2024 UPC Model Code Changes			
Summary	Do not adopt change:	Adopt change: or Accept Change	Adopt change with amendment: May include renumbering or integration of existing amendment

Last Updated: **April 08, 2025**

Red text = State amendment
Blue text = Model code change

	= Significant change
Red Highlighted Text	= Construction Cost is what the TAG is wondering
Orange Accent 2	Existing amendment
Orange Highlighted Text	= Code Change Proposal

Existing State Amendment	Title or Subject	2021 UPC #	2024 UPC #	Summary	2024 Staff Recommendation	2024 TAG Member Recommendation	Other Comments
Chapter 1 Administration							
	Construction Documents	104.3.1	104.3.1	Example Title	**Accept Change**	Accept Change	
	Example summary of the code change.						
Accept Change	**Accept Change** with amendment	No additional comments.	104.4.5	Editorial	**Accept Change**	Accept Change	Potential Code Change Steve Hart
	104.4.5 Suspension or Revocation. The Authority Having Jurisdiction shall be permitted to, ~~in writing~~ with written notification, suspend or revoke a permit issued under the provisions of this code where the permit is issued in error or on the basis of incorrect information supplied or in violation of other ordinance or regulation of the jurisdiction.						
Chapter 2 Definitions							
	Definition	(N/A)	203.0	New definition	**Accept Change**	Accept Change	Check IFGC
	Anodeless Riser. An assembly of steel-cased plastic pipe used to make the transition between plastic piping installed underground and metallic piping installed aboveground. [NFPA 54:3.3.3] **2024 IFGC Definition: A transition assembly in which plastic *piping* is installed and terminated above ground outside of a *building*.**						
	Definition	203.0	203.0	Updated definition	**Accept Change**	Accept Change	Check IFGC
	Appliance. A device that utilizes fuel or electricity as an energy source to produce light, heat, power, refrigeration, or air conditioning~~, or compressed fuel gas~~. This definition also ~~shall include a~~ includes vented decorative appliances and electric storage or tankless water heaters**. 2024 IFGC Definition Any apparatus or device that utilizes a fuel or a raw material as a fuel to produce light, heat, power, refrigeration or air conditioning. Also, an apparatus that compresses fuel gases.**						
	Definition	(N/A)	204.0	New definition	**Accept Change**	Accept Change	

Existing State Amendment	Title or Subject	2021 UPC #	2024 UPC #	Summary	2024 Staff Recommendation	2024 TAG Member Recommendation	Other Comments
	Body Spray. A shower device for spraying water onto a bather from other than the overhead position.						
	Definition	204.0	204.0	Updated definition	**Accept Change**	Accept Change	
	Bonding ~~Conductor or~~ Jumper. A reliable conductor to ensure the required electrical conductivity between metal parts required to be electrically connected. [NFPA 70:100 (Part I)]						
	Definition	205.0	205.0	Updated definition	**Accept Change**	Accept Change	Check IFGC
	Chimney, Metal. ~~A chimney constructed of metal with a minimum thickness not less than 0.127 inches (3.23 mm) (No. 10 manufacturer's standard gauge) steel sheet.~~ A **field-constructed chimney of metal. [NFPA 54:3.3.18.4]**						
	Definition	205.0	205.0	Updated definition	**Accept Change**	Accept Change	
	Confined Space. A ~~room or~~ space ~~having a volume less than 50 cubic feet per 1000 British thermal units per hour (Btu/h) (4.83 m^3/kW) of the aggregate input rating of all fuel-burning appliances installed in that space~~ with limited entrance and egress that is not suitable for inhabitants and not intended for continuous human occupancy.						
	Definition	206.0	206.0	Updated definition	**Accept Change**	Accept Change	
	~~**Gray Water Diverter Valve**~~ **Diverter Valve, Gray Water.** A valve that directs gray water to the sanitary drainage system or a subsurface irrigation system.						
	Definition	(N/A)	206.0	New definition	**Accept Change**	Accept Change	WAC 246.275
	Diverter Valve, On-Site Treated Nonpotable Water. A component in the collection system to control inflow and overflow in collection tanks intended for on-site treatment and direct beneficial use.						
	Definition	(N/A)	206.0	New definition	**Accept Change**	Accept Change	
	Diverter Valve, Rainwater. A component in commercial rainwater catchment systems to control high inflow and overflow volumes in rainwater storage tanks.						
	Definition	207.0	207.0	Updated definition	**Accept Change**	Accept Change	
	Essentially Nontoxic Transfer Fluid. ~~Essentially nontoxic at practically nontoxic, Toxicity Rating Class 1 (reference "Clinical Toxicology of Commercial Products" by Gosselin, Smith, Hodge, & Braddock).~~ A fluid generally recognized as safe by the Food and Drug Administration (FDA) as food grade.						
	Definition	208.0	208.0	Updated definition	**Accept Change**	Accept Change	
	Flood-Level Rim. The top edge of a receptor or fixture from which water overflows.						
	Definition	209.0	209.0	Updated definition	**Accept Change**	Accept Change	
	Gas Piping. An installation of pipe, valves, or fittings that are used to convey fuel gas, installed on a premise or in a building~~, but shall not include:~~. ~~(1) A portion of the service piping.~~ ~~(2) An approved piping connection 6 feet (1829 mm) or less in length between an existing gas outlet and a gas appliance in the same room with the outlet.~~						
	Definition	209.0	209.0	Updated definition	**Accept Change**	Accept Change	

Existing State Amendment	Title or Subject	2021 UPC #	2024 UPC #	Summary	2024 Staff Recommendation	2024 TAG Member Recommendation	Other Comments
	Gray Water. Untreated wastewater that has not come into contact with toilet waste, kitchen sink waste, dishwasher waste or similarly contaminated sources. Gray water includes wastewater from bathtubs, showers, lavatories, clothes washers, and laundry ~~tubs~~ sinks. Also, known as grey water, graywater, and greywater.						
	Definition	212.0	212.0	Updated definition	**Accept Change**	Accept Change	
	~~**Heat-Fusion Weld Joints**~~ **Joint, Heat-Fusion.** A joint used in some thermoplastic systems to connect the pipe to fittings or pipe lengths directly to one another (butt-fusion). This method of joining pipe to fittings includes socket-fusion, electro-fusion, and saddle-fusion. This method of welding involves the application of heat and pressure to the components, allowing them to fuse together forming a bond between the pipe and fitting.						
	Definition	215.0	215.0	Updated definition	**Accept Change**	Accept Change	
	Medical Air. For ~~the~~ purposes of this code, medical air is air supplied from cylinders, bulk containers, or medical air compressors, or reconstituted from oxygen USP and oil-free, dry nitrogen NF. [NFPA 99:3.3.~~96~~ 106]						
	Definition	215.0	215.0	New Definition	**Accept Change**	Accept Change	
	Mid-Story Guide. A support designed to keep piping in alignment, located mid-way between floors or a floor and ceiling.						
	Definition	222.0	222.0	New Definition	**Accept Change**	Accept Change	
	Valve, Balancing. A valve that regulates and controls the return of water to the water heater in a recirculating hot water piping system.						
	Definition	222.0	222.0	Updated Definition	**Accept Change**	Accept Change	IFGC
	Vent Connector, Gas. That portion of a gas venting system that connects a listed gas appliance beginning at the draft hood or flue collar to a gas vent and is installed within the space or area in which the appliance is located. **2024 IFGC Connector, Chimney or Vent The pipe that connects an *appliance* to a chimney or vent.**						
	Definition	222.0	222.0	New Definition	**Accept Change**	Accept Change	IFGC
	Vented Appliance. **Category I Vented Appliance.** An appliance that operates with a nonpositive vent static pressure and with a vent gas temperature that avoids excessive condensate production in the vent. [NFPA 54:3.3.4.10.1] **Category II Vented Appliance.** An appliance that operates with a nonpositive vent static pressure and with a vent gas temperature that can cause excessive condensate production in the vent. [NFPA 54:3.3.4.10.2] **Category III Vented Appliance.** An appliance that operates with a positive vent static pressure and with a vent gas temperature that avoids excessive condensate production in the vent. [NFPA 54:3.3.4.10.3] **Category IV Vented Appliance.** An appliance that operates with a positive vent static pressure and with a vent gas temperature that can cause excessive condensate production in the vent. [NFPA 54:3.3.4.10.4]						
51-56-0200	Definition	225.0	225.0	New Definition	**Accept Change**	Accept Change	
	Water Heater, Dual Purpose. An appliance intended to be a heat source for both space heating and domestic hot water applications.						

Existing State Amendment	Title or Subject	2021 UPC #	2024 UPC #	Summary	2024 Staff Recommendation	2024 TAG Member Recommendation	Other Comments
51-56-0200	Definition	225.0	225.0	New Definition	**Accept Change**	Accept Change	
	Water Station. A designated location intended to provide access to drinking water through a device or appliance.						
Chapter 3 General Regulations							
	Plastic Pipe, Plastic Pipe Fittings, and Components	301.2.3	301.2.3	Updated Reference location	**Accept Change**	Accept Change	
	301.2.3 Plastic Pipe, Plastic Pipe Fittings, and Components. Plastic pipe, plastic pipe fittings, and components other than those for gas shall comply with NSF/ANSI 14.						
	Tall Wood (Mass Timber) Buildings	(N/A)	301.6	This segment adds building code language on expansion and contraction in mass timber buildings, ensuring design compliance.	**Accept Change**	Code Change Proposal	Tag is recommending putting in code change proposal
	301.6 Tall Wood (Mass Timber) Buildings. Plumbing systems installed in tall wood (mass timber) buildings, shall comply with the following: (1) Be designed by a licensed plumbing contractor or a registered design professional in accordance with this code and the building code. (2) Be designed to accommodate expansion, contraction, and differential movement between parts of a tall wood (mass timber) building in accordance with Section 312.2.						
	Prohibited Location	308.0. 308.1	308.0, 308.1	Language edit	**Accept Change**	Accept Change	
	308.0 ~~Improper Location~~ Prohibited Locations.						
	Fittings	310.1	310.1	Removed exemption for double hub sanitary tapped tee.	**Accept Change**	Accept Change	
	310.1 Fittings. No double hub fitting, single or double tee branch, single or double tapped tee branch, side inlet quarter bend, running thread, band, or saddle shall be used as a drainage fitting~~, except that a double hub sanitary tapped tee shall be permitted to be used on a vertical line as a fixture connection~~.						
	Female Plastic Connections	(N/A)	310.9	Female plastic tapered threads can't be used with male metal threads, but straight plastic threads are allowed.	**Accept Change**	Accept Change	
	310.9 Female Plastic Connections. Female plastic tapered (NPT) threaded connections shall not be allowed to be used when threaded onto a male metallic connection. **Exception:** Female plastic parallel (straight) threaded connections shall be permitted.						
	ABS and PVC Transition Joints	(N/A)	310.10	PVC and ABS pipes can't be glued to different materials, except as allowed in Section 705.9.4.	**Accept Change**	Accept Change	
	310.10 ABS and PVC Transition Joints. Except as provided in Section 705.9.4, PVC and ABS pipe and fittings shall not be solvent welded to dissimilar material.						
	Independent Systems	311.1	311.1	Adding clarifying language.	**Accept Change**	Accept Change	

Existing State Amendment	Title or Subject	2021 UPC #	2024 UPC #	Summary	2024 Staff Recommendation	2024 TAG Member Recommendation	Other Comments
	311.1 General. The drainage system of each new building and of new work installed in an existing building shall be separate and independent from that of any other building, and, where available, every building shall have an independent connection with a public or private sewer. **Exception:** Where one building stands in the rear of another building on an interior lot, and no public or private sewer is available or can be constructed to the rear building through an adjoining court, yard, or driveway, the building drain from the front building shall be permitted to be extended to the rear building.						
	Protection of Pipping, Tubing. Materials, and Structures	312.0	312.0	Including Tubing pipe	**Accept Change**	Accept Change	
	312.0 Protection of Piping, Tubing, Materials, and Structures.						
	Steel Nail Plates	312.9	312.9	Clarifying language on piping and tubing and adding specification for fuel gas piping protection.	**Accept Change**	Striking Last Sentence Code Change Proposal	
	312.9 Steel Nail Plates. Plastic piping or tubing, and copper or copper alloy piping or tubing penetrating framing members to within 1 inch (25.4 mm) of the exposed framing shall be protected by steel nail plates not less than No. 18 gauge (0.0478 inches) (1.2 mm) in thickness. The steel nail plate shall extend along the framing member not less than 1-1⁄2 inches (38 mm) beyond the outside diameter of the pipe or tubing. Fuel gas piping shall be protected in accordance with Section 1210.4.3. ~~**Exception:** See Section 1210.3.3.~~						
	Hangers, Supports, and Anchors.	313.0	313.0	Adding in reference to Anchors	**Accept Change**	Accept Change	
	313.0 Hangers, ~~and~~ Supports and Anchors.						
	General	313.1	313.1	Adding in tubing and Seismic restraints.	**Accept Change**	Modify the language code change proposal	
	313.1 General. Piping, tubing, fixtures, appliances, and appurtenances shall be supported in accordance with this code, the manufacturer's installation instructions, and in accordance with the Authority Having Jurisdiction. Seismic restraints shall be in accordance with the building code.						
	Material	313.2	313.2	Clarifying language	**Accept Change**	Accept Change	
	313.2 Material. Hangers, supports, and anchors shall be of sufficient strength to support the weight of the pipe or tubing and its contents. Piping or tubing shall be isolated from incompatible materials.						
Chapter 4 Plumbing Fixtures and Fixture Fittings							
	Flanged Fixture Connections	402.6	402.6	Explaining flange location, and how carriers shall be attached.	**Accept Change**	Accept Change	
	402.6 Flanged Fixture Connections. Fixture connections between drainage pipes and water closets, floor outlet service sinks and urinals shall be made by means of approved copper alloy, hard lead, ABS, PVC, or iron flanges caulked, soldered, solvent cemented; rubber compression gaskets; or screwed to the drainage pipe. The connection shall be bolted with an approved gasket, washer, or setting compound between the fixture and the connection. The bottom of the flange shall be set on ~~an approved firm base~~ the top of the finished floor.						

Existing State Amendment	Title or Subject	2021 UPC #	2024 UPC #	Summary	2024 Staff Recommendation	2024 TAG Member Recommendation	Other Comments
	Wall-mounted water closet fixtures shall be securely bolted to an approved carrier fitting. The approved carrier fitting shall be securely attached to the structure. The connecting pipe between the carrier fitting and the fixture shall be an approved material and designed to accommodate an adequately sized gasket. Gasket material *shall* be neoprene, felt, or similar *approved* types.						
	Closet Rings (Closet Flanges).	402.6.1	402.6.1	Clarifying language	**Accept Change**	Accept Change	
	402.6.1 Closet Rings (Closet Flanges). Closet rings (closet flanges) for water closets or similar fixtures shall be of an approved type and shall be copper alloy, copper, hard lead, cast-iron, galvanized malleable iron, ABS, PVC, or other approved materials. ~~Each such~~ Closet rings (closet flanges) shall be approximately 7 inches (178 mm) in diameter and, where installed, shall, together with the soil pipe, present a 1½ inch (38 mm) wide flange or face to receive the fixture gasket or closet seal. (Remainder unchanged)						
	Securing Floor-Mounted, Back-Outlet Water Closet Bowls.	402.6.3	402.6.3	Using specific language for closet flange placement.	**Accept Change**	Accept Change	
	402.6.3 Securing Floor-Mounted, Back-Outlet Water Closet Bowls. Floor-mounted, back-outlet water closet bowls shall be set level with an angle of 90 degrees (1.57 rad) between the floor and wall at the centerline of the fixture outlet. The floor and wall shall have a flat mounting surface not less than 5 inches (127 mm) to the right and left of the fixture outlet centerline. The closet flange shall be secured to the wall mounting surface. Offset, eccentric, or reducing closet flanges shall not be permitted with these fixtures. The fixture shall be secured to the wall outlet flange or drainage connection and to the floor by corrosion-resistant screws or bolts. ~~The closet flange shall be secured to a firm base.~~ ~~Where floor-mounted, back-outlet water closets are used, the soil pipe shall be not less than 3 inches (80 mm) in diameter. Offset, eccentric, or reducing closet flanges shall not be used.~~						
	Overflows	404.2	404.2	Updated language on Overflows and separating them in to separate parts	**Accept Change**	Accept Change	
	404.2. Overflows. Where a fixture is provided with an overflow, the overflow shall comply with Section 404.2.1 or Section 404.2.2.						
	Sinks, Lavatories, and Bathtubs.	(N/A)	404.2.1	Introducing Section 404.2.1	**Accept Change**	Accept Change	
	404.2.1 Sinks, Lavatories, and Bathtubs. The waste shall be so arranged that the standing water in the fixture shall not rise in the overflow where the stopper is closed or remain in the overflow where the fixture is empty. The overflow pipe from a fixture shall be connected on the house or inlet side of the fixture trap., ~~except that overflow on flush tanks shall be permitted to discharge into the water closets or urinals served by them, but it shall be unlawful to connect such overflows with any other part of the drainage system.~~						
	Water Closets and Urinals.	(N/A)	404.2.2	Introducing Section 404.2.2	**Accept Change**	Accept Change	
	404.2.2 Water Closets and Urinals. ~~except that~~ Overflow on flush tanks shall be permitted to discharge into the water closets or urinals served by them~~, but it shall be unlawful to connect such overflows with any other part of the drainage system~~.						
	Miscellaneous Fixtures	405.3	405.3	Eliminating unneeded language	**Accept Change**	Accept Change	
	405.3 Miscellaneous Fixtures. Fixed wooden, or tile wash sinks for domestic use shall not be installed in a building designed or used for human habitation.						

Existing State Amendment	Title or Subject	2021 UPC #	2024 UPC #	Summary	2024 Staff Recommendation	2024 TAG Member Recommendation	Other Comments
	Tileable Shower Receptors	(N/A)	408.2	Rules on Tileable shower Receptors	**Accept Change**	Accept Change	
	408.2 Tileable Shower Receptors. Tileable shower receptors and shower kits shall comply with IAPMO PS 106.						
	Water Consumption	408.2	408.3	Moved location and added flow rate	**Accept Change with State Amendment**	Code Change proposal	
	408.3. Water Consumption. Showerheads shall have a maximum flow rate of not more than 2.5 gpm at 80 psi (9.5L/m at 552 kPa). Body sprays shall have a flow rate of not more than 2.5 gpm at 80 psi (9.5 L/m at 552 kPa).						
	Individual Shower and Tub-Shower Combination Control Valves	408.3	408.4	**Moved location**	**Accept Change**	Accept Change	
	408.4 Individual Shower and Tub-Shower Combination Control Valves. Showers and tub-shower combinations shall be provided with individual control valves of the pressure balance, thermostatic, or combination pressure balance/thermostatic mixing valve type that provide scald and thermal shock protection for the rated flow rate of the installed showerhead. These valves shall be installed at the point of use and comply with ASSE 1016/ASME A112.1016/CSA B125.16 or ASME A112.18.1/CSA B125.1.						
	Gang Showers	408.3.1	408.4.1	Moved location	**Accept Change**	Accept Change	
	408.4.1 Gang Showers. Where gang showers are supplied with a single temperature-controlled water supply pipe, it shall be controlled by a mixing valve that complies with ASSE 1069.						
	Temperature Limiting.	408.3.2	408.4.2	Moved location	**Accept Change**	Accept Change	
	408.4.2 Temperature Limiting. The maximum water temperature discharging from an individual showerhead shall be limited to 120°F (49°C) by one of the following methods: (1) A shower or tub/shower combination valve conforming to ASSE 1016/ASME A112.1016/CSAB125.16 where either: (a) The valve is field-adjusted to the required maximum temperature, or (b) The handle position, stop, or temperature limiting control is set in accordance with the manufacturer's instructions to the required maximum temperature. (2) For gang showers supplied by a single water supply pipe, a mixing valve that conforms to ASSE 1069 that is field-adjusted to the required maximum temperature.						
	Temperature-Actuated, Flow-Reduction Devices for Individual Fixture Fittings.	(N/A)	408.4.3	Adding New section about Flow-Reduction devices	**Accept Change**	Accept Change	
	408.4.3 Temperature-Actuated, Flow-Reduction Devices for Individual Fixture Fittings. Temperature- actuated, flow-reduction devices, where installed for individual fixture fittings, shall comply with ASSE 1062. Such devices shall not be used alone as a substitute for the balanced pressure, thermostatic or combination shower valves requirements or as a substitute for bathtub or whirlpool tub water temperature-limiting valves requirements.						
	Waste Outlet	408.4	408.5	Standard requires Free grate area of strainer. If linear must have equivalent waterway	**Accept Change with code amendment**	Accept Change with code amendment	See existing amendment

Existing State Amendment	Title or Subject	2021 UPC #	2024 UPC #	Summary	2024 Staff Recommendation	2024 TAG Member Recommendation	Other Comments
	408.5 Waste Outlet. Showers shall have a waste outlet and fixture tailpiece not less than 2 inches (50 mm) in diameter. Fixture tailpieces shall be constructed from the materials specified in Section 701.2 for drainage piping. Strainers serving ~~have a waterway at least equivalent to the area of the tailpiece.~~ shower drains shall comply with ASME A112.18.2/CSAB125.2.						
	Finished Curb or Threshold.	408.5	408.6	This adds minimum depth and time requirements for testing installation of a watertight shower receptor.	**Accept Change**	Accept Change	
	408.6 Finished Curb or Threshold. Where a shower receptor has a finished dam, curb, or threshold, it shall be not less than 1 inch (25.4 mm) lower than the sides and back of such receptor. In no case, shall a dam or threshold be less than 2 inches (51 mm) or exceeding 9 inches (229 mm) in depth where measured from the top of the dam or threshold to the top of the drain. Each such receptor shall be provided with a nailing flange either integral or field installed in accordance with the manufacturer's installation instructions. The flange shall be watertight and extend vertically not less than 1 inch (25.4 mm) above the top of the sides of the receptor. The finished floor of the receptor shall slope uniformly from the sides towards the drain not less than 1⁄8 inch per foot (10.4mm/m), nor more than 1⁄2 inch per foot (41.6 mm/m).						
51-56-0400	**Shower Compartments**	408.6	408.7	Detailed language on shower compartments.	**Accept Change with code amendment**	**Code Change Proposal**	**Provide more direction in the Code change proposal**
Need to update amendments to new numbers as this one has moved	**408.7 Shower Compartments.** Shower compartments shall have a finished interior in accordance with the following: (1) Not less than 1024 square inches (0.6606 m2). (2) Be capable of encompassing a 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 a point tangent to its centerline. The area and dimensions shall be maintained to a point of not less than 70 inches (1778 mm) above the shower drain outlet with no protrusions other than the fixture valve or valves, showerheads, soap dishes, shelves, and safety grab bars, or rails. Fold-down seats in accessible shower stalls shall be permitted to protrude into the 30 inch (762 mm) circle. Exceptions: (1) Showers that are designed to be in accordance with ICCA117.1. (2) The minimum required area and dimension shall not apply for a shower receptor having overall dimensions of not less than 30 inches (762 mm) in width and 60 inches (1524 mm) in length.						
	Lining for Showers and Receptors	408.7	408.8	Moved Location	**Accept Change**	Accept Change	
	408.8 Lining for Showers and Receptors. Shower receptors built on-site shall be watertight and shall be constructed from approved-type dense, nonabsorbent, and noncorrosive materials. Each such receptor shall be adequately reinforced, shall be provided with an approved flanged floor drain designed to make a watertight joint on the floor, and shall have smooth, impervious, and durable surfaces. Shower receptors shall have the subfloor and rough side of walls to a height of not less than 3 inches (76 mm) above the top of the finished dam or threshold shall be first lined with sheet plastic, lead, or copper, or shall be lined with other durable and watertight materials. Showers that are provided with a built in place, permanent seat or seating area that is located within the shower enclosure, shall be first lined with sheet plastic, lead, copper, or shall be lined with other durable and watertight materials that extend not less than 3 inches (76mm) above horizontal surfaces of the seat or the seating area. Lining materials shall be pitched 1⁄4 inch per foot (20.8mm/m) to weep holes in the subdrain of a smooth and solidly formed subbase. Such lining materials shall extend upward on the rough jambs of the shower opening to a point not less than 3 inches (76 mm) above the horizontal surfaces of the seat or the seating area, the top of the finished dam or threshold and shall extend outward over the top of the permanent seat, permanent seating area, or rough threshold and be turned over and fastened on the outside face of both the permanent seat, permanent seating area, or rough threshold and the jambs. Nonmetallic shower subpans or linings shall be permitted to be built up on the job site of not less than three layers of standard grade 15 pound (6.8 kg) asphalt impregnated roofing felt. The bottom layer shall be fitted to the formed subbase and each succeeding layer thoroughly hot-mopped to that below. Corners shall be carefully fitted and shall be made strong and watertight by folding or lapping, and each corner shall be reinforced with suitable webbing hot-mopped in place. Folds, laps, and reinforcing webbing shall extend not less than 4 inches (102 mm) in all directions from the corner, and webbing shall be of approved type and mesh, producing a tensile strength of not less than 50 pounds per square foot (lb/ft2) (244 kg/m2) in either direction. Nonmetallic shower subpans or linings shall be permitted to consist of multilayers of other approved equivalent materials suitably reinforced and carefully fitted in place on the job site as elsewhere required in this section.						

Existing State Amendment	Title or Subject	2021 UPC #	2024 UPC #	Summary	2024 Staff Recommendation	2024 TAG Member Recommendation	Other Comments
	Linings shall be properly recessed and fastened to the approved backing so as not to occupy the space required for the wall covering and shall not be nailed or perforated at a point that is less than 1 inch (25.4 mm) above the finished dam or threshold. An approved type subdrain shall be installed with a shower subpan or lining. Each such subdrain shall be of the type that sets flush with the subbase and shall be equipped with a clamping ring or other device to make a tight connection between the lining and the drain. The subdrain shall have weep holes into the waste line. The weep holes located in the subdrain clamping ring shall be protected from clogging.						
	PVC Sheets	**408.7.1**	408.8.1	Moved Location	**Accept Change**	Accept Change	
	408.8.1 PVC Sheets. Plasticized polyvinyl chloride (PVC) sheets shall conform to ASTM D4551. Sheets shall be joined by solvent cementing in accordance with the manufacturer's installation instructions.						
	Chlorinated Polyethylene	408.7.2	408.8.2	Moved Location	**Accept Change**	Accept Change	
	408.8.2 Chlorinated Polyethylene (CPE) Sheets. Nonplasticized chlorinated polyethylene sheets shall conform to ASTM D4068. The liner shall be joined in accordance with the manufacturer's installation instructions.						
	Sheet Lead	408.7.3	408.8.3	Moved Location	**Accept Change**	Accept Change	
	408.8.3 Sheet Lead. Sheet lead shall weigh not less than 4 lb/ft2 (19.5 kg/m2) and shall be coated with an asphalt paint or other approved coating. The lead sheet shall be insulated from conducting substances, other than the connecting drain, by 15 pound (6.8 kg) asphalt felt or an equivalent. Sheet lead shall be joined by burning.						
	Sheet Copper	408.7.4	408.8.4	Moved Location	**Accept Change**	Accept Change	
	408.8.4 Sheet Copper. Sheet copper shall comply with ASTM B152 and shall weigh not less than 12 ounces per square foot (oz/ft2) (3.7 kg/m2) or No. 24 B & S Gauge (0.02 inches) (0.51 mm). The copper sheet shall be insulated from conducting substances, other than the connecting drain, by 15 pound (6.8 kg) asphalt felt or an equivalent. Sheet copper shall be joined by brazing or soldering.						
	Tests for Shower Receptors	408.7.5	408.8.5	Moved Location also added specifications on size and time.	**Accept Change**	Accept Change	
	408.8.5 Tests for Shower Receptors. Shower receptors shall be tested for watertightness by filling with water to a depth of not less than 2 inches (51 mm) for not less than 15 minutes. Where no threshold is present, a 2 inch (51 mm) barrier shall be temporarily constructed for testing. The test plug shall be so placed that both upper and under sides of the subpan shall be subjected to the test at the point where it is clamped to the drain.						
	Public Shower Floors	408.8	408.9	Moved Location	**Accept Change**	Accept Change	

Existing State Amendment	Title or Subject	2021 UPC #	2024 UPC #	Summary	2024 Staff Recommendation	2024 TAG Member Recommendation	Other Comments
	408.9 Public Shower Floors. Floors of public shower rooms shall have a nonskid surface and shall be drained in such a manner that wastewater from one bather shall not pass over areas occupied by other bathers. Gutters in public or gang shower rooms shall have rounded corners for easy cleaning and shall be sloped not less than 2 percent toward drains. Drains in gutters shall be spaced at a maximum of 8 feet (2438 mm) from sidewalls nor more than 16 feet (4877 mm) apart.						
	Location of Valves and Heads	408.9	408.10	Moved Location	**Accept Change**	Accept Change	
	408.10 Location of Valves and Heads. Control valves and showerheads shall be located on the sidewall of shower compartments or otherwise arranged so that the showerhead does not discharge directly at the entrance to the compartment so that the bather can adjust the valves before stepping into the shower spray.						
	Water Supply Riser	408.10	408.11	Moved Location	**Accept Change**	Accept Change	
	408.11 Water Supply Riser. A water supply riser from the shower valve to the showerhead outlet, whether exposed or not, shall be securely attached to the structure.						
	Installation and Access	409.6	409.6	Removed reference location that was not needed for this section	**Accept Change**	Accept Change	
	409.6 Installation and Access. Bathtubs and whirlpool bathtubs shall be installed in accordance with the manufacturer's installation instructions. Access openings shall be of a size and opening to permit the removal and replacement of the circulation pump. Whirlpool pump access located in the crawl space shall be located not more than 20 feet (6096 mm) from an access door, trap door, or crawl hole. The circulation pump shall be located above the crown weir of the trap The pump and the circulation piping shall be self-draining to minimize water retention.						
	Installation and Access	(N/A)	409.6.1	Created a new Section	**Accept Change**	Accept Change	
	409.6.1 Suction Fittings. Suction fittings on whirlpool bathtubs shall comply with ASME A112.19.7/CSA B45.10.						
	Flexible PVC Hoses and Tubing	409.6.1	409.6.2	Moved location and added new standard document	**Accept Change**	Accept Change	
	409.6.2 Flexible PVC Hoses and Tubing. Flexible PVC hoses and tubing intended to be used on whirlpool bathtub water circulation systems or pneumatic systems shall comply with IAPMO/ANSI Z1033.						
	Water Closet Seats	411.3	411.3	Standardizing the design and functionality of water closet seats.	**Accept Change**	Accept Change	
	411.3 Water Closet Seats. Water closet seats shall be properly sized for the water closet bowl type, and shall be of smooth, non-absorbent material. Seats, for public use, shall be of the elongated type and either of the open front type or have an automatic seat cover dispenser. Water closet seats shall be provided with or without covers. Plastic seats shall comply with IAPMO/ANSI Z124.5.						
	Application	414.1	414.1	Specific language and standards added	**Accept Change**	Accept Change	

Existing State Amendment	Title or Subject	2021 UPC #	2024 UPC #	Summary	2024 Staff Recommendation	2024 TAG Member Recommendation	Other Comments
	414.1 Application. Domestic dishwashing machines shall comply with UL 749. Domestic dishwashing machines containing sanitation features shall comply with NSF/ANSI 184 and UL 749. Commercial dishwashing machines shall comply with NSF/ANSI 3 and UL 921.						
51-56-0400	**Drainage Connection**	414.3	414.3	Specifying acceptable discharge methods for both domestic and commercial dishwashing machines	**Do not adopt**	See existing amendments	See existing amendments
	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 break in accordance with Section 807.1, or by a direct connection in accordance with Section 704.3.						
	Lead Content	(N/A)	414.4	Adding lead content for Dishwashers	**Accept Change**	Accept Change	
	414.4 Lead Content. Dishwashing machines shall comply with the lead content requirements of Section 604.2.						
	Application	415.1	415.1	Updated Location of standard	**Accept Change**	**Accept Change**	
	415.1 Application. Drinking fountains shall be self-closing and comply with ASME A112.19.1/CSA B45.2, ASME A112.19.2/CSA B45.1, or ASME A112.19.3/CSA B45.4. Drinking fountains and bottle filling stations shall also comply with NSF/ANSI/CAN 61. Permanently installed electric water coolers and bottle filling stations shall also comply with UL 399.						
	Applications	417.1	417.1	**Update to the Standard**	**Accept Change**	**Accept Change**	
	417.1 Application. Faucets and fixture fittings shall comply with ASME A112.18.1/CSA B125.1. Fixture fittings covered under the scope of NSF/ANSI/CAN 61 shall comply with the requirements of NSF/ANSI/CAN 61.						
	Low-Pressure Water Dispenser	417.6	417.6	**Updated the Standard to in include new location**	**Accept Change**	**Accept Change**	
	417.6 Low-Pressure Water Dispenser. Beverage faucets shall comply with ASME A112.18.1/CSA B125.1. Electrically heated or cooled water dispensers shall comply with ASSE 1023.						
	Head shampoo sink Faucets	(N/A)	**417.7**	**Enhance safety by preventing scalding**	**Accept Change**	**Accept Change**	**Construction Cost**

