

# Summary of Modifications/Changes in this Update

This Summary of Changes is for information only.  
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U.S. Department of Veterans Affairs ♦ Office of Construction & Facilities Management

## **DATE OF THIS VERSION (new)**

February 1, 2024

## **TITLE OF DOCUMENT (new title if applicable):**

PG-18-10 Plumbing Design Manual

## **DATE OF VERSION BEING SUPERSEDED (old):**

January 1, 2023

## **DESCRIPTION OF DOCUMENT (previous title, number, other identifying data):**

PG-18-10 Plumbing Design Manual

## **SUMMARY OF CHANGES IN THIS VERSION:**

Updated Design Manual to reflect current industry standards and codes. This was a general update of the manual with the majority of the sections receiving updates. The summary of changes is general in nature and is focused on significant changes, minor edits (wording, formatting, etc.) have not been identified in this memo. The engineers and designers should review the entire manual to ensure they are familiar with the current VA design requirements.

1. Section 1 – General Requirements:
  - a. Added section 1.1.1 – Deviations and VA Authority to provide directions on the process and information required to request deviations.
  - b. Section 1.3 – Sustainable Design – Updated section to clarify requirements for third-party certification and combined commissioning requirements with the sustainable design section.
  - c. Section 1.4 – Metering – Updated metering requirements.
  - d. Section 1.5 – National Codes and Standards – Minor updates to wording to clarify VA engineers and employees have access to the CEOSH website and referenced codes and standards.

- e. Section 1.6 – Updated referenced title for “Guiding Principles for Sustainable Federal Buildings”
  - f. Section 1.7.5 – Design Manuals – Updated title for Site Design Manual and deleted references to Physical Security Design Manual: For Mission Critical Facilities and Physical Security Design Manual: For Life Safety Protected Facilities
  - g. Old Section 1.9.3 – Implementing Instructions: Federal Agency Implementation of Water Efficiency and Management Provisions – Deleted
  - h. Section 1.10 – Local Codes and Requirements – Updated to provide additional direction concerning use of local and state building codes.
  - i. Section 1.11.2 – Proprietary Items – Updated to provide additional direction concerning the use of proprietary items and manufacturer’s name.
2. Section 2 – Plumbing Design Criteria
- a. Section 2.3 – Piping – Added requirement that all plumbing piping above pharmacy compounding suites is restricted to piping that serve the pharmacy compounding suites.
  - b. Section 2.6 – Freeze Conditions – Added requirements for the design for freeze protection for piping located outside the building, in an attic space, in a crawl space, or in an outside wall. Freezing conditions are based on the VA HVAC weather conditions that are below 40 °F.
  - c. 2.8.2 – Basic Design Parameters – Added Gray Water Distribution
  - d. 2.9 – Interdisciplinary Coordination – Added Solar Hot Water Equipment, Piping (location, sizes, and materials), and site utilities.
3. Section 3 – Plumbing Fixtures, Faucets, Fittings and Equipment
- a. Section 3.1.1 (k) – Added requirement of all shower and tub-shower valves to the combination pressure balancing and thermostatic.
  - b. Section 3.1.2 (a) – Bariatric Plumbing Fixtures – Added requirements the fixtures comply with ASME/ANSI A112.19.2 and be rated for 1,000 lbs.
  - c. Old Section 3.1.2 (b) – Deleted, moved requirement to 3.1.2 (a)
  - d. Section 3.3 – Electric Water Coolers – Added requirement to include water bottle fillers on all water coolers.
4. Section 4 – Water Supply and Distribution
- a. Section 4.1 – General – Updated reference to VA Physical Security and Resiliency Design Manual (PSRDM)
  - b. Section 4.2 – Domestic Hot Water Systems – Added guidance to minimize oversized piping and long piping run.
  - c. Section 4.2.2 – Water heater Energy Source Selection – Added section to provide guidance on the selection of the energy source for domestic water hot water.
  - d. Section 4.2.3 – Water Heater for Patient Care and Research Buildings - Provided clarification for required water heater redundancy. Deleted discussion of water heater energy source (moved to new section 4.2.2).
  - e. Section 4.2.5 – Instantaneous Tankless Water Heaters (Point of Use) – Added requirement for Life Cycle Cost Analysis (LCCA) before use of an instantaneous heater will be considered.
  - f. Section 4.2.2 (a) – Dead Ends – Added requirement that dead ends, no greater than two piping diameters, be terminated with a valve (ball or butterfly) and be capped.

