

**WASHINGTON STATE
BUILDING CODE**

CHAPTERS 51-56 WAC

Adoption and amendment of the
UNIFORM PLUMBING CODE

2018 Edition



Washington State Building Code Council

Effective July 1, 2020

Complete copies of the 2018 Uniform Plumbing Code as published by the
International Association of Plumbing and Mechanical Officials
may be obtained from:

International Association of Plumbing and Mechanical Officials
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<http://publications.iapmo.org/>

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<http://codes.iapmo.org/home.aspx?code=UPC>

**Uniform Plumbing Code
Chapters 51-56 WAC
Effective July 1, 2020
Printed March 2020**

Preface

Authority: The Uniform Plumbing Code (Chapter 51-56 WAC) is adopted by the Washington State Building Code Council pursuant to Chapters 19.27 and 70.92 RCW. This code was first adopted by reference by the Washington State Legislature in 1974. In 1985, the Legislature delegated the responsibility of adoption and amendment of these codes to the State Building Code Council.

Supersession of Previous Codes: Chapter 51-56 WAC supersedes Chapters 51-46 and 51-47 WAC.

Code Precedence: The State Building Code Act, Chapter 19.27 RCW, establishes the following order of precedence among the documents adopted as parts of the State Building Code:

- International Building Code, Standards and amendments – WAC 51-50;
- International Residential Code, Standards and amendments – WAC 51-51;
- International Mechanical Code, Standards and amendments – WAC 51-52;
- International Fire Code, Standards and amendments – WAC 51-54A;
- Uniform Plumbing Code, Standards and amendments – WAC 51-56.

Where there is a conflict between codes, an earlier named code takes precedence over a later named code. In the case of conflict between the duct insulation requirements of the International Mechanical Code and the duct insulation requirements of the Energy Code, the Energy Code, or where applicable, a local jurisdiction's energy code, shall govern.

Where, in any specific case, different sections of this Code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is conflict between a general requirement and a specific requirement, the specific requirement shall be applicable.

Organization and Numbering: These rules are written to allow compatible use with the Uniform Plumbing Code. All sections which are amended, deleted, or added are referenced.

Enforcement: The State Building Code Act requires that each local jurisdiction enforce the State Building Code within its jurisdiction. Any jurisdiction can contract with another jurisdiction or an inspection agency to provide the mandated enforcement activities.

Amendments to the State Building Code:

The State Building Code Council has adopted review procedures and approval criteria for local amendments. These procedures and criteria are found in Chapter 51-04 WAC. The Council has exempted from its review any amendments to the administrative provisions of the various codes.

Forms for proposing statewide amendments to the State Building Code are available from the State Building Code Council staff.

- A. **Amendments of Statewide Application:** On a yearly basis the State Building Code Council will consider proposals to amend the State Building Code. The Council is not scheduled to enter formal rulemaking until 2021 as part of its consideration of adoption of the 2021 series of codes.

Proposals to amend the State Building Code shall be made on forms provided by the Building Code Council.

- B. **Local Amendments:** Any jurisdiction may amend the State Building Code provided the amendments do not reduce the minimum performance standards of the codes. There are two areas where local amendments are limited or prohibited:

Prohibited Amendments: Residential provisions of the State Energy Code (WAC 51-11R and WAC 51-11C); any provision of the International Building Code or International Residential Code affecting accessibility; and standards specifically adopted in Chapters 19.27 and 19.27A WAC cannot be amended by any local jurisdiction.

Residential Amendments: Amendments by local jurisdictions which affect the construction of single family and multi-family residential buildings must be reviewed and approved by the State Building Code Council before such amendments can be enforced. The State Building Code Act provides the following definition:

Multi-family residential building: means common wall residential buildings that consist of four or fewer units, that do not exceed two stories in height, that are less than 5,000 square feet in area, and that have a one-hour fire-resistive occupancy separation between units.

Application forms for Council review of local amendments are available from the State Building Code Council Staff.

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Printing Format: This version of the rules is published as a series of insert or replacement pages and is intended to be printed as a two-sided document. Each page provides instructions for installing them in the model code book. Amendments to the model code, are indicated by a double line in the margin next to the revised portions. Any portion of the model code that has been deleted in the amendment will be marked with (<) symbol

Effective Date: These rules were adopted by the State Building Code Council on November 8, 2019. The rules are effective throughout the state on July 1, 2020. This code is based on WAC 51-56 as published in WSR 16-02-044. It is subject to review by the State Legislature during the 2020 session.)

Building Permit Fees: The activities of the State Building Code Council are supported by permit fees collected by each city and county. Section 19.27.085 of the State Building Code Act requires that a fee of \$6.50 be imposed on each residential permit and \$25.00 on each commercial building permit issued by each city and county. In addition, a fee of \$2.00 per unit shall be imposed for each dwelling unit after the first unit, on each building containing more than one residential unit. For the purpose of this fee, WAC 365-110-035 defines building permits as any permit to construct, enlarge, alter, repair, move, improve, remove, convert or demolish any building or structure regulated by the Building Code. Exempt from the fee are plumbing, electrical, mechanical permits, permits issued to install a mobile/manufactured home, commercial coach or factory built structure, or permits issued pursuant to the International Fire Code.

Each city and county shall remit moneys collected to the state treasury quarterly. No remittance is required until a minimum of \$50.00 has accumulated.

These permit fees are the amounts current in January 2020. Such fees may be changed by the State Legislature.

Opinions: RCW 19.27.031 grants the council authority to render opinions relating to the building code at the request of a local code official. For the purposes of this section, the term "code official" means the local or state official, or their designee, responsible for implementation and enforcement of the specific code provision on which the opinion is requested.

At the request of a code official, the council will issue opinions relating to the codes adopted under chapters 19.27, 19.27A, and 70.92 RCW, and council amendments to the model codes. At the request of a local code official, the council may issue opinions on the applicability of WAC 51-04-030 to a local government ordinance regulating construction. Council related opinions may be developed and approved by a standing committee of the council. Opinions approved by a standing committee may be reviewed and modified by the council.

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**CHAPTER 51-56 WAC
STATE BUILDING CODE ADOPTION AND AMENDMENT
OF THE 2018 EDITION OF THE UNIFORM PLUMBING CODE**

||

WAC 51-56-001 AUTHORITY.

These rules are adopted under the authority of Chapter 19.27 RCW.

WAC 51-56-002 PURPOSE.

The purpose of these rules is to implement the provisions of Chapter 19.27 RCW, which provides that the State Building Code Council shall maintain the State Building Code in a status which is consistent with the purpose as set forth in RCW 19.27.020. In maintaining the codes, the council shall regularly review updated versions of the codes adopted under the act, and other pertinent information, and shall amend the codes as deemed appropriate by the Council.

WAC 51-56-003 UNIFORM PLUMBING CODE.

The 2018 edition of the Uniform Plumbing Code, including Appendices A, B, and I, published by the International Association of Plumbing and Mechanical Officials, is hereby adopted by reference with the following additions, deletions and exceptions: PROVIDED that Chapters 12 and 14 of this code are not adopted. PROVIDED FURTHER, that those requirements of the Uniform Plumbing Code relating to venting and combustion air of fuel fired appliances as found in Chapter 5 and those portions of the Code addressing building sewers are not adopted.

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WAC 51-56-004 CONFLICTS BETWEEN APPENDIX I AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

Where a conflict exists between the provisions of Appendix I and the manufacturer's installation instructions, the conditions of the listing and the manufacturer's installation instructions shall apply.

WAC 51-56-007 EXCEPTIONS.

The exceptions and amendments to the model codes contained in the provisions of Chapter 19.27 RCW shall apply in cases of conflict with any of the provisions of these rules.

Codes referenced which are not adopted through RCW 19.27.031 or Chapter 19.27A RCW shall not apply unless specifically adopted by the authority having jurisdiction.

WAC 51-56-008 IMPLEMENTATION.

The Uniform Plumbing Code adopted by Chapter 51-56 WAC shall become effective in all counties and cities of this state on July 1, 2020.

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(Insert as Page A)

102.1 Conflict Between Codes. Delete paragraph.

||

103.3.1 Certification. State rules and regulations concerning certification shall apply.

||

(Insert Facing Page 2)

205.0

Certified Backflow Assembly Tester. A person certified by the Washington state department of health under chapter 246-292 WAC to inspect (for correct installation and approval status) and test (for proper operation), maintain and repair (in compliance with chapter [18.106](#) RCW) backflow prevention assemblies, devices and air gaps.

(Insert Facing Page 10)

210.0

Hot Water. Water at a temperature exceeding or equal to 100°F.



(Insert Facing Page 13)

211.0

Insanitary. A condition that is contrary to sanitary principles or is injurious to health.

Conditions to which "insanitary" shall apply include the following:

- (1) A trap that does not maintain a proper trap seal.
- (2) An opening in a drainage system, except where lawful, that is not provided with an approved liquid-sealed trap.
- (3) A plumbing fixture or other waste discharging receptor or device that is not supplied with water sufficient to flush and maintain the fixture or receptor in a clean condition, except as otherwise provided in this code.
- (4) A defective fixture, trap, pipe, or fitting.
- (5) A trap, except where in this code exempted, directly connected to a drainage system, the seal of which is not protected against siphonage and backpressure by a vent pipe.
- (6) A connection, cross-connection, construction, or condition, temporary or permanent, that would permit or make possible by any means whatsoever for an unapproved foreign matter to enter a water distribution system used for domestic purposes.
- (7) The foregoing enumeration of conditions to which the term "insanitary" shall apply, shall not preclude the application of that term to conditions that are, in fact, insanitary.

(Insert Facing Page 14)

218.0

Plumbing System. Includes all potable water, building supply and distribution pipes, all reclaimed or other alternate source water systems, all rainwater systems, all plumbing fixtures and traps, all drainage and vent pipe(s), and all building drains including their respective joints and connection, devices, receptors, and appurtenances within the property lines of the premises and shall include potable water piping, potable water treating or using equipment, medical gas and medical vacuum systems, and water heaters: Provided, that no certification shall be required for the installation of a plumbing system within the property lines and outside a building.

(Insert Facing Page 16)

221.0

Spray Sprinkler Body. The exterior case or shell of a sprinkler incorporating a means of connection to the piping system designed to convey water to a nozzle or orifice.



(Insert Facing Page 18)

225.0

Water Heater (consumer electric storage). A consumer product that uses electricity as the energy source to heat domestic potable water, has a nameplate input rating of twelve kilowatts or less, contains nominally forty gallons but no more than one hundred twenty gallons of rated hot water storage volume, and supplies a maximum hot water delivery temperature less than one hundred eighty degrees Fahrenheit.

Water Heater (mini-tank electric). A small electric water heater that has a measured storage volume of more than one gallon and a rated storage volume of less than twenty gallons.

Water/Wastewater Utility. A public or private entity, including a water purveyor as defined in chapter 246-290 WAC, which may treat, deliver, or do both functions to reclaimed (recycled) water, potable water, or both to wholesale or retail customers.

(Insert Facing Page 20)

301.2.2 Standards. Standards listed or referred to in this chapter or other chapters cover materials which will conform to the requirements of this code, when used in accordance with the limitations imposed in this or other chapters thereof and their listing. Where a standard covers materials of various grades, weights, quality, or configurations, the portion of the listed standard that is applicable shall be used. Design and materials for special conditions or materials not provided for herein shall be permitted to be used by special permission of the authority having jurisdiction after the authority having jurisdiction has been satisfied as to their adequacy in accordance with Section 301.2.

301.3 Alternative Materials and Methods of Construction Equivalency. Nothing in this code is intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety over those prescribed by this code. Technical documentation shall be submitted to the authority having jurisdiction to demonstrate equivalency. The authority having jurisdiction shall have the authority to approve or disapprove the system, method, or device for the intended purpose. Where the alternate material, design or method of construction is not approved, the code official shall respond in writing, stating the reasons why the alternative was not approved.

However, the exercise of this discretionary approval by the authority having jurisdiction shall have no effect beyond the jurisdictional boundaries of said authority having jurisdiction. An alternate material or method of construction so approved shall not be considered as in accordance with the requirements, intent or both of this code for a purpose other than that granted by the authority having jurisdiction where the submitted data does not prove equivalency.

310.4 Use of Vent and Waste Pipes. Except as hereinafter provided in Sections 908.0 through 911.0 and Appendix C, no vent pipe shall be used as a soil or waste pipe, nor shall any soil or waste pipe be used as a vent. ||

312.6 Freezing Protection. No water, soil, or waste pipe shall be installed or permitted outside of a building, in attics or crawl spaces, or in an exterior wall unless, where necessary, adequate provision is made to protect such pipe from freezing. All hot and cold water pipes installed outside the conditioned space shall be insulated to a minimum R-3.

312.7 Fire-Resistant Construction. All pipe penetrating floor/ceiling assemblies and fire-resistance rated walls or partitions shall be protected in accordance with the requirements of the building code.

(Insert Facing Page 24)

402.5 Setting. Fixtures shall be set level and in proper alignment with reference to adjacent walls. No water closet or bidet shall be set closer than fifteen (15) inches (381 mm) from its center to any side wall or obstruction nor closer than thirty (30) inches (762 mm) center to center to any similar fixture. The clear space in front of any water closet or bidet shall be not less than twenty-four (24) inches (610 mm). No urinal shall be set closer than twelve (12) inches (305 mm) from its center to any side wall or partition nor closer than twenty-four (24) inches (610 mm) center to center.

Exceptions:

1. The clear space in front of a water closet, lavatory or bidet in dwelling units and sleeping units shall be not less than 21 inches (533 mm).
2. The installation of paper dispensers or accessibility grab bars shall not be considered obstructions.

405.4 Application. No individual, public or private corporation, firm, political subdivision, government agency, or other legal entity, may, for purposes of use in the state of Washington, distribute, sell, offer for sale, import, install, or approve for installation any plumbing fixtures or fittings unless the fixtures or fittings meet the standards as provided for in this chapter.

407.2 Water Consumption. The maximum water use allowed in gallons per minute (gpm) or liters per minute (lpm) for any of the following faucets and replacement aerators is the following:

Lavatory faucets2 gpm/8.3 lpm
Kitchen faucets	2.2 gpm/8.3 lpm
Replacement aerators	2.2 gpm/8.3 lpm
Public lavatory faucets other than metering	0.5 gpm/1.9 lpm

(Insert Facing Page 28)

407.4 Metering Valves. Lavatory faucets located in restrooms intended for use by the general public shall be equipped with a metering valve designed to close by spring or water pressure when left unattended (self-closing).

Exceptions:

1. Where designed and installed for use by persons with a disability.
2. Where installed in day care centers, for use primarily by children under 6 years of age.

408.2 Water Consumption. Showerheads shall have a maximum flow rate of not more than 2.5 gpm at 80 psi (9.5 L/m at 552 kPa), in accordance with ASME A112.18.1/CSA B125.1.

Exception: Emergency use showers shall be exempt from the maximum water usage rates.

408.4 Waste Outlet. Showers shall have a waste outlet and fixture tailpiece not less than two (2) inches (50 mm) in diameter. Fixture tailpieces shall be constructed from the materials specified in Section 701.1 for drainage piping. Strainers serving shower drains shall have a waterway at least equivalent to the area of the tailpiece.

Exception: In a residential dwelling unit where a 2 inch waste is not readily available and approval of the AHJ has been granted, the waste outlet, fixture tailpiece, trap and trap arm may be 1-1/2 inch when an existing tub is being replaced by a shower sized per Section 408.6(2). This exception only applies where one shower head rated at 2.5 gpm is installed.

408.6 Shower Compartments. Shower compartments, regardless of shape, shall have a minimum finished interior of nine hundred (900) square inches (0.58 m²) and shall also be capable of encompassing a thirty (30) inch (762 mm) circle. The minimum required area and dimensions shall be measured at a height equal to the top of the threshold and at a point tangent to its centerline. The area and dimensions shall be maintained to a point of not less than seventy (70) inches (1,778 mm) above the shower drain outlet with no protrusions other than the fixture valve or valves, shower head, soap dishes, shelves, and safety grab bars or rails. Fold-down seats in accessible shower stalls shall be permitted to protrude into the thirty (30) inch (762 mm) circle.

Exceptions:

1. Showers that are designed to comply with ICC/ANSI A117.1.
2. The minimum required area and dimension shall not apply for a shower receptor having overall dimensions of not less than thirty (30) inches (762 mm) in width and sixty (60) inches (1,524 mm) in length.

411.2 Water Consumption. Water closets shall have a maximum consumption not to exceed 1.6 gallons (6.0 L) of water per flush in accordance with ASME A112.19.2/CSA B45.1. No water closet that operates on a continuous flow or continuous flush basis shall be permitted.

Exceptions:

1. Water closets located in day care centers, intended for use by young children may have a maximum water use of 3.5 gallons per flush or 13.25 liters per flush.
2. Water closets with bed pan washers may have a maximum water use of 3.5 gallons per flush or 13.25 liters per flush.
3. Blow out bowls, as defined in ANSI/ASME A112.19.2M, Section 5.1.2.3 may have a maximum water use of 3.5 gallons per flush or 13.25 liters per flush.

412.1 Application. Urinals shall comply with ASME A112.19.2/CSA B45.1, ASME A112.19.19, or CSA B45.5/IAPMO Z124. Urinals shall have an average water consumption not to exceed 1 gallon (3.8 L) of water per flush. No urinal that operates on a continuous flow or continuous flush basis shall be permitted.

414.3 Drainage Connection. Domestic dishwashing machines shall discharge indirectly through an air gap fitting in accordance with Section 807.3 into a waste receptor, a wye branch fitting on the tailpiece of a kitchen sink, or dishwasher connection of a food waste disposer. Commercial dishwashing machines shall discharge indirectly through an air gap.

415.2 Drinking Fountain Alternatives. This section is not adopted. See Building Code chapter 29.

(Insert Facing Page 32)

418.3 Location of Floor Drains. Floor drains shall be installed in the following areas:

1. Toilet rooms containing two (2) or more water closets or a combination of one (1) water closet and one (1) urinal, except in a dwelling unit. The floor shall slope toward the floor drains.
2. Laundry rooms in commercial buildings and common laundry facilities in multifamily dwelling buildings.

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420.0 Sinks

420.1 Application. Sinks shall comply with ASME A112.19.1/CSA B45.2, ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4, or CSA B45.5/IAPMO Z124. Moveable sink systems shall comply with ASME A112.19.12.

420.2 Water Consumption. Sink faucets shall have a maximum flow rate of not more than 2.2 gpm at 60 psi (8.3 L/m at 414 kPa) in accordance with ASME A112.18.1/CSA B125.1.

Exception: Clinical sinks, laundry trays, service sinks.

422.0 Minimum Number of Required Fixtures. For minimum number of plumbing fixtures required, see Building Code Chapter 29 and Table 2902.1.

Sections 422.1 through 422.5 and Table 422.1 are not adopted.

501.1 Applicability. The regulations of this chapter shall govern the construction, location, and installation of fuel burning and other types of water heaters heating potable water. The minimum capacity for water heaters shall be in accordance with the first hour rating listed in Table 501.1(2). See the Mechanical Code for combustion air and installation of all vents and their connectors. No water heater shall be hereinafter installed that does not comply with the manufacturer's installation instructions and the type and model of each size thereof approved by the authority having jurisdiction. A list of accepted water heater appliance standards is referenced in Table 501(2). Listed appliances shall be installed in accordance with the manufacturer's installation instructions. Unlisted water heaters shall be permitted in accordance with Section 504.3.2.

TABLE 501.1(2)^{1,3}

Number of Bathrooms	1 to 1.5			2 to 2.5				3 to 3.5			
Number of Bedrooms	1	2	3	2	3	4	5	3	4	5	6
First Hour Rating², Gallons	38	49	49	49	62	62	74	62	74	74	74

Notes:

1. The first hour rating is found on the "Energy Guide" label.
2. Nonstorage and solar water heaters shall be sized to meet the appropriate first hour rating as shown in the table, and shall be capable of delivering hot water at the maximum system demand flow, as calculated in Section 610.0 or Appendix A, as applicable.
3. For replacement water heaters, see Section 102.4.

504.1 Location. Water heater installation in bedrooms and bathrooms shall comply with one of the following:

- (1) Fuel-burning water heaters may be installed in a closet located in the bedroom or bathroom provided the closet is equipped with a listed, gasketed door assembly and a listed self-closing device. The self-closing door assembly shall meet the requirements of Section 505.1.1. The door assembly shall be installed with a threshold and bottom door seal and shall meet the requirements of Section 505.1.2. All combustion air for such installations shall be obtained from the outdoors in accordance with the International Mechanical Code. The closet shall be for the exclusive use of the water heater.
- (2) Water heater shall be of the direct vent type.

505.2 Safety Devices. All storage-type water heaters deriving heat from fuels or types of energy other than gas, shall be provided with, in addition to the primary temperature controls, an over-temperature safety protection device constructed, listed, and installed in accordance with nationally recognized applicable standards for such devices and a combination temperature and pressure relief valve. ||

506.0 Combustion Air. For issues relating to combustion air, see the Mechanical Code. ||

Sections 506.1 through 506.9 are not adopted. ||

Sections 507.6 through 507.9 are not adopted.

(Insert Facing Page 42)

507.2 Seismic Provisions. Water heaters shall be anchored or strapped to resist horizontal displacement due to earthquake motion. Strappings shall be at points within the upper one-third and lower one-third of its vertical dimensions. At the lower point, a distance of not less than four (4) inches (102 mm) shall be maintained from the controls to the strapping.

507.13 Installation in Garages. Appliances in garages and in adjacent spaces that open to the garage and are not part of the living space of a dwelling unit shall be installed so that burners, burner-ignition devices and ignition sources are located not less than eighteen (18) inches above the floor unless listed as flammable vapor ignition resistant.

(Insert Facing Page 46)

507.16 Venting of Flue Gases - Delete entire section.

Sections 507.18 through 507.22 are not adopted.

509.0 Venting of Equipment. Delete entire section.

510.0 Sizing of Category I Venting Systems. Delete entire section.

(Insert Facing Page 62)

601.1 Applicability. This chapter shall govern the materials, design and installation of *water supply systems*, including backflow prevention devices, assemblies and methods used for backflow prevention.



603.1 General. Cross-connection control shall be provided in accordance with the provisions of this chapter. Devices or assemblies for protection of the public water system must be models approved by the department of health under WAC 246-290-490. The authority having jurisdiction shall coordinate with the local water purveyor where applicable in all matters concerning cross-connection control within the property lines of the premises.

No person shall install any water operated equipment or mechanism, or use any water treating chemical or substance, if it is found that such equipment, mechanism, chemical or substance may cause pollution or contamination of the domestic water supply. Such equipment or mechanism may be permitted only when equipped with an approved backflow prevention device or assembly.

603.2 Approval of Devices or Assemblies. Before any device or assembly is installed for the prevention of backflow, it shall have first been approved by the authority having jurisdiction. Devices or assemblies shall be tested for conformity with recognized standards or other standards acceptable to the authority having jurisdiction. Backflow prevention devices and assemblies shall comply with Table 603.2, except for specific applications and provisions as stated in Section 603.5.1 through 603.5.21.

All devices or assemblies installed in a potable water supply system for protection against backflow shall be maintained in good working condition by the person or persons having control of such devices or assemblies. Such devices or assemblies shall be tested in accordance with Section 603.4.2 and WAC 246-290-490. If found to be defective or inoperative, the device or assembly shall be replaced or repaired. No device or assembly shall be removed from use or relocated or other device or assembly substituted, without the approval of the authority having jurisdiction.

Testing shall be performed by a Washington state department of health certified backflow assembly tester.

**TABLE 603.2
BACKFLOW PREVENTION DEVICES, ASSEMBLIES AND METHODS**

The following line is deleted from the table:

Device, Assembly or Method ¹	Applicable Standards	Pollution (Low Hazard)		Contamination (High Hazard)		Installation ^{2,3}
		Back Siphonage	Back Pressure	Back Siphonage	Back Pressure	
Backflow preventer for carbonated beverage dispensers (two independent check valves with a vent to the atmosphere.)	ASSE 1022	X				Installation includes carbonated beverage machines or dispensers. These devices operate under intermittent or continuous pressure conditions.

603.4.2 Testing. For devices and assemblies other than those regulated by the Washington department of health in conjunction with the local water purveyor for the protection of public water systems, the authority having jurisdiction shall ensure that the premise owner or responsible person shall have the backflow prevention assembly tested by a Washington state department of health certified backflow assembly tester:

- (1) At the time of installation, repair or relocation; and
- (2) At least on an annual schedule thereafter, unless more frequent testing is required by the authority having jurisdiction.

603.4.9 Prohibited Location. Backflow prevention devices with atmospheric vents or ports shall not be installed in pits, underground or in submerged locations. Backflow preventers shall not be located in any area containing fumes or aerosols that are toxic, poisonous, infectious, or corrosive.

603.5.6 Protection from Lawn Sprinklers and Irrigation Systems. Potable water supplies to systems having no pumps or connections for pumping equipment, and no chemical injection or provisions for chemical injection, shall be protected from backflow by one of the following:

- (1) Atmospheric vacuum breaker (AVB).
- (2) Pressure vacuum breaker backflow prevention assembly (PVB).
- (3) Spill-resistant pressure vacuum breaker (SVB).
- (4) Reduced pressure principle backflow prevention assembly (RP).
- (5) A double check valve backflow prevention assembly (DC) may be allowed when approved by the water purveyor and the authority having jurisdiction.

603.5.10 Steam or Hot Water Boilers. Potable water connections to steam or hot water boilers shall be protected by an air gap or a reduced pressure principle backflow preventer.

(Insert Facing Page 98)

603.5.12 Beverage Dispensers. Potable water supply to carbonators shall be protected by a listed reduced pressure principle backflow preventer as approved by the authority having jurisdiction for the specific use. The backflow preventer shall comply with Section 603.4.3. The piping downstream of the backflow preventer shall not be of copper, copper alloy, or other material that is affected by carbon dioxide.

603.5.14 Protection from Fire Systems. Except as provided under Sections 603.5.14.1 and 603.5.14.2, potable water supplies to fire protection systems that are normally under pressure, including but not limited to standpipes and automatic sprinkler systems, except in one or two family or townhouse residential flow-through or combination sprinkler systems piped in materials approved for potable water distribution systems, shall be protected from back-pressure and back-siphonage by one of the following testable assemblies:

- (1) Double check valve backflow prevention assembly (DC).
- (2) Double check detector fire protection backflow prevention assembly.
- (3) Reduced pressure principle backflow prevention assembly (RP).
- (4) Reduced pressure detector fire protection backflow prevention assembly.

Potable water supplies to fire protection systems that are not normally under pressure shall be protected from backflow and shall meet the requirements of the appropriate standard(s) referenced in Table 1701.1.

604.14 Plastic Pipe Termination. Plastic water service piping may terminate within a building, provided the connection to the potable water distribution system shall be made as near as is practical to the point of entry and shall be accessible. Barbed insert fittings with hose clamps are prohibited as a transition fitting within the building.

(Insert Facing Page 101)

606.5 Control Valve. A control valve shall be installed immediately ahead of each water-supplied appliance and immediately ahead of each slip joint or appliance supply.

Parallel water distribution systems shall provide a control valve either immediately ahead of each fixture being supplied or installed at the manifold, and shall be identified with the fixture being supplied. Where parallel water distribution system manifolds are located in attics, crawl spaces, or other locations not accessible, a separate shutoff valve shall be required immediately ahead of each individual fixture or appliance served.

608.3 Expansion Tanks, and Combination Temperature and Pressure-Relief Valves. A water system provided with a check valve, backflow preventer, or other normally closed device that prevents dissipation of building pressure back into the water main, independent of the type of water used, shall be provided with an approved, listed, and adequately sized expansion tank or other approved device having a similar function to control thermal expansion. Such expansion tank or other approved device shall be installed on the building side of the check valve, backflow preventer, or other device and shall be sized and installed in accordance with the manufacturer's installation instructions.

Exception: Instantaneous hot water systems installed in accordance with the manufacturer's installation instructions.

(Insert Facing Page 106)

608.5 Discharge Piping. The discharge piping serving a temperature relief valve, pressure relief valve or combination of both shall have no valves, obstructions or means of isolation and be provided with the following:

- (1) Equal to the size of the valve outlet and shall discharge full size to the flood level of the area receiving the discharge and pointing down.
- (2) Materials shall be rated at not less than the operating temperature of the system and approved for such use or shall comply with ASME A112.4.1.
- (3) Discharge pipe shall discharge independently by gravity through an air gap into the drainage system or outside of the building with the end of the pipe not exceeding 2 feet (610 mm) and not less than 6 inches (152 mm) above the ground pointing downwards.
- (4) Discharge in such a manner that does not cause personal injury or structural damage.
- (5) No part of such discharge pipe shall be trapped or subject to freezing.
- (6) The terminal end of the pipe shall not be threaded.
- (7) Discharge from a relief valve into a water heater pan shall be prohibited.

Exception: Where no drainage was provided, replacement water heating equipment shall only be required to provide a drain pointing downward from the relief valve to extend between two (2) feet (610 mm) and six (6) inches (152 mm) from the floor. No additional floor drain need be provided.

609.9 Disinfection of Potable Water System. New or repaired *potable water* systems *shall* be disinfected prior to use where required by the *authority having jurisdiction*. The method to be followed *shall* be that prescribed by the health authority or, in case no method is prescribed by it, the following:

- (1) The *pipe* system *shall* be flushed with clean, *potable water* until *potable water* appears at the points of outlet.
- (2) The system or parts thereof *shall* be filled with a water-chlorine solution containing not less than 50 parts per million of chlorine, and the system or part thereof *shall* be valved-off and allowed to stand for twenty-four hours; or, the system or part thereof *shall* be filled with a water-chlorine solution containing not less than 200 parts per million of chlorine and allowed to stand for three hours.
- (3) Following the allowed standing time, the system *shall* be flushed with clean, *potable water* until the chlorine residual in the water coming from the system does not exceed the chlorine residual in the flushing water.
- (4) The procedure *shall* be repeated when a standard bacteriological test for drinking water, performed by a laboratory certified for drinking water in Washington state, shows unsatisfactory results indicating that *contamination* persists in the system.

609.11 Insulation of Potable Water Piping. Domestic water piping within commercial buildings shall be insulated in accordance with Section C403.2.8 and Table C403.2.8 or Section C404.6 of the Washington State Energy Code, as applicable.

(Insert Facing Page 108)

610.4 Sizing Water Supply and Distribution Systems. Systems within the range of Table 610.4 may be sized from that table or by the method set forth in Section 610.5. <

Listed parallel water distribution systems shall be installed in accordance with their listing.

611.1 Application. Drinking water treatment units shall comply with NSF 42 or NSF 53. Water softeners shall comply with NSF 44. Ultraviolet water treatment systems shall comply with NSF 55. Reverse osmosis drinking water treatment systems shall comply with NSF 58. Drinking water distillation systems shall comply with NSF 62.

The owner of a building that serves potable water to twenty-five or more people at least sixty or more days per year and that installs drinking water treatment units including, but not limited to, the treatment units in Section 611.1, may be regulated (as a Group A public water system) by the Washington state department of health under chapter 246-290 WAC. See Washington state department of health publication 331-488 for guidance.

612.1 General. Where residential fire sprinkler systems are installed, they shall be installed in accordance with the International Building Code or International Residential Code.
Sections 612.2 through 612.7.2 are not adopted.

701.2 Drainage Piping. Materials for drainage piping shall be in accordance with one of the referenced standards in Table 701.1 except that:

- (1) No galvanized wrought-iron or galvanized steel pipe shall be used underground and shall be kept not less than 6 inches (152 mm) above ground.
- (2) ABS and PVC DWV piping installations shall be installed in accordance with applicable standards in Table 1701.1. Except for individual single family dwelling units, materials exposed within ducts or plenums shall have a maximum flame-spread index of 25 and a maximum smoke developed index of 50, when tested in accordance with ASTM E-84 and UL 723. <
- (3) No vitrified clay pipe or fittings shall be used above ground or where pressurized by a pump or ejector. They shall be kept not less than 12 inches (305 mm) below ground.
- (4) Copper tube for drainage and vent piping shall have a weight of not less than that of copper drainage tube type DWV.
- (5) Stainless steel 304 pipe and fittings shall not be installed underground and shall be kept not less than 6 inches (152 mm) above ground.
- (6) Cast-iron soil pipe and fittings shall be listed and tested in accordance with standards referenced in Table 1701.1. Such pipe and fittings shall be marked with country of origin and identification of the original manufacturer in addition to markings required by referenced standards.

704.3 Commercial Sinks. Except where specifically required to be connected indirectly to the drainage system, or when first approved by the authority having jurisdiction, all plumbing fixtures, drains, appurtenances, and appliances shall be directly connected to the drainage system of the building or premises.

(Insert Facing Page 128)

**TABLE 703.2
MAXIMUM UNIT LOADING AND MAXIMUM LENGTH OF DRAINAGE AND VENT PIPING**

(Table unchanged)

Notes:

1. Excluding trap arm.
2. Except sinks, urinals, and dishwashers - Exceeding 1 fixture unit.
3. Except six-unit traps or water closets.
4. Only four water closets or six-unit traps allowed on a vertical pipe or stack; and not to exceed three water closets or six-unit traps on a horizontal branch or drain.

Exception: In a single family dwelling addition or alteration where a 4 inch horizontal waste is not readily available four water closets not to exceed 1.6 gpf each may be allowed on a 3 inch horizontal waste when approved by the AHJ.

5. Based on one-fourth inch per foot (20.8 mm/m) slope. For one-eighths of an inch per foot (10.4 mm/m) slope, multiply horizontal fixture units by a factor of 0.8.
6. The diameter of an individual vent shall be not less than one and one-fourth inches (32 mm) nor less than one-half the diameter of the drain to which it is connected. Fixture unit load values for drainage and vent piping shall be computed from Table 702.1 and Table 702.2(b). Not to exceed one-third of the total permitted length of a vent shall be permitted to be installed in a horizontal position. Where vents are increased one pipe size for their entire length, the maximum length limitations specified in this table do not apply. This table is in accordance with the requirements of Section 901.2.

(Insert Facing Page 129)

707.4 Location. Each horizontal drainage *pipe shall* be provided with a cleanout at its upper terminal, and each run of piping, that is more than 100 feet (30,480 mm) in total *developed length, shall* be provided with a cleanout for each 100 feet (30,480 mm), or fraction thereof, in length of such piping. An additional cleanout *shall* be provided in a drainage line for each aggregate horizontal change of direction exceeding 135 degrees (2.36 rad). <

Exceptions:

1. Cleanouts *shall* be permitted to be omitted on a horizontal *drain* line less than 5 feet (1,524 mm) in length unless such line is serving sinks or urinals.
2. Cleanouts *shall* be permitted to be omitted on a horizontal drainage *pipe* installed on a *slope* of 72 degrees (1.26 rad) or less from the vertical angle (one-fifth bend).
3. Except for the *building drain*, its *horizontal branches*, and urinals, a cleanout *shall* not be required on a *pipe* or piping that is above the floor level of the lowest floor of the *building*.
4. An *approved* type of two-way cleanout fitting, installed inside the *building* wall near the connection between the *building drain* and the *building sewer* or installed outside of a *building* at the lower end of a *building drain* and extended to *grade, shall* be permitted to be substituted for an upper terminal cleanout.

707.9 Clearance. Each cleanout in piping 2 inches (50 mm) or less in size *shall* be so installed that there is a clearance of not less than 12 inches (457 mm) in front of the cleanout. Cleanouts in piping exceeding 2 inches (50 mm) *shall* have a clearance of not less than 18 inches (610 mm) in front of the cleanout. Cleanouts in under-floor piping *shall* be extended to or above the finished floor or *shall* be extended outside the *building* where there is less than 18 inches (457 mm) vertical overall, allowing for obstructions such as ducts, beams, and piping, and 30 inches of (762 mm) horizontal clearance from the means of access to such cleanout. No under-floor cleanout *shall* be located exceeding 20 feet (1,524 mm) from an access door, trap door, or crawl hole.

CHAPTER 7, PART II—BUILDING SEWERS

Part II Building Sewers. Delete all of Part II (Sections 713 through 723, and Tables 717.1 and 721.1).

908.2.4 Water Closet. This section is not adopted. ||

911.1 Circuit Vent Permitted. A maximum of eight fixtures connected to a horizontal branch drain shall be permitted to be circuit vented. Each fixture drain shall connect horizontally to the horizontal branch being circuit vented. The horizontal branch drain shall be classified as a vent from the most downstream fixture drain connection to the most upstream fixture drain connection to the horizontal branch. Given its grease-producing potential, restaurant kitchen equipment shall not be connected to a circuit vented system ||

(Insert Facing Page 145).

1101.4 Material Uses. Pipe, tube, and fittings conveying rainwater shall be of such materials and design as to perform their intended function to the satisfaction of the authority having jurisdiction. Conductors within a vent or shaft shall be of cast iron, galvanized steel, wrought iron, copper, copper alloy, lead, Scheduled 40 ASB DWV, Scheduled 40 PVC DWV, stainless steel 304 or 316L (stainless steel 304 pipe and fittings shall not be installed underground and shall be kept not less than six (6) inches (152 mm) aboveground), or other approved materials, and changes in direction shall conform to the requirements of Section 706.0. ABS and PVC DWV piping installations shall be installed in accordance with IS 5 and IS 9. Except for individual single-family dwelling units, materials exposed within ducts or plenums shall have a maximum flame-spread index of 25 and a maximum smoke-developed index of 50, when tested in accordance with ASTM E-84 and UL 723.

1101.13 Cleanouts. Cleanouts for building storm drains shall comply with the requirements of this section.

1101.13.1 Locations. Rain leaders and conductors connected to a building storm sewer shall have a cleanout installed at the base of the outside leader or outside conductor before it connects to the horizontal drain. Cleanouts shall be placed inside the building near the connection between the building drain and the building sewer or installed outside the building at the lower end of the building drain and extended to grade.

1101.13.2 Cleaning. Each cleanout shall be installed so that it opens to allow cleaning in the direction of flow of the soil or waste or at right angles thereto, and except in the case of wye branch and end-of-line cleanouts, shall be installed vertically above the flow line of the pipe.

1101.13.3 Access. Cleanouts installed under concrete or asphalt paving shall be made accessible by yard boxes, or extending flush with paving with approved materials and be adequately protected.

1101.13.4 Manholes. Approved manholes may be installed in lieu of cleanouts when first approved by the authority having jurisdiction. The maximum distance between manholes shall not exceed three hundred (300) feet (91.4 m).

The inlet and outlet connections shall be made by the use of a flexible compression joint no closer than twelve (12) inches (305 mm) to, and not farther than three (3) feet (914 mm) from the manhole. No flexible compression joints shall be embedded in the manhole base.

1105.0 Controlled-Flow Roof Drainage. This section is not adopted.

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(Insert Facing Page 156)

1303.8 Water Mains for Hospitals. Hospitals shall be provided with not less than two *approved potable water* mains that are installed in such a manner as to prevent the interruption of water service. ||

(Insert Facing Page 218)

1305.3 Minimum Station Outlets/Inlets. Station outlets and inlets for medical gas and medical vacuum systems for facilities licensed or certified by Washington state department of health (DOH) or Washington state department of social and health services (DSHS) shall be provided as listed in chapters 246-320 and 246-330 WAC as required by the applicable licensing rules as applied by DOH construction review services. All other medical gas and medical vacuum systems shall be provided as listed in Table 1305.3.

1501.1 Applicability. The provisions of this chapter and the Washington state department of health shall apply to the construction, alteration, and repair of alternate water source systems for nonpotable applications. ||

1601.1 Applicability. The provisions of this chapter and the Washington state department of health shall apply to the construction alteration and repair of nonpotable rainwater catch systems. ||

**TABLE 1701.1
REFERENCED STANDARDS**

Add the following standards to Table 1701.1:

Standard Number	Standard Title	Application
WAC 246-290-490	Washington State Department of Health Cross Connection Control Requirements	Backflow Protection