [solder] connections.

2.4.24 Water Closet, Neuropsychiatric (NP) Patient (Item P9400)

ASME A112.19.2M, floor mounted with wax gasket, vitreous china, siphon jet, elongated bowl and 40 mm 1 1/2 inch back inlet spud, with concealed elongated open-front seat, and ANSI large diaphragm (not less than 66.70 mm 2.625 inches upper chamber inside diameter at the point where the diaphragm is sealed between the upper and lower chambers), nonhold-open flush valve of chrome plated copper alloy, including vacuum breaker and angle (control-stop) valve with back check, operated by a push button mounted through the wall. Seat shall be elongated, without cover, and white solid plastic with open front and check hinge.

2.4.25 Water Closet, Specimen (Item P9520)

ASME A112.19.2M, floor mounted with wax gasket, vitreous china, siphon jet, elongated bowl, and 40 mm 1 1/2 inch brass top spud, elongated bowl, and 40 mm 1 1/2 inch back inlet spud, with concealed elongated open-front seat, and ANSI large diaphragm (not less than 66.70 mm 2.625 inches upper chamber inside diameter at the point where the diaphragm is sealed between the upper and lower chambers), nonhold-open flush valve of chrome plated copper alloy, including vacuum breaker and angle (control-stop) valve with back check, with lever operator. Bowl shall be capable of receiving a full size bedpan. [Rim of bowl shall be 430 to 480 mm 17 to 19 inches above the floor for wheelchair patients.] Seat shall be elongated, white solid plastic, open front without cover.

2.4.26 Cleaner, Whirlpool (Item P9560)

Exposed, wall mounted with stationary hose rack, rubber hose, and vacuum breaker; 735 mm 29 inches high, 406 mm 16 inches wide. Provide brass hot and cold water supply valves with control stops.

PART 3 EXECUTION

3.1 INSTALLATION

NOTE: Mounting heights, clearances, access, operating devices, insulation, and accessories for hospital plumbing fixtures shall comply with Chapter 18, Provisions for the Physically Handicapped, in Department of Defense Construction Criteria Manual 4270.1-M.

Installation of hospital plumbing fixture systems shall be in accordance with the ICC IPC. When fixtures require both hot water and cold water supplies, provide the hot water supply to the left of the cold water supply. Off-the-floor supports shall conform to ASME A112.6.1M.

3.2 DISINFECTION

Disinfect the new water piping [and existing water piping affected by Contractor's operations] in accordance with AWWA C651. Fill the piping systems with solution containing minimum of 50 mg/kg parts per million (ppm) of available chlorine and allow solution to stand for a minimum of 24 hours. Flush the solution from the systems with clean water until maximum residual chlorine content is not greater than 0.2 mg/kg ppm.

3.3 FIELD TESTING

NOTE: With approval of the Engineering Field Division, Naval Facilities Engineering Command Mechanical Design Branch, use the current Plumbing Code which is recognized by the state in which the project is located.

Before final acceptance of the work, test each fixture as in service to demonstrate compliance with the contract requirements. Perform the following tests in addition to the tests specified in the ICC IPC. Correct all defects in the work provided by the Contractor, and repeat the tests until the work is in compliance with contract requirements. Furnish equipment, instruments, connecting devices, and personnel for the tests.

3.3.1 Water Piping

Test water piping as specified in Section 15400N PLUMBING SYSTEMS.

3.3.2 DWV Piping

Test DWV piping as specified in Section 15400N PLUMBING SYSTEMS.

3.3.3 Operational Tests

Upon completion and sterilization and prior to acceptance of the installation, the Contractor shall subject the plumbing system to operating tests to demonstrate satisfactory, functional, and operating efficiency. Such operating tests shall cover a period of not less than [_____] hours

for each system and shall include the following information in a report with conclusion as to the adequacy of the system:

- a. Time, date, and duration of test.
- b. Water pressures at remotest and highest fixtures.
- c. Operation of all fixtures and fixture trim.
- d. Operation of all valves, flush valves, and faucets.
- e. Operation of all floor and shower drains by flooding with water.
- f. Operation of plaster interceptor.
- g. Operation of vacuum breakers.
- h. Complete operation of automatic scrub station, including water temperature, water pressure, and electronic timer.

All indicating instruments shall be read at half-hour intervals unless otherwise directed by the Contracting Officer. [Four] [Six] copies of the test report shall be supplied to the Contracting Officer.

3.4 FIELD INSPECTION

Inspection shall continue during installation and testing. The right is reserved to inspect any equipment at the manufacturer's facility, during or after manufacture, and to require reasonable witness tests before shipment. A final inspection of the equipment shall be performed prior to installation to determine conformity to the type, class, grade, size, capacity, and other characteristics specified herein or indicated. All equipment rejected shall be corrected or replaced prior to installation.

3.5 SCHEDULE

Some metric measurements in this section are based on mathematical conversion of inch-pound measurement, and not on metric measurement commonly agreed to by the manufacturers or other parties. The inch-pound and metric measurements shown are as follows:

<u>Products</u>	<u>Inch-Pound Measurement</u>	<u>Metric Measurement</u>
a. Bath, Size	27 x 23 x 21 in.	685 x 585 x 535 mm
b. Hand Held Shower	60 in. flex. hose	1525 mm flex. hose
c. Bathtub	66 x 30 x 18 in.	1675 x 760 x 460 mm
d. Lavatory (Wall Mount)	20 x 18 in.	510 x 460 mm
e. Lavatory (Surgeon's)	28 x 20 x 3 5/8 in.	710 x 510 x 90 mm
f. Sink (SS Countertop)	25 x 22 x 7 1/2 in.	635 x 560 x 190 mm
g. Service Sink (Pedestal)	20 x 20 x 18 in.	510 x 510 x 460 mm
h. Service Sink (Wall Mount)	22 x 26 x 10 1/2 in.	560 x 660 x 270 mm
i. Sink (Surgeon's Scrub)	30 x 22 x 10 in.	760 x 560 x 250 mm
j. Laboratory (Wheelchair)	20 x 27 in.	510 x 685 mm

-- End of Section --