- g. Section 4.2.2 (b) – Fixture Run-out – Added clarification of the maximum run-out length. Added clarification aerators are prohibited on all lavatories and sink faucets.
        - h. Section 4.5.1 – Purpose – Added requirement for the designer to obtain the Water Management Plan (WMP) from the VA COR and the design comply with the WMP and ASHRAE 188.
        - i. Section 4.13 – Solar Domestic Water Heating – Added requirement for a LCCA on all new buildings and buildings undergoing major renovations.
- 5. Section 5 – Sanitary Drainage Systems
  - a. Minor edits throughout for clarifications.
- 6. Section 6 – Building Storm Drainage Systems
  - a. Section 6.2 – Roof Drain Leader Insulation – Clarified requirements for insulation and heat tracing on drain leaders.
  - b. Section 6.6 – Location of Drain Leaders – Added telecommunications rooms to the list of spaces above which drain leaders are prohibited.
- 7. Section 7 – Specialty Traps, Interceptors, and Separators
  - a. Minor edits throughout for clarifications.
- 8. Section 8 – Medical Gases and Vacuum
  - a. Section 8.2 – Medical Gas and Vacuum Systems –Section updated. Updates include pressure and flow required for medical gases, piping material, allowable diversity, allowable pressure drops, and allowable pipe sizing.
  - b. Section 8.4 – Oral Evacuation System – Removed requirement that all oral evacuation system be designed to NFPA 99 Category 3 requirements. Designer must coordinate level of sedation with the VA facility to determine the correct design category.
- 9. Section 9 – Fuel Gas Systems
  - a. Minor edits throughout for clarifications.
- 10. Section 10 – Specialty Systems
  - a. Section 10.5 – Pharmacy Plumbing Requirements – Removed foot or elbow operation of hand washing sinks.
  - b. Section 10.7.1 – Automatic Film Processors – Added recommendation these are not common for new construction.
  - c. Section 10.9.4 – Water Heater – Added requirement of for an LCCA to select water heater energy source.
- 11. Appendix D: Schematic Diagrams
  - a. 14.1.1 – Master Thermostatic Mixing Valve – Modified detail to show two water heaters, changed symbols to match VA Plumbing Legend, and added designer noted about the need for the master mixing valve.
  - b. 14.1.2 – Temporary Eradication System Connection – Modified details to change symbols to match VA Plumbing Legend, added shut off valve in spool section, and added note #4 to give direction of the operation of the shut off valve.
  - c. 14.1.3 – Cold Water / Hot Water Connection of Plumbing Fixture – Modified details to change symbols to match VA Plumbing Legend, modified piping routing to conform with fixture runout requirements, and deleted notes 2 and 3 from the detail.
  - d. 14.1.4 Acid Waste Neutralization System – Modified details to change symbols to match VA Plumbing Legend

- e. 14.1.5 – Hot Water / Hot Water Return Piping Routing in a Typical Ward – Modified details to change symbols to match VA Plumbing Legend and modified piping routing to conform with fixture runout requirements.
- f. 14.1.6 – Hot Water Circulation with Master Thermostatic Mixing Valve – Modified details to change symbols to match VA Plumbing Legend, modified the side of the check valve (pump discharge) the recirculation for the master mixing valve is located, added requirements for 1070 mixing valves on runout piping, and added isolation valve before water heater on hot water return/cold water entrance piping.
- g. 14.1.7 – Thermostatic Balancing Valve – Added schematic diagram for a thermostatic balancing valve group for hot water return.

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U.S. Department of Veterans Affairs ♦ Office of Construction & Facilities Management

## DATE OF THIS VERSION (new)

January 1, 2023

## TITLE OF DOCUMENT (new title if applicable):

PG-18-10 Plumbing Design Manual

## DATE OF VERSION BEING SUPERSEDED (old):

June 1, 2022

## DESCRIPTION OF DOCUMENT (previous title, number, other identifying data):

PG-18-10 Plumbing Design Manual

## SUMMARY OF CHANGES IN THIS VERSION:

1. Updated 3.1.2 (b) Bariatric Plumbing Fixtures:
  - a. Removed as shown: “The bariatric water closet shall comply with ~~ASME/ANSI A112.12.2M~~ and be rated for 454 kg [1,000 pounds] when tested in accordance with ~~ASME/ANSI A112.12.2M~~.”
  - b. Added as shown: “The bariatric water closet shall comply with ASME/ANSI A112.19.2 and be rated for 454 kg [1,000 pounds] when tested in accordance with ASME/ANSI A112.19.2.”

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**DATE OF THIS VERSION (new)**

June 1, 2022

**TITLE OF DOCUMENT (new title if applicable):**

Plumbing Design Manual

**DATE OF VERSION BEING SUPERSEDED (old):**

May 1, 2021

**DESCRIPTION OF DOCUMENT (previous title, number, other identifying data):**

Plumbing Design Manual

**SUMMARY OF CHANGES IN THIS VERSION:**

1. Expanded Section 10.6 pertaining to Sterile Processing Service water quality.
2. Reformatting page numbering and some section numbering, including Appendixes and Index.

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**DATE OF THIS VERSION (new)**

May 1, 2021

**TITLE OF DOCUMENT (new title if applicable):**

Plumbing Design Manual

**DATE OF VERSION BEING SUPERSEDED (old):**

May 1, 2018

**DESCRIPTION OF DOCUMENT (previous title, number, other identifying data):**

Plumbing Design Manual

**SUMMARY OF CHANGES IN THIS VERSION:**

1. 4.4.2 Requirements for Piping Systems – ADDED “(g)”, verbiage regarding prohibition of press-connect fittings and their use in an emergency.

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## **DATE OF THIS VERSION (new)**

May 1, 2018

## **TITLE OF DOCUMENT (new title if applicable):**

VA Plumbing Design Manual

## **DATE OF VERSION BEING SUPERSEDED (old):**

November 1, 2014

## **DESCRIPTION OF DOCUMENT (previous title, number, other identifying data):**

This is an update of the 2014 Plumbing Design Manual to correct many IP to SI errors and improvements especially in the Legionella section.

## **SUMMARY OF CHANGES IN THIS VERSION:**

1. Correction to many IP to SI conversions.
2. Updated Historic Preservation Section to include the National Environmental Policy Act (NEPA) and the National Historic Preservation Act and related standards.
3. 1.1 Purpose: Added that deviations from Section 4.5 shall be approved by the Facility Water Safety Committee.
4. 1.6 National Codes and Standards: Updated ASHRAE 90.1 from 2010 to 2013.
5. 2.2 Equipment Pads: Added additional verbiage regarding having access to equipment, et al.
6. 2.4 Pipe Support Design: Added seismic event to types of damage that can occur.
7. 2.8.2 Basic Design Parameters: Added Legionella eradication/mitigation system to systems that shall be shown when applicable.
8. 3.1.2(a) Bariatric Plumbing Fixtures: Added that floor mounted bariatric water closets are preferred, but that the COR should check with local union, EMS, and clinical staff prior to design to ensure proper fixtures are installed.



9. 4.1 General: Added that additional information regarding potable water storage requirements can be found in the VA Physical Security Design Manual.
10. 4.2.1 Water Heater Efficiency: Updated ASHRAE 90.1 from 2010 to 2013.
11. 4.2.8 Shut-Off and Balancing Valves: Added verbiage about cold water recirculation flow if necessary.
12. 4.5.2 Background (Legionella):
  - a. Added additional information regarding cold water distribution desired temperatures.
  - b. Added additional information regarding whether cooling of cold water distribution is necessary.
  - c. Added additional information regarding circulation of hot and cold water flow.
13. 4.5.3 Piping Design for Legionella Mitigation: Added additional information regarding cold water recirculation and if necessary.
14. 5.1.2 Floor Drains: Added floor drains to all Mechanical Rooms, unless noted otherwise in Contract Documents.
15. 8.2.3 MEDICAL GASES AND VACUUM Piping Systems: Changed design pressure for piping to 10 percent of system working pressure instead of 34kPa[5psig] loss.
16. 8.4.4 (g) Added additional information about "The Dental Rule" regarding Amalgam separators having to be installed in all vacuum lines in all dental offices.
17. FSS will coordinate with CSS and OCAMES regarding "Legionella bacteria growth temperature ranges" if CDC has changed theirs.
18. FSS will discuss/coordinate with CSS and OCAMES regarding trap guards efficacy.

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## DATE OF THIS VERSION (new)

November 1, 2014

## TITLE OF DOCUMENT (new title if applicable):

VA Plumbing Design Manual

## DATE OF VERSION BEING SUPERSEDED (old):

March 1, 2011

## DESCRIPTION OF DOCUMENT (previous title, number, other identifying data):

This new VA Plumbing Design Manual is a consolidation and update of the existing plumbing design manuals into a new and comprehensive VA Plumbing Design Manual.

## SUMMARY OF CHANGES IN THIS VERSION:

1. This new VA Plumbing Design Manual is a consolidation of the following previous VA Plumbing Design Manuals:
  - CLC and Domiciliary, March 2011
  - New Hospitals, Replacement Hospitals, Ambulatory Care, Clinical Additions, Energy Centers, Outpatient Clinics, Animal Research Facilities and Laboratory Buildings, April 2010
  - Laundry Projects, June 2006
  - Parking Structure Projects, June 2006
  - Regional Office and Warehouses, June 2006
2. In addition to updating the content, the organization of the material is revised and improves the usefulness of the manual.
3. The Chapter 4 content regarding *Legionella* mitigation was coordinated with the VA *Legionella* Expert Work Group and the

new VHA Directive 1061 - PREVENTION OF HEALTHCARE-ASSOCIATED *LEGIONELLA* DISEASE AND SCALD INJURY FROM POTABLE WATER DISTRIBUTION SYSTEMS dated August 13, 2014.

4. Compliance date. All projects that are in design at the effective date of the manual but have not concluded the 35% design milestone (defined as Schematic Design or SD2) must incorporate all the requirements of this manual. Implementations for projects that have completed the 35% design milestone are at the discretion of the Project Delivery Team considering cost and schedule implications. Regardless of design progress milestone, all design features included in VHA Directive 1061 shall be included in all designs as of August 13, 2014. These design features are incorporated into the new Plumbing Design Manual as follows:

- a) Hot water distribution systems - Chapter 4.2.2
- b) Water temperature control at the outlet - Chapter 4.2.6
- c) Water quality and temperature monitoring - Chapter 4.5.1
- d) Cold water distribution systems - Chapter 4.5.3
- e) Supplementary water treatment measures - Chapter 4.5.4
- f) Emergency remediation procedures - Chapter 4.5.5

VHA Directive 1061 establishes policy for the prevention and control of Legionella disease in VHA-owned buildings in which patients, residents, or visitors stay overnight.