<table>
<tr><th>Existing State Amendment</th><th>Title or Subject</th><th>2021 UPC #</th><th>2024 UPC #</th><th>Summary</th><th>2024 Staff Recommendation</th><th>2024 TAG Member Recommendation</th><th>Other Comments</th></tr>
<tr><td></td><td colspan="7">417.7 Head Shampoo Sink Faucets. Head shampoo sink faucets shall be supplied with hot water that is limited to not more than 120°F (49°C). Each faucet shall have integral check valves to prevent crossover flow between the hot and cold water supply connections. The means for regulating the maximum temperature shall be in accordance with one of the following:

(1) A limiting device conforming to ASSE 1070/ASME A112.1070/CSA B125.70.
(2) A water heater conforming to ASSE 1084.
(3) A temperature-actuated, flow-reduction device conforming to ASSE 1062.</td></tr>
<tr><td></td><td>Footbaths and Pedicure Baths</td><td>(N/A)</td><td>417.8</td><td>New section</td><td>Accept Change</td><td>Accept Change</td><td>Construction Cost</td></tr>
<tr><td></td><td colspan="7">417.8 Footbaths and Pedicure Baths. The water supplied to specialty plumbing fixtures, such as pedicure chairs having an integral foot bathtub and footbaths, shall be limited to not more than 120ºF (49ºC) by a water-temperature-limiting device that conforms to ASSE 1070/ASME A112.1070/CSA B125.70 or by a water heater complying with ASSE 1084.</td></tr>
<tr><td>51-56-0400</td><td>Water Consumption</td><td>420.2</td><td>420.2</td><td>Changing Language</td><td>Accept with state amendment</td><td>Accept Change with amendment</td><td>See existing amendment Review previsions</td></tr>
<tr><td></td><td colspan="7">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).
Exceptions:
(1) Clinical sinks
(2) Laundry sinks
(3) Service sinks</td></tr>
<tr><td>51-56-0400</td><td>Pre-Rinse Spray Valve</td><td>420.3</td><td>420.3</td><td>Update to add Table Reference</td><td>Accept Change</td><td>Accept Change</td><td></td></tr>
<tr><td></td><td colspan="7">420.3 Pre-Rinse Spray Valve. Commercial food service pre-rinse spray valves shall have a maximum flow rate in accordance with Table 420.3 and shall be equipped with an integral automatic shutoff.</td></tr>
<tr><td></td><td>COMMERCIAL PRE-RINSE SPRAY VALVE MAXIMUM FLOW RATE</td><td>(N/A)</td><td>Table 420.3</td><td>Adding a New Table</td><td>Accept Change with amendment</td><td>Accept Change with amendment</td><td>Code Change proposal</td></tr>
<tr><td></td><td colspan="7">TABLE 420.3
COMMERCIAL PRE-RINSE SPRAY VALVE MAXIMUM FLOW RATE
<table>
<tr><th>PRODUCT CLASS BY SPRAY FORCE</th><th>MAXIMUM FLOW RATE, GPM</th></tr>
<tr><td>Product Class 1 (≤ 5.0 ounces-force)</td><td>1.00</td></tr>
<tr><td>Product Class 2 (> 5.0 ounces-force and ≤ 8.0 ounces-forces)</td><td>1.20</td></tr>
<tr><td>Product Class 3 (> 8.0 ounces-forces)</td><td>1.28</td></tr>
</table>
For SI units: 1 gallon per minute = 3.785 L/min, 1 ounce-force = 0.278 N</td></tr>
</table>

Existing State Amendment	Title or Subject	2021 UPC #	2024 UPC #	Summary	2024 Staff Recommendation	2024 TAG Member Recommendation	Other Comments
	Fixture Calculations	422.1.1	422.1.1	**Updated standards for water closet based on male or female**	**Do Not adopt**	**Do Not Adopt**	**422.1-422.5 are not adopted in the state code.**
	422.1.1 Fixture Calculations. The minimum number of fixtures shall be calculated at 50 percent male and 50 percent female based on the total occupant load. Where information submitted indicates a difference in the distribution of the sexes such information shall be used to determine the number of fixtures for each sex. Once the occupancy load and occupancy are determined, Table 422.1 shall be applied to determine the minimum number of plumbing fixtures required. Where applying the fixture ratios in Table 422.1 results in fractional numbers, such numbers shall be rounded to the next whole number. For multiple occupancies, fractional numbers shall be first summed and then rounded to the next whole number. For toilet facilities designed for use by all genders, the minimum number of fixtures shall be the aggregate calculated at 50 percent female and 50 percent male in accordance with Table 422.1. Where all-gender fixtures are provided in addition to separate men's and women's facilities, those fixtures shall be included in determining the number of fixtures provided in an occupancy.						
	Single Use, Family or Assisted-Use Toilet ,and Bathing Facilities	422.1.1	422.1.2	**Update language on Single use toilets**	**Do Not adopt**	**Do Not Adopt**	
	422.1.2 Single Use, Family or Assisted-Use Toilet ,and Bathing Facilities. Where single use, family or assisted-use toilet, and bathing rooms are required, in applicable building regulations, the facilities shall be installed in accordance with those regulations. Fixtures located in single use, family or assisted-use, and bathing room facilities shall contribute to the total number of required fixtures in accordance with Section 422.1.						
	Separate Facilities	422.2	422.2	**Update exception**	**Do Not adopt**	**Do Not Adopt**	
	422.2 Separate Facilities. Separate toilet facilities shall be provided for each sex. **Exceptions:** (1) Residential installations. (2) In occupancies with a total occupant load of 10 or less, including customers and employees, one toilet facility, designed for use by no more than one person at a time, shall be permitted for use by both sexes. (3) In business and mercantile occupancies with a total occupant load of 50 or less including customers and employees, one toilet facility, designed for use by no more than one person at a time, shall be permitted for use by both sexes. (4) Separate facilities shall not be required where rooms have fixtures designed for use by both sexes and the water closets are installed in privacy compartments. Urinals shall be located in a privacy compartment.						
	Single Use Facilities	422.2.1	422.2.1	**Clarifying language**	**Do Not adopt**	**Do Not Adopt**	
	422.2.1 Single Use Facilities. Single use toilet facilities, bathing facilities, and family or assisted use toilet facilities shall be identified with signage indicating use by either sex.						
	Water Closet Compartment	(N/A)	422.6	New added section with specifications on water closet compartments	**Do Not adopt**	**Do Not Adopt**	
	422.6 Water Closet Compartment. Public water closets shall occupy a separate compartment with walls or partitions and a door enclosing the fixtures to ensure privacy. Partitions for water closets located in separate gender toilet or bathrooms shall comply with the Type B security requirements of IAPMO Z124.10. Partitions for water closets located in all gender toilet or bathrooms shall comply with the Type A security requirements of IAPMO Z124.10. **Exceptions:** (1) Water closet compartments shall not be required in a single- occupant toilet room having a lockable door. (2) Toilet rooms in day care facilities having more than one water closets shall be permitted to have one water closet without an enclosing compartment.						

<table>
<tr><th>Existing State Amendment</th><th>Title or Subject</th><th>2021 UPC #</th><th>2024 UPC #</th><th>Summary</th><th>2024 Staff Recommendation</th><th>2024 TAG Member Recommendation</th><th>Other Comments</th></tr>
<tr><td></td><td>Urinal Partitions</td><td>(N/A)</td><td>422.7</td><td>New added section with specifications on urinal partitions</td><td>Do Not adopt</td><td>Do Not Adopt</td><td></td></tr>
<tr><td></td><td colspan="7">422.7 Urinal Partitions. Each urinal shall be separated with walls or partitions to provide privacy. The horizontal dimension between walls or partitions at each urinal shall comply with Section 402.5. Partitions for urinals shall comply with the Type C security requirements of IAPMO Z124.10. Walls or partitions shall extend from not less than 12 inches (305mm) above the finished floor to not less than 60 inches (1524 mm) above the finished floor. Walls shall extend outward from the wall surface not less than 18 inches (457 mm). Urinals located in all gender toilet rooms shall be visually separated from the remainder of the room or each urinal shall be installed in a privacy compartment complying with Type A security requirements of IAPMO Z124.10.
Exception: Urinal partitions shall not be required in a single occupant or family/assisted-use toilet room with a lockable door.</td></tr>
<tr><td colspan="8">Chapter 5 Water Heaters</td></tr>
<tr><td rowspan="2">51-56-0500</td><td>Applicability</td><td>501.1</td><td>501.1</td><td>Updating time frame standards</td><td>Do Not Adopt</td><td>Do Not Adopt</td><td>Existing State Amendment</td></tr>
<tr><td colspan="7">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, together with chimneys, vents, and their connectors. The minimum capacity for storage water heaters shall be in accordance with the first-hour rating listed in Table 501.1(2). A list of accepted water heater appliance standards is referenced in Table 501.1(1). 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. Water heaters shall be installed in accordance with the manufacturer’s installation instructions. The final installation shall be approved by the Authority Having Jurisdiction.</td></tr>
<tr><td rowspan="2">51-56-0500</td><td>TABLE WATER HEATERS</td><td>501.1(1)</td><td>501.1(1)</td><td>Table updated</td><td>Accept Change</td><td>Accept Change</td><td></td></tr>
<tr><td colspan="7">
<table>
<tr><th>TYPE*</th><th>STANDARD</th></tr>
<tr><td>Electric, Household Storage</td><td>UL 174</td></tr>
<tr><td>Oil-Fired Storage Tank</td><td>UL 732</td></tr>
<tr><td>Gas-Fired, 75 000 Btu/h or less, Storage</td><td>CSA/ANSI Z21.10.1/CSA 4.1</td></tr>
<tr><td>Gas-Fired, Above 75 000 Btu/h, Storage and Instantaneous</td><td>CSA/ANSI Z21.10.3/CSA 4.3</td></tr>
<tr><td>Electric, Commercial Storage</td><td>UL 1453</td></tr>
<tr><td>Solid Fuel-Fired</td><td>UL 2523</td></tr>
<tr><td>Electric Instantaneous</td><td>UL 499</td></tr>
</table>
For SI units: 1000 British thermal units per hour = 0.293 kW
* Dual purpose water heaters shall be installed in accordance with this code and the manufacturer’s installation instructions.</td></tr>
<tr><td rowspan="3"></td><td>Unlisted Water Heaters</td><td>504.3.2</td><td>504.3.2</td><td>Updated to include exception</td><td>Accept Change</td><td>Accept Change</td><td></td></tr>
<tr><td colspan="7">504.3.2 Unlisted Water Heaters. Except as otherwise permitted in this code, unlisted water heaters shall be approved by the Authority Having Jurisdiction prior to being installed. Clearance for unlisted water heaters shall be not less than 12 inches (305 mm) on all sides. Combustible floors under unlisted water heaters shall be protected in an approved manner. {NFPA 54-2018:10.27.2.2}</td></tr>
<tr><td>Pressure-Limiting Devices</td><td>504.4</td><td>504.4</td><td>Adding an not an exceed limit</td><td>Accept Change</td><td>Accept Change</td><td></td></tr>
</table>

Existing State Amendment	Title or Subject	2021 UPC #	2024 UPC #	Summary	2024 Staff Recommendation	2024 TAG Member Recommendation	Other Comments
	504.4 Pressure-Limiting Devices. A water heater installation shall be provided with overpressure protection using an approved, listed device installed in accordance with the terms of its listing and the manufacturer's installation instructions. Pressure relief devices shall have a pressure setting greater than the water service pressure and not exceed 150 psi (1034 kPa) as required in Section 608.4.						
	Lead Content	(N/A)	504.7	New Section	**Accept Change**	**Accept Change**	
	504.7 Lead Content. Water heaters shall comply with the lead content requirements of Section 604.2.						
	Engineered Installations	506.6	506.6	Updated language	**Do Not Adopt**	**Do Not Adopt**	Existing State Amendment
	506.6 Engineered Installations. Engineered combustion air installations shall provide an adequate supply of combustion, ventilation, and dilution air determined using engineering methods. [NFPA 54:9.3.5]						
	Drainage Pan	507.5	507.5	Added new standards	**Accept Change**	Code Change Proposal	Code Change proposal
	507.5 Drainage Pan. Where a water heater is located in an attic, in or on an attic ceiling assembly, floor-ceiling assembly, floor-subfloor assembly or where damage results from a leaking water heater, a watertight pan of corrosion-resistant materials shall be installed beneath the water heater in accordance with the following: (1) The drainage pan shall be provided with not less than 3⁄4 of an inch (20 mm) diameter drain to an approved location. The terminating end of the drainpipe shall be readily visible. (2) The drainage pan shall be not less than 1 1⁄2 inches (38mm) in depth. (3) Where a drainage pan pipe is installed, the material of the piping shall be rated for the temperature rating of the water heater and shall be approved for use with the liquid being discharged. (4) Discharge from a relief valve into a drainage pan shall be prohibited.						
	Type Gas(es).	507.7	507.7	Editor change	**Do Not Adopt**	**Accept Change**	Not Adopted
	507.7 Type of Gas(es). The appliance shall be connected to the fuel gas for which it was designed. No attempt shall be made to convert the appliance from the gas specified on the rating plate for use with a different gas without consulting the installation instructions, the serving gas supplier, or the appliance manufacturer for complete instructions. Listed appliances shall not be converted unless permitted by and in accordance with the manufacturer's installation instructions. [NFPA 54:9.1.3]						
	Safety Shutoff Devices for Unlisted LP-Gas Appliance Used Indoors.	507.8	507.8	Language update	**Do Not Adopt**	**Accept Change**	Not Adopted
	507.8 Safety Shutoff Devices for Unlisted LP-Gas Appliance Used Indoors. Unlisted appliances for use with undiluted LP-Gases and installed indoors, except attended laboratory equipment, shall be equipped with safety shutoff devices of the complete shutoff type. [NFPA 54:9.1.4]						
	Installation in Residential Garages.	507.13	507.13	Addition of exception	**Adopt with State amendment**	Adopt with out State amendment	New UPC covers the state amendment language
	507.13 Installation in Residential Garages. Appliances in residential 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 all heating elements, switches, burners, and burner-ignition devices are located not less than 18 inches (457 mm) above the floor.**Exception:** Listed flammable vapor ignition resistant (FVIR) appliances. {NFPA 54:9.1.10.1}						
	Addition to Existing System	(N/A)	507.18	Updating Title, editor language update	**Do Not adopt**	Do Not adopt	Not adopted in the state code

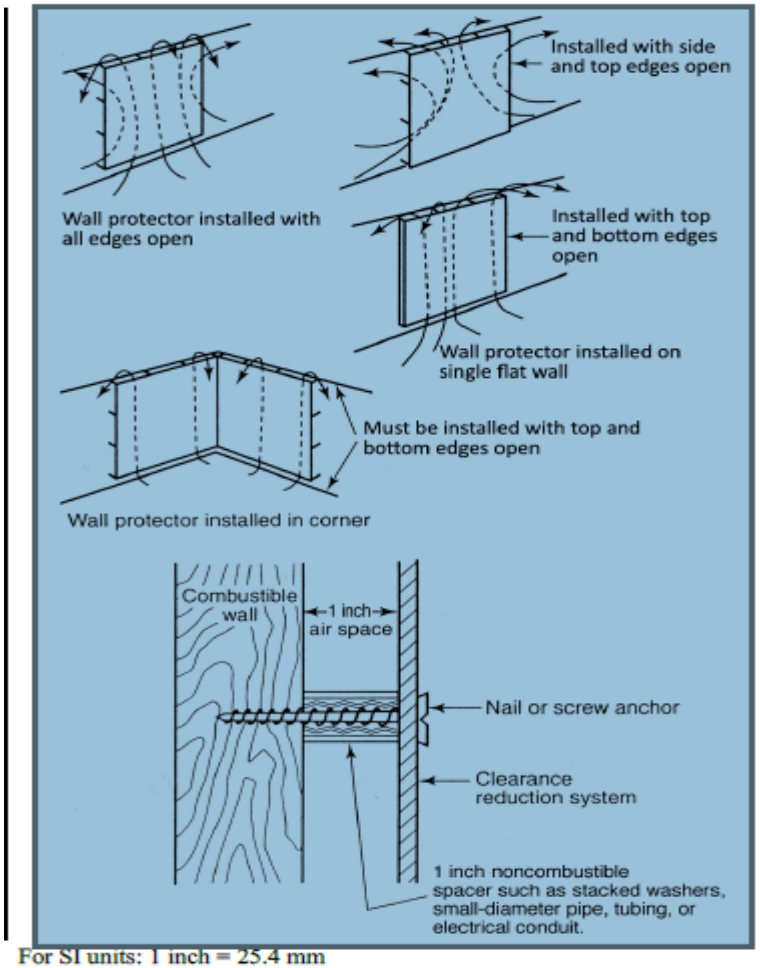
Existing State Amendment	Title or Subject	2021 UPC #	2024 UPC #	Summary	2024 Staff Recommendation	2024 TAG Member Recommendation	Other Comments
	507.18 Addition to Existing System. When additional appliances are being connected to a gas piping system, the existing piping shall be checked to determine whether it has adequate capacity. If the capacity of the system is determined to be inadequate for the additional appliances, the existing system shall be enlarged as required, or separate gas piping of adequate capacity shall be provided. [NFPA 54:5.1.2]						
	Gas Appliance Pressure Regulators.	507.20	507.20	Update Reference location	**Do Not adopt**	Do Not adopt	Not adopted in the state code
	507.20 Gas Appliance Pressure Regulators. Where the gas supply pressure is higher than that at which the appliance is designed to operate or varies beyond the design pressure limits of the appliance, a gas appliance pressure regulator listed in accordance with CSA/ANSI Z21.18/CSA 6.3 shall be installed. [NFPA 54:9.1.17]						
	Bleed Lines for Diaphragm-Type Valves.	507.22	507.21	Section Moved	**Do Not adopt**	Do Not adopt	Not adopted in the state code
	<< **507.21 Bleed Lines for Diaphragm-Type Valves.** Bleed lines shall comply with the following requirements: (1) Diaphragm-type valves shall be equipped to convey bleed gas to the outdoors or into the combustion chamber adjacent to a continuous pilot. (2) In the case of bleed lines leading outdoors, means shall be employed to prevent water from entering this piping and also to prevent blockage of vents by insects and foreign matter. (3) Bleed lines shall not terminate in the appliance flue or exhaust system. (4) In the case of bleed lines entering the combustion chamber, the bleed line shall be located so the bleed gas is readily ignited by the pilot and the heat liberated thereby does not adversely affect the normal operation of the safety shutoff system. The terminus of the bleed line shall be securely held in a fixed position relative to the pilot. For manufactured gas, the need for a flame arrester in the bleed line piping shall be determined. (5) A bleed line(s) from a diaphragm-type valve and a vent line(s) from an appliance pressure regulator shall not be connected to a common manifold terminating in a combustion chamber. Bleed lines shall not terminate in positive-pressure-type combustion chambers. [NFPA 54:9.1.18]<<						
	Combination of Appliances and Equipment	507.23	507.22	Section Moved	**Adopt Change**	Adopt Change	
	<< **507.22 Combination of Appliances and Equipment.** Any combination of appliances, equipment, attachments, or devices used together in any manner shall comply with the standards that apply to the individual appliance and equipment. [NFPA 54:9.1.19] <<						
	Installation Instructions	507.24	507.23	Section Moved, Language updated	**Accept Change**	**Accept Change**	
	<< 507.23 Installation Instructions. The installer shall conform to the appliance and equipment manufacturers' recommendations in completing an installation. The installer shall leave the manufacturers' installation, operating, and maintenance instructions on the premises. [NFPA 54:9.1.20] <<						
	Protection of Outdoor Appliances	507.25	507.24	Section Moved, Update reference location	**Accept Change**	**Accept Change**	
	<< **507.24 Protection of Outdoor Appliances.** Appliances not listed for outdoor installation but installed outdoors shall be provided with protection to the degree that the environment requires. Appliances listed for outdoor installation shall be permitted to be installed without protection in accordance with the manufacturer's installation instructions. [NFPA 54:9.1.21] **<<**						

Existing State Amendment	Title or Subject	2021 UPC #	2024 UPC #	Summary	2024 Staff Recommendation	2024 TAG Member Recommendation	Other Comments
	Accessibility for Service.	507.26	507.25	Section Moved, Update reference location	**Accept Change**	**Accept Change**	
	<< 507.25 Accessibility for Service. All appliances shall be located with respect to building construction and other equipment so as to permit access for repair or replacement of the appliance. Clearance shall be maintained to permit removal of the appliance; cleaning of heating surfaces; the replacement of filters, blowers, motors, burners, controls, and vent connections; the lubrication of moving parts where necessary; the adjustment and cleaning of burners and pilots; and the proper functioning of explosion vents, if provided. For attic installation, the passageway and servicing area adjacent to the appliance shall be in accordance with Section 508.4. {NFPA 54:9.2.1} Unless otherwise specified, clearances of not less than 30 inches (762 mm) in depth, width, and height of working space shall be maintained.<<						
	Clearance to Combustible Materials	507.27	507.26	Section Moved	**Accept Change**	**Accept Change**	
	>> 507.26 Clearance to Combustible Materials. Appliances and their vent connectors shall be installed with clearances from combustible material so their operation does not create a hazard to persons or property. Minimum clearances between combustible walls and the back and sides of various conventional types of appliances and their vent connectors are specified in Section 509.0. [NFPA 54:9.2.2] >>						
	Appliances on Roofs, in Attics or Under-Floor Spaces.	(N/A)	508.0	Title of Section Change	**Accept Change**	**Accept Change**	
	508.0 Appliances on Roofs, in Attics or Under-Floor Spaces.						
	Guards and Rails	508.2.1.1	508.2.1.1	Updated Reference Location	**Accept Change**	**Accept Change**	
	508.2.1.1 Guards and Rails. Guards or rails shall be required where the following exist: (1) The clearance between the appliance and a roof edge or open end of an equipment platform is less than 6 feet (1829 mm). (2) The open end of the equipment platform is located more than 30 inches (762 mm) above the roof, floor, or grade below. Where guards or rails are installed, they shall be constructed so as to prevent the passage of a 21inch (533 mm) diameter ball, resist the imposed loading conditions, and shall extend not less than 30 inches (762 mm) beyond each side of the equipment or appliance. **Exception:** Guards shall not be required where a permanent fall arrest anchorage connector system in accordance with ASSP Z359.1 is installed.						
	Electrical Power	508.2.2	508.2.2	Updated Reference location	**Accept Change**	Code Change Proposal	Confirm its all in NFPA 70
	508.2.2 Electrical Power. Appliances requiring an external source of electrical power shall be installed in accordance with NFPA 70. [NFPA 54:9.4.2.3]						
	Appliances in Attics and Under-Floor Spaces	508.4	508.4	Updated language	**Accept Change**	**Accept Change**	
	508.4 Appliances in Attics and Under-Floor Spaces. An attic or under-floor space in which an appliance is installed shall be accessible through an opening and passage way larger than the largest component of the appliance, and not less than 22 inches by 30 inches (559 mm by 762 mm). {NFPA 54:9.5.1}						
	Length of Passageway	508.4.1	508.4.1	Added Reference location	**Accept Change**	**Accept Change**	
	508.4.1 Length of Passageway. Where the height of the passageway is less than 6 feet (1829 mm), the distance from the passageway access to the appliance shall not exceed 20 feet (6096 mm) measured along the centerline of the passageway. [NFPA 54:9.5.1.1] Where the height of the passageway is 6 feet (1829 mm) or more, the distance from the passageway access to the appliance shall not exceed 50 feet (15 240 mm) measured along the centerline of the passageway.						
	Lighting and Convenience Outlet	508.4.4	508.4.4	Update code language	**Accept Change**	Accept Change	

Existing State Amendment	Title or Subject	2021 UPC #	2024 UPC #	Summary	2024 Staff Recommendation	2024 TAG Member Recommendation	Other Comments
	508.4.4 Lighting and Convenience Outlet. A permanent 120 V receptacle outlet and a luminaire shall be installed near the appliance. The switch controlling the luminaire shall be located at the entrance to the passage-way. [NFPA 54:9.5.3]						
	Installation	509.1.1	509.1.1	Specification language added	**Do Not Adopt**	**Do Not Adopt**	**Existing amendment**
	509.1.1 Installation. Listed chimneys and vents shall be installed in accordance with Section 509.0 and the manufacturers' installation instructions. [NFPA 54:12.2.1]						
	Direct-Vent Appliances	509.2.6	509.2.6	Title of section update	**Do Not Adopt**	**Do Not Adopt**	**Existing amendment**
	509.2.6 Direct-Vent Appliances. Listed direct vent appliances shall be installed in accordance with the manufacturer's installation instructions. [NFPA 54:12.3.5.1]						
	Through-the-Wall Vent Termination	(N/A)	509.2.6.1	**Added new section**	**Do Not Adopt**	**Do Not Adopt**	**Existing amendment**
	509.2.6.1 Through-the-Wall Vent Termination. Through-the-wall vent terminations for listed direct-vent appliances shall be in accordance with Section 509.8.1. [NFPA 54:12.3.5.2]						
	Appliances with Integral Vents	509.2.7	509.2.7	**Eliminated reference to no longer used section 509.8**	**Do Not Adopt**	**Do Not Adopt**	**Existing amendment**
	509.2.7 Appliances with Integral Vents. Appliances incorporating integral venting means shall be installed in accordance with Section 509.8. [NFPA 54:12.3.6]						
	Ventilating Hoods and Exhaust Systems	509.3.4	509.3.4	**Addition of language on food truck**	**Do Not Adopt**	**Do Not Adopt**	**Existing amendment**
	509.3.4 Ventilating Hoods and Exhaust Systems. Where automatically operated appliances, other than food service appliances, are vented through a ventilating hood or exhaust system equipped with a damper or with a power means of exhaust, provisions shall be made to allow the flow of gas to the main burners only when the damper is open to a position to properly vent the appliance and when the power means of exhaust is in operation. [NFPA 54:12.4.4.1]						
	Factory-Built Chimneys	509.5.1	509.5.1	**Updated Reference**	**Do Not Adopt**	**Do Not Adopt**	**Existing amendment**
	509.5.1 Factory-Built Chimneys. Factory-built chimneys shall be listed in accordance with UL 103, UL 959, or UL 2561. Factory-built chimneys used to vent appliances that operate at positive vent pressure shall be listed for such application. [NFPA 54:12.6.1.1]						
	Size of Chimneys	509.5.5	509.5.5	**Code requirement updates**	**Do not adopt**	**Do Not Adopt**	**Existing amendment**

Existing State Amendment	Title or Subject	2021 UPC #	2024 UPC #	Summary	2024 Staff Recommendation	2024 TAG Member Recommendation	Other Comments
	509.5.5 Size of Chimneys. The effective area of a chimney venting system serving listed appliances with draft hoods, Category I appliances, and other appliances listed for use with Type B vents shall be in accordance with one of the following methods: (1) Those listed in Section 510.0. (2) The effective areas of the vent connector and chimney flue of a venting system serving a single appliance with a draft hood shall be not less than the area of the appliance flue collar or draft hood outlet or greater than seven times the draft hood outlet area. (3) The effective area of the chimney flue of a venting system serving two appliances with draft hoods shall be not less than the area of the larger draft hood outlet plus 50 percent of the area of the smaller draft hood outlet or greater than seven times the smaller draft hood outlet area. (4) Chimney venting systems using mechanical draft shall be sized in accordance with engineering methods. (5) Other engineering methods. [NFPA 54:12.6.3.1]						
	Cleanouts	509.5.6.2	509.5.6.2	**Code language update**	**Do not adopt**	**Do Not Adopt**	**Existing amendment**
	509.5.6.2 Cleanouts. Cleanouts shall be examined and where they do not remain tightly closed when not in use, they shall be repaired or replaced. [NFPA 54:12.6.4.3]						
	Insulation Protection Shield	509.6.1.1	509.6.1.1	**Title of section update, steel thickness**	**Do not adopt**	**Do Not Adopt**	**Existing amendment**
	509.6.1.1 Insulation Protection Shield. Where a vent passes through an insulated assembly, an approved metal shield constructed of steel having a thickness of not less than 26 gauge (0.0179 inch) (0.45 mm) (No. 26 gauge) shall be installed between the vent and insulation. The shield shall extend not less than 2 inches (51 mm) above the insulation and be secured to the structure in accordance with the manufacturer's installation instructions.						
	Category I Appliances	509.6.2.1	509.6.2.1	**Code update on engineering methods**	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.6.2.1 Category I Appliances. The sizing of natural draft venting systems serving one or more listed appliances equipped with a draft hood or appliances listed for use with a Type B gas vent, installed in a single story of a building, shall be in accordance with one of the following: (1) The provisions of Section 510.0. (2) Vents serving fan-assisted combustion system appliances, or combinations of fan-assisted combustion system and draft hood-equipped appliances, shall be sized in accordance with Section 510.0 or other engineering methods. (3) For sizing an individual gas vent for a single, draft hood-equipped appliance, the effective area of the vent connector and the gas vent shall be not less than the area of the appliance draft hood outlet or greater than seven times the draft hood outlet area. (4) For sizing a gas vent connected to two appliances with draft hoods, the effective area of the vent shall be not less than the area of the larger draft hood outlet plus 50 percent of the area of the smaller draft hood outlet or greater than seven times the smaller draft hood outlet area. **(5) Engineering methods. [**NFPA **54:12.7.4.1]**						

Existing State Amendment	Title or Subject	2021 UPC #	2024 UPC #	Summary	2024 Staff Recommendation	2024 TAG Member Recommendation	Other Comments
	Category II, Category III, and Category IV Appliances	509.6.2.3	509.6.2.3	**Code update**	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.6.2.3 Category II, Category III, and Category IV Appliances. The sizing of gas vents for Category II, Category III, and Category IV appliances shall be in accordance with the appliance manufacturers' instructions. The sizing of plastic pipe specified by the appliance manufacturer as a venting material for Category II, III, and IV appliances shall be in accordance with the appliance manufacturers' instructions. [NFPA 54:12.7.4.3]						
	Sizing	509.6.2.4	509.6.2.4	**Updating reference**	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.6.2.4 Sizing. Chimney venting systems using mechanical draft shall be sized in accordance with engineering methods. [NFPA 54:12.7.4.4]						
	Gas Vents Serving Appliances on More than One Floor	509.6.3	509.6.3	**Gave specifications and regulation updates to this section**	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.6.3 Gas Vents Serving Appliances on More than One Floor. Where a common vent is installed in a multistory installation to vent Category I appliances located on more than one floor level, the venting system shall be designed and installed in accordance with engineering methods. Crawl spaces, basements, and attics shall be considered as floor levels. [NFPA 54:12.7.5.1]						
	Termination.	509.7.2	509.7.2	**Reference update**	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.7.2 Termination. The termination of single-wall metal pipe shall meet the following requirements: (1) Single-wall metal pipe shall terminate at least 5 feet (1524 mm) in vertical height above the highest connected appliance draft hood outlet or flue collar. [NFPA 54:12.8.3(1)] (2) Single-wall metal pipe shall extend at least 2 feet (610 mm) above the highest point where it passes through a roof of a building and at least 2 feet (610mm) higher than any portion of a building within a horizontal distance of 10 feet (3048 mm). [NFPA 54:12.8.3(2)] (3) An approved cap or roof assembly shall be attached to the terminus of a single-wall metal pipe. [NFPA54:12.8.3(3)]						
	FIGURE	509.7.3.4(1)1	509.7.3.4(1)1	**Table update**	**Do not adopt**	**Do not adopt**	**Existing amendment**

Existing State Amendment	Title or Subject	2021 UPC #	2024 UPC #	Summary	2024 Staff Recommendation	2024 TAG Member Recommendation	Other Comments
	FIGURE 509.7.3.4(1)[1, 2, 3] **EXTENT OF PROTECTION NECESSARY TO REDUCE CLEARANCES FROM GAS APPLIANCE OR VENT CONNECTORS** **[NFPA 54: FIGURE 10.3.3.3(a)]**  For SI units: 1 inch = 25.4 mm **Note:** Masonry walls shall be attached to combustible walls using wall ties. Spacers shall not be used directly behind appliance or connector.						
	Size of Single-Wall Metal Pipe.	509.7.4	509.7.4	**Adding language to code**	**Do not adopt**	**Do not adopt**	**Existing amendment**

Existing State Amendment	Title or Subject	2021 UPC #	2024 UPC #	Summary	2024 Staff Recommendation	2024 TAG Member Recommendation	Other Comments
	509.7.4 C. Single-wall metal piping shall comply with the following requirements: (1) A venting system of a single-wall metal pipe shall be sized in accordance with one of the following methods and the appliance manufacturer's instructions: (a) For a draft hood-equipped appliance, in accordance with Section 510.0. (b) For a venting system for a single appliance with a draft hood, the areas of the connector and the pipe each shall not be less than the area of the appliance flue collar or draft hood outlet, whichever is smaller. The vent area shall not be greater than seven times the draft hood outlet area. (c) Engineering methods.						
	REDUCTION OF CLEARANCES WITH	TABLE 509.7.3.4(2)	TABLE 509.7.3.4(2)	**Code adoption of new notes**	**Do not adopt**	**Do not adopt**	**Existing amendment**

TABLE 509.7.3.4(2)
REDUCTION OF CLEARANCES WITH SPECIFIED FORMS OF PROTECTION[1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11]
[NFPA 54: TABLE 10.2.4]

TYPE OF PROTECTION APPLIED TO AND COVERING ALL SURFACES OF COMBUSTIBLE MATERIAL WITHIN THE DISTANCE SPECIFIED AS THE REQUIRED CLEARANCE WITH NO PROTECTION [SEE FIGURE 509.7.3.4(1) THROUGH FIGURE 509.7.3.4(5)]	WHERE THE REQUIRED CLEARANCE WITH NO PROTECTION FROM APPLIANCE, VENT CONNECTOR, OR SINGLE-WALL METAL PIPE IS:									
	36 (inches)		18 (inches)		12 (inches)		9 (inches)		6 (inches)	
	ALLOWABLE CLEARANCES WITH SPECIFIED PROTECTION (inches)									
	USE COLUMN 1 FOR CLEARANCES ABOVE APPLIANCE OR HORIZONTAL CONNECTOR. USE COLUMN 2 FOR CLEARANCES FROM APPLIANCES, VERTICAL CONNECTOR, AND SINGLE-WALL METAL PIPE.									
	ABOVE COLUMN 1	SIDES AND REAR COLUMN 2	ABOVE COLUMN 1	SIDES AND REAR COLUMN 2	ABOVE COLUMN 1	SIDES AND REAR COLUMN 2	ABOVE COLUMN 1	SIDES AND REAR COLUMN 2	ABOVE COLUMN 1	SIDES AND REAR COLUMN 2
(1) 3½ inch thick masonry wall without ventilated air space	—	24	—	12	—	9	—	6	—	5
(2) ½ of an inch insulation board over 1 inch glass fiber or mineral wool batts	24	18	12	9	9	6	6	5	4	3
(3) 0.024 inch (nominal 24 gauge) sheet metal over 1 inch glass fiber or mineral wool batts reinforced with wire on rear face with ventilated air space	18	12	9	6	6	4	5	3	3	3
(4) 3½ inch thick masonry wall with ventilated air space	—	12	—	6	—	6	—	6	—	6
(5) 0.024 inch (nominal 24 gauge) sheet metal with ventilated air space	18	12	9	6	6	4	5	3	3	2
(6) ½ of an inch thick insulation board with ventilated air space	18	12	9	6	6	4	5	3	3	3
(7) 0.024 inch (nominal 24 gauge) sheet metal with ventilated air space over 0.024 inch (nominal 24 gauge) sheet metal with ventilated air space	18	12	9	6	6	4	5	3	3	3
(8) 1 inch glass fiber or mineral wool batts sandwiched between two sheets 0.024 inch (nominal 24 gauge) sheet metal with ventilated air space	18	12	9	6	6	4	5	3	3	3

For SI units: 1 inch = 25.4 mm

Notes:

TABLE 509.7.3.4(2) REDUCTION OF CLEARANCES WITH SPECIFIED FORMS OF PROTECTION1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 [NFPA 54: TABLE 10.2.4]

1 Reduction of clearances from combustible materials shall not interfere with combustion air, draft hood clearance and relief, and accessibility of servicing.

2 All clearances shall be measured from the outer surface of the combustible material to the nearest point on the surface of the appliance, disregarding any intervening protection applied to the combustible material.

3 Spacers and ties shall be of noncombustible material. No spacer or tie shall be used directly opposite the appliance or connector.

4 Where all clearance reduction systems use a ventilated air space, adequate provision for air circulation shall be provided as described. [See Figure 509.7.3.4(2) and Figure 509.7.3.4(3)]

5 At least 1 inch (25.4 mm) shall be between clearance reduction systems and combustible walls and ceilings for reduction systems using a ventilated air space.

6 Where a wall protector is installed on a single flat wall away from corners, it shall have a minimum 1 inch (25.4 mm) air gap. To provide adequate air circulation, the bottom and top edges, or only the side and top edges, or all edges shall be left open.

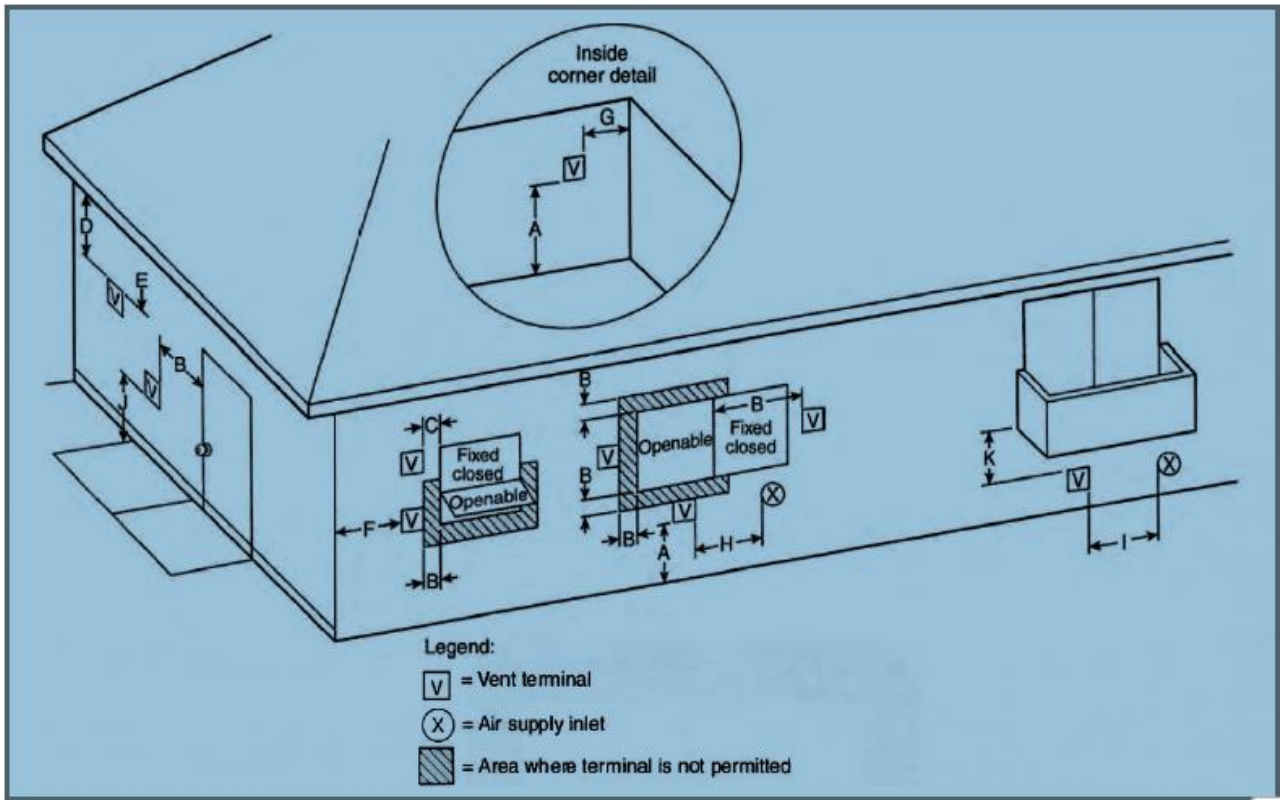
7 Mineral wool batts (blanket or board) shall have a minimum density of 8 pounds per cubic foot (lb/ft3) (128 kg/m3) and a minimum melting point of 1500°F (816°C).

8 Insulation material used as part of a clearance reduction system shall have a thermal conductivity of 1.0 British thermal unit inch per hour square foot degree Fahrenheit [Btu•in/(h•ft2•°F)] [0.1 W/(m•K)] or less.

9 At least 1 inch (25.4 mm) shall be between the appliance and the protector. The clearance between the appliance and the combustible surface shall not be reduced below that allowed in this table.

10 All clearances and thicknesses are minimum; larger clearances and thicknesses are acceptable.

11 Listed single-wall connectors shall be installed in accordance with the terms of their listing and the manufacturer's installation instructions.

	Through-the-Wall Vent Termination	509.8	509.8	**Updating Code Section**	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.8 Through-the-Wall Vent Termination. Through the-wall vent termination shall be in accordance with Section 509.8.1 through Section 509.8.3.						
	Clearance for Through-the-Wall Vent Termination	(N/A)	509.8.1	**New Code Section**	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.8.1 Clearance for Through-the-Wall Vent Termination. The clearance for through-the-wall direct and non-direct vent terminals shall be in accordance with Table 509.8.1 and Figure 509.8.1. Exception: The clearances in Table 509.8.1 shall not apply to the combustion air intake of a direct vent appliance. [NFPA4:12.9.1]						
	FIGURE EXIT TERMINALS OF MECHANICAL DRAFT AND DIRECT-VENT VENTING SYSTEMS	(N/A)	509.8.1	**Updated new figure**	**Do not adopt**	**Do not adopt**	**Existing amendment**
	FIGURE 509.8.1 EXIT TERMINALS OF MECHANICAL DRAFT AND DIRECT-VENT VENTING SYSTEMS [NFPA 54: FIGURE 12.9.1]  						
	Condensation Drain	509.9	509.9	**Updated to follow NFPA only**	**Do not adopt**	**Do not adopt**	**Existing amendment**

509.9 Condensation Drain. Provision shall be made to collect and dispose of condensate from venting systems serving Category II and Category IV appliances and noncategorized condensing appliances. [NFPA 54:12.10.1]

Installation	(N/A)	509.1	**New Code section**	**Do not adopt**	**Do not adopt**	**Existing amendment**

509.9.1 Installation. Drains for condensate shall be installed in accordance with the appliance and vent manufacturers' installation instructions. [NFPA 54:12.10.2]

THROUGH-THE-WALL DIRECT-VENT TERMINATION CLEARANCES [NFPA 54: TABLE 12.9.1]	(N/A)	509.8.1	**New Table added**	**Do not adopt**	**Do not adopt**	**Existing amendment**

ABLE 509.8.1 THROUGH-THE-WALL DIRECT-VENT TERMINATION CLEARANCES [NFPA 54: TABLE 12.9.1]<<

TABLE 509.8.1
THROUGH-THE-WALL DIRECT-VENT TERMINATION CLEARANCES
[NFPA 54: TABLE 12.9.1]

FIGURE CLEARANCE	CLEARANCE LOCATION	MINIMUM CLEARANCES FOR DIRECT VENT TERMINALS	MINIMUM CLEARANCES FOR NON-DIRECT VENT TERMINALS
A	Clearance above finished grade level, veranda, porch, deck, or balcony	12 inches	12 inches
B	Clearance to window or door that is openable	6 inches for appliances ≤ 10 000 Btu/hr	4 feet below or to side of opening or 1 foot above opening
		9 inches for appliances > 10 000 Btu/hr ≤ 50 000 Btu/hr	
		12 inches for appliances > 50 000 Btu/hr ≤ 150 000 Btu/hr	
		Appliances > 150 000 Btu/hr, in accordance with the appliance manufacturer's instructions and not less than the clearances specified for non-direct vent terminals in row B	
C	Clearance to non-openable window	None unless otherwise specified by the appliance manufacturer	
D	Vertical clearance to ventilated soffit located above the terminal within a horizontal distance of 2 feet (610 mm) from the center line of the terminal	None unless otherwise specified by the appliance manufacturer	
E	Clearance to unventilated soffit	None unless otherwise specified by the appliance manufacture	
F	Clearance to outside corner of building	None unless otherwise specified by the appliance manufacture	
G	Clearance to inside corner of building	None unless otherwise specified by the appliance manufacture	
H	Clearance to non-mechanical air supply inlet to building and the combustion air inlet to any other appliance	Same clearance as specified for row B	
I	Clearance to a mechanical air supply inlet	10 feet horizontally from inlet or 3 feet above inlet	
J	Clearance above paved sidewalk or paved driveway located on public property or other areas where condensate or vapor can cause a nuisance or hazard	7 feet and not located above public walkways or other areas where condensate or vapor can cause a nuisance or hazard	
K	Clearance to underside of veranda, porch, deck, or balcony	12 inches where the area beneath the veranda, porch, deck, or balcony is open on not less than two sides. The vent terminal is prohibited in this location where only one side is open.	

	Medium-Heat Appliances	509.10.1.4	509.10.1.4	New Code language	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.10.1.4 Medium-Heat Appliances. Vent connectors for medium-heat appliances shall be constructed of factory-built, medium-heat chimney sections or steel of a thickness not less than that specified in Table 509.10.1.4 and shall comply with the following: (1) A steel vent connector for an appliance with a vent gas temperature in excess of 1000°F (538°C) measured at the entrance to the connector shall be lined with medium-duty fire brick or the equivalent. (2) The lining shall be at least 2⁄2 inches (64 mm) thick for a vent connector having a diameter or greatest cross-sectional dimension of 18 inches(457 mm) or less. (3) The lining shall be at least 4⁄2 inches (114 mm) thick laid on the 4⁄2 inches (114 mm) bed for a vent connector having a diameter or greatest cross-sectional imension greater than 18 inches (457 mm). (4) Where factory-built chimney sections are installed, they shall be joined together in accordance with the chimney manufacturer's instructions. [NFPA 54:12.11.2.5]						
	Size of Vent Connector	509.10.2	509.10.2	Clarifying code language	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.10.2 Size of Vent Connector. A vent connector for an appliance with a single draft hood or for a Category I fan-assisted combustion system appliance shall be sized and installed in accordance with Section 510.0 or engineering methods. [NFPA 54:12.11.3.1]						
	Manifold	509.10.2.1	509.10.2.1	Clarifying code language	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.10.2.1 Manifold. Where a single appliance having more than one draft hood outlet or flue collar is installed, the manifold shall be constructed according to the instructions of the appliance manufacturer. Where there are no instructions, the manifold shall be designed and constructed in accordance with engineering methods. As an alternative method, the effective area of the manifold shall equal the combined area of the flue collars or draft hood outlets, and the vent connectors shall have a minimum 1 foot (305mm) rise. [NFPA 54:12.11.3.2]						
	Size	509.10.2.2	509.10.2.2	Clarifying code language	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.10.2.2 Size. Where two or more appliances are connected to a common vent or chimney, each vent connector shall be sized in accordance with Section 510.0 or engineering methods. [NFPA 54:12.11.3.3]						
	Height	509.10.2.3	509.10.2.3	Clarifying code language	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.10.2.3 Height. Where two or more appliances are vented through a common vent connector or vent manifold, the common vent connector or vent manifold shall be located at the highest level consistent with available headroom and clearance to combustible material and sized in accordance with Section 510.0 or engineering methods. [NFPA 54:12.11.3.5]						
	Joints	509.10.5	509.10.5	Updating method (1) on joint methods	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.10.5 Joints. Joints between sections of connector piping and connections to flue collars or draft hood outlets shall be fastened in accordance with one of the following methods: (1) Mechanically fastened by means of not less than three sheet-metal screws equally spaced around the joint. (2) Vent connectors of listed vent material assembled and connected to flue collars or draft hood outlets in accordance with the manufacturer's instructions. (3) Other approved means. {NFPA 54:12.11.6}						
	Connector Junctions	(N/A)	509.10.6	New Section added to code	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.10.6 Connector Junctions. Where vent connectors are joined together, the connection shall be made with a manufactured tee or wye fitting. [NFPA 54:12.11.7]						

	Slope	509.10.6	509.10.7	Moved section, and updated Reference	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.10.7 Slope. A vent connector shall be installed without any dips or sags and shall slope upward toward the vent or chimney at least 1⁄4 inch per foot (20.8m/m).<< **Exception:** Vent connectors attached to a mechanical draft system installed in accordance with appliance and the draft system manufacturers' instructions. [NFPA 54:12.11.8]						
	Length of Vent Connector.	509.10.7	509.10.8	Moved section	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.10.8 Length of Vent Connector. The length of vent connectors shall comply with Section 509.10.8.1 or Section 509.10.8.2. <<						
	Single Wall Connector	509.10.7.1	509.10.8.1	Moved section	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.10.8.1 Single Wall Connector. The maximum horizontal length of a single-wall connector shall be 75 percent of the height of the chimney or vent, except for << engineered systems. [NFPA 54:12.11.9.1]						
	Type B Double Wall Connector	509.10.7.2	509.10.8.2	Moved section	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.10.8.2 Type B Double Wall Connector. The maximum horizontal length of a Type B double-wall connector shall be 100 percent of the height of the chimney or<< vent, except for engineered systems. The maximum length of an individual connector for a chimney or vent system serving multiple appliances, from the appliance outlet to the junction with the common vent or another connector, shall be 100 percent of the height of the chimney or vent. [NFPA 54:12.11.9.2]						
	Support	509.10.8	509.10.9	Moved section	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.10.9 Support. A vent connector shall be supported for the design and weight of the material employed to maintain clearances and prevent physical damage and separation of joints. [NFPA 54:12.11.10]						
	Chimney Connection	509.10.9	509.10.10	Moved section	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.10.10 Chimney Connection. Where entering a flue in a masonry or metal chimney, the vent connector shall be installed above the extreme bottom to avoid<< stoppage. Where a thimble or slip joint is used to facilitate removal of the connector, the connector shall be firmly attached to or inserted into the thimble or slip joint to prevent the connector from falling out.Means shall be employed to prevent the connector from entering so far as to restrict the space between its end and the opposite wall of the chimney flue. [NFPA54:12.11.11.1 – 12.11.11.3]						
	Inspection	509.10.10	509.10.11	Moved section	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.10.11 Inspection. The entire length of a vent connector shall be readily accessible for inspection, cleaning, and replacement. [NFPA 54:12.11.12] <<						
	Fireplaces	509.10.11	509.10.12	Moved section	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.10.12 Fireplaces. A vent connector shall not be connected to a chimney flue serving a fireplace unless the fireplace flue opening is permanently sealed.[NFPA << 54:12.11.13]						
	Passage Through Ceilings, Floors, or Walls.	509.10.12	509.10.13	Update to exception on vent type b and type l	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.10.13 Passage Through Ceilings, Floors, or Walls. A vent connector shall not pass through a ceiling, floor, or fire-resistance-rated wall. A single-wall metal pipe << connector shall not pass through an interior wall. Exceptions: (1) Vent connectors made of listed Type B or Type L vent material and serving listed appliances with draft hoods and other appliances listed for use with Type B gas vents that pass through walls or partitions constructed of combustible material shall be installed with not less than the listed clearance to combustible material.						

	(2) Vent connectors shall be permitted to pass through ceilings, floors, or walls in accordance with Section 509.7.3.1 and Section 509.7.3.5.						
	Medium-Heat Appliances	509.10.12.1	509.10.13.1	Moved section	**Do not adopt**	**Do not adopt**	**Existing amendment**
	» 509.10.13.1 Medium-Heat Appliances. Vent connectors for medium-heat appliances shall not pass through walls or partitions constructed of combustible material. [NFPA54:12.11.14.2]						
	Appliances Requiring Draft Hoods.	509.12	509.12	Updated code title and exceptions	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.12 Appliances Requiring Draft Hoods. Vented appliances shall be installed with draft hoods. Exception: Dual oven-type combination ranges; direct vent appliances; fan-assisted combustion system appliances; appliances requiring chimney draft for operation; single-firebox boilers equipped with conversion burners with inputs greater than 400 000 Btu/h (117 kW); appliances equipped with blast, power, or pressure burners that are not listed for use with draft hoods; and appliances designed for forced venting. [NFPA54:12.13.1]						
	Automatically Operated Vent Dampers	509.14	509.14	Updated code language	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.14 Automatically Operated Vent Dampers. An automatically operated vent damper shall be listed. [NFPA54:12.15]						
	Obstructions	509.15	509.15	Updated Code Exceptions	**Do not adopt**	**Do not adopt**	**Existing amendment**
	509.15 Obstructions. Devices that retard the flow of vent gases shall not be installed in a vent connector, chimney, or vent. The following shall not be considered as obstructions: (1) Draft regulators and safety controls specifically listed for installation in venting systems and installed in accordance with the manufacturer's installation instructions. (2) Approved draft regulators and safety controls designed and installed in accordance with engineering methods. (3) Listed heat reclaimers and automatically operated vent dampers installed in accordance with the manufacturers' installation instructions. (4) Vent dampers serving listed appliances installed in accordance with Section 510.1 or Section 510.2 or engineering methods. (5) Approved economizers, heat reclaimers, and recuperators installed in venting systems of appliances not required to be equipped with draft hoods, provided the appliance manufacturer's instructions cover the installation of such a device in the venting system and performance in accordance with Section 509.3 and Section 509.3.1 is obtained. [NFPA 54:12.16]						
	Additional Requirements to Single Appliance Vent.	510.1	510.1	Updated Code Section Title	**Do not adopt**	**Do not adopt**	**Existing amendment**
	510.1 Additional Requirements to Single Appliance Vent. Venting Table 510.1.2(1) through Table 510.1.2(6) shall not be used where obstructions are installed in the venting system. The installation of vents serving listed appliances with vent dampers shall be in accordance with the appliance manufacturer's instructions or in accordance with the following:						
	Corrugated Chimney Liners	510.1.6	510.1.6	Updated Code Section Title	**Do not adopt**	**Do not adopt**	**Existing amendment**
	510.1.6 Corrugated Chimney Liners. Listed corrugated metallic chimney liner systems in masonry chimneys shall be sized by using Table 510.1.2(1) or Table 510.1.2(2) for Type B vents with the maximum capacity reduced by 20 percent (0.80 x maximum capacity) and the minimum capacity as shown in Table 510.1.2(1) or Table 510.1.2(2). Corrugated metallic liner systems installed with bends or offsets shall have their maximum capacity further reduced in accordance with Section 10.1.2. The 20 percent reduction for corrugated metallic chimney liner systems includes an allowance for one long radius 90 degree (1.57 rad) turn at the bottom of the liner. [NFPA54:13.1.7]						
	Vertical Vent Upsizing Using the 7 Times Rule	510.1.8	510.1.8	Updated Code Section Title	**Do not adopt**	**Do not adopt**	**Existing amendment**

510.1.8 Vertical Vent Upsizing Using the 7 Times Rule. Where the vertical vent has a larger diameter than the vent connector, the vertical vent diameter shall be used to determine the minimum vent capacity, and the connector diameter shall be used to determine the maximum vent capacity. The flow area of the vertical vent shall not exceed seven times the flow area of the listed appliance categorized vent area, flue collar area, or draft hood outlet area unless designed in accordance with engineering methods. [NFPA 54:13.1.9]

Multiple Vertical Vent Sizes	510.1.13	510.1.13	Updated Code Section Title	**Do not adopt**	**Do not adopt**	**Existing amendment**

510.1.13 Multiple Vertical Vent Sizes. In a single run of vent or vent connector, more than one diameter and type shall be permitted to be used, provided that all the sizes and types are permitted by the tables. [NFPA54:13.1.14]

Sizing Vents	510.1.16	510.1.16	Updated Code Section Title	**Do not adopt**	**Do not adopt**	**Existing amendment**

510.1.16 Sizing Vents Not Covered by Tables. Where a vent height is lower than 6 feet (1829 mm) or higher than shown in Table 510.1.2(1) through Table 510.2(9), an engineering method shall be used to calculate the vent capacity. [NFPA 54:13.1.17

Additional Requirements to Multiple-Appliance Vent	510.2	510.2	Updated Code Section Title	**Do not adopt**	**Do not adopt**	**Existing amendment**

510.2 Additional Requirements to Multiple-Appliance Vent. Venting Table 510.2(1) through Table 510.2(9) shall not be used where obstructions are installed in the venting system. The installation of vents serving listed appliances with vent dampers shall be in accordance with the appliance manufacturer's instructions, or in accordance with the following:

(1) The maximum capacity of the vent connector shall be determined using the NAT Max column.

(2) The maximum capacity of the vertical vent or chimney shall be determined using the FAN + NAT column when the second appliance is a fan-assisted appliance, or the NAT + NAT column when the second appliance is equipped with a draft hood. (3) The minimum capacity shall be determined as if the appliance were a fan-assisted appliance, as follows:

(a) The minimum capacity of the vent connector shall be determined using the FAN Min column.

(b) The FAN + FAN column shall be used when the second appliance is a fan-assisted appliance, and the FAN + NAT column shall be used when the second appliance is equipped with a draft hood, to determine whether the vertical vent or chimney configuration is not permitted (NA). Where the vent configuration is NA, the vent configuration shall not be permitted and an alternative venting configuration shall be utilized. [NFPA 54:13.2.1]

Vent Connector Rise	510.2.11	510.2.11	Updated Code Section Title	**Do not adopt**	**Do not adopt**	**Existing amendment**

510.2.11 Vent Connector Rise. The vent connector rise (*R*) for each appliance shall be measured from the draft hood outlet or flue collar to the centerline where the vent gas streams come together. {NFPA 54:13.2.12}

Vent Height	510.2.12	510.2.12	Updated Code Section Title	**Do not adopt**	**Do not adopt**	**Existing amendment**

510.2.12 Vent Height. The available total height (*H*) for multiple appliances on the same floor shall be measured from the highest draft hood outlet or flue collar up to the level of the outlet of the common vent. [NFPA54:13.2.13]

	Multistory Vent Height	510.2.13	510.2.13	Updated Code Section Title	**Do not adopt**	**Do not adopt**	**Existing amendment**
	510.2.13 Multistory Vent Height. Where appliances are located on more than one floor, the available total height (*H*) for each segment of the system shall be the vertical distance between the highest draft hood outlet or flue collar entering that segment and the centerline of the next higher interconnection tee. [NFPA 54:13.2.14]						
	Multistory Type B Vents Required	510.2.15	510.2.15	Updated Code Section Title	**Do not adopt**	**Do not adopt**	**Existing amendment**
	510.2.15 Multistory Type B Vents Required. Where used in multistory systems, vertical common vents shall be Type B double wall and shall be installed with a listed vent cap. [NFPA 54:13.2.16]						
	Multistory Vent Offsets and Capacity	510.2.16	510.2.16	Updated Code Section Title	**Do not adopt**	**Do not adopt**	**Existing amendment**
	510.2.16 Multistory Vent Offsets and Capacity. Offsets in multistory common vent systems shall be limited to a single offset in each system, and systems with an offset shall comply with all of the following: (1) The offset angle shall not exceed 45 degrees (0.79 rad) from vertical. (2) The horizontal length of the offset shall not exceed 18 inches per inch (18 mm/mm) of common vent diameter of the segment in which the offset is located. (3) For the segment of the common vertical vent containing the offset, the common vent capacity listed in the common venting tables shall be reduced by 20 percent (0.80 x maximum common vent capacity). (4) A multistory common vent shall not be reduced in size above the offset. [NFPA 54:13.2.17]						
	Vertical Vent Size Limitation	510.2.17	510.2.17	Reference section updated	**Do not adopt**	**Do not adopt**	**Existing amendment**
	510.2.17 Vertical Vent Size Limitation. Where two or more appliances are connected to a vertical vent or chimney, the flow area of the largest section of vertical vent or chimney shall not exceed seven times the smallest listed appliance categorized vent areas, flue collar area, or draft hood outlet area unless designed in accordance with engineering methods. [NFPA 54:13.2.18]						
	Two-Stage/Modulating Appliances	510.2.18	510.2.18	Section Title update. Maximum vent connector tables updated	**Do not adopt**	**Do not adopt**	**Existing amendment**
	510.2.18 Two-Stage/Modulating Appliances. The minimum vent connector capacity (FAN Min) of appliances with more than one input rate shall be determined from the tables and shall be less than the lowest appliance input rating. The maximum vent connector capacity (FAN Max or NAT Max) shall be determined from the tables and shall be greater than the highest appliance input rating. [NFPA 54:13.2.19]						
Chapter 6 Water Supply and Distribution							
51-56-0600	**Approval of Devices or Assemblies**	603.2	603.2	Updated reference section	**Do not adopt**	**Do not adopt**	**Existing amendment**

603.2 Approval of Devices or Assemblies. Before a device or an 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 in accordance 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 Section 603.5.22. 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 at the time of installation, repair, or relocation and not less than on an annual schedule thereafter, or more often where required by the Authority Having Jurisdiction. Where found to be defective or inoperative, the device or assembly shall be repaired or replaced. 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 or maintenance shall be performed by a certified backflow assembly tester or repairer certified in accordance with SSE/IAPMO/ANSI Series 5000 or any other additional certification approved by the Authority Having Jurisdiction.

51-56-0600	BACKFLOW PREVENTION DEVICES, ASSEMBLIES, AND METHODS	TABLE 603.2	TABLE 603.2	Added requirements carbonated beverage	**Adopt with existing amendment**	**Adopt with existing amendment**	Existing amendment

TABLE 603.2
BACKFLOW PREVENTION DEVICES, ASSEMBLIES, AND METHODS

DEVICE, ASSEMBLY, OR METHOD[1]	APPLICABLE STANDARDS	DEGREE OF HAZARD				INSTALLATION[2,3]
		POLLUTION (LOW HAZARD)		CONTAMINATION (HIGH HAZARD)		
		BACK-SIPHONAGE	BACK-PRESSURE	BACK-SIPHONAGE	BACK-PRESSURE	
Air gap	ASME A112.1.2	X	—	X	—	See Table 603.3.1 in this chapter.
Air gap fittings for use with plumbing fixtures, appliances, and appurtenances	ASME A112.1.3	X	—	X	—	Air gap fitting is a device with an internal air gap, and typical installation includes plumbing fixtures, appliances, and appurtenances. The critical level shall not be installed below the flood level rim.
Antisiphon fill valve (ballcocks) for gravity water closet flush tanks and urinal tanks	ASSE 1002/ ASME A112.1002/ CSA B125.12	X	—	X	—	Installation of gravity water closet flush tank and urinal tanks with the fill valve installed with the critical level not less than 1 inch above the opening of the overflow pipe.[4,5]
Atmospheric vacuum breaker (consists of a body, checking member and atmospheric port)	ASSE 1001 or CSA B64.1.1	X	—	X	—	Upright position. Have outlet open to atmosphere. Minimum of 6 inches or listed distance above all downstream piping and flood level rim of receptor.[4,5]
Backflow preventer for Carbonated Beverage Dispensers (two independent check valves with a vent to the atmosphere)	ASSE 1022	X	X	X	X	Installation includes carbonated beverage machines or dispensers. These devices operate under intermittent or continuous pressure conditions.
Backflow preventer with intermediate atmospheric vent	ASSE 1012	X	X	—	—	Installation of potable water connections to water boilers. No high-hazard chemicals shall be introduced into the system using such devices. Designed to operate under continuous pressure conditions. May discharge water.
Backflow preventer with intermediate atmospheric vent and pressure reducing valve	ASSE 1081	X	X	—	—	Installation of potable water connections to water boilers. No high-hazard chemicals shall be introduced into the system using such devices. Designed to operate under continuous pressure conditions. May discharge water.
Chemical dispenser with integral backflow protection	ANSI/CAN/ ASSE/IAPMO 1055	X	—	X	—	Shall be installed in accordance with manufacturer's installation instructions with dedicated water supply whenever possible.
Dual check backflow preventer	ASSE 1024	X	X	—	—	Installation does not include carbonated drink dispensers.
Dual check backflow preventer wall hydrants, freeze resistant	ASSE 1053	X	—	X	—	Such devices are not for use under continuous pressure conditions.[4]
Double Check Detector Fire Protection Backflow Prevention Assembly (two independent check valves with a parallel detector assembly consisting of a water meter and a double check valve backflow prevention assembly and means for field testing)	ASSE 1048	X	X	—	—	Horizontal unless otherwise listed. Access and clearance shall be in accordance with the manufacturer's instructions, and not less than a 12 inch clearance at the bottom for maintenance. May need platform/ladder for test and repair. Does not discharge water. Installation includes a fire protection system and is designed to operate under continuous pressure conditions.

TABLE 603.2
BACKFLOW PREVENTION DEVICES, ASSEMBLIES, AND METHODS (continued)

DEGREE OF HAZARD						
DEVICE, ASSEMBLY, OR METHOD[1]	APPLICABLE STANDARDS	POLLUTION (LOW HAZARD)		CONTAMINATION (HIGH HAZARD)		INSTALLATION[2,3]
		BACK-SIPHONAGE	BACK-PRESSURE	BACK-SIPHONAGE	BACK-PRESSURE	
Double Check Valve Backflow Prevention Assembly (two independent check valves and means of field testing)	ASSE 1015; AWWA C510; CSA B64.5 or CSA B64.5.1	X	X	—	—	Horizontal unless otherwise listed. Access and clearance shall be in accordance with the manufacturer's instructions, and not less than a 12 inch clearance at the bottom for maintenance. May need platform/ladder for test and repair. Does not discharge water.
Freeze resistant sanitary yard hydrants	ASSE 1057	X	—	X	—	Such devices are not for use under continuous pressure conditions.[4]
Hose connection backflow preventers	ASSE 1052	X	—	X	—	Such devices are not for use under continuous pressure conditions.[4,6]
Hose connection vacuum breakers	ASSE 1011	X	—	X	—	Such devices are not for use under continuous pressure conditions. No valve downstream.[4,6]
Laboratory faucet backflow preventer	ASSE 1035	X	—	X	—	Installation includes laboratory faucets. Such devices are not for use under continuous pressure conditions. No valve downstream.[4]
Pressure Vacuum Breaker Backflow Prevention Assembly (loaded air inlet valve, internally loaded check valve and means for field testing)	ASSE 1020 or CSA B64.1.2	X	—	X	—	Upright position. May have valves downstream. Minimum of 12 inches above all downstream piping and flood-level rim of the receptor. May discharge water.
Reduced Pressure Detector Fire Protection Backflow Prevention Assembly (two independently acting loaded check valves, a differential pressure relief valve, with a parallel detector assembly consisting of a water meter and a reduced-pressure principle backflow prevention assembly, and means for field testing)	ASSE 1047	X	X	X	X	Horizontal unless otherwise listed. Access and clearance shall be in accordance with the manufacturer's instructions, and not less than a 12 inch clearance at the bottom for maintenance. May need platform/ladder for test and repair. May discharge water. Installation includes a fire protection system and is designed to operate under continuous pressure conditions.
Reduced Pressure Principle Backflow Prevention Assembly (two independently acting loaded check valves, a differential pressure relief valve and means for field testing)	ASSE 1013; AWWA C511; CSA B64.4 or CSA B64.4.1	X	X	X	X	Horizontal unless otherwise listed. Access and clearance shall be in accordance with the manufacturer's instructions, and not less than a 12 inch clearance at the bottom for maintenance. May need platform/ladder for test and repair. May discharge water.
Spill-Resistant Pressure Vacuum Breaker (single check valve with air inlet vent and means of field testing)	ASSE 1056	X	—	X	—	Upright position. Minimum of 12 inches or listed distance above all downstream piping and flood-level rim of receptor.[5]
Vacuum breaker wall hydrants, hose bibbs, freeze resistant, automatic draining type	ASSE 1019 or CSA B64.2.1.1	X	—	X	—	Installation includes wall hydrants and hose bibbs. Such devices are not for use under continuous pressure conditions (means of shutoff downstream of device is prohibited).[4,5]

For SI units: 1 inch = 25.4 mm

Notes:

1 See the description of devices and assemblies in this chapter.
2 Installation in pit or vault requires previous approval by the Authority Having Jurisdiction.
3 Refer to the general and specific requirement for installation.
4 Not to be subjected to operating pressure for more than 12 hours in a 24-hour period.
5 For deck-mounted and equipment-mounted vacuum breaker, see Section 603.5.13.
6 Shall be installed in accordance with Section 603.5.7.

	Testing	603.4.2	603.4.2	Updated reference location	**Do Not Adopt**	**Do not adopt**	**Existing amendment**
	603.4.2 Testing. The premise owner or responsible person shall have the backflow prevention assembly tested by a certified backflow assembly tester at the time of installation, repair, or relocation and not less than on an annual schedule thereafter, or more often where required by the Authority Having Jurisdiction. The periodic testing shall be performed in accordance with the procedures referenced in ASSE/IAPMO/ANSI Series 5000 by a tester qualified in accordance with those standards. The field test kit used shall comply with ASSE 1064.						
	Protection from Lawn Sprinklers and Irrigation Systems	603.5.6	603.5.6	Added new device requirement	**Adopt with existing amendment**	**Code Change proposal**	**Revise State Amendment to model Code change**
	603.5.6 Protection from Lawn Sprinklers and Irrigation Systems. Potable water supplies to systems having no pumps or connections for pumping equipment, nd no chemical injection or provisions for chemical injection, shall be protected from backflow by one of the following devices: (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 valve complying with IAPMO PS 72						
	Beverage Dispensers	603.5.12	603.5.12	Updated requirements for Beverage Dispensers	**Do not adopt**	**Code Change proposal**	**Review for a determination on existing amendment**
	603.5.12 Beverage Dispensers. Potable water supply to carbonated beverage dispensers shall be protected by an air gap or a vented backflow preventer that complies with ASSE 1022. For carbonated beverage dispensers, piping material installed downstream of the backflow preventer shall not be affected by carbon dioxide gas. Non-carbonated beverage dispensers, such as ice makers and coffee machines, shall be protected by an air gap or dual check backflow preventer that comply with ASSE 1032 or ASSE 1024.						
	Garbage Can Washers	(N/A)	603.5.19	New Section added	**Accept Change**	**Accept Change**	
	603.5.19 Garbage Can Washers. Where garbage can washers are connected to a potable water supply system, the connection shall be protected against backflow in accordance with Table 603.2.						
	Plumbing Fixture Fittings	603.5.19	603.5.20	Section moved	**Accept Change**	**Accept Change**	
	>> 603.5.20 Plumbing Fixture Fittings. Plumbing fixture fittings with integral backflow protection shall comply with ASME A112.18.1/CSA B125.1. >>						
	Swimming Pools,	603.5.20	603.5.21	**Section moved**	**Accept Change**	**Accept Change**	

>> **603.5.21 Swimming Pools**, Spas, and Hot Tubs. Potable water supply to swimming pools, spas, and hot tubs shall be protected by an air gap or a reduced pressure principle backflow preventer in accordance with the following:

(1) The unit is equipped with a submerged fill line.

(2) The potable water supply is directly connected to the unit circulation system. >>

Chemical Dispensers	603.5.21	603.5.22	Section moved and new backflow requirements	**Accept Change**	**Code Change proposal**	**Review with DOH on backflow**

>> **603.5.22 Chemical Dispensers.** The water supply to chemical dispensers shall be protected against backflow by one of the following:

(1) The chemical dispenser shall comply with ANSI/CAN/ASSE/IAPMO 1055. Where an installation involves a water source coming from a faucet with an integrated vacuum breaker device, a pressure bleed device conforming to IAPMO PS 104 shall be used to protect the vacuum breaker device.

(2) Water supply shall be protected by one of the following methods:

(a) Air gap

(b) Atmospheric vacuum breaker (AVB)

(c) Pressure vacuum breaker backflow prevention assembly (PVB)

(d) Spill-resistant pressure vacuum breaker (SVB)

(e) Reduced-pressure principle backflow prevention assembly (RP)

Pipe, Tube, and Fittings	604.1	604.1	Added new reference page	**Accept Change**	**Accept Change**	

604.1 Pipe, Tube, and Fittings. Pipe, tube, fittings, solvent cement, thread sealants, solders, and flux used in potable water systems intended to supply drinking water shall comply with NSF/ANSI/CAN 61. Where pipe fittings and valves are made from copper alloys containing more than 15 percent zinc by weight and are used in plastic piping systems, they shall be resistant to dezincification and stress corrosion cracking in compliance with NSF/ANSI 14. Materials used in the water supply system, except valves and similar devices, shall be of a like material, except where otherwise approved by the Authority Having Jurisdiction. Materials for building water piping and building supply piping shall comply with the applicable standards referenced in Table 604.1.

Flexible Connectors	604.5	604.5	Clarified code language.	**Accept Change**	**Accept Change**	

604.5 Flexible Connectors. Flexible water connectors shall be installed in accessible locations, and where under continuous pressure shall comply with ASME A112.18.6/CSA B125.6. Flexible water connectors with an excess flow shutoff device shall comply with CSA B125.5/IAPMO Z600.

Epoxy Coating	604.9	604.9	Updated reference for code	**Accept Change**	**Accept Change**	

604.9 Epoxy Coating. The epoxy coating used on existing, underground steel building supply piping shall comply with NSF/ANSI/CAN 61 and AWWA C210.

MATERIALS FOR BUILDING SUPPLY AND WATER DISTRIBUTION PIPING AND FITTINGS	TABLE 604.1	TABLE 604.1	Updated Code Reference location	**Accept Change**	**Accept Change**	

TABLE 604.1
MATERIALS FOR BUILDING SUPPLY AND WATER DISTRIBUTION PIPING AND FITTINGS

MATERIAL	BUILDING SUPPLY PIPE AND FITTINGS	WATER DISTRIBUTION PIPE AND FITTINGS	REFERENCED STANDARD(S) PIPE	REFERENCED STANDARD(S) FITTINGS
Copper and Copper Alloys	X	X	ASTM B42, ASTM B43, ASTM B75, ASTM B88, ASTM B135, ASTM B251, ASTM B302, ASTM B447	ASME B16.15, ASME B16.18, ASME B16.22, ASME B16.26, ASME B16.50[2], ASME B16.51, ASSE 1061, ASTM F3226, AWWA C606, CSA B242, IAPMO PS 53, IAPMO PS 117
CPVC	X	X	ASTM D2846, ASTM F441, ASTM F442, CSA B137.6	ASSE 1061, ASTM D2846, ASTM F437, ASTM F438, ASTM F439, ASTM F1970, CSA B137.6, IAPMO PS 53
CPVC-AL-CPVC	X	X	ASTM F2855	ASTM D2846
Ductile-Iron	X	X	AWWA C151	ASME B16.4, AWWA C110, AWWA C153, AWWA C606, CSA B242, IAPMO PS 53
Galvanized Steel	X	X	ASTM A53	AWWA C606, CSA B242, IAPMO PS 53
Malleable Iron	X	X	—	ASME B16.3, AWWA C606, IAPMO PS 53
PE	X[1]	—	ASTM D2239, ASTM D2737, ASTM D3035, AWWA C901, CSA B137.1	ASTM D2609, ASTM D2683, ASTM D3261, ASTM F1055, CSA B137.1
PE-AL-PE	X	X	ASTM F1282, CSA B137.9	ASTM F1282, ASTM F1974, CSA B137.9
PE-RT	X	X	ASTM F2769, CSA B137.18	ASSE 1061, ASTM D3261, ASTM F1055, ASTM F1807, ASTM F2098, ASTM F2159, ASTM F2735, ASTM F2769, CSA B137.18
PEX	X	X	ASTM F876, CSA B137.5, AWWA C904[1]	ASSE 1061, ASTM F877, ASTM F1807, ASTM F1960, ASTM F2080, ASTM F2159, ASTM F2735, ASTM F3347, ASTM F3348, CSA B137.5
PEX-AL-PEX	X	X	ASTM F1281, CSA B137.10	ASTM F1281, ASTM F1974, ASTM F2434, CSA B137.10
PP	X	X	ASTM F2389, CSA B137.11	ASTM F2389, CSA B137.11
PVC	X[1]	—	ASTM D1785, ASTM D2241, AWWA C900	ASTM D2464, ASTM D2466, ASTM D2467, ASTM F1970, AWWA C907, IAPMO PS 53
Stainless Steel	X	X	ASTM A269, ASTM A312, ASTM A554, ASTM A778	ASTM F3226, CSA B242, IAPMO PS 53, IAPMO PS 117

Notes:
[1] For building supply or exterior cold-water applications, not for water distribution piping.
[2] For brazed fittings only.

Solvent Cement Joints	605.2.2	605.2.2	Specified code	**Accept Change**	**Accept Change**	

	605.2.2 Solvent Cement Joints. Solvent cement joints for CPVC pipe and fittings shall be clean from dirt and moisture. Solvent cements shall comply with ASTM F493, requiring the use of a primer shall be orange in color. The primer shall be colored and shall comply with ASTM F656. Listed solvent cement that complies with ASTM F493 and that does not require the use of primers, yellow, green, or red in color, shall be permitted for pipe and fittings that comply with ASTM D2846, 1⁄2 of an inch (15mm) through 2 inches (50 mm) in diameter or ASTM F442, 1⁄2 of an inch (15 mm) through 3 inches (80 mm) in diameter. Apply primer where required inside the fitting and to the depth of the fitting on pipe. Apply liberal coat of cement to the outside surface of pipe to depth of fitting and inside of fitting. Place pipe inside fitting to forcefully bottom the pipe in the socket and hold together until joint is set.						
	PVC Plastic Pipe and Joints	605.12	605.12	Added new exemption	**Accept Change**	**Accept Change**	
	605.12 PVC Plastic Pipe and Joints. PVC plastic pipe and fitting joining methods shall be installed in accordance with the manufacturer's installation instructions and shall comply with Section 605.12.1 through Section 605.12.3. PVC piping shall not be exposed to direct sunlight. **Exception:** PVC piping in a location exposed to direct sunlight shall not exceed 24 inches (610 mm) in length and be wrapped with not less than 0.04 of an inch (1.02 mm) thick UV resistant tape or otherwise protected from UV degradation.						
	Dielectric Unions	605.15	605.15	Change in reference location	**Accept Change**	**Accept Change**	
	605.15 Dielectric Unions. Dielectric unions where installed at points of connection where there is a dissimilarity of metals shall be in accordance with ASSE 1079 or IAPMO PS 66.						
	Copper or Copper Alloy Pipe or Tubing to Threaded Pipe Joints	605.16.1	605.16.1	Change in reference location	**Accept Change**	**Accept Change**	
	605.16.1 Copper or Copper Alloy Pipe or Tubing to Threaded Pipe Joints. Joints from copper or copper alloy pipe or tubing to threaded pipe shall be made using copper alloy adapter, copper alloy nipple [minimum 6 inches (152 mm)], dielectric fitting, or dielectric union in accordance with ASSE 1079 or IAPMO PS 66.The joint between the copper or copper alloy pipe or tubing and the fitting shall be a soldered, brazed, flared, or press-connect joint and the connection between the threaded pipe and the fitting shall be made with a standard pipe size threaded joint.						
	Stainless Steel to Other Materials.	605.16.3	605.16.3	New reference location	**Accept Change**	**Accept Change**	
	605.16.3 Stainless Steel to Other Materials. Where connecting stainless steel pipe to other types of piping, mechanical joints of the compression type, dielectric fitting, or dielectric union in accordance with ASSE 1079 or IAPMO PS 66 and designed for the specific transition intended shall be used.						
	General	606.1	606.1	New reference and code update	**Accept Change**	**Accept Change**	
	606.1 General. Valves up to and including 2 inches (50mm) in size shall be copper alloy or other approved material. Sizes exceeding 2 inches (50 mm) shall be ermitted to have bodies of cast iron, copper alloy, or other approved materials. Each gate or ball valve shall be a fullway or full-port type with working parts of the non-corrosive material. Where valves are made from copper alloys containing more than 15 percent zinc by weight and are used in plastic piping systems, they shall be resistant to dezincification and stress corrosion cracking in compliance with NSF/ANSI 14. Valves carrying water used in potable water systems shall comply with the requirements of ASME A112.4.14/CSA B124.14, ASMEB16.34, ASTM F1970, ASTM F2389, AWWA C500, AWWA C504, AWWA C507, IAPMO/ANSI Z1157, MSS SP-67, MSS SP-70, MSS SP-71, MSS SP-72, MSS SP-78, MSS SP-80, MSS SP-110, MSS SP-122, or NSF/ANSI 359.Valves intended to supply drinking water shall also comply with the requirements of NSF/ANSI/CAN 61.						
	Manifolds	(N/A)	606.5.1	New Code section added	**Accept Change**	**Accept Change**	
	606.5.1 Manifolds. Field installed manifolds for water distribution shall conform with the applicable requirements for valves, pipes, and fittings as referenced in this code. Manufactured water distribution manifolds shall be in accordance with IAPMO IGC 109.						
	Leak Detection Devices	606.9	606.9	New reference location	**Accept Change**	**Accept Change**	
	606.9 Leak Detection Devices. Where leak detection devices for water supply and distribution are installed, they shall comply with ANSI/CAN/IAPMO Z1349.						
	Private Well Water Tanks	(N/A)	607.2	New Code section added	**Accept Change**	**Code Change proposal**	**Source state boiler pressure code applies? Code change proposal**
	607.2 Private Well Water Tanks. Pressurized potable water tanks for private well water systems shall comply with ASSE1099/WSC-PST 2000.						

	Potable Water Tanks	607.2	607.3	New location, and updated Reference location	**Accept Change**	**Accept Change**	
	607.3 Potable Water Tanks. Potable water supply tanks, interior tank coatings, or tank liners intended to supply drinking water shall comply with NSF/ANSI/CAN 61. <<						
	Venting	607.3	607.4	New location	**Accept Change**	**Accept Change**	
	607.4 Venting. Tanks used for potable water shall be tightly covered and vented in accordance with the manufacturer's installation instructions. Such vent shall be << screened with a corrosion-resistant material of not less than number 24 mesh.						
	Overflow	607.4	607.5	New location	**Accept Change**	**Accept Change**	
	607.5 Overflow. Tanks shall have not less than a 16 square inch (0.01 m2) overflow that is screened with a corrosion-resistant material of not less than number 24 << mesh.						
	Valves	607.5	607.6	New reference and code update	**Accept Change**	**Accept Change**	
	607.6 Valves. Pressurized tanks shall be provided with a listed pressure-relief valve installed in accordance with the manufacturer's installation instructions. The << relief valve shall be discharged in accordance with Section 608.5. Where a potable water supply tank is located above the fixtures, appliances, or system components it serves, it shall be equipped with a vacuum relief valve that complies with ANSI Z21.22/CSA 4.4.						
	Inadequate Water Pressure	608.1	608.1	Updated code language	**Accept Change**	**Accept Change**	
	608.1 Inadequate Water Pressure. Where the water pressure in the main or other source of supply will not provide a residual water pressure of not less than 15 pounds force per square inch (psi) (103 kPa), after allowing for friction and other pressure losses, a tank and a pump or other means that will provide said 15 psi (103 kPa) pressure shall be installed. Where fixtures, fixture fittings, or both are installed that, require a residual pressure exceeding 15 psi (103 kPa), that minimum residual pressure shall be provided.						
	Excessive Water Pressure	608.2	608.2	Updated code language, and ne Reference location	**Accept Change**	**Accept Change**	
	608.2 Excessive Water Pressure. Where static water pressure in the water supply piping exceeds 80 psi (552 kPa), an approved-type pressure regulator preceded by an adequate strainer shall be installed and the static pressure reduced to 80 psi (552 kPa) or less. Pressure regulators for potable water distribution systems shall comply with ASSE 1003 or AWWA C530. Pressure regulator(s) equal to or exceeding 1½ inches (40 mm) shall not require a strainer. Such regulator(s) shall control the pressure to water outlets in the building unless otherwise approved by the Authority Having Jurisdiction. Each such regulator and strainer shall be accessibly located aboveground or in a vault equipped with a properly sized and sloped boresighted drain to daylight, shall be protected from freezing, and shall have the strainer readily accessible for cleaning without removing the regulator or strainer body or disconnecting the supply piping. Pipe size determinations shall be based on 80 percent of the reduced pressure where using Table 610.4. An approved expansion tank shall be installed in the cold water distribution piping downstream of each such regulator to prevent pressure exceeding 80 psi from developing due to thermal expansion. Expansion tanks used in potable water systems intended to supply drinking water shall comply with NSF/ANSI/CAN 61. The expansion tank shall be properly sized, securely fastened to the structure, and installed in accordance with the manufacturer's installation instructions and listing. Systems designed by a licensed plumbing contractor or registered design professionals shall be permitted to use approved pressure relief valves in lieu of expansion tanks provided such relief valves have a maximum pressure relief setting of 100 psi (689 kPa) or less.						

	Expansion Tanks, and Combination Temperature and Pressure-Relief Valves.	608.3	608.3	Updated code language, and New Reference location	**Accept Change**	**Accept Change**	
	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 heater 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. Pre-pressurized water expansion tanks shall comply with IAPMO/ANSI Z1088. 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, securely fastened to the structure, and installed in accordance with the manufacturer's installation instructions. A water system containing storage water heating equipment shall be provided with an approved, listed, adequately sized combination temperature and pressure-relief valve, except for listed non-storage instantaneous heaters having an inside diameter of not more than 3 inches (80 mm). Each such approved combination temperature and pressure-relief valve shall be installed on the water-heating device in an approved location based on its listing requirements and the manufacturer's installation instructions. Each such combination temperature and pressure-relief valve shall be provided with a drain in accordance with Section 608.5.**Exception:** An expansion tank shall not be required for an instantaneous non-storage water heater.						
	Vacuum Relief Valves	608.7	608.7	New Reference location	**Accept Change**	**Accept Change**	
	608.7 Vacuum Relief Valves. Where a hot-water storage tank or an indirect water heater is located at an elevation above the fixture outlets in the hot-water system, a vacuum relief valve that complies with ANSI Z21.22/CSA 4.4 shall be installed on the storage tank or heater.						
	Hot-Water Recirculating Pumps	(N/A)	609.8.3	New section to protect health and safety	**Accept Change**	**Code Change proposal**	**Code Change proposal**
	609.8.3 Hot-Water Recirculating Pumps. For healthcare facilities, long term care facilities, hotels, or motels, devices that automatically turn off the recirculation pump(s) shall not be required.						

Water Supply Fixture Units	610.3	610.3	Updated Code Language	**Accept Change**	**Accept Change**	

TABLE 610.3
WATER SUPPLY FIXTURE UNITS (WSFU) AND MINIMUM FIXTURE BRANCH PIPE SIZES[3]

APPLIANCES, APPURTENANCES OR FIXTURES[2]	MINIMUM FIXTURE BRANCH PIPE SIZE[1,4] (inches)	PRIVATE	PUBLIC	ASSEMBLY[6]
Bathtub or Combination Bath/Shower (fill)	½	4.0	4.0	—
¾ inch Bathtub Fill Valve	¾	10.0	10.0	—
Bidet	½	1.0	—	—
Clothes Washer	½	4.0	4.0	—
Dental Unit, cuspidor	½	—	1.0	—
Dishwasher, domestic	½	1.5	1.5	—
Drinking Fountain or Water Cooler	½	0.5	0.5	0.75
Hose Bibb	½	2.5	2.5	—
Hose Bibb, each additional[8]	½	1.0	1.0	—
Lavatory	½	1.0	1.0	1.0
Lawn Sprinkler, each head[5]	—	1.0	1.0	—
Mobile Home, each (minimum)	—	12.0	—	—
Sinks	—	—	—	—
Bar	½	1.0	2.0	—
Clinical Faucet	½	—	3.0	—
Clinical Flushometer Valve with or without faucet	1	—	8.0	—
Kitchen, domestic with or without dishwasher	½	1.5	1.5	—
Laundry	½	1.5	1.5	—
Service or Mop Basin	½	1.5	3.0	—
Washup, each set of faucets	½	—	2.0	—
Shower, per head	½	2.0	2.0	—
Urinal, 1.0 GPF Flushometer Valve	¾	See Footnote[7]		—
Urinal, greater than 1.0 GPF Flushometer Valve	¾	See Footnote[7]		—
Urinal, flush tank	½	2.0	2.0	3.0
Nonwater Urinal with Drain Cleansing Action	½	1.0	1.0	1.0
Wash Fountain, circular spray	¾	—	4.0	—
Water Closet, 1.6 GPF Gravity Tank	½	2.5	2.5	3.5
Water Closet, 1.6 GPF Flushometer Tank	½	2.5	2.5	3.5
Water Closet, 1.6 GPF Flushometer Valve	1	See Footnote[7]		—
Water Closet, greater than 1.6 GPF Gravity Tank	½	3.0	5.5	7.0
Water Closet, greater than 1.6 GPF Flushometer Valve	1	See Footnote[7]		—

For SI units: 1 inch = 25 mm

Notes:

1 Size of the cold branch pipe, or both the hot and cold branch pipes.

2 Appliances, appurtenances, or fixtures not referenced in this table shall be permitted to be sized by reference to fixtures having a similar flow rate and frequency of use.

3 The listed fixture unit values represent their load on the cold water building supply. The separate cold water and hot water fixture unit value for fixtures having both hot and cold water connections shall be permitted to be each taken as three-quarter of the listed total value of the fixture.

4 The listed minimum supply branch pipe sizes for individual fixtures are the nominal (I.D.) pipe size.

5 For fixtures or supply connections likely to impose continuous flow demands, determine the required flow in gallons per minute (gpm) (L/s), and add it separately to the demand in gpm (L/s) for the distribution system or portions thereof.

6 Assembly [Public Use (See Table 422.1)].

7 Where sizing flushometer systems, see Section 610.10.

8 Reduced fixture unit loading for additional hose bibbs is to be used where sizing total building demand and for pipe sizing where more than one hose bibb is supplied by a segment of water distribution pipe. The fixture branch to each hose bibb shall be sized on the basis of 2.5 fixture units.

Scale Reduction Devices	611.1.2	611.1.2	New Reference location	**Accept Change**	**Accept Change**	

611.1.2 Scale Reduction Devices. Scale reduction devices shall comply with IAPMO/ANSI Z601.

Air Gap Discharge	611.2	611.2	New Reference location	**Accept Change**	**Accept Change**	

611.2 Air Gap Discharge. Discharge from drinking water treatment units shall enter the drainage system through an air gap in accordance with Table 603.3.1 or an air gap device that complies with Table 603.2, NSF/ANSI 58, or IAPMO PS 65.

SIZING OF RESIDENTIAL WATER SOFTENERS4	611.4	611.4	Updated New Note	**Accept Change**	**Accept Change**	

TABLE 611.4
SIZING OF RESIDENTIAL WATER SOFTENERS[4]

REQUIRED SIZE OF SOFTENER CONNECTION (inches)	NUMBER OF BATHROOM GROUPS SERVED[1]
¾	up to 2[2]
1	up to 4[3]

For SI units: 1 inch = 25 mm

Notes:

1 Installation of a kitchen sink and dishwasher, laundry sink, and automatic clothes washer permitted without additional size increase.

2 An additional water closet and lavatory permitted.

3 Over four bathroom groups, the softener size shall be engineered for the specific installation.

4 See also Appendix A, Recommended Rules for Sizing the Water Supply System, and Appendix C, Alternate Plumbing Systems, for alternate methods of sizing water supply systems.

Where Required	612.1	612.1	New Reference location	**Adopt with existing amendment**	**Adopt with existing amendment**	

612.1 Where Required. Where residential sprinkler systems are required in one and two-family dwellings or townhouses, the systems shall be installed by personnel, installer, or both, certified in accordance with ASSE/IAPMO/ANSI Series 7000 in accordance with this section or NFPA 13D. This section shall be considered equivalent to NFPA 13D. Partial residential sprinkler systems shall be permitted to be installed in buildings not required to be equipped with a residential sprinkler system.

DRINKING WATER TREATMENT UNITS	TABLE 611.1	TABLE 611.1	Updated Code language	**Accept Change**	**Accept Change**	

TABLE 611.1
DRINKING WATER TREATMENT UNITS

APPLICATION	RESIDENTIAL		COMMERCIAL
	POINT OF USE	POINT OF ENTRY	
Aesthetic Contaminant Reduction (filters)	NSF/ANSI 42	NSF/ANSI 42	ASSE 1087 and NSF/ANSI 42*
Health Related Contaminant Reduction (filters)	NSF/ANSI 53	NSF/ANSI 53	ASSE 1087 and NSF/ANSI 53*
Water Softener	–	NSF/ANSI 44	ASSE 1087
Ultraviolet Water Treatment	NSF/ANSI 55	NSF/ANSI 55	ASSE 1087
Reverse Osmosis	NSF/ANSI 58	NSF/ANSI/CAN 61	ASSE 1087
Distillation	NSF/ANSI 62	NSF/ANSI 62	ASSE 1087

* Required for commercial modular systems only.

Chapter 7 Sanitary Drainage						
MAXIMUM UNIT LOADING AND MAXIMUM LENGTH OF DRAINAGE AND VENT PIPING	TABLE 703.2	TABLE 703.2	Updated Code Language	**Accept Change**	**Accept Change**	

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

SIZE OF PIPE (inches)	1¼	1½	2	3	4	5	6	8	10	12
Maximum Units										
Drainage Piping[1]										
Vertical	1	2[2,7]	16[3]	48[4]	256	600	1380	3600	5600	8400
Horizontal	1	1[7]	8[3]	35[4]	216[5]	428[5]	720[5]	2640[5]	4680[5]	8200[5]
Maximum Length										
Drainage Piping										
Vertical, (feet)	45	65	85	212	300	390	510	750	–	–
Horizontal (unlimited)										
Vent Piping										
Horizontal and Vertical[6]										
Maximum Units	1	8[3]	24	84	256	600	1380	3600	–	–
Maximum Lengths, (feet)	45	60	120	212	300	390	510	750		

For SI units: 1 inch = 25 mm, 1 foot = 304.8 mm

Notes:

1 Excluding trap arm.

2 Except for sinks, urinals, and dishwashers – exceeding 1 fixture unit.

3 Except for six-unit traps or water closets.

4 Not to exceed six water closets or five six-unit traps.

5 Based on 1⁄4 inch per foot (20.8 mm/m) slope. For 1⁄8 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 1¼ 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. 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 901.3.

7 Up to 8 public lavatories are permitted to be installed on a 1½ inch (40 mm) vertical branch or horizontal sanitary branch sloped at ¼ inch per foot (20.8 mm/m).

Plastic Pipe to Other Materials	705.10.3	705.10.3	New Reference location in updated code language	**Accept Change**	**Accept Change**	

705.10.3 Plastic Pipe to Other Materials. Where connecting plastic pipe to other types of plastic or other types of piping material; approved listed adapter or transition fittings and listed for the specific transition intended shall be used. Except as provided in Section 705.9.4, PVC and ABS pipe and fittings shall not be solvent welded to any other unlike material.

CLEANOUT MATERIALS FOR DRAIN, WASTE, AND VENT	TABLE 707.2	TABLE 707.2	New Reference location	**Accept Change**	**Accept Change**	

TABLE 707.2
CLEANOUT MATERIALS FOR DRAIN, WASTE, AND VENT

MATERIAL	STANDARD
ABS	ASTM D2661, CSA B79, IAPMO IGC 78, IAPMO IGC 224
Cast Iron	ASME A112.36.2M, ASTM A888, CISPI 301, CSA B79, IAPMO IGC 224
Copper or Copper Alloy	ASME A112.36.2M, CSA B79
Ductile Iron	CSA B79
Elastomers	CSA B79, IAPMO PS 90
Polyethylene (PE)	CSA B79
Polypropylene (PP)	CSA B79
PVC	ASTM D2665, CSA B79, IAPMO IGC 78, IAPMO IGC 224
Polyvinylidene Fluoride (PVDF)	CSA B79
Stainless Steel	CSA B79

Load Rated Cover	(N/A)	707.4.1	New Section added	**Accept Change**	**Accept Change**	

707.4.1 Load Rated Cover. Cleanout floor covers and top rims meant to take loads shall be rated for the loading in accordance with ASME A112.36.2M.

General	708.1	708.1	Update Code language and requirements	**Accept Change**	**Accept Change**	

708.1 General. Building drain and other horizontal drainage piping shall be run in practical alignment and a uniform slope of not less than 1⁄4 inch per foot (20.8 mm/m) or 2 percent toward the point of disposal. Where it is impractical due to the depth of the street sewer, structural features, or to the arrangement of a building or structure to obtain a slope of 1⁄4 inch per foot (20.8 mm/m) or 2 percent, building drain piping 4 inches (100 mm) or larger in diameter shall be permitted to have a slope of not less than 1⁄8 inch per foot (10.4 mm/m) or 1 percent, when first approved by the Authority Having Jurisdiction.

Backwater Valves	710.9	710.6	Reference location update	**Accept Change**	**Accept Change**	

710.6 Backwater Valves. Backwater valves, gate valves, fullway ball valves, unions, motors, compressors, air tanks, and other mechanical devices required by this section shall be located where they will be accessible for inspection and repair and, unless continuously exposed, shall be enclosed in a masonry pit fitted with an adequately sized removable cover. Backwater valves shall comply with ASME A112.14.1 or IAPMO IGC 305, and have bodies of cast-iron, plastic, copper alloy, or other approved materials; shall have noncorrosive bearings, seats, and self-aligning discs; and shall be constructed to ensure a positive mechanical seal. Such backwater valves shall remain open during periods of low flows to avoid screening of solids and shall not restrict capacities or cause excessive turbulence during peak loads. Unless otherwise listed, valve access covers shall be bolted type with gasket, and each valve shall bear the manufacturer's name cast into the body and the cover.

Alarm	710.9	710.9	Code Language update	**Accept Change**	**Accept Change**	

710.9 Alarm. Such sumps and receiving tanks shall be automatically discharged and, wherein a "public use" occupancy, shall be provided with dual pumps or ejectors arranged to function alternately in normal use and independently. Such pumps shall be capable of running continuously in case of overload or mechanical failure of one of the pumps or ejectors. The pumps shall have an audio and visual alarm, readily accessible, that signals pump failure or an overload condition. The lowest inlet shall have a clearance of not less than 2 inches (51 mm) from the high-water or "starting" level of the sump.

Private	**713.2**	**713.2**	**Code Language update**	**Do Not Adopt**	**Do Not Adopt**	**Existing State Amendment**

713.2 Private Sewage Disposal System. Where no public sewer intended to serve a lot or premises is available in a thoroughfare or right of way abutting such lot or premises, drainage piping from a building or works shall be connected to a private sewage disposal system as approved by the Authority Having Jurisdiction. See Appendix H.

Existing Sewers	**715.3**	**715.3**	**Updated Section and new reference location**	**Do Not Adopt**	**Do Not Adopt**	

715.3 Existing Sewers. Where permitted by the Authority Having Jurisdiction, trenchless methods of rehabilitation of existing building sewer and building storm sewers shall be installed in accordance with Section 715.3.1 or Section 715.3.2.

	Sewer Pipe Lining	**(N/A)**	**715.3.1**	**New section with specific requirements to piping lining**	**Do Not Adopt**	**Do Not Adopt**	
	715.3.1 Sewer Pipe Lining. For trenchless installation of resin-impregnated flexible tubing to line existing building sewers and building storm sewers installation shall be in accordance with ASTM F1216, ASTM F2561, ASTM F2599, or ASTM F3240.						
	Sewer Pipe Replacement.	**(N/A)**	**715.3.2**	**Requirements for sewer pipe trenchless installation**	**Do Not Adopt**	**Do Not Adopt**	
	715.3.2 Sewer Pipe Replacement. For trenchless installation of polyethylene (PE) pipe using the pipe bursting method to replace existing building sewers and building storm sewers materials shall be in accordance with ASTM F714.						
	Slope	**718.1**	**718.1**	**incorporates fixture unit loading limits from Table 717.1**	**Do Not Adopt**	**Do Not Adopt**	
	718.1 Slope. Building sewers shall be run in practical alignment and at a uniform slope of not less than 1⁄4 inch per foot (20.8 mm/m) toward the point of disposal. Exception: Where approved by the Authority Having Jurisdiction and where it is impractical, due to the depth of the street sewer, the structural features or the arrangement of a building or structure, to obtain a slope of 1⁄4 inch per foot (20.8 mm/m), piping 4 inches (100 mm) through 6 inches (150 mm) shall be permitted to have a slope of not less than 1⁄8 inch per foot (10.4 mm/m) and piping 8 inches (200 mm) and larger shall be permitted to have a slope of not less than 1⁄16 inch per foot (5.2 mm/m). The maximum and minimum fixture unit loading shall be in accordance with Table 717.1.						
	Chapter 8 Indirect Wastes						
	Pipe Size and Length	803.3	803.3	The update clarifies venting requirements by separating sentences for readability without changing technical requirements.	**Accept Change**	**Accept Change**	
	803.3 Pipe Size and Length. Except as hereinafter provided, the size of indirect waste piping shall be in accordance with other sections of this code applicable to drainage and vent piping. No vent from indirect waste piping shall combine with a sewer-connected vent. Vents from indirect waste piping shall extend separately to the outside air. Indirect waste pipes exceeding 5 feet (1524 mm), but less than 15 feet (4572 mm) in length shall be directly trapped, but such traps need not be vented.						
	Non-Classed Apparatus	807.1	807.1	Update requirement for air break	**Do not adopt**	**Do Not Adopt**	Existing state amendment
	807.1 Non-Classed Apparatus. Commercial dishwashing machines, silverware washing machines, and other appliances, devices, equipment, or other apparatus not regularly classed as plumbing fixtures, which are equipped with pumps, drips, or drainage outlets, shall be permitted to be drained by indirect waste pipes discharging through an air break into an approved type of open receptor.						
	Domestic Dishwashing Machine	807.3	807.3	Updated requirements on dishwasher	**Accept Change**	**Accept Change**	
	807.3 Domestic Dishwashing Machine. No domestic dishwashing machine shall be directly connected to a drainage system or food waste disposer without the use of an approved dishwasher air gap fitting on the discharge side of the dishwashing machine. Listed dishwasher air gap fittings shall be installed with the flood-level (FL) marking at or above the flood level of the sink or drainboard, whichever is higher.						

General	**809.1**	**809.1**	Updated requirements on air break	**Accept Change**	**Accept Change**	

809.1 General. Drinking fountains shall be permitted to be installed with indirect wastes through an air break.

Condensate Control	**814.2**	**814.2**	Updated requirements to follow	**Accept Change**	**Accept Change**	

814.2 Condensate Control. Where any equipment or appliance is installed in a space where damage is capable of resulting from condensate overflow, a drain line shall be provided and shall be drained in accordance with Section 814.1. An additional protection method for condensate overflow shall be provided in accordance with one of the following:

(1) A water level detecting device that will shut off the equipment or appliance in the event the primary drain is blocked. Such detecting device shall be in accordance with the manufacturer's installation instructions.

(2) An additional watertight pan of corrosion-resistant material, with a separate drain line, installed beneath the cooling coil, unit, or the appliance to catch the overflow condensate due to a clogged primary condensate drain.

(3) An additional separate drain line at a level that is higher than the primary drain line connection of the drain pan.

(4) An additional watertight pan of corrosion-resistant material with a water level detection device installed beneath the cooling coil, unit, or the appliance to catch the overflow condensate due to a clogged primary condensate drain and to shut off the equipment.

The additional pan or the additional drain line connection shall be provided with a drainpipe of not less than 3⁄4 of an inch (20 mm) nominal pipe size, discharging at a point that is readily observed.

MINIMUM CONDENSATE PIPE SIZE	**TABLE 814.3**	**TABLE 814.3**	Updated Air-condition requirements	**Accept Change**	**Accept Change**	

TABLE 814.3
MINIMUM CONDENSATE PIPE SIZE

EQUIPMENT CAPACITY IN TONS OF REFRIGERATION	MINIMUM CONDENSATE PIPE DIAMETER (inches)
Up to 20	¾
21 – 40	1
41 – 90	1¼
91 – 125	1½
126 – 250	2

For SI units: 1 ton of refrigerant = 3.52 kW, 1 inch = 25 mm

The size of condensate waste pipes is for one unit or a combination of units, or as recommended by the manufacturer. The capacity of waste pipes assumes a 1⁄8 inch per foot (10.4 mm/m) or 1 percent slope, with the pipe running threequarters full at the following pipe conditions:

Outside Air – 20%		Room Air – 80%	
DB	WB	DB	WB
90°F	73°F	75°F	62.5°F

For SI units: °C = (°F-32)/1.8

Condensate drain sizing for other slopes or other conditions shall be approved by the Authority Having Jurisdiction. Air-conditioning waste pipes, 1¼ of an inch (32 mm) and larger in size, shall be constructed of materials specified in Chapter 7. Condensate waste piping less than 1¼ of an inch (32 mm) in size shall be permitted to be PVC, CPVC, PE, PP, copper, or other rigid materials approved by the Authority Having Jurisdiction.

	Appliance Condensate Drains	**814.4**	**814.4**	Requirements for indirect waist	Do not adopt	Do Not Adopt	Investigate for code change proposal
	814.4 Appliance Condensate Drains. Condensate drain lines from individual condensing appliances shall be sized as required by the manufacturer's instructions. Condensate drain lines serving more than one appliance connecting to a common indirect waste pipe shall have the connections to the indirect waste pipe protected by a sanitary waste valve complying with ASME A112.18.8, condensate trap complying with IAPMO IGC 196, or trap with a trap primer.						
	Point of Discharge	**814.5**	**814.5**	Updated code language for discharge on Air condition	**Accept Change**	**Accept Change**	
	814.5 Point of Discharge. Air-conditioning condensate waste pipes shall connect indirectly to the drainage system through an air gap or air break to trapped and vented receptors, dry wells, mop sinks, leach pits, or the tailpiece of plumbing fixtures. An individual condensate drain shall be trapped in accordance with the appliance manufacturer's instructions or in accordance with Section 814.4.						
	Chapter 9 Vents						
	Location of Opening	905.5	905.5	Added Exception for water closets	**Accept Change**		
	905.5 Location of Opening. The vent pipe opening from soil or waste pipe shall not be below the weir of the trap. **Exception:** Water closets and similar fixtures.						
	Frost or Snow Closure	906.7	906.7	Updated code requirement to 3 inches	**Accept Change**	**Accept Change**	
	906.7 Frost or Snow Closure. Where frost or snow closure is likely to occur in locations having minimum design temperature below 0°F (-17.8°C), vent terminals shall be not less than 3 inches (76 mm) in diameter, but in no event smaller than the required vent pipe. The change in diameter shall be made inside the building not less than 1 foot (305mm) below the roof in an insulated space and terminate not less than 10 inches (254 mm) above the roof, or in accordance with the Authority Having Jurisdiction.						
	Connections and Size	910.4	910.4	Updating Title, and requirement angle connection	**Accept Change**	**Accept Change**	
	910.4 Connections and Size. Branches serving traps shall connect to the main line at an angle not exceeding 2 percent. Each waste pipe and each trap in such a system shall be not less than two pipe sizes exceeding the sizes required by Chapter 7 of this code, and not less than two pipe sizes exceeding a fixture tailpiece or connection.						
	Circuit Vent Permitted.	911.1	911.1	Requirement for wall hung water closet update.	**Adopt with existing amendment**	**Adopt with existing amendment**	**Revise Existing state amendment**
	911.1 Circuit Vent Permitted. A maximum of eight floor outlet water closets, showers, bathtubs, or floor drains connected to a horizontal branch shall be permitted to be circuit vented. Each trap arm shall connect horizontally to the horizontal branch being circuit vented in accordance with Table 1002.2. The horizontal branch shall be classified as a drain and a vent from the most downstream trap arm connection to the most upstream trap arm connection to the horizontal branch. **Exception:** Back-outlet and wall-hung water closets shall be permitted to be circuit vented provided that no floor-outlet fixtures are connected to the same horizontal branch. Back-outlet and wall-hung water closets shall connect horizontally to the horizontal circuit vented drain.						
	Chapter 10 Traps and Interceptors						
	Where Required	1001.2	1001.2	Code language update	**Accept Change**	**Accept Change**	
	1001.2 Where Required. Each plumbing fixture shall be separately trapped by an approved type of liquid seal trap. This section shall not apply to fixtures with integral traps. Not more than one trap shall be permitted on a trap arm. Food waste disposers installed with a set of restaurant, commercial, or industrial sinks shall be connected to a separate trap. Each domestic clothes washer and each laundry sink shall be connected to a separate and independent trap, except that a trap serving a laundry sink shall also be permitted to receive the waste from a clothes washer set adjacent to it. The vertical distance between a fixture outlet and the trap weir shall be as short as practicable, but in no case shall the tailpiece exceed 24 inches (610 mm) in length. One trap shall be permitted to serve a set of not more than three single compartment sinks or laundry sinks of the same depth or three lavatories immediately adjacent to each other and in the same room where the waste outlets are not more than 30 inches (762 mm) apart, and the trap is centrally located where three compartments are installed.						

HORIZONTAL LENGTHS OF TRAP ARMS (EXCEPT FOR WATER CLOSETS AND SIMILAR FIXTURES)1, 2, 3	TABLE 1002.2	TABLE 1002.2	Updated code notes to include ne note for showers and similar fixtures.	**Accept Change**	**Accept Change**	

TABLE 1002.2
HORIZONTAL LENGTHS OF TRAP ARMS

(EXCEPT FOR WATER CLOSETS AND SIMILAR FIXTURES)1, 2, 3

TABLE 1002.2
HORIZONTAL LENGTHS OF TRAP ARMS
(EXCEPT FOR WATER CLOSETS AND SIMILAR FIXTURES)[1, 2, 3]

TRAP ARM PIPE DIAMETER (inches)	DISTANCE TRAP TO VENT MINIMUM (inches)	LENGTH MAXIMUM (inches)
1¼	2½	30
1½	3	42
2	4	60
3	6	72
4	8	120
Exceeding 4	2 x Diameter	120

For SI units: 1 inch = 25.4 mm

Notes:

1 Maintain 1⁄4 inch per foot slope (20.8 mm/m).

2 The developed length between the trap of a water closet or similar fixture (measured from the face of the closet flange to the inner edge of the vent) and its vent shall not exceed 6 feet (1829 mm).

3 Horizontally wet vented bathtubs, showers and similar fixtures shall be limited to a maximum of 6 feet (1829 mm) for 1½ inch (40 mm) fixture drains and 8 feet (2438 mm) for 2 inch (50 mm) fixture drains, maintaining ¼ inch per foot slope (20.8 mm/m).

Trap Seal Primers	1007.2	1007.2	New Requirements from ASSE	**Accept Change**	**Accept Change**	

1007.2 Trap Seal Primers. Potable water supply trap seal primer valves shall comply with ASSE 1018. Drainage or electronic design type trap seal primer devices shall comply with ASSE 1044 or IAPMO PS 76.

Where Required	**1009.1**	**1009.1**	**Reference to new Created table**	**Accept Change**	**Accept Change**	

1009.1 Where Required. Interceptors (clarifiers) (including grease, oil, sand, solid interceptors, etc.) shall be required by the Authority Having Jurisdiction where they are necessary for the proper handling of liquid wastes containing grease, flammable wastes, sand, solids, acid or alkaline substances, or other ingredients harmful to the building drainage system, the public or private sewer, or to public or private sewage disposal. A list of acceptable interceptor standards is referenced in Table 1009.1.

APPROVED INTERCEPTORS (CLARIFIERS	**(N/A)**	TABLE 1009.1	**New Created Table**	**Accept Change**	**Accept Change**	

TABLE 1009.1

APPROVED INTERCEPTORS (CLARIFIERS

TABLE 1009.1
APPROVED INTERCEPTORS (CLARIFIERS)

APPLICATION	STANDARD
Fats, Oil, Grease (FOG)	ASME A112.14.3, ASME A112.14.4, ASME A112.14.6, CSA B481, ANSI/CAN/IAPMO Z1001, PDI G-101, PDI G-102
Solid Waste	IAPMO IGC 167
Non-petroleum Oil	ASME A112.14.6, IAPMO PS 80, PDI G-102
Petroleum Oil	ASTM D6104, IAPMO IGC 183, IAPMO IGC 325

General	**1014.1**	**1014.1**	**Updated Reference location for grease interceptors.**	**Accept Change**	**Accept Change**	

1014.1 General. Where it is determined by the Authority Having Jurisdiction that waste pretreatment is required, an approved type of grease interceptor(s) shall comply with ASME A112.14.3, ASME A112.14.4, CSA B481, ANSI/CAN/IAPMO Z1001, PDI G-101, or PDI G-102, and sized in accordance with Section 1014.2.1 or Section 1014.3.6, shall be installed in accordance with the manufacturer's installation instructions to receive the drainage from fixtures or equipment that produce grease-laden waste. Grease-laden waste fixtures shall include, but not be limited to, sinks and drains, such as floor drains, floor sinks, and other fixtures or equipment in serving establishments, such as restaurants, cafes, lunch counters, cafeterias, bars and clubs, hotels, hospitals, sanitariums, factory or school kitchens, or other establishments where grease is introduced into the drainage or sewage system in quantities that can effect line stoppage or hinder sewage treatment or private sewage disposal systems. A combination of hydromechanical, gravity grease interceptors and engineered systems shall be allowed to meet this code and other applicable requirements of the Authority Having Jurisdiction where space or existing physical constraints of existing buildings necessitate such installations. A grease interceptor shall not be required for individual dwelling units or private living quarters. Water closets, urinals, and other plumbing fixtures conveying human waste shall not drain into or through the grease interceptor.

1014.3.4 Location. Each grease interceptor shall be so installed and connected that it shall be easily accessible for inspection, cleaning, and removal of the intercepted grease. A gravity grease interceptor that complies with ANSI/CAN/IAPMO Z1001 shall not be installed in a building where food is handled. Location of the grease interceptor shall meet the approval of the Authority Having Jurisdiction.

Construction Requirements	**1014.3.5**	**1014.3.5**	**Updated code language**	**Accept Change**	**Accept Change**	

1014.3.5 Construction Requirements. Gravity grease interceptors shall be designed to remove grease from effluent and shall be sized in accordance with this section. Gravity grease interceptors shall also be designed to retain grease until accumulations can be removed by pumping the interceptor. When provided, a sample box shall be located at the outlet end of gravity grease interceptors so that the Authority Having Jurisdiction can periodically sample effluent quality.

Interceptors Required	**1017.1**	**1017.1**	**Updated to separate into another section.**	**Accept Change**	**Accept Change**	
1017.1 Interceptors Required. Repair garages and gasoline stations with grease racks or grease pits, and factories that have oily, flammable, or both types of wastes as a result of manufacturing, storage, maintenance, repair, or testing processes, shall be provided with an oil or flammable liquid interceptor. Floor drains in such locations shall be connected directly to oil and flammable liquid interceptors.						
Interceptor Design Alternatives	**(N/A)**	**1017.2**	**New Section**	**Accept Change**	**Accept Change**	
1017.2 Interceptor Design Alternatives. Oil interceptors shall comply with IAPMO IGC 183 or be in accordance with Section 1017.3 through Section 1017.4.						
Interceptor Details	**1017.2**	**1017.3**	**Updated Code requirements**	**Accept Change**	**Accept Change**	
1017.3 Interceptor Details. Oil and flammable liquid interceptors shall be in accordance with the following: (1) The separation or vapor compartment shall be independently vented to the outer air. Where two or more separation or vapor compartments are used, each shall be vented to the outer air or shall be permitted to connect to a header that is installed at a minimum of 6 inches (152 mm) above the spill line of the lowest floor drain and vented independently to the outer air. (2) The minimum size of a flammable vapor vent shall be not less than 2 inches (50 mm), and, where vented through a sidewall, the vent shall be not less than 10 feet (3048 mm) above the adjacent level at an approved location. (3) The interceptor shall be vented on the sewer side and shall not connect to a flammable vapor vent. Oil and flammable interceptors shall be provided with gastight cleanout covers that shall be readily accessible. (4) The waste line shall be not less than 3 inches (80 mm) in diameter with a full-size cleanout to grade. (5) Where an interceptor is provided with an overflow, it shall be provided with an overflow line [not less than 2 inches (50 mm) in diameter] to an approved waste oil tank having a minimum capacity of 550 gallons (2082 L) and meeting the requirements of the Authority Having Jurisdiction. (a) The waste oil from the separator shall flow by gravity or shall be pumped to a higher elevation by an automatic pump. (b) Pumps shall be adequately sized and accessible. (c) Waste oil tanks shall have a 2 inch (50 mm) minimum pump-out connection at grade and an 1½ inch (40 mm) minimum vent to atmosphere at an approved location not less than 10 feet (3048 mm) above grade.						
Design of Interceptors.	**1017.2**	**1017.4**	**Moved locations and updated code language**	**Accept Change**	**Accept Change**	
1017.4 Design of Interceptors. Each manufactured interceptor that is rated shall be stamped or labeled by the manufacturer with an indication of its full discharge rate in gpm (L/s). The following shall apply: (1) The full discharge rate to such an interceptor shall be determined at full flow. Each interceptor shall be rated equal to or greater than the incoming flow and shall be provided with an overflow line to an underground tank. (2) Interceptors not rated by the manufacturer shall have a depth of not less than 2 feet (610 mm) below the invert of the discharge drain. The outlet opening shall have not less than an 18 inch (457 mm) water seal and shall have a minimum capacity as follows: (a) Where not more than three motor vehicles are serviced, stored, or both, interceptors shall have a minimum capacity of 6 cubic feet (0.2 m3), and 1 cubic foot (0.03 m3) of capacity shall be added for each vehicle up to 10 vehicles. (b) Above 10 vehicles, the Authority Having Jurisdiction shall determine the size of the interceptor required. (c) Where vehicles are serviced and not stored, interceptor capacity shall be based on a net capacity of 1cubic foot (0.03 m3) for each 100 square feet (9.29m2) of the surface to be drained into the interceptor, with a minimum of 6 cubic feet (0.2 m3).						

	Chapter 11 Storm Drainage						
	Rain Leaders and Conductors	1101.13.1	1101.13.1	Updated code language	**Adopt with existing amendment**	Code Change proposal	To combine UPC and state amendment
	1101.13.1 Rain Leaders and Conductors. Rain leaders and conductors connected to a building storm sewer shall have a cleanout installed at the base of the leader or conductor before it connects to the horizontal drain.						
	Chapter 12 Fuel Gas Piping						
	This Chapter is not adopted per RCW 19.27.031						
	Chapter 13 Health Care Facilities and Medical Gas and Medical Vacuum Systems						
	Where Required	1301.4	1301.4	New Reference location	**Accept Change**	**Accept Change**	
	1301.4 Where Required. Construction and equipment requirements shall be applied only to new construction and new equipment, except as modified in individual sections of this chapter. {NFPA 99:1.3.2}						
	Risk Categories	1302.1	1302.1	Updating to include all activities	**Accept Change**	**Accept Change**	
	1302.1 Risk Categories. All activities, as well as systems or equipment that are new or altered, shall be designed to meet Category 1 through Category 4 requirements, as detailed in this chapter. {NFPA 99:4.1}						
	STANDARD DESIGNATION COLORS AND OPERATING PRESSURES FOR GAS AND VACUUM SYSTEMS	TABLE 1305.1	TABLE 1305.1	Updated the Standard gauge pressures limits.	**Accept Change**	**Accept Change**	

TABLE 1305.1
STANDARD DESIGNATION COLORS AND OPERATING PRESSURES FOR GAS AND VACUUM SYSTEMS
[NFPA 99: TABLE 5.1.11]

TABLE 1305.1
STANDARD DESIGNATION COLORS AND OPERATING PRESSURES FOR GAS AND VACUUM SYSTEMS
[NFPA 99: TABLE 5.1.11]

GAS SERVICE	ABBREVIATED NAME	COLORS (BACKGROUND/TEXT)	STANDARD GAUGE PRESSURE
Medical air	Med Air	Yellow/black	50–55 psi
Carbon dioxide	CO_2	Gray/black or gray/white	50–55 psi
Helium	He	Brown/white	50–55 psi
Nitrogen	N_2	Black/white	55–185 psi
Nitrous oxide	N_2O	Blue/white	50–55 psi
Oxygen	O_2	Green/white or white/green	50–55 psi
Oxygen/carbon dioxide mixtures	O_2/CO_2 n% (n = % of CO_2)	Green/white	50–55 psi
Medical–surgical vacuum	Med Vac	White/black	15 inch to 30 inch HgV
Waste anesthetic gas disposal	WAGD	Violet/white	Varies with system type
Medical-surgical vacuum/ WAGD combination	Med-surg/WAGD	White/black and violet/white	15 inch to 30 inch HgV
Other mixtures	Gas A% / Gas B%	Colors as above; major gas for background/minor gas for text	None
Nonmedical air and dental air	—	Yellow and white diagonal stripe/black	None
Nonmedical vacuum and dental vacuum	—	White and black diagonal stripe/black boxed	None
Laboratory air	—	Yellow and white checkerboard/black	None
Laboratory vacuum	—	White and black checkerboard/black boxed	None
Instrument air	—	Red/white	50–185 psi

For SI units: 1 pound-force per square inch = 6.8947 kPa, 1 inch of mercury vacuum (HgV) = 3.386 kPa

	Pressure Relief Valves	1308.2	1308.2	They added size requirement for note 5, and clarified code language on note 6	**Accept Change**	**Accept Change**	
	1308.2 Pressure Relief Valves. All pressure relief valves shall meet the following requirements: (1) They shall be of brass, bronze, or stainless steel construction. (2) They shall be designed for the specific gas service. (3) They shall have a relief pressure setting not higher than the maximum allowable working pressure (MAWP) of the component with the lowest working pressure rating in the portion of the system being protected. (4) They shall be vented to the outside of the building, except that relief valves for compressed air systems having less than 3000 cubic feet (84 950 L) at STP shall be permitted to be diffused locally by means that will not restrict the flow. (5) They shall have a vent discharge line that is not smaller than the size of the relief valve outlet or ¾ NPS (20 mm), whichever is larger. (6) Where two or more relief valves discharge into a common vent line, the internal cross-sectional area of the common line shall be not less than the aggregate cross-sectional area of all relief valve vent discharge lines served. (7) They shall not discharge into locations creating potential hazards. (8) They shall have the discharge terminal turned down and screened to prevent the entry of rain, snow, or vermin. (9) They shall be designed in accordance with ASME B31.3.[NFPA 99:5.1.3.5.6.1]						
	Supply Air Quality	1309.6	1309.6	Updated Code Language	**Accept Change**	**Accept Change**	
	1309.6 Supply Air Quality. The supply air to the concentrator(s) shall be of a quality to ensure the oxygen concentrator unit can produce oxygen complying with Section 1309.1 and shall not be subject to normally anticipated contamination (e.g., vehicle or other exhausts, gas leakage, discharge from vents, flooding). [NFPA 99:5.1.3.9.1.6]						
	Electrical Components	1309.7	1309.7	Updated Code Language	**Accept Change**	**Accept Change**	
	1309.7 Electrical Components. The oxygen concentrator supply unit and any associated electrical equipment shall be provided with, at a minimum, the following electrical components: (1) Either a disconnect switch for each major electrical component or a single disconnect that deactivates all electrical components in the concentrator unit. (2) Motor starting devices with overload protection for any component with an electrical motor over 2 hp (1.5 kW). [NFPA 99:5.1.3.9.1.7]						

	Location	1311.4	1311.4	Adding WAGD discharge to the requirement	**Accept Change**	**Accept Change**	
	1311.4 Location. Medical air intakes shall be located as follows: (1) The medical air intake shall be located a minimum of 25 feet (7620 mm) from ventilating system exhausts, fuel storage vents, combustion vents, plumbing vents, vacuum and WAGD discharges, or areas that can collect vehicular exhausts or other noxious fumes. (2) The medical air intake shall be located a minimum of 20 feet (6096 mm) above ground level. (3) The medical air intake shall be located a minimum of 10 feet (3048 mm) from any door, window, or other opening in the building. [NFPA 99:5.1.3.6.3.11(B-D)]						
	Vacuum Filtration	1312.4	1312.4	Putting in information about ring pumps, Upgrading efficiency to .3 from .03	**Accept Change**	**Accept Change**	
	1312.4 Vacuum Filtration. Central supply systems for vacuum other than liquid ring pumps shall be provided with inlet filtration with the following characteristics: (1) Filtration shall be at least duplex to allow one filter to be exchanged without impairing the vacuum system. (2) Filtration shall be located on the patient side of the vacuum producer. (3) Filters shall be efficient to 0.3 µ and 99.97 percent HEPA or better, per DOE-STD-3020. (4) Filtration shall be sized for 100 percent of the peak calculated demand while one filter or filter bundle is isolated. (5) It shall be permitted to group multiple filters into bundles to achieve the required capacities. (6) The system shall be provided with isolation valves on the source side of each filter or filter bundle and isolation valves on the patient side of each filter or filter bundle, permitting the filters to be isolated without shutting off flow to the central supply system. (7) A means shall be available to allow the user to observe any accumulations of liquids. (8) A vacuum relief petcock shall be provided to allow vacuum to be relieved in the filter canister during filter replacement. (9) Filter elements and canisters shall be permitted to be constructed of materials as deemed suitable by the manufacturer. (10) In normal operation, one filter or filter bundle shall be isolated from the system to be available for service should a blockage in the operating filter occur or rotation of the filters be desired after filter element exchange.[NFPA 99:5.1.3.7.4]						
	Multiple Pumps	1313.5	1313.5	Code language update	**Accept Change**	**Accept Change**	
	1313.5 Multiple Pumps. Vacuum exhausts from multiple pumps shall be permitted to be joined together to one common exhaust where the following conditions are met: (1) The common exhaust is sized to minimize back pressure in accordance with the pump manufacturer's recommendations. (2) Each pump can be isolated by manual or check valve, blind flange, or tube cap to prevent open exhaust piping when the pump(s) is removed for service from consequent flow of exhaust air into the room. [NFPA 99:5.1.3.7.7.6]						
	Valve Types	1314.5	1314.5	Referenced updated table, and added 2 new conditions	**Accept Change**	**Accept Change**	
	1314.5 Valve Types. New or replacement valves shall be permitted to be of any type as long as they meet the following conditions: (1) They have a minimum Cv factor in accordance with Table 1314.5(1) or Table 1314.5(2). (2) They use a quarter turn to off. (3) They are constructed of materials suitable for the service. (4) They are provided with copper tube extensions by the manufacturer for brazing or with corrugated medical tubing (CMT) fittings. (5) They indicate to the operator if the valve is open or closed. (6) They permit in-line serviceability. (7) They are cleaned for oxygen service by the manufacturer if used for any positive-pressure service. (8) They have threaded purge ports on the patient side and the source side. (9) They have a minimum working pressure equal to or greater than the relief valve protecting the piping system on which the valve is installed for any positive-pressure service. [NFPA 99:5.1.4.1.6]						

POSITIVE PRESSURE GASES	TABLE 1314.5(1)	TABLE 1314.5(1)	Updated title	**Accept Change**	**Accept Change**	

TABLE 1314.5(1)
POSITIVE PRESSURE GASES
[NFPA 99: TABLE 5.1.4.1.6(a)]

VALVE SIZE (inch)	MINIMUM Cv (full open)
½	17
¾	31
1	60
1¼	110
1½	169
2	357
2½	390
3	912
4	1837

For SI units: 1 inch = 25.4 mm

VACUUM AND WAGD	(N/A)	TABLE 1314.5(2)	New table added	**Accept Change**	**Accept Change**	

TABLE 1314.5(2)
VACUUM AND WAGD
[NFPA 99:TABLE 5.1.4.1.6(b)]

VALVE SIZE (inch)	MINIMUM Cv (full open)
½	17
¾	31
1	60
1¼	110
1½	169
2	357
2½	196
3	302
4	600
5	1022
6	1579
8	3136

For SI units: 1 inch = 25.4 mm

Readily Accessible	1314.10.1	1314.10.1	Updated code language, and added a new requirement	**Accept Change**	**Accept Change**	

1314.10.1 Readily Accessible. A zone valve in each medical gas or vacuum line shall be provided for each Category 1 space and anesthetizing location for moderate sedation, deep sedation, or general anesthesia specific for the occupancy, and shall be located as follows:
(1) They are installed immediately outside the area controlled.
(2) They are installed where they are visible and accessible at all times. [NFPA 99:5.1.4.6.2]

Category 1	**1317.1**	**1317.1**	**Updated code language**	**Accept Change**	**Accept Change**	
1317.1 Category 1. All master, area, and local alarm systems used for medical gas and vacuum systems shall include the following: (1) Separate visual indicators for each condition monitored, except as permitted in Section 1317.1.2 for local alarms that are displayed on master alarm panels. (2) Visual indicators that remain in alarm until the situation that has caused the alarm is resolved. (3) Cancelable audible indication of each alarm condition that produces a sound with a minimum level of 80 dBA at 3 feet (914 mm). (4) Means to indicate a lamp or LED failure and audible failure. (5) Visual and audible indication that the communication with an alarm-initiating device is disconnected. (6) Labeling of each indicator, indicating the condition monitored. (7) Labeling of each alarm panel for its area of surveillance. (8) Reinitiating of the audible signal if another alarm condition occurs while the audible alarm is silenced. (9) Power for master alarms, area alarms, sensors, and switches from the life safety branch of the essential electrical system as described in NFPA 99. (10) Power for local alarms, dew point sensors, and carbon monoxide sensors permitted to be from the same essential electrical branch as is used to power the air compressor system. (11) Where used for communications, wiring from switches or sensors that is supervised or protected as required by NFPA 70 for life safety and critical branches circuits in which protection is any of the following types: (a) Conduit (b) Free air (c) Wire (d) Cable tray (e) Raceways (12) Communication devices that do not use electrical wiring for signal transmission and are supervised such that failure of communication initiates an alarm. (13) Assurance by the responsible authority of the facility that the labeling of alarms, where room numbers or designations are used, is accurate and up-to-date. (14) Provisions for automatic restart after a power loss of 10 seconds (e.g., during generator start-up) without giving false signals or requiring manual reset. (15) Alarm switches/sensors installed so as to be removable and accessible for service and testing. [NFPA 99:5.1.9.1]						
Medical Vacuum Systems	**1320.2.1**	**1320.2.1**	**Updated to add WAGD**	**Accept Change**	**Accept Change**	
1320.2.1 Medical Vacuum Systems. Vacuum systems and WAGD systems fabricated from copper tubing shall be permitted to have branch connections made using mechanically formed, drilled, and extruded teebranch connections that are formed in accordance with the tool manufacturer's instructions. Such branch connections shall be joined by brazing, as described in Section 1321.0. [NFPA 99:5.1.10.3.3]						
Cut Ends	**1321.7.2**	**1321.7.2**	**Updated code language**	**Accept Change**	**Accept Change**	
1321.7.2 Cut Ends. The cut ends of the tube shall be rolled smooth or deburred with a sharp, clean deburring tool, taking care to prevent chips from entering the tube. [NFPA 99:5.1.10.4.2.3]						
On-Site Recleaning	**1321.8.7**	**1321.8.7**	**Updated code language**	**Accept Change**	**Accept Change**	
1321.8.7 On-Site Recleaning. The interior surfaces of tube ends, fittings, and other components that were cleaned for oxygen service by the manufacturer, but that became contaminated prior to being installed, shall be permitted to be recleaned on-site by the installer by thoroughly scrubbing the interior surfaces with a clean, hot water–alkaline solution, such as sodium carbonate or trisodium phosphate, using a solution of 1 pound (0.5 kg) of sodium carbonate or trisodium phosphate to 3 gallons (11 L) of potable water, and thoroughly rinsing them with clean, hot, potable water. Other aqueous cleaning solutions shall be permitted to be used for on-site recleaning permitted in this section, provided that they are in accordance with the mandatory requirements of CGA G-4.1. [NFPA99:5.1.10.4.3.10,5.1.10.4.3.11]						
Axially Swaged Fittings.	**1322.4**	**1322.4**	**Updated code language**	**Accept Change**	**Accept Change**	
1322.4 Axially Swaged Fittings. Axially swaged fittings providing metal-to-metal seals, suitable for service at 300 psig (2070 kPa) and able to withstand a temperature of 1000°F (538°C) and that, when complete, are permanent and non-separable shall be permitted to be used to join copper or stainless steel tube. Axially swaged fittings shall be installed by qualified technicians in accordance with the manufacturer's instructions. [NFPA 99:5.1.10.7.1, 5.1.10.7.2]						

	Qualifications of Installers	**1323.10**	**1323.10**	**Updated reference location**	**Accept Change**	**Accept Change**	
	1323.10 Qualifications of Installers. The installation of medical gas and vacuum systems shall be made by qualified, competent technicians who are experienced in performing such installations, including all personnel who actually install the piping system. Installers of medical gas and vacuum piped distribution systems, all appurtenant piping supporting pump and compressor source systems, and appurtenant piping supporting source gas manifold systems not including permanently installed bulk source systems, shall be certified in accordance with ASSE/IAPMO/ANSI 6010. [NFPA 99:5.1.10.11.10.1, 5.1.10.11.10.2]						
	Pipe Labeling	**1323.13.1**	**1323.13.1**	**Updated code language**	**Accept Change**	**Accept Change**	
	1323.13.1 Pipe Labeling. Piping shall be labeled by stenciling or adhesive markers that identify the patient medical gas, the medical support gas, or the vacuum system and include the following: (1) Name of the gas or vacuum system or the chemical symbol per Table 1305.1. (2) Gas or vacuum system color code per Table 1305.1. [NFPA 99:5.1.11.1.1]						
	Pipe Pressure Labeling	**1323.13.2**	**1323.13.2**	**Updated Title and Reference location**	**Accept Change**	**Accept Change**	
	1323.13.2 Pipe Pressure Labeling. Where positive pressure gas piping systems operate at pressures other than the standard gauge pressure in Table 1305.1, the operating pressure in addition to the name of the gas shall be labeled. [NFPA 99:5.1.11.1.2]						
	Identification of Shutoff Valves	**1323.14**	**1323.14**	**Added shutoff requirements**	**Accept Change**	**Accept Change**	
	1323.14 Identification of Shutoff Valves. Shutoff valves shall be identified with the following: (1) Name or chemical symbol for the specific medical gas or vacuum system (2) Gas or vacuum system color code in accordance with Table 1305.1 (3) Room or areas served (4) Caution to not close or open the valve except in emergency [NFPA 99:5.1.11.2.1]						
	Main Line Valves	**1323.14.3**	**1323.14.3**	**Updated code language**	**Accept Change**	**Accept Change**	
	1323.14.3 Main Line Valves. Main line valves shall be labeled in substance as follows: MAIN LINE VALVE FOR THE (GAS/VACUUM NAME) SERVING (NAME OF THE BUILDING) [NFPA 99:5.1.11.2.5]						
	Identification	**1323.15**	**1323.15**	**Update to medical gas, and table requirements**	**Accept Change**	**Accept Change**	
	1323.15 Identification. Station outlets and inlets shall be identified as to the name or chemical symbol for the specific medical gas or vacuum provided and shall include the following:(1) Name of the gas or vacuum system or the chemical symbol in accordance with Table 1305.1 (2) Gas or vacuum system color code in accordance with Table 1305.1 In sleep labs, where the outlet is downstream of a flow control device, the station outlet identification shall include a warning not to use the outlet for ventilating patients. Where medical gas systems operate at pressures other than the standard gauge pressure of 50 psi to 55 psi (345 kPato 380 kPa) or a gauge pressure of 160 psi to 185 psi (1103kPa to 1275 kPa) for nitrogen, the station outlet identification shall include the nonstandard operating pressure in addition to the name of the gas. [NFPA 99:5.1.11.3.1 – 5.1.11.3.2]						
	Time Frame for Testing	**1324.5.4.1**	**1324.5.4.1**	**Updated code language and reference location**	**Accept Change**	**Accept Change**	
	1324.5.4.1 Time Frame for Testing. Tests shall be conducted after the final installation of station outlet valve bodies, faceplates, and all other distribution system components. [NFPA 99:5.1.12.2.6.1]						
	Conclusion of Test	**1324.5.4.5**	**1324.5.4.5**	**Updated length of testing**	**Accept Change**		
	1324.5.4.5 Conclusion of Test. The leakage over the 24-hour test shall not exceed 0.5 percent of the starting pressure [e.g., 0.3 psi (2 kPa) starting at 60 psig (414 kPa)] except that attributed to specific changes in ambient temperature. [NFPA 99:5.1.12.2.6.5]						
	Proof of Testing	**1324.5.4.7**	**1324.5.4.7**	**Updated Reference location**	**Accept Change**	**Accept Change**	
	1324.5.4.7 Proof of Testing. The 24-hour standing pressure test of the positive pressure system shall be witnessed by an ASSE/IAPMO/ANSI 6020 inspector, an ASSE/IAPMO/ANSI 6030 verifier, or the Authority Having Jurisdiction or its designee. A form indicating that this test has been performed and witnessed shall be provided to the verifier at the start of the tests required in Section 1324.5.7 through Section 1324.5.11. [NFPA 99:5.1.12.2.6.7]						

Conclusion of Test	**1324.5.5.5**	**1324.5.5.5**	**Update on reference to the standard code language**	**Accept Change**	**Accept Change**	
1324.5.5.5 Conclusion of Test. The leakage over the 24-hour test shall not exceed 0.5 percent of the starting pressure [e.g., 0.125 inch (0.3 mm) HgV starting at 25 inches (635 mm) HgV] except that attributed to specific changes in ambient temperature. [NFPA 99:5.1.12.2.7.5]						
Inspection Qualification	**1324.5.6.2**	**1324.5.6.2**	**Update on reference location**	**Accept Change**	**Accept Change**	
1324.5.6.2 Inspection Qualification. Inspections shall be conducted by a party technically competent and experienced in the field of medical gas and vacuum pipeline inspections and testing and meeting the requirements of ASSE/IAPMO/ANSI 6020, or ASSE/IAPMO/ANSI 6030. [NFPA 99:5.1.12.3.1.3]						
Inspections	**1324.5.6.5**	**1324.5.6.5**	**Update on reference location**	**Accept Change**	**Accept Change**	
1324.5.6.5 Inspections. The initial pressure tests performed by the installing contractor shall be witnessed by an ASSE/IAPMO/ANSI 6020 inspector, an ASSE/IAPMO/ANSI 6030 verifier, or the Authority Having Jurisdiction or its designee. A form indicating that this test has been performed and witnessed shall be provided to the verifier at the start of the tests required in Section 1324.5.7 through Section 1324.5.11. The presence and correctness of labeling and valve tagging required by this code for all concealed components and piping distribution systems shall be inspected. [NFPA 99:5.1.12.3.2 –5.1.12.3.2.2]						
Approved Tester	1324.5.7.2	1324.5.7.2	Update on reference location	**Accept Change**	**Accept Change**	
1324.5.7.2 Approved Tester. Testing shall be conducted by a party technically competent and experienced in the field of medical gas and vacuum pipeline testing and meeting the requirements of ASSE/IAPMO/ANSI 6030, except as required by Section 1324.5.7.3. [NFPA 99:5.1.12.4.1.3] Testing shall be performed by a party other than the installing contractor. [NFPA 99:5.1.12.4.1.5] Where systems have not been installed by inhouse personnel, testing shall be permitted by personnel of that organization who meet the requirements of Section 1324.5.7.2. [NFPA 99:5.1.12.4.1.6]						
Cryogenic Fluid Testing	**1324.5.7.3**	**1324.5.7.3**	**Update on reference location**	**Accept Change**	**Accept Change**	
1324.5.7.3 Cryogenic Fluid Testing. Testing of the cryogenic fluid central supply system shall be conducted by a party technically competent and experienced in the field of cryogenic fluid systems and meeting the requirements of ASSE/IAPMO/ANSI 6035, in accordance with the mandatory requirements in CGA M-1. [NFPA 99:5.1.12.4.1.4]						
General	**1325.1**	**1325.1**	**Update on code language**	**Accept Change**	**Accept Change**	
1325.1 General. Category 2 piped gas or piped vacuum system requirements shall be permitted when all of the following criteria are met: (1) Only moderate sedation (as defined in Chapter 2), minimal sedation (as defined in Chapter 2); or no sedation is performed. Deep sedation and general anesthesia shall not be permitted. (2) The loss of the piped gas or piped vacuum systems is likely to cause minor injury to patients, staff, or visitors. (3) The facility piped gas or piped vacuum systems are intended for Category 2 patient care space as defined in Chapter 2. [NFPA 99:5.2.1.2]						
Warning Systems	**1325.10**	**1325.10**	**Updated title**	**Accept Change**	**Accept Change**	
1325.10 Warning Systems. Warning systems associated with Category 2 systems shall provide the master, area, and local alarm functions of a Category 1 system as required in Section 1317.0, except as follows: (1) Warning systems shall be permitted to be a single alarm panel. (2) The alarm panel shall be located in an area of continuous surveillance while the facility is in operation. (3) Pressure and vacuum switches/sensors shall be mounted at the source equipment with a pressure indicator at the master alarm panel. [NFPA 99:5.2.9]						
Category 2 Distribution	**1325.11**	**1325.11**	**Updated code language**	**Accept Change**	**Accept Change**	
1325.11 Category 2 Distribution. Category 2 systems shall comply with Section 1318.0 through Section 1323.12.[NFPA 99:5.2.10]						
Performance Criteria and Testing	**1325.13**	**1325.13**	**Updated to include WAGD**	**Accept Change**	**Accept Change**	
1325.13 Performance Criteria and Testing — Gas, Medical–Surgical Vacuum, and WAGD. Category 2 systems shall comply with Section 1324.0. [NFPA 99:5.2.12]						

	General	**1326.1**	**1326.1**	**Update to requirement 1**	**Accept Change**	**Accept Change**	
	1326.1 General. Category 3 piped gas and vacuum systems shall be permitted when all of the following criteria are met: (1) Only minimal sedation, as defined in Chapter 2; or no sedation is performed. Deep sedation, moderate sedation, and general anesthesia are not performed. (2) The loss of the piped gas and vacuum systems is not likely to cause injury to patients, staff, or visitors, but can cause discomfort. (3) The facility piped gas and vacuum systems are intended for Category 3 patient care rooms as defined in Chapter 2. [NFPA 99:5.3.1.2]						
	Medical Air Supply Systems	**1326.3**	**1326.3**	**Updated two include 8 new requirements**	**Accept Change**	**Accept Change**	
	1326.3 Medical Air Supply Systems. Category 3 central supply systems shall be permitted to consist of the following: (1) Gas cylinder or cryogenic liquid container headers in accordance with NFPA 99. (2) Oxygen concentrator supply units in accordance with NFPA 99. (3) Cylinder manifolds for gas cylinders in accordance with NFPA 99. (4) Manifolds for cryogenic liquid containers in accordance with NFPA 99. (5) Cryogenic fluid central supply systems in accordance with NFPA 99. (6) Medical air compressor systems in accordance with NFPA 99. (7) Proportioning air systems in accordance with NFPA 99. (8) Medical-surgical vacuum systems in accordance with of NFPA 99. (9) Waste anesthetic gas disposal systems (WAGDs) in accordance with NFPA 99. (10) Instrument air compressor systems in accordance with NFPA 99. {NFPA 99:5.3.3.5}						
	Medical–Surgical Vacuum Systems	**1326.4**	**1326.4**	**Update to code requirements and NFPA location**	**Accept Change**	**Accept Change**	
	1326.4 Medical–Surgical Vacuum Systems. Category 3 systems shall comply with Section 1307.3 through Section 1309.13 and Section 1312.0 through Section 1313.5, except as follows: (1) Medical–surgical vacuum systems shall be permitted to be simplex. (2) The facility staff shall develop an emergency plan to deal with the loss of medical–surgical vacuum. (3) Emergency electrical service shall conform to the requirements of Section 6.6 of NFPA 99 and NFPA 70. [NFPA 99:5.3.3.7]						
	Warning Systems	**1326.8**	**1326.8**	**Updated to 1st requirement and new NFPA location**	**Accept Change**	**Accept Change**	
	1326.8 Warning Systems. Warning systems associated with Category 3 systems shall provide the master, area, and local alarm functions of a Category 1 system as required in Section 1317.0, except as follows: (1) Warning systems shall be permitted to be a single alarm panel (i.e., a combination master/area alarm panel). (2) The alarm panel shall be located in an area of continuous surveillance while the facility is in operation. (3) Pressure and vacuum switches/sensors shall be mounted at the source equipment with a pressure indicator at the master alarm panel. (4) Electrical power for warning systems shall be in accordance with Section 6.6 of NFPA 99 for Category 3 and Category 4 spaces. [NFPA 99:5.3.9]						
	Emergency Shutoff Valves (Oxygen and Nitrous Oxide	**1327.2**	**1327.2**	**Update to include all category 2**	**Accept Change**	**Accept Change**	
	1327.2 Emergency Shutoff Valves (Oxygen and Nitrous Oxide). (1) All Category 2 medical gas systems shall have an emergency shutoff valve accessible from all use-point locations in an emergency. (2) Where a central medical gas supply system supplies two treatment facilities, each facility shall be provided with an emergency shutoff valve located in that treatment facility so as to be accessible from all use-point locations in an emergency. (3) Emergency shutoff valves shall be labeled to indicate the gas controlled by the shutoff valve and shall shut off only the gas to the treatment facility that they serve. (4) A remotely activated shutoff valve at a gas supply manifold shall not be used for emergency shutoff. For clinical purposes, such a remote valve actuator shall not fail-close in the event of loss of electric power. Where remote actuators are the type that fail-open, it shall be mandatory that cylinder shutoff valves be closed whenever the system is not in use. [NFPA 99:15.4.2.6.1 – 15.4.2.6.4.2]						
Chapter 14 Firestop Protection							
	State Does Not Adopt						
Chapter 15 Alternative Water Sources for Nonpotable Applications							

	Minimum Water Quality Requirements	1501.7	1501.7	Update to reference location	**Accept Change**	**Accept Change**	
	1501.7 Minimum Water Quality Requirements. The minimum water quality for alternate water source systems shall meet the applicable water quality requirements for the intended application as determined by the Authority Having Jurisdiction. In the absence of water quality requirements, for on-site treated nonpotable systems, the water quality requirements of IAPMO IGC 324 or NSF/ANSI 350 shall apply. **Exception:** Water treatment is not required for gray water used for subsurface irrigation.						
	Separation Requirements	1502.4	1502.4	Updated code language	**Accept Change**	**Accept Change**	
	1502.4 Separation Requirements. Underground alternate water source service piping other than gray water shall be separated from the building sewer in accordance with this code. Pipes carrying treated nonpotable water shall be permitted to be run or laid in the same trench as potable water pipes with a 12 inch (305 mm) minimum vertical and horizontal separation where both pipe materials are approved for use within a building. Where horizontal piping materials do not comply with this requirement, the minimum separation shall be increased to 60 inches (1524 mm). The potable water piping shall be installed at an elevation above the treated nonpotable water piping.						
	Water Pressure	1505.5	1505.5	New Section	**Accept Change**	**Accept Change**	
	1505.5 Water Pressure. Reclaimed (recycled) water systems supplying water to water closets, urinals, and trap primers shall be capable of delivering not less than 15 pounds-force per square inch (psi) (103 kPa) residual pressure at the highest and most remote outlet served. Where the water pressure in the reclaimed water supply system within the building exceeds 80 psi (552 kPa), a pressure reducing valve reducing the pressure to 80 psi (552 kPa) or less to water outlets in the building shall be installed.						
	Water Pressure	1506.5	1506.5	New Section	**Accept Change**	**Accept Change**	
	1506.5 Water Pressure. On-site treated non-potable water systems supplying water to water closets, urinals, and trap primers shall be capable of delivering not less than 15 pounds-force per square inch (psi) (103 kPa) residual pressure at the highest and most remote outlet served. Where the water pressure in the on-site treated non-potable water supply system within the building exceeds 80 psi (552 kPa), a pressure reducing valve reducing the pressure to 80 psi (552 kPa) or less to water outlets in the building shall be installed.						
	On-Site Treated Non-potable Water Devices and Systems	1506.8	1506.8	Update to code and new Reference location	**Accept Change**	**Accept Change**	
	1506.8 On-Site Treated Non-potable Water Devices and Systems. Devices or equipment used to treat on-site treated nonpotable water to maintain the minimum water quality requirements determined by the Authority Having Jurisdiction shall be listed and labeled (third-party certified) by a listing agency (accredited conformity assessment body) or approved for the intended application. Devices or equipment used to treat on-site treated nonpotable water for use in the water closet and urinal flushing, surface irrigation, and similar applications shall comply with IAPMO IGC 324, NSF/ANSI 350 or approved by the Authority Having Jurisdiction.						
Chapter 16 Nonpotable Rainwater Catchment Systems							
	General	1602.1	1602.1	New Reference location	**Accept Change**	**Accept Change**	
	1602.1 General. The installation, construction, alteration, and repair of rainwater catchments systems intended to supply uses such as water closets, urinals, trap primers for floor drains and floor sinks, irrigation, industrial processes, water features, cooling tower makeup and other uses shall be approved by the Authority Having Jurisdiction. Rainwater catchment systems for collecting precipitation from rooftops shall comply with ARCSA/ASPE/ANSI 63.						
	Rainwater Catchment Collection Surfaces	1603.4	1603.3	Moved Location	**Accept Change**	**Accept Change**	
	1603.3 Rainwater Catchment Collection Surfaces. Rainwater shall be collected from roof surfaces or other manmade, aboveground collection surfaces.						
	Other Surfaces.	1603.4.1	1603.3.1	Moved Location	**Accept Change**	**Accept Change**	
	1603.3.1 Other Surfaces. Natural precipitation collected from surface water runoff, vehicular parking surfaces, or manmade surfaces at or below grade shall be in accordance with the stormwater requirements for on-site treated nonpotable water systems in Section 1506.0.						
	Prohibited Discharges	1603.4.2	1603.3.2	Moved Location	**Accept Change**	**Accept Change**	
	1603.3.2 Prohibited Discharges. Overflows and bleed-off pipes from roof-mounted equipment and appliances shall not discharge onto roof surfaces that are intended to collect rainwater without prior approval from the Authority Having Jurisdiction.						

Minimum Water Quality	1603.5	1603.4	New Reference location	**Accept Change**	**Accept Change**	

1603.4 Minimum Water Quality. The minimum water quality for harvested rainwater shall meet the applicable water quality requirements for the intended applications as determined by the Authority Having Jurisdiction. In the absence of water quality requirements determined by the Authority Having Jurisdiction, the minimum treatment and water quality shall be in accordance with Table 1603.4, IAPMO IGC 324 or NSF/ANSI 350.
Exception: No treatment is required for rainwater used for subsurface or nonsprinkled surface irrigation where the maximum storage volume is less than 360 gallons (1363 L).

MINIMUM WATER QUALITY	TABLE 1603.5	TABLE 1603.4	Moved Location	**Accept Change**	**Accept Change**	

TABLE 1603.4
MINIMUM WATER QUALITY

APPLICATION	MINIMUM TREATMENT	MINIMUM WATER QUALITY
Car washing	Debris excluder or other approved means in accordance with Section 1603.17, and 100 microns in accordance with Section 1603.18 for drip irrigation.	N/A
Subsurface and drip irrigation	Debris excluder or other approved means in accordance with Section 1603.17, and 100 microns in accordance with Section 1603.18 for drip irrigation.	N/A
Spray irrigation where the maximum storage volume is less than 360 gallons	Debris excluder or other approved means in accordance with Section 1603.17, and disinfection in accordance with Section 1603.15.	N/A
Spray irrigation where the maximum storage volume is equal to or more than 360 gallons	Debris excluder or other approved means in accordance with Section 1603.17.	Escherichia coli: < 100 CFU/100 mL, and Turbidity: < 10 NTU
Urinal and water closet flushing, clothes washing, and trap priming	Debris excluder or other approved means in accordance with Section 1603.17, and 100 microns in accordance with Section 1603.18.	Escherichia coli: < 100 CFU/100 mL, and Turbidity: < 10 NTU
Ornamental fountains and other water features	Debris excluder or other approved means in accordance with Section 1603.17.	Escherichia coli: < 100 CFU/100 mL, and Turbidity: < 10 NTU
Cooling tower make-up water	Debris excluder or other approved means in accordance with Section 1603.17, and 100 microns in accordance with Section 1603.18.	Escherichia coli: < 100 CFU/100 mL, and Turbidity: < 10 NTU

For SI units: 1 micron = 1 µm, 1 gallon = 3.785 L

	Rainwater Storage Tanks	1603.6	1603.5	New Reference location	**Accept Change**	**Accept Change**	
	1603.5 Rainwater Storage Tanks. Rainwater storage tanks shall comply with IAPMO/ANSI Z1002 and be installed in accordance with Section 1603.6 through Section 1603.12.						
	Location	**1603.7**	**1603.6**	Moved Location	**Accept Change**	**Accept Change**	
	1603.6 Location. Rainwater storage tanks shall be permitted to be installed above or below grade.						
	Above Grade	**1603.8**	**1603.7**	Moved Location	**Accept Change**	**Accept Change**	
	1603.7 Above Grade. Above grade, storage tanks shall be of an opaque material, approved for aboveground use in direct sunlight or shall be shielded from direct sunlight. Tanks shall be installed in an accessible location to allow for inspection and cleaning. The tank shall be installed on a foundation or platform that is constructed to accommodate loads in accordance with the building code.						
	Below Grade	**1603.9**	**1603.8**	Moved Location	**Accept Change**	**Accept Change**	
	1603.8 Below Grade. Rainwater storage tanks installed below grade shall be structurally designed to withstand anticipated earth or other loads. Holding tank covers shall be capable of supporting an earth load of not less than 300 pounds per square foot (lb/ft2) (1465 kg/m2) where the tank is designed for underground installation. Below grade rainwater tanks installed underground shall be provided with manholes. The manhole opening shall be not less than 20 inches (508 mm) in diameter and located not less than 4 inches (102 mm) above the surrounding grade. The surrounding grade shall be sloped away from the manhole. Underground tanks shall be ballasted, anchored, or otherwise secured, to prevent the tank from floating out of the ground where empty. The combined weight of the tank and hold down system shall meet or exceed the buoyancy force of the tank.						
	Drainage and Overflow	**1603.10**	**1603.9**	Moved Location	**Accept Change**	**Accept Change**	
	1603.9 Drainage and Overflow. Rainwater storage tanks shall be provided with a means of draining and cleaning. The overflow drain shall not be equipped with a shutoff valve. The overflow outlet shall discharge in accordance with this code for storm drainage systems. Where discharging to the storm drainage system, the overflow drain shall be protected from backflow of the storm drainage system by a backwater valve or other approved method.						
	Overflow Outlet Size	**1603.10.1**	**1603.9.1**	Moved Location	**Accept Change**	**Accept Change**	
	1603.9.1 Overflow Outlet Size. The overflow outlet shall be sized to accommodate the flow of the rainwater entering the tank and not less than the aggregate cross-sectional area of inflow pipes.						
	Opening and Access Protection	**1603.11**	**1603.10**	Moved Location	**Accept Change**	**Accept Change**	
	1603.10 Opening and Access Protection. Rainwater tank openings shall be protected to prevent the entrance of insects, birds, or rodents into the tank. Rainwater tank access openings exceeding 12 inches (305 mm) in diameter shall be secured to prevent tampering and unintended entry by either a lockable device or other approved method.						
	Marking	**1603.12**	**1603.11**	Moved Location	**Accept Change**		
	1603.11 Marking. Rainwater tanks shall be permanently marked with the capacity and the language: “NONPOTABLE RAINWATER.” Where openings are provided to allow a person to enter the tank, the opening shall be marked with the following language: “DANGER-CONFINED SPACE.”						
	Storage Tank Venting	**1603.13**	**1603.12**	Moved Location	**Accept Change**	**Accept Change**	
	1603.12 Storage Tank Venting. Where venting using drainage or overflow piping is not provided or is considered insufficient, a vent shall be installed on each tank. The vent shall extend from the top of the tank and terminate not less than 6 inches (152 mm) above grade and shall be not less than 1½ inches (40 mm) in diameter. The vent terminal shall be directed downward and covered with a 3⁄32 of an inch (2.4mm) mesh screen to prevent the entry of vermin and insects.						
	Pumps	**1603.14**	**1603.13**	Moved Location	**Accept Change**	**Accept Change**	
	1603.13 Pumps. Pumps serving rainwater catchment systems shall be listed. Pumps supplying water to water closets, urinals, and trap primers shall be capable of delivering not less than 15 pounds-force per square inch (psi) (103 kPa) residual pressure at the highest and most remote outlet served. Where the water pressure in the rainwater supply system within the building exceeds 80 psi (552 kPa), a pressure reducing valve reducing the pressure to 80 psi (552 kPa) or less to water outlets in the building shall be installed in accordance with this code.						

	Roof Drains	**1603.15**	**1603.14**	Moved Location	**Accept Change**	**Accept Change**	
	1603.14 Roof Drains. Primary and secondary roof drains, conductors, leaders, and gutters shall be designed and installed in accordance with this code.						
	Water Quality Devices and Equipment	**1603.16**	**1603.15**	Moved Location	**Accept Change**	**Accept Change**	
	1603.15 Water Quality Devices and Equipment. Devices and equipment used to treat rainwater to maintain the minimum water quality requirements determined by the Authority Having Jurisdiction shall be listed or labeled (third party certified) by a listing agency (accredited conformity assessment body) and approved for the intended application.						
	Freeze Protection	**1603.17**	**1603.16**	Moved Location	**Accept Change**	**Accept Change**	
	1603.16 Freeze Protection. Tanks and piping installed in locations subject to freezing shall be provided with an approved means of freeze protection.						
	Debris Removal.	**1603.18**	**1603.17**	Moved Location	**Accept Change**	**Accept Change**	
	1603.17 Debris Removal. The rainwater catchment conveyance system shall be equipped with a debris excluder or other approved means to prevent the accumulation of leaves, needles, other debris and sediment from entering the storage tank. Devices or methods used to remove debris or sediment shall be accessible and sized and installed in accordance with manufacturer's installation instructions.						
	Required Filters	**1603.19**	**1603.18**	Moved Location	**Accept Change**	**Accept Change**	
	1603.18 Required Filters. A filter permitting the passage of particulates not larger than 100 microns (100 µm) shall be provided for rainwater supplied to water closets, urinals, trap primers, and drip irrigation system.						
	Roof Gutters	**1603.20**	**1603.19**	Moved Location	**Accept Change**	**Accept Change**	
	1603.19 Roof Gutters. Gutters shall maintain a minimum slope and be sized in accordance with Section 1103.3.						
	Rainwater Diversion Valves	(N/A)	**1603.20**	Updated	**Accept Change**	**Accept Change**	Research on what it use to be if it is not fully new
	1603.20 Rainwater Diversion Valves. Rainwater diversion valves ranging from 2 inches (50 mm) through 4 inches (100 mm) in diameter shall comply with IAPMO PS 59. Rainwater diversion valves ranging from 6 inches (150 mm) to 12 inches (300 mm) in diameter shall comply with IAPMO IGC 352. Valves shall be accessible and include a filter located upstream of the valve when required.						

Chapter 17 Referenced Standards

The following standards were **updated:**

REFERENCED STANDARDS	TABLE 1701.1	TABLE 1701.1	Updated Reference standard location	**Accept Change**	**Accept Change**	Existing WAC and state amendment

TABLE 1701.1
REFERENCED STANDARDS

TABLE 1701.1
REFERENCED STANDARDS

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
ARCSA			
ARCSA/ASPE/ANSI 63-2020	Rainwater Catchment Systems	Miscellaneous	1602.1
ASME			
ASME A112.1.2-2012 (R2017)	Air Gaps in Plumbing Systems (For Plumbing Fixtures and Water-Connected Receptors)	Fittings	Table 603.2
ASME A112.1.3-2000 (R2019)	Air Gap Fittings for Use with Plumbing Fixtures, Appliances, and Appurtenances	Fittings	Table 603.2
ASME A112.3.1-2007 (R2017)	Stainless Steel Drainage Systems for Sanitary DWV, Storm, and Vacuum Applications, Above- and Below-Ground	Piping	418.1, Table 701.2, 705.7.2, 1102.1
ASME A112.3.4-2018/CSA B45.9-2018	Macerating Toilet Systems and Waste-Pumping Systems for Plumbing Fixtures	Fixtures	710.13
ASME A112.4.1-2009 (R2019)	Water Heater Relief Valve Drain Tubes	Appliances	608.5(2)
ASME A112.4.2-2021/CSA B45.16-2021	Personal Hygiene Devices for Water Closets	Fixtures	411.4
ASME A112.4.4-2017	Plastic Push-Fit Drain, Waste, and Vent (DWV) Fittings	Fittings	Table 701.2
ASME A112.4.14-2017/CSA B125.14-2017	Manually Operated Valves for Use in Plumbing Systems	Valves	606.1
ASME A112.6.1M-1997 (R2017)	Floor-Affixed Supports for Off-the-Floor Plumbing Fixtures for Public Use	Fixtures	402.4
ASME A112.6.2-2017	Framing-Affixed Supports (Carriers) for Off-the-Floor Plumbing Fixtures	Fixtures	402.4
ASME A112.6.3-2019	Floor and Trench Drains	Fixtures	418.1
ASME A112.6.4-2003 (R2012)	Roof, Deck, and Balcony Drains	Fixtures	1102.1
ASME A112.6.7-2010 (R2019)	Sanitary Floor Sinks	Fixtures	421.1
ASME A112.6.9-2005 (R2019)	Siphonic Roof Drains	DWV Components	1106.3
ASME A112.14.1-2003 (R2017)	Backwater Valves	Valves	710.6
ASME A112.14.3-2018	Hydromechanical Grease Interceptors	Fixtures	1014.1, Table 1009.1
ASME A112.14.4-2001 (R2017)	Grease Removal Devices	Fixtures	1014.1, Table 1009.1
ASME A112.14.6-2010 (R2019)	FOG (Fats, Oils, and Greases) Disposal Systems	Fixtures	1015.2, Table 1009.1
ASME A112.18.1-2018/CSA B125.1-2018	Plumbing Supply Fittings	Fittings	408.4, 417.1, 417.2, 417.3, 417.4, 417.6, 603.5.20

TABLE 1701.1 (continued)
REFERENCED STANDARDS

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
ASME A112.18.2-2020/CSA B125.2-2020	Plumbing Waste Fittings	Fittings	404.1, 408.5
ASME A112.18.3-2002 (R2017)	Backflow Protection Devices and Systems in Plumbing Fixture Fittings	Backflow Protection	417.3, 417.4
ASME A112.18.6-2017/ CSA B125.6-2017 (R2021)	Flexible Water Connectors	Piping	604.5, 604.13
ASME A112.18.8-2020	Sanitary Waste Valves for Plumbing Drainage Systems	Sanitary Waste Valves	814.4
ASME A112.18.9-2011 (R2017)	Protectors/Insulators for Exposed Waste and Supplies on Accessible Fixtures	Miscellaneous	403.3
ASME A112.19.1-2018/CSA B45.2-2018	Enameled Cast Iron and Enameled Steel Plumbing Fixtures	Fixtures	407.1, 408.1, 409.1, 415.1, 420.1
ASME A112.19.2-2018/CSA B45.1-2018	Ceramic Plumbing Fixtures	Fixtures	407.1, 408.1, 409.1, 410.1, 411.1, 412.1, 415.1, 420.1
ASME A112.19.3-2017/CSA B45.4-2017	Stainless Steel Plumbing Fixtures	Fixtures	407.1, 408.1, 409.1, 410.1, 411.1, 415.1, 420.1
ASME A112.19.5-2017/CSA B45.15-2017	Flush Valves and Spuds for Water Closets, Urinals, and Tanks	Fixtures	413.3
ASME A112.19.7-2020/CSA B45.10-2020	Hydromassage Bathtub Systems	Fixtures	409.1, 409.6.1
ASME A112.19.12-2014 (R2019)	Wall Mounted, Pedestal Mounted, Adjustable, Elevating, Tilting, and Pivoting Lavatory, Sink, and Shampoo Bowl Carrier Systems and Drain Waste Systems	Fixtures	407.1, 420.1
ASME A112.19.14-2013 (R2018)	Six-Liter Water Closets Equipped with a Dual Flushing Device	Fixtures	411.2.1
ASME A112.19.15-2012 (R2017)	Bathtubs/Whirlpool Bathtubs with Pressure Sealed Doors	Fixtures	409.1
ASME A112.19.19-2016 (R2021)	Vitreous China Nonwater Urinals	Fixtures	412.1, 412.1.2
ASSE 1002-2020/ASME A112.1002-2020/CSA B125.12-2020	Anti-Siphon Fill Valves for Water Closet Tanks	Backflow Protection	413.3, Table 603.2
ASME A112.36.2M-1991 (R2017)	Cleanouts	DWV Components	Table 707.2, 707.4.1
ASSE 1016-2017/ASME A112.1016-2017/CSA B125.16-2017	Automatic Compensating Valves for Individual Showers and Tub/Shower Combinations	Valves	408.4, 408.4.2(1)
ASSE 1037-2020/ASME A112.1037-2020/CSA B125.37-2020	Pressurized Flushing Devices for Plumbing Fixtures	Backflow Protection	413.2
ASSE 1070-2020/ASME A112.1070-2020/CSA B125.70-2020	Water Temperature Limiting Devices	Valves	407.3(1), 409.4(1), 410.3(1), 417.7(1), 417.8
ASME B1.20.1-2013 (R2018)	Pipe Threads, General Purpose (Inch)	Joints	605.1.5, 605.2.3, 605.5.2, 605.12.3, 705.1.3, 705.3.4, 705.4.2, 705.6.3, 1208.5.8, 1322.5(2)
ASME B16.1-2020	Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250	Fittings	1208.5.11.1
ASME B16.3-2021	Malleable Iron Threaded Fittings: Classes 150 and 300	Fittings	Table 604.1, Table 701.2

TABLE 1701.1 (continued)
REFERENCED STANDARDS

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
ASME B16.4-2021	Gray Iron Threaded Fittings: Classes 125 and 250	Fittings	Table 604.1
ASME B16.5-2020	Pipe Flanges and Flanged Fittings: NPS ½ through NPS 24 Metric/Inch	Fittings	1208.5.11.2(1)
ASME B16.12-2019	Cast Iron Threaded Drainage Fittings	Fittings	Table 701.2
ASME B16.15-2018	Cast Copper Alloy Threaded Fittings: Classes 125 and 250	Fittings	Table 604.1
ASME B16.18-2018	Cast Copper Alloy Solder Joint Pressure Fittings	Fittings	Table 604.1
ASME B16.20-2017	Metallic Gaskets for Pipe Flanges	Joints	1208.5.12.2
ASME B16.21-2021	Nonmetallic Flat Gaskets for Pipe Flanges	Joints	1208.5.12.3
ASME B16.22-2018	Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings	Fittings	Table 604.1, 1321.1
ASME B16.23-2016	Cast Copper Alloy Solder Joint Drainage Fittings: DWV	Fittings	Table 701.2
ASME B16.24-2016	Cast Copper Alloy Pipe Flanges, Flanged Fittings, and Valves: Classes 150, 300, 600, 900, 1500, and 2500	Fittings	1208.5.11.3
ASME B16.26-2018	Cast Copper Alloy Fittings for Flared Copper Tubes	Fittings	Table 604.1
ASME B16.29-2017	Wrought Copper and Wrought Copper Alloy Solder-Joint Drainage Fittings – DWV	Fittings	Table 701.2
ASME B16.33-2012 (R2017)	Manually Operated Metallic Gas Valves for Use in Gas Piping Systems Up to 175 psi (Sizes NPS ½ through NPS 2)	Valves	Table 1208.13
ASME B16.34-2020	Valves-Flanged, Threaded, and Welding End	Valves	606.1
ASME B16.42-2016	Ductile Iron Pipe Flanges and Flanged Fittings: Classes 150 and 300	Fuel Gas Piping	1208.5.11.4
ASME B16.44-2012 (R2017)	Manually Operated Metallic Gas Valves for Use in Above Ground Piping Systems up to 5 psi	Valves	Table 1208.13
ASME B16.47-2020	Large Diameter Steel Flanges: NPS 26 through NPS 60 Metric/Inch	Fittings	1208.5.11.2(2)
ASME B16.50-2018	Wrought Copper and Copper Alloy Braze-Joint Pressure Fittings	Fittings	Table 604.1, 1321.1, 1321.11
ASME B16.51-2018	Copper and Copper Alloy Press-Connect Pressure Fittings	Fittings	Table 604.1
ASME B31.3-2020	Process Piping	Piping	1308.2(9)
ASME B36.10M-2018	Welded and Seamless Wrought Steel Pipe	Fuel Gas, Piping	1208.5.2.2
ASME BPVC Section VIII.1-2021	Rules for Construction of Pressure Vessels - Division 1	Miscellaneous	505.4, 1309.5(2), 1310.4(2), 1312.3(2)
ASME BPVC Section IX-2021	Welding, Brazing, and Fusing Qualifications - Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators	Miscellaneous	1322.1.1, 1322.2.1, 1323.11
ASPE			
ASPE/ANSI 45-2018	Siphonic Roof Drainage	Storm Drainage	1106.2
ARCSA/ASPE/ANSI 63-2020	Rainwater Catchment Systems	Miscellaneous	1602.1
ASSE			
ASSE 1001-2017	Atmospheric Type Vacuum Breakers	Backflow Protection	Table 603.2
ASSE 1002-2020/ASME A112.1002-2020/CSA B125.12-2020	Anti-Siphon Fill Valves for Water Closet Tanks	Backflow Protection	413.3, Table 603.2
ASSE 1003-2020[e2]	Water Pressure Reducing Valves for Potable Water Distribution Systems	Valves	608.2
ASSE 1004-2017	Commercial Dishwashing Machines	Backflow Protection	414.2
ASSE 1008-2020	Plumbing Aspects of Residential Food Waste Disposer Units	Appliances	419.1
ASSE 1010-2004	Water Hammer Arresters	Appliances	609.11
ASSE 1011-2017	Hose Connection Vacuum Breakers	Backflow Protection	Table 603.2
ASSE 1012-2009	Backflow Preventers with an Intermediate Atmospheric Vent	Backflow Protection	Table 603.2

TABLE 1701.1 (continued)
REFERENCED STANDARDS

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
ASSE 1013-2021	Reduced Pressure Principle Backflow Prevention Assemblies	Backflow Protection	Table 603.2
ASSE 1014-2020	Backflow Prevention Devices for Hand-Held Showers	Backflow Protection	417.3
ASSE 1015-2021	Double Check Backflow Prevention	Backflow Protection	Table 603.2
ASSE 1016-2017/ASME A112.1016-2017/CSA B125.16-2017	Automatic Compensating Valves for Individual Showers and Tub/Shower Combinations	Valves	408.4, 408.4.2(1)
ASSE 1018-2001 (R2021)	Trap Seal Primer Valves - Potable Water Supplied	Valves	1007.2
ASSE 1019-2011 (R2016)	Wall Hydrant with Backflow Protection and Freeze Resistance	Backflow Protection	Table 603.2
ASSE 1020-2020	Pressure Vacuum Breaker Assemblies	Backflow Protection	Table 603.2
ASSE 1022-2021	Backflow Preventer for Beverage Dispensing Equipment	Backflow Protection	Table 603.2, 603.5.12
ASSE 1023-2020	Electrically Heated or Cooled Water Dispensers	Appliances	417.6
ASSE 1024-2017 (R2021)	Dual Check Backflow Preventers	Backflow Protection	Table 603.2, 603.5.12
ASSE 1032-2004 (R2021)	Dual Check Valve Type Backflow Preventers for Carbonated Beverage Dispensers, Post Mix Type	Backflow Protection	603.5.12
ASSE 1035-2020	Laboratory Faucet Backflow Preventers	Backflow Protection	Table 603.2, 603.3.11
ASSE 1037-2020/ASME A112.1037-2020/CSA B125.37-2020	Pressurized Flushing Devices for Plumbing Fixtures	Backflow Protection	413.2
ASSE 1044-2015 (R2020)	Trap Seal Primer - Drainage Types and Electric Design Types	DWV Components	1007.2
ASSE 1047-2021	Reduced Pressure Detector Backflow Prevention Assemblies	Backflow Protection	Table 603.2
ASSE 1048-2021	Double Check Detector Backflow Prevention Assemblies	Backflow Protection	Table 603.2
ASSE 1052-2016	Hose Connection Backflow Preventers	Backflow Protection	Table 603.2
ASSE 1053-2019	Dual Check Backflow Preventer Wall Hydrants – Freeze Resistant Type	Backflow Protection	Table 603.2
ANSI/CAN/ASSE/IAPMO 1055-2020	Chemical Dispensers with Integral Backflow Protection	Backflow Protection	Table 603.2, 603.5.22(1)
ASSE 1056-2013 (R2021)	Spill Resistant Vacuum Breaker Assemblies	Backflow Protection	Table 603.2
ASSE 1057-2012	Freeze Resistant Sanitary Yard Hydrants with Backflow Protection	Backflow Protection	Table 603.2
ASSE 1060-2017	Outdoor Enclosures for Fluid Conveying Components with Errata dated February 1, 2019	Miscellaneous	603.4.7
ASSE 1061-2020	Push-Fit Fittings	Fittings	Table 604.1, 605.1.3.3, 605.2.1.1, 605.3.2.1, 605.9.3
ASSE 1062-2017 (R2021)	Temperature Actuated, Flow Reduction (TAFR) Valves for Individual Supply Fittings	Valves	408.4.3, 417.7(3)
ASSE 1064-2020	Backflow Prevention Assembly Field Test Kits	Backflow Protection	603.4.2
ASSE 1069-2020	Automatic Temperature Control Mixing Valves	Valves	408.4.1, 408.4.2(2)
ASSE 1070-2020/ASME A112.1070-2020/CSA B125.70-2020	Water Temperature Limiting Devices	Valves	407.3(1), 409.4(1), 410.3(1), 417.7(1), 417.8
ASSE 1071-2012 (R2021)	Temperature Actuated Mixing Valves for Plumbed Emergency Equipment	Valves	416.2
ASSE 1079-2012 (R2021)	Dielectric Pipe Unions	Fittings	605.15, 605.16.1, 605.16.3
ASSE 1081-2014 (R2020)	Backflow Preventers with Integral Pressure Reducing Boiler Feed Valve and Intermediate Atmospheric Vent Style for Domestic and Light Commercial Water Distribution Systems	Backflow Protection	Table 603.2

TABLE 1701.1 (continued)
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STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
ASSE 1084-2018[e1]	Water Heaters with Temperature Limiting Capacity	Appliances	407.3(2), 409.4(2), 410.3(2), 417.7(2), 417.8
ASSE 1085-2018	Water Heaters for Emergency Equipment	Appliances	416.2
ASSE 1087-2018	Commercial and Food Service Water Treatment Equipment Utilizing Drinking Water	Water Conditioning, Water Treatment	Table 611.1
ASSE 1099-2021/WSC PST 2000-2021	Pressurized Water Storage Tanks	Valves	607.2
ASSE/IAPMO/ANSI Series 5000-2015	Cross-Connection Control Professional Qualifications Standard	Certification	603.2, 603.4.2
ASSE/IAPMO/ANSI 6010-2021	Medical Gas Systems Installers	Certification	1323.10
ASSE/IAPMO/ANSI 6020-2021	Medical Gas Systems Inspectors	Miscellaneous	1324.5.4.7, 1324.5.6.2, 1324.5.6.5
ASSE/IAPMO/ANSI 6030-2021	Medical Gas Systems Verifiers	Miscellaneous	1324.5.4.7, 1324.5.6.2, 1324.5.6.5, 1324.5.7.2
ASSE/IAPMO/ANSI 6035-2021	Bulk Medical Gas/Cryogenic Fluid Central Supply Systems Verifiers	Miscellaneous	1324.5.7.3
ASSE/IAPMO/ANSI Series 7000-2020	Residential Potable Water Fire Sprinkler System Installers & Inspectors for One- and Two-Family Dwellings	Miscellaneous	612.1
ASSE/IAPMO/ANSI 12010-2021	Environment of Care, Infection Control and Construction Risk Assessment Professional Qualification Standard	Professional Qualifications	1303.9
ASSP			
ASSP Z359.1-2020	The Fall Protection Code	Miscellaneous	508.2.1.1
ASTM			
ASTM A53/A53M-2020	Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless	Piping	Table 604.1, Table 701.2, 1208.5.2.2(1)
ASTM A74-2021	Standard Specification for Cast Iron Soil Pipe and Fittings	Piping	301.2.4, Table 701.2
ASTM A106/A106M-2019a	Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service	Piping	1208.5.2.2(2)
ASTM A254/A254M-2012 (R2019)	Standard Specification for Copper-Brazed Steel Tubing	Piping	1208.5.3.1
ASTM A268/A268M-2020	Standard Specification for Seamless and Welded Ferritic and Martensitic Stainless Steel Tubing for General Service	Piping	1208.5.3.2(1)
ASTM A269/A269M-2015a (R2019)	Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service	Piping	Table 604.1, 1208.5.3.2(2), 1319.1(2)(a)
ASTM A312/A312M-2021	Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes	Piping	Table 604.1, 1208.5.2.2(3), 1319.1(2)(b), 1319.1(2)(c)
ASTM A403/A403M-2020	Standard Specification for Wrought Austenitic Stainless Steel Piping Fittings	Fittings	1319.1(2)(c)
ASTM A554-2021	Standard Specification for Welded Stainless Steel Mechanical Tubing	Piping	Table 604.1
ASTM A778-2016 (R2021)	Standard Specification for Welded, Unannealed Austenitic Stainless Steel Tubular Products	Piping	Table 604.1
ASTM A861-2004 (R2017)	Standard Specification for High-Silicon Iron Pipe and Fittings	Piping	811.2
ASTM A888-2021a	Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications	Piping	301.2.4, Table 701.2, Table 707.2

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ASTM A1056-2020	Standard Specification for Cast Iron Couplings used for Joining Hubless Cast Iron Soil Pipe and Fittings	Fittings	705.2.2
ASTM B32-2020	Standard Specification for Solder Metal	Joints	605.1.4, 705.3.3
ASTM B42-2020	Standard Specification for Seamless Copper Pipe, Standard Sizes	Piping	Table 604.1
ASTM B43-2020	Standard Specification for Seamless Red Brass Pipe, Standard Sizes	Piping	Table 604.1, Table 701.2
ASTM B75/B75M-2020	Standard Specification for Seamless Copper Tube	Piping	Table 604.1, Table 701.2
ASTM B88-2020	Standard Specification for Seamless Copper Water Tube	Piping	Table 604.1, 604.4, 903.2.3, 1208.5.3.3, 1319.1(1)(a)
ASTM B135/B135M-2017	Standard Specification for Seamless Brass Tube	Piping	Table 604.1
ASTM B152/B152M-2019	Standard Specification for Copper Sheet, Strip, Plate, and Rolled Bar	Miscellaneous	408.8.4
ASTM B210/B210M-2019a	Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes	Piping	1208.5.3.4
ASTM B241/B241M-2016	Standard Specification for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube	Piping	1208.5.2.4, 1208.5.3.4
ASTM B251/B251M-2017	Standard Specification for General Requirements for Wrought Seamless Copper and Copper-Alloy Tube	Piping	Table 604.1, Table 701.2
ASTM B280-2020	Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service	Piping	1208.5.3.3, 1319.1(1)(b)
ASTM B302-2017	Standard Specification for Threadless Copper Pipe, Standard Sizes	Piping	Table 604.1, Table 701.2
ASTM B306-2020	Standard Specification for Copper Drainage Tube (DWV)	Piping	Table 701.2, 903.2.3
ASTM B447-2012a (R2021)	Standard Specification for Welded Copper Tube	Piping	Table 604.1
ASTM B813-2016	Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube	Joints	605.1.4, 705.3.3
ASTM B819-2019	Standard Specification for Seamless Copper Tube for Medical Gas Systems	Piping	1318.4, 1318.5, 1319.1(1)(c), 1319.1.1
ASTM B828-2016	Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings	Joints	605.1.4, 705.3.3
ASTM C4-2004 (R2018)	Standard Specification for Clay Drain Tile and Perforated Clay Drain Tile	Piping	Table 1101.4.6
ASTM C425-2021	Standard Specification for Compression Joints for Vitrified Clay Pipe and Fittings	Joints	705.8.1
ASTM C564-2020a	Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings	Joints	705.2.2
ASTM C700-2018	Standard Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated	Piping	Table 701.2, Table 1101.4.6
ASTM C1053-2000 (R2015)	Standard Specification for Borosilicate Glass Pipe and Fittings for Drain, Waste, and Vent (DWV) Applications	Piping	811.2
ASTM C1173-2018	Standard Specification for Flexible Transition Couplings for Underground Piping Systems	Fittings	705.10
ASTM C1277-2020	Standard Specification for Shielded Couplings Joining Hubless Cast Iron Soil Pipe and Fittings	Fixtures	301.2.4, 705.2.2
ASTM C1460-2021	Standard Specification for Shielded Transition Couplings for Use With Dissimilar DWV Pipe and Fittings Above Ground	Joints	705.10
ASTM C1461-2021	Standard Specification for Mechanical Couplings Using Thermoplastic Elastomeric (TPE) Gaskets for Joining Drain, Waste, and Vent (DWV), Sewer, Sanitary, and Storm Plumbing Systems for Above and Below Ground Use	Joints	705.10

TABLE 1701.1 (continued)
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STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
ASTM C1540-2020	Standard Specification for Heavy-Duty Shielded Couplings Joining Hubless Cast Iron Soil Pipe and Fittings	Joints	705.2.2
ASTM C1563-2008 (R2021)	Standard Test Method for Gaskets for Use in Connection with Hub and Spigot Cast Iron Soil Pipe and Fittings for Sanitary Drain, Waste, Vent, and Storm Piping Applications	Joints	705.2.2
ASTM C1822-2021	Standard Specification for Insulating Covers on Accessible Lavatory Piping	Miscellaneous	403.3
ASTM D1785-2021a	Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120	Piping	Table 604.1, Table 701.2
ASTM D2235-2021	Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings	Joints	705.1.2
ASTM D2239-2021	Standard Specification for Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Controlled Inside Diameter	Piping	Table 604.1
ASTM D2241-2020	Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series)	Piping	Table 604.1
ASTM D2464-2015	Standard Specification for Threaded Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80	Fittings	Table 604.1
ASTM D2466-2021	Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40	Fittings	Table 604.1
ASTM D2467-2020	Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80	Fittings	Table 604.1
ASTM D2513-2020	Standard Specification for Polyethylene (PE) Gas Pressure Pipe, Tubing, and Fittings	Piping	1208.5.4, 1208.5.6.2, 1208.5.10.2, 1210.1.7.1(1)
ASTM D2564-2020	Standard Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems	Joints	605.12.2, 705.6.2
ASTM D2609-2021	Standard Specification for Plastic Insert Fittings for Polyethylene (PE) Plastic Pipe	Fittings	Table 604.1
ASTM D2661-2021	Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings	Piping	Table 701.2, Table 707.2
ASTM D2665-2020	Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings	Piping	Table 701.2, Table 707.2
ASTM D2680-2020	Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) and Poly (Vinyl Chloride) (PVC) Composite Sewer Piping	Piping	Table 701.2
ASTM D2683-2020	Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing	Fittings	Table 604.1
ASTM D2729-2017	Standard Specification for Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings	Piping	Table 701.2, Table 1101.4.6
ASTM D2737-2021	Standard Specification for Polyethylene (PE) Plastic Tubing	Piping, Plastic	Table 604.1
ASTM D2846/D2846M-2019a	Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Hot- and Cold-Water Distribution Systems	Piping	Table 604.1, 605.2.2, 605.3.1
ASTM D3034-2016	Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings	Piping, Plastic	Table 701.2
ASTM D3035-2021	Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter	Piping	Table 604.1
ASTM D3138-2004 (R2016)	Standard Specification for Solvent Cement for Transition Joints Between Acrylonitrile-Butadiene-Styrene (ABS) and Poly (Vinyl Chloride) (PVC) Non-Pressure Piping Components	Joints	705.9.4
ASTM D3139-2019	Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals	Joints	605.12.1
ASTM D3212-2020	Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals	Joints	705.1.1, 705.6.1

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ASTM D3261-2016	Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing	Fittings	Table 604.1
ASTM D4068-2017	Standard Specification for Chlorinated Polyethylene (CPE) Sheeting for Concealed Water-Containment Membrane	Miscellaneous	408.8.2
ASTM D4551-2017	Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Flexible Concealed Water-Containment Membrane	Miscellaneous	408.8.1
ASTM D6104-1997 (R2017)[e1]	Standard Practice for Determining the Performance of Oil/Water Separators Subjected to Surface Run-Off	Interceptors	Table 1009.1
ASTM E84-2021a	Standard Test Method for Surface Burning Characteristics of Building Materials	Miscellaneous	701.2(2), 903.1(2), 1101.4
ASTM E119-2020	Standard Test Methods for Fire Tests of Building Construction and Materials	Miscellaneous	1404.3, 1405.3
ASTM E814-2013a (R2017)	Standard Test Method for Fire Tests of Penetration Firestop Systems	Miscellaneous	1404.3, 1405.3
ASTM F409-2017	Standard Specification for Thermoplastic Accessible and Replaceable Plastic Tube and Tubular Fittings	Piping, Plastic	404.1
ASTM F437-2021	Standard Specification for Threaded Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80	Fittings	Table 604.1
ASTM F438-2017	Standard Specification for Socket-Type Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 40	Fittings	Table 604.1
ASTM F439-2019	Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80	Fittings	Table 604.1
ASTM F441/F441M-2020	Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80	Piping	Table 604.1
ASTM F442/F442M-2020	Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe (SDR-PR)	Piping	Table 604.1, 605.2.2
ASTM F493-2020	Standard Specification for Solvent Cements for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe and Fittings	Joints	605.2.2, 605.3.1
ASTM F628-2012[e3]	Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe with a Cellular Core	Piping	Table 701.2
ASTM F656-2021	Standard Specification for Primers for Use in Solvent Cement Joints of Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings	Joints	605.2.2, 605.3.1, 605.12.2, 705.6.2
ASTM F667/F667M-2016 (R2021)	Standard Specification for 3 through 24 in. Corrugated Polyethylene Pipe and Fittings	Piping, Plastic	Table 1101.4.6
ASTM F714-2021a	Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Outside Diameter	Piping	Table 701.2, 715.3.2
ASTM F794-2021	Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter	Piping	Table 701.2
ASTM F876-2020b	Standard Specification for Crosslinked Polyethylene (PEX) Tubing	Piping	Table 604.1, 605.9.1
ASTM F877-2020	Standard Specification for Crosslinked Polyethylene (PEX) Hot- and Cold-Water Distribution Systems	Piping	Table 604.1
ASTM F891-2016	Standard Specification for Coextruded Poly (Vinyl Chloride) (PVC) Plastic Pipe with a Cellular Core	Piping	Table 701.2
ASTM F894-2019	Standard Specification for Polyethylene (PE) Large Diameter Profile Wall Sewer and Drain Pipe	Piping, Plastic	Table 701.2
ASTM F1055-2016a	Standard Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene and Crosslinked Polyethylene (PEX) Pipe and Tubing	Fittings	Table 604.1, 705.5.1.2

STANDARD NUMBER	STANDARD TITLE	APPLICATION	REFERENCED SECTION
ASTM F1216-2021	Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube	Piping	715.3.1
ASTM F1281-2017 (R2021)[e1]	Standard Specification for Crosslinked Polyethylene/ Aluminum/Crosslinked Polyethylene (PEX-AL-PEX) Pressure Pipe	Piping	Table 604.1
ASTM F1282-2017	Standard Specification for Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Composite Pressure Pipe	Piping	Table 604.1
ASTM F1336-2020	Standard Specification for Poly (Vinyl Chloride) (PVC) Gasketed Sewer Fittings	Fittings	Table 701.2
ASTM F1412-2016	Standard Specification for Polyolefin Pipe and Fittings for Corrosive Waste Drainage Systems	Piping	811.2
ASTM F1488-2014 (R2019)	Standard Specification for Coextruded Composite Pipe	Piping	Table 701.2
ASTM F1673-2010 (R2021)[e1]	Standard Specification for Polyvinylidene Fluoride (PVDF) Corrosive Waste Drainage Systems	Piping	811.2
ASTM F1760-2016 (R2020)	Standard Specification for Coextruded Poly(Vinyl Chloride) (PVC) Non-Pressure Plastic Pipe Having Reprocessed Recycled Content	Piping	Table 701.2
ASTM F1807-2019b	Standard Specification for Metal Insert Fittings Utilizing a Copper Crimp Ring, or Alternate Stainless Steel Clamps, for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing	Fittings	Table 604.1
ASTM F1866-2018	Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Schedule 40 Drainage and DWV Fabricated Fittings	Fittings	Table 701.2
ASTM F1960-2021	Standard Specification for Cold Expansion Fittings with PEX Reinforcing Rings for Use with Cross-linked Polyethylene (PEX) and Polyethylene of Raised Temperature (PE-RT) Tubing	Fittings	Table 604.1
ASTM F1970-2019	Standard Specification for Special Engineered Fittings, Appurtenances or Valves for Use in Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Systems	Piping	Table 604.1, 606.1
ASTM F1973-2013 (R2018)	Standard Specification for Factory Assembled Anodeless Risers and Transition Fittings in Polyethylene (PE) and Polyamide 11 (PA11) and Polyamide 12 (PA12) Fuel Gas Distribution Systems	Fuel Gas	1210.1.7.1(2)
ASTM F1974-2009 (R2020)	Standard Specification for Metal Insert Fittings for Polyethylene/ Aluminum/Polyethylene and Crosslinked Polyethylene/ Aluminum/Crosslinked Polyethylene Composite Pressure Pipe	Fittings	Table 604.1, 605.7.1, 605.10.1
ASTM F2080-2019	Standard Specification for Cold-Expansion Fittings with Metal Compression-Sleeves for Crosslinked Polyethylene (PEX) Pipe and SDR9 Polyethylene of Raised Temperature (PE-RT) Pipe	Fittings	Table 604.1
ASTM F2098-2018	Standard Specification for Stainless Steel Clamps for Securing SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) to Metal Insert and Plastic Insert Fittings	Fittings	Table 604.1
ASTM F2159-2021	Standard Specification for Plastic Insert Fittings Utilizing a Copper Crimp Ring, or Alternate Stainless Steel Clamps for SDR9 Crosslinked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing	Fittings	Table 604.1
ASTM F2389-2021	Standard Specification for Pressure-Rated Polypropylene (PP) Piping Systems	Piping	Table 604.1, 605.11.1, 606.1
ASTM F2434-2019	Standard Specification for Metal Insert Fittings Utilizing a Copper Crimp Ring for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Cross-linked Polyethylene/Aluminum/Cross-linked Polyethylene (PEX-AL-PEX) Tubing	Fittings	Table 604.1, 605.10.1

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ASTM F2509-2015 (R2019)	Standard Specification for Field-Assembled Anodeless Riser Kits for Use on Outside Diameter Controlled Polyethylene and Polyamide-11 (PA11) Gas Distribution Pipe and Tubing	Fuel Gas	1210.1.7.1(3)
ASTM F2561-2020	Standard Practice for Rehabilitation of a Sewer Service Lateral and Its Connection to the Main Using a One Piece Main and Lateral Cured-in-Place Liner	Piping	715.3.1
ASTM F2599-2020	Standard Practice for the Sectional Repair of Damaged Pipe by Means of an Inverted Cured-In-Place Liner	Piping	715.3.1
ASTM F2618-2021	Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Pipe and Fittings for Chemical Waste Drainage Systems	Piping	811.2
ASTM F2620-2020	Standard Practice for Heat Fusion Joining of Polyethylene Pipe and Fittings	Joints	605.6.1.1, 605.6.1.3, 705.5.1.1, 705.5.1.3
ASTM F2735-2021	Standard Specification for Plastic Insert Fittings for SDR9 Cross-linked Polyethylene (PEX) and Polyethylene of Raised Temperature (PE-RT) Tubing	Fittings	Table 604.1
ASTM F2769-2018	Standard Specification for Polyethylene of Raised Temperature (PE-RT) Plastic Hot and Cold-Water Tubing and Distribution Systems	Piping, Fittings	Table 604.1
ASTM F2831-2019	Standard Practice for Internal Non Structural Epoxy Barrier Coating Material Used in Rehabilitation of Metallic Pressur-ized Piping Systems	Miscellaneous	320.1
ASTM F2855-2019	Standard Specification for Chlorinated Poly (Vinyl Chloride)/Aluminum/Chlorinated Poly (Vinyl Chloride) (CPVC-AL-CPVC) Composite Pressure Tubing	Piping	Table 604.1, 605.3.1
ASTM F2945-2018	Standard Specification for Polyamide 11 Gas Pressure Pipe, Tubing, and Fittings	Piping	1208.5.4, 1208.5.10.2
ASTM F3226/F3226M-2019	Standard Specification for Metallic Press-Connect Fittings for Piping and Tubing Systems	Fittings	Table 604.1
ASTM F3240-2019[e1]	Standard Practice for Installation of Seamless Molded Hydrophilic Gaskets (SMHG) for Long-Term Watertightness of Cured-in-Place Rehabilitation of Main and Lateral Pipelines	Piping	715.3.1
ASTM F3347-2021	Metal Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing	Fittings	Table 604.1
ASTM F3348-2021a	Plastic Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing	Fittings	Table 604.1
AWS			
AWS A5.8M/A5.8-2019	Filler Metals for Brazing and Braze Welding	Joints	605.1.1, 705.3.1, 1321.3
AWS A5.9/A5.9M-2017 (ISO 14343:2009 MOD)	Welding Consumables—Wire Electrodes, Strip Electrodes, Wires, and Rods for Arc Welding of Stainless and Heat Resist-ing Steels—Classification	Joints	605.13.2
AWS B2.2/B2.2M-2016	Brazing Procedure and Performance Qualification	Certification	1323.11
AWWA			
AWWA C110-2012	Ductile-Iron and Gray-Iron Fittings	Fittings	Table 604.1
AWWA C111-2017	Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings	Joints	605.4.1, 605.4.2
AWWA C151-2017	Ductile-Iron Pipe, Centrifugally Cast	Piping	Table 604.1
AWWA C153-2019	Ductile-Iron Compact Fittings	Fittings	Table 604.1

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AWWA C210-2015	Liquid-Epoxy Coatings and Linings for Steel Water Pipe and Fittings	Miscellaneous	604.9
AWWA C500-2019	Metal-Seated Gate Valves for Water Supply Service	Valves	606.1
AWWA C504-2015	Rubber-Seated Butterfly Valves	Valves	606.1
AWWA C507-2018	Ball Valves, 6 in. through 60 in. (150 mm through 1,500 mm)	Valves	606.1
AWWA C510-2017	Double Check-Valve Backflow Prevention Assembly	Backflow Protection	Table 603.2
AWWA C511-2017	Reduced-Pressure Principle Backflow Prevention Assembly	Backflow Protection	Table 603.2
AWWA C530-2017	Pilot-Operated Control Valves	Valves	608.2
AWWA C606-2015	Grooved and Shouldered Joints	Joints	Table 604.1
AWWA C900-2016	Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 in. through 12 in. (100 mm through 300 mm)	Piping	Table 604.1
AWWA C901-2020	Polyethylene (PE) Pressure Pipe and Tubing, ¾ in. (19 mm) through 3 in. (76 mm), for Water Service	Piping	Table 604.1
AWWA C904-2016	Crosslinked Polyethylene (PEX) Pressure Tubing, ½ in. through 3 in. (13 mm through 76 mm), for Water Service	Piping	Table 604.1
AWWA C907-2017	Injection-Molded Polyvinyl Chloride (PVC) Pressure Fittings, 4 in. through 12 in. (100 mm through 300 mm), for Water, Wastewater, and Reclaimed Water Service	Fittings	Table 604.1
CFR			
49 CFR 192.281	Plastic Pipe	Plastic, Pipe	1208.5.6.2
49 CFR 192.283	Plastic Pipe: Qualifying Joining Procedures	Plastic, Pipe	1208.5.6.2
CGA			
CGA G-4.1-2018	Cleaning of Equipment for Oxygen Service	Miscellaneous	1318.2, 1321.8.7
CGA M-1-2018	Medical Gas Supply Systems at Health Care Facilities	Miscellaneous	1324.5.7.3
CGA V-5-2019	Diameter Index Safety System (Noninterchangeable Low Pressure Connections for Medical Gas Applications)	Connections	1315.5
CISPI			
CISPI 301-2021	Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications	Piping, Ferrous	301.2.4, Table 701.2, Table 707.2
CISPI 310-2020	Couplings for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications	Joints	301.2.4, 705.2.2
CSA			
ASME A112.19.2-2018/CSA B45.1-2018	Ceramic Plumbing Fixtures	Fixtures	407.1, 408.1, 409.1, 410.1, 411.1, 412.1, 415.1, 420.1
ASME A112.19.1-2018/CSA B45.2-2018	Enameled Cast Iron and Enameled Steel Plumbing Fixtures	Fixtures	407.1, 408.1, 409.1, 415.1, 420.1
ASME A112.19.3-2017/CSA B45.4-2017	Stainless Steel Plumbing Fixtures	Fixtures	407.1, 408.1, 409.1, 410.1, 411.1, 415.1, 420.1
CSA B45.5-2017/IAPMO Z124-2017	Plastic Plumbing Fixtures (with Errata dated August 2017)	Fixtures	407.1, 408.1, 409.1, 411.1, 412.1, 420.1
CSA B45.8-2018/IAPMO Z403-2018	Terrazzo, Concrete, Composite Stone, and Natural Stone Plumbing Fixtures	Fixtures	407.1, 420.1
ASME A112.3.4-2018/CSA B45.9-2018	Macerating Toilet Systems and Waste-Pumping Systems for Plumbing Fixtures	Fixtures	710.13
ASME A112.19.7-2020/CSA B45.10-2020	Hydromassage Bathtub Systems	Fixtures	409.1, 409.6.1

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CSA B45.11-2017/IAPMO Z401-2017 (R2021)	Glass Plumbing Fixtures	Fixtures	407.1
CSA B45.12-2013/IAPMO Z402-2013 (R2018)	Aluminum and Copper Plumbing Fixtures	Fixtures	407.1, 408.1, 409.1, 420.1
ASME A112.19.5-2017/CSA B45.15-2017	Flush Valves and Spuds for Water Closets, Urinals, and Tanks	Fixtures	413.3
ASME A112.4.2-2021/CSA B45.16-2021	Personal Hygiene Devices for Water Closets	Fixtures	411.4
CSA B64.1.1-2021	Atmospheric Vacuum Breakers (AVB)	Backflow Protection	Table 603.2
CSA B64.1.2-2021	Pressure Vacuum Breakers (PVB)	Backflow Protection	Table 603.2
CSA B64.2.1.1-2021	Hose Connection Dual Check Vacuum Breakers (HCDVB)	Backflow Protection	Table 603.2
CSA B64.4-2021	Reduced Pressure Principle (RP) Backflow Preventers	Backflow Protection	Table 603.2
CSA B64.4.1-2021	Reduced Pressure Principle Backflow Preventers for Fire Protection Systems (RPF)	Backflow Protection	Table 603.2
CSA B64.5-2021	Double Check Valve (DCVA) Backflow Preventers	Backflow Protection	Table 603.2
CSA B64.5.1-2021	Double Check Valve Backflow Preventers for Fire Protection Systems (DCVAF)	Backflow Protection	Table 603.2
CSA B79-2008 (R2018)	Commercial and Residential Drains and Cleanouts	Fixtures	418.1, Table 707.2
ASME A112.18.1-2018/CSA B125.1-2018	Plumbing Supply Fittings	Fittings	408.4, 417.1, 417.2, 417.3, 417.4, 417.6, 603.5.20
ASME A112.18.2-2020/CSA B125.2-2020	Plumbing Waste Fittings	Fittings	404.1, 408.5
CSA B125.3-2018	Plumbing Fittings	Fittings	409.4(1), 410.3(1)
CSA B125.5-2011/IAPMO Z600-2011 (R2016)	Flexible Water Connectors with Excess Flow Shut-off Device	Miscellaneous	604.5
ASME A112.18.6-2017/CSA B125.6-2017 (R2021)	Flexible Water Connectors	Piping	604.5, 604.13
ASSE 1002-2020/ASME A112.1002-2020/CSA B125.12-2020	Anti-Siphon Fill Valves for Water Closet Tanks	Backflow Protection	413.3, Table 603.2
ASME A112.4.14-2017/CSA B125.14-2017	Manually Operated Valves for Use in Plumbing Systems	Valves	606.1
ASSE 1016-2017/ASME A112.1016-2017/CSA B125.16-2017	Automatic Compensating Valves for Individual Showers and Tub/Shower Combinations	Valves	408.4, 408.4.2(1)
ASSE 1037-2020/ASME A112.1037-2020/CSA B125.37-2020	Pressurized Flushing Devices for Plumbing Fixtures	Backflow Protection	413.2
ASSE 1070-2020/ASME A112.1070-2020/CSA B125.70-2020	Water Temperature Limiting Devices	Valves	407.3(1), 409.4(1), 410.3(1), 417.7(1), 417.8
CSA B137.1-2020	Polyethylene (PE) Pipe, Tubing, and Fittings for Cold-Water Pressure Services	Piping	Table 604.1
CSA B137.5-2020	Crosslinked Polyethylene (PEX) Tubing Systems for Pressure Applications	Piping	Table 604.1
CSA B137.6-2020	Chlorinated Polyvinylchloride (CPVC) Pipe, Tubing, and Fittings for Hot- and Cold-Water Distribution Systems (with Update No. 1)	Piping, Fittings	Table 604.1

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CSA B137.9-2020	Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Composite Pressure-Pipe Systems	Piping	Table 604.1
CSA B137.10-2020	Crosslinked Polyethylene/Aluminum/Crosslinked Polyethylene (PEX-AL-PEX) Composite Pressure-Pipe Systems	Piping	Table 604.1
CSA B137.11-2020	Polypropylene (PP-R & PP-RCT) Pipe and Fittings for Pressure Applications	Piping	Table 604.1, 605.11.1
CSA B137.18-2020	Polyethylene of Raised Temperature Resistance (PE-RT) Tubing Systems for Pressure Applications	Piping, Fittings	Table 604.1
CSA B181.3-2021	Polyolefin and Polyvinylidene Fluoride (PVDF) Laboratory Drainage Systems	Piping	811.2
CSA B242-2005 (R2021)	Groove- and Shoulder-Type Mechanical Pipe Couplings	Fittings	Table 604.1
CSA B481-2012 (R2017)	Grease Interceptors	Fixtures	Table 1009.1, 1014.1
CSA/ANSI LC 1-2019/CSA 6.26-2019	Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing	Fuel Gas	1208.5.3.5, 1210.4.1(4), 1211.3
ANSI LC 4-2022/CSA 6.32-2022	Press-Connect Metallic Fittings and Valves for Use in Fuel Gas Distribution Systems	Fuel Gas	1208.4(2), 1208.5.9.1, 1208.5.9.2, 1208.5.9.3, Table 1208.13, 1210.4.1(3)
CSA/ANSI Z21.10.1-2019/CSA 4.1-2019	Gas Water Heaters, Volume I, Storage Water Heaters with Input Ratings of 75,000 Btu Per Hour or Less	Fuel Gas, Appliances	Table 501.1(1)
CSA/ANSI Z21.10.3-2019/CSA 4.3-2019	Gas-Fired Water Heaters, Volume III, Storage Water Heaters with Input Ratings Above 75,000 Btu Per Hour, Circulating and Instantaneous	Fuel Gas, Appliances	Table 501.1(1)
CSA/ANSI Z21.15-2021/CSA 9.1-2021	Manually Operated Gas Valves for Appliances, Appliance Connector Valves, and Hose End Valves	Fuel Gas	Table 1208.13
CSA/ANSI Z21.18-2019/CSA 6.3-2019	Gas Appliance Pressure Regulators	Gas Pressure Regulators	507.20
ANSI Z21.22-2015/CSA 4.4-2015 (R2020)	Relief Valves for Hot Water Supply Systems	Valves	607.6, 608.7
ANSI Z21.24-2015/CSA 6.10-2015 (R2020)	Connectors for Gas Appliances	Fuel Gas	1212.1(3), 1212.2
ANSI Z21.41-2014/CSA 6.9-2014 (R2019)	Quick Disconnect Devices for Use with Gas Fuel Appliances	Fuel Gas	1212.7
CSA/ANSI Z21.54-2019/CSA 8.4-2019	Gas Hose Connectors for Portable Outdoor Gas-Fired Appliances	Fuel Gas	1212.3.2
ANSI Z21.69-2015/CSA 6.16-2015 (R2020)	Connectors for Moveable Gas Appliances	Fuel Gas	1212.1.2
ANSI Z21.75-2016/CSA 6.27-2016	Connectors for Outdoor Gas Appliances and Manufactured Homes	Fuel Gas	1212.1(4)
CSA/ANSI Z21.80-2019/CSA 6.22-2019	Line Pressure Regulators	Fuel Gas	1208.7.1, 1208.15
CSA/ANSI Z21.90-2019/CSA 6.24-2019	Gas Convenience Outlets and Optional Enclosures	Fuel Gas	1212.8
ANSI Z21.93-2017/CSA 6.30-2017	Excess Flow Valves for Natural Gas and Propane Gas with Pressures up to 5 psig	Fuel Gas	1209.1
DOE			
DOE-STD-3020-2015	HEPA Filters Used by DOE Contractors	Miscellaneous	1312.4(3)
IAPMO			
ANSI/CAN/ASSE/IAPMO 1055-2020	Chemical Dispensers with Integral Backflow Protection	Backflow Protection	Table 603.2, 603.5.22
ASSE/IAPMO/ANSI Series 5000-2015	Cross-Connection Control Professional Qualifications Standard	Certification	603.2, 603.4.2

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ASSE/IAPMO/ANSI 6010-2021	Medical Gas Systems Installers	Certification	1323.10
ASSE/IAPMO/ANSI 6020-2021	Medical Gas Systems Inspectors	Miscellaneous	1324.5.4.7, 1324.5.6.2, 1324.5.6.5
ASSE/IAPMO/ANSI 6030-2021	Medical Gas Systems Verifiers	Miscellaneous	1324.5.4.7, 1324.5.6.2, 1324.5.6.5, 1324.5.7.2
ASSE/IAPMO/ANSI 6035-2021	Bulk Medical Gas/Cryogenic Fluid Central Supply Systems Verifiers	Miscellaneous	1324.5.7.3
ASSE/IAPMO/ANSI Series 7000-2020	Residential Potable Water Fire Sprinkler System Installers & Inspectors for One- and Two-Family Dwellings	Miscellaneous	612.1
ASSE/IAPMO/ANSI 12010-2021	Environment of Care, Infection Control and Construction Risk Assessment Professional Qualification Standard	Professional Qualifications	1303.9
IAPMO IGC 78-2019	Drain, Waste and Vent (DWV) Internal Cleanout Fittings	DWV Components	Table 707.2
IAPMO IGC 109-2019	Water Distribution Manifolds	Valves	606.5.1
IAPMO IGC 127-2018	Combined Hand-Washing Systems	Fixtures	407.1, 420.1
IAPMO IGC 154-2019	Shower and Tub/Shower Enclosures, Bathtubs with Glass Pressure-Sealed Doors, and Shower/Steam Panels	Fixtures	408.1
IAPMO IGC 167-2011a[e2] (R2021)	Solid Waste Containment Interceptors	Interceptors	Table 1009.1
IAPMO IGC 183-2016	Oil/Water Separators and Coalescing Plate Separators	DWV Components	Table 1009.1, 1017.2
IAPMO IGC 196-2018	Condensate Traps and Overflow Switches for Air-Conditioning Systems	Condensate Traps	814.4
IAPMO IGC 224-2018	ABS, PVC and Cast Iron DWV Test Fitting with Integral Cleanout	DWV Components	Table 707.2
IAPMO IGC 305-2019	ABS and PVC Horizontal Backwater Valves with Lifting Devices	Valves	710.6
IAPMO IGC 322-2018	Alkaline Water – Drinking Water Treatment Units	Miscellaneous	611.1.1
IAPMO IGC 324-2019	Alternate Water Source Systems for Multi-Family, Residential, and Commercial Use	Water Quality	1501.7, 1506.8, 1603.4
IAPMO IGC 325-2016	Oil/Water Separators Performance	Interceptors	Table 1009.1
IAPMO IGC 352-2020[e1]	Diverter Valves for use in Alternate Nonpotable Water Source Systems	Valves	1603.20
IAPMO PS 53-2020	Grooved Mechanical Pipe Couplings and Grooved Fittings	Fittings	Table 604.1
IAPMO PS 59-2016a[e2]	Wastewater Diverter/Bypass Valves and Diversion Systems	Fittings	1503.2.2. 1603.20
IAPMO PS 65-2019a	Airgap Units for Water Conditioning Equipment Installation	Backflow Protection	611.2
IAPMO PS 66-2015	Dielectric Fittings	Fittings	605.15, 605.16.1, 605.16.3
IAPMO PS 72-2019	Valves with Atmospheric Vacuum Breakers	Valves	603.5.6(5)
IAPMO PS 76-2021	Trap Primers for Fill Valves and Flushometer Valves	DWV Components	1007.2
IAPMO PS 80-2019	Clarifiers	Interceptors	Table 1009.1
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IAPMO PS 104-2019	Pressure Relief Connection for Dispensing Equipment	Valves	603.5.22(1)
IAPMO PS 106-2015[e1]	Tileable Shower Receptors and Shower Kits	Fixtures	408.2
IAPMO PS 117-2021	Press Connections	Fittings	Table 604.1
CSA B45.5-2017/IAPMO Z124-2017	Plastic Plumbing Fixtures (with Errata dated August 2017)	Fixtures	407.1, 408.1, 409.1, 411.1, 412.1, 420.1

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IAPMO/ANSI Z124.5-2013[e1] (R2018)	Plastic Toilet Seats	Appurtenance	411.3
CSA B45.11-2017/IAPMO Z401-2017 (R2021)	Glass Plumbing Fixtures	Fixtures	407.1
CSA B45.12-2013/IAPMO Z402-2013 (R2018)	Aluminum and Copper Plumbing Fixtures	Fixtures	407.1, 408.1, 409.1, 420.1
CSA B45.8-2018/IAPMO Z403-2018	Terrazzo, Concrete, Composite Stone, and Natural Stone Plumbing Fixtures	Fixtures	407.1, 420.1
IAPMO/ANSI Z601-2018	Scale Reduction Devices	Water Conditioning, Water Treatment	611.1.2
ANSI/CAN/IAPMO Z1001-2021	Prefabricated Gravity Grease Interceptors	Fixtures	Table 1009.1, 1014.1, 1014.3.4
IAPMO/ANSI Z1002-2020	Rainwater Harvesting Tanks	Rainwater Tanks	1603.5
IAPMO/ANSI Z1033-2015 (R2020)	Flexible PVC Hoses and Tubing for Pools, Hot Tubs, Spas, and Jetted Bathtubs	Tubing	409.6.2
IAPMO/ANSI Z1088-2019[e1]	Pre-Pressurized Water Expansion Tanks	Miscellaneous	608.3
IAPMO/ANSI Z1157-2014e1 (R2019)	Ball Valves	Valves	606.1
ANSI/CAN/IAPMO Z1349-2021	Devices for Detection, Monitoring or Control of Plumbing Systems	Leak Detection	606.9
CSA B125.5-2011/IAPMO Z600-2011 (R2016)	Flexible Water Connectors with Excess Flow Shut-off Device	Miscellaneous	604.5
ICC			
ICC A117.1-2017	Accessible and Usable Buildings and Facilities	Miscellaneous	403.2, 408.7
ISEA			
ISEA Z358.1-2014	Emergency Eyewash and Shower Equipment	Miscellaneous	416.1, 416.2
MSS			
MSS SP-58-2018	Pipe Hangers and Supports – Materials, Design, Manufacture, Selection, Application, and Installation	Miscellaneous	1210.3.5, 1323.4.1
MSS SP-67-2017	Butterfly Valves	Valves	606.1
MSS SP-70-2011	Gray Iron Gate Valves, Flanged and Threaded Ends	Valves	606.1
MSS SP-71-2018	Gray Iron Swing Check Valves, Flanged and Threaded Ends	Valves	606.1
MSS SP-72-2010a	Ball Valves with Flanged or Butt-Welding Ends for General Service	Valves	606.1
MSS SP-78-2011	Gray Iron Plug Valves, Flanged and Threaded Ends	Valves	606.1
MSS SP-80-2019	Bronze Gate, Globe, Angle, and Check Valves	Valves	606.1
MSS SP-110-2010	Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends	Valves	606.1
MSS SP-122-2017	Plastic Industrial Ball Valves	Valves	606.1
NFPA			
NFPA 13D-2022	Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes	Miscellaneous	612.1, 612.5.3.1
NFPA 30A-2021	Code for Motor Fuel Dispensing Facilities and Repair Garages	Miscellaneous	507.14.2
NFPA 31-2020	Standard for the Installation of Oil-Burning Equipment	Fuel Gas, Appliances	505.3, 1201.1
NFPA 51-2018	Standard for the Design and Installation of Oxygen-Fuel Gas Systems for Welding, Cutting, and Allied Processes	Fuel Gas	507.9
NFPA 54/ANSI Z223.1-2021	National Fuel Gas Code	Fuel Gas	Chapter 5, Chapter 12

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NFPA 58-2020	Liquefied Petroleum Gas Code	Fuel Gas	1208.4(8), 1208.5.6.3, 1208.5.10.4, 1212.11
NFPA 70-2020	National Electrical Code	Miscellaneous	508.2.2, 1210.12.5.2, 1211.2.4, 1211.7, 1317.1(11), 1323.3.1, 1326.4(3)
NFPA 88A-2019	Parking Structures	Miscellaneous	507.14.1
NFPA 99-2021	Health Care Facilities Code	Miscellaneous	1301.3, 1309.13(2), 1317.1(9), 1324.5.9.4, 1326.3, 1326.4(3), 1326.8(4), 1327.1
NFPA 211-2019	Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances	Fuel Gas, Appliances	509.5.2, 509.5.3, 509.5.6.1, 509.5.6.3
NFPA 409-2022	Standard on Aircraft Hangars	Miscellaneous	507.15
NFPA 780-2020	Standard for the Installation of Lightning Protection Systems	Fuel Gas	1211.5
NFPA 1192-2021	Standard on Recreational Vehicles	Fuel Gas	1202.3(18)
NSF			
NSF/ANSI 3-2021	Commercial Warewashing Equipment	Appliances	414.1
NSF/ANSI 14-2020	Plastics Piping System Components and Related Materials	Miscellaneous	301.2.3, 604.1, 606.1
NSF/ANSI 42-2021	Drinking Water Treatment Units – Aesthetic Effects	Appliances	Table 611.1
NSF/ANSI 44-2018	Residential Cation Exchange Water Softeners	Appliances	Table 611.1
NSF/ANSI 53-2020	Drinking Water Treatment Units-Health Effects	Appliances	Table 611.1
NSF/ANSI 55-2020	Ultraviolet Microbiological Water Treatment Systems	Appliances	Table 611.1
NSF/ANSI 58-2020	Reverse Osmosis Drinking Water Treatment Systems	Appliances	Table 611.1, 611.2
NSF/ANSI/CAN 61-2021	Drinking Water System Components – Health Effects	Miscellaneous	415.1, 417.1, 604.1, 604.9, 606.1, 607.3, 608.2, 609.8.2, Table 611.1
NSF/ANSI 62-2021	Drinking Water Distillation Systems	Appliances	Table 611.1
NSF/ANSI 184-2019	Residential Dishwashers	Appliances	414.1
NSF/ANSI 350-2020	Onsite Residential and Commercial Water Reuse Treatment Systems	Miscellaneous	1501.7, 1506.8, 1603.4
NSF/ANSI 359-2018	Valves for Crosslinked Polyethylene (PEX) Water Distribution Tubing Systems	Valves	606.1
PDI			
PDI G-101-2017	Testing and Rating Procedure for Hydro Mechanical Grease Interceptors with Appendix of Installation and Maintenance	DWV Components	Table 1009.1, 1014.1
PDI G-102-2009	Testing and Certification for Grease Interceptors with FOG Sensing and Alarm Devices	Certification	Table 1009.1, 1014.1
PDI-WH 201-2017	Water Hammer Arresters	Water Supply Components	609.11
UL			
UL 103-2010	Factory-Built Chimneys for Residential Type and Building Heating Appliances (with revisions through September 24, 2021)	Fuel Gas, Appliances	509.5.1, 509.5.1.1
UL 174-2004	Household Electric Storage Tank Water Heaters (with revisions through December 16, 2021)	Appliances	Table 501.1(1)

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UL 263-2011	Fire Tests of Building Construction and Materials (with revisions through August 5, 2021)	Miscellaneous	1404.3, 1405.3
UL 378-2006	Draft Equipment (with revisions through September 17, 2013)	Fuel Gas, Appliances	509.3.3, 509.13, 509.14.1
UL 399-2017	Drinking Water Coolers (with revisions through July 31, 2020)	Fixtures	415.1
UL 430-2015	Waste Disposers (with revisions through September 14, 2021)	Appliances	419.1
UL 441-2016	Gas Vents (with revisions through August 28, 2019)	Fuel Gas, Vents	509.1
UL 467-2013	Grounding and Bonding Equipment (with revisions through June 7, 2017)	Miscellaneous	1211.2.5
UL 499-2014	Electric Heating Appliances (with revisions through October 22, 2021)	Appliances	Table 501.1(1)
UL 641-2010	Type L Low-Temperature Venting Systems (with revisions through April 23, 2018)	Fuel Gas	509.1
UL 723-2018	Test for Surface Burning Characteristics of Building Materials	Miscellaneous	701.2(2), 903.1(2), 1101.4
UL 732-2018	Oil-Fired Storage Tank Water Heaters (with revisions through August 9, 2018)	Fuel Gas, Appliances	Table 501.1(1)
UL 749-2018	Household Dishwashers	Appliances	414.1
UL 778-2016	Motor-Operated Water Pumps (with revisions through June 29, 2021)	Appliances	1101.14
UL 921-2020	Commercial Dishwashers	Appliances	414.1
UL 959-2010	Medium Heat Appliance Factory-Built Chimneys (with revisions through August 28, 2019)	Fuel Gas, Appliances	509.5.1
UL 1453-2016	Electric Booster and Commercial Storage Tank Water Heaters (with revisions through May 18, 2018)	Appliances	Table 501.1(1)
UL 1479-2015	Fire Tests of Penetration Firestops (with revisions through May 18, 2021)	Miscellaneous	1404.3, 1405.3
UL 1738-2010	Venting Systems for Gas-Burning Appliances, Categories II, III, and IV (with revisions through August 26, 2021)	Fuel Gas, Appliances	509.4.1, 509.4.2, 509.4.3
UL 1777-2015	Chimney Liners (with revisions through April 11, 2019)	Chimney Liners	509.5.3(2)
UL 2523-2009	Solid Fuel-Fired Hydronic Heating Appliances, Water Heaters, and Boilers (with revisions through March 16, 2018)	Fuel Gas, Appliances	Table 501.1(1)
UL 2561-2016	1400 Degree Fahrenheit Factory-Built Chimneys (with revisions through April 19, 2018)	Fuel Gas, Appliances	509.5.1
WSC			
ASSE 1099-2021/WSC PST 2000-2021	Pressurized Water Storage Tanks	Valves	607.2

	STANDARDS, PUBLICATIONS, PRACTICES, AND GUIDES	**TABLE 1701.2**	**TABLE 1701.2**	**Update to Reference Location**	**Accept Change Adopt with state amendment**	**Accept Change**	**Existing Amendment**

DOCUMENT NUMBER	DOCUMENT TITLE	APPLICATION
AHAM		
AHAM FWD-1-2016	Food Waste Disposers	Appliances
ARCSA		
ARCSA/ASPE 78-2015	Stormwater Harvesting System Design for Direct End-Use Applications	Miscellaneous
ASCE		
ASCE 25-2016	Earthquake-Actuated Automatic Gas Shutoff Devices	Fuel Gas
ASABE		
ASABE/ICC 802-2014	Landscape Irrigation Sprinkler and Emitter Standard	Irrigation
ASHRAE		
ASHRAE/IES 90.1-2019	Energy Standard for Buildings Except Low-Rise Residential Buildings	Miscellaneous
ASHRAE/IES 90.2-2018	Energy-Efficient Design of Low-Rise Residential Buildings	Miscellaneous
ASHRAE 188-2021	Legionellosis: Risk Management for Building Water Systems	Risk Management
ASHRAE Guideline 12-2020	Managing the Risk of Legionellosis Associated with Building Water Systems	Risk Management
ASME		
ASME A13.1-2020	Scheme for the Identification of Piping Systems	Piping
ASME A112.4.3-1999 (R2019)	Plastic Fittings for Connecting Water Closets to the Sanitary Drainage System	Fittings
ASME A112.19.10-2017	Retrofit Dual Flush Devices for Water Closets	Fixtures
ASME A112.21.3M-1985 (R2017)	Hydrants for Utility and Maintenance Use	Valves
ASME B1.20.3-1976 (R2018)	Dryseal Pipe Threads (Inch)	Joints
ASME B16.39-2019	Malleable Iron Threaded Pipe Unions: Classes 150, 250 and 300	Fittings
ASME B16.40-2019	Manually Operated Thermoplastic Gas Shutoffs and Valves in Gas Distribution Systems	Valves
ASME B31.1-2020	Power Piping	Piping
ASME B36.19M-2018	Stainless Steel Pipe	Piping, Ferrous
ASME BPVC Section IV-2021	Rules for Construction of Heating Boilers	Miscellaneous
ASPE		
ARCSA/ASPE 78-2015	Stormwater Harvesting System Design for Direct End-Use Applications	Miscellaneous
WQA/ASPE/ANSI S-803-2017	Sustainable Drinking Water Treatment Systems	Miscellaneous
ASSE		
ASSE 1017-2009	Temperature Actuated Mixing Valves for Hot Water Distribution Systems	Valves
ASSE 1066-1997	Individual Pressure Balancing In-Line Valves for Individual Fixture Fittings	Valves
ASSE 1082-2018	Water Heaters with Integral Temperature Control Devices for Hot Water Distribution Systems	Appliances
ASSE 1086-2020	Reverse Osmosis Water Efficiency – Drinking Water	Appliances
ASSE/IAPMO/ANSI 5110-2015	Backflow Prevention Assembly Testers	Professional Qualifications

DOCUMENT NUMBER	DOCUMENT TITLE	APPLICATION
ASSE/IAPMO/ANSI 5120-2015	Cross-Connection Control Surveyors	Professional Qualifications
ASSE/IAPMO/ANSI 5130-2015	Backflow Prevention Assembly Repairers	Professional Qualifications
ASSE/IAPMO/ANSI 5140-2015	Fire Protection System Cross-Connection Control Tester	Professional Qualifications
ASSE/IAPMO/ANSI 5150-2015	Backflow Prevention Program Administrators	Professional Qualifications
ASSE/IAPMO/ANSI Series 6000-2021	Professional Qualifications Standard for Medical Gas Systems Personnel	Professional Qualifications
ASSE/IAPMO/ANSI 6015-2021	Bulk Medical Gas/Cryogenic Fluid Central Supply Systems Installers	Professional Qualifications
ASSE/IAPMO/ANSI 6040-2021	Medical Gas Systems Maintenance Personnel	Professional Qualifications
ASSE/IAPMO/ANSI 7010-2020	Installers of Residential Potable Water Fire Sprinkler Systems for One- and Two-Family Dwellings	Professional Qualifications
ASSE/IAPMO/ANSI 7020-2020	Inspectors of Residential Potable Water Fire Sprinkler Systems for One- and Two-Family Dwellings	Professional Qualifications
ASSE/IAPMO/ANSI Series 12000-2021	Professional Qualifications Standard for Water Management and Infection Control Risk Assessment for Building Systems	Professional Qualifications
ASSE/IAPMO/ANSI 12020-2021	Environment of Care, Infection Control and Construction Risk Assessment Professional Qualification Standard for Construction and Maintenance Employers	Professional Qualifications
ASSE/IAPMO/ANSI 12060-2021	Water Quality Program Professional Qualifications Standard for Employers and Designated Representatives	Professional Qualifications
ASSE/IAPMO/ANSI 12061-2021	Water Quality Program Professional Qualifications Standard for Plumbers	Professional Qualifications
ASSE/IAPMO/ANSI 12062-2021	Water Quality Program Professional Qualifications Standard for Pipefitters and HVAC Technicians	Professional Qualifications
ASSE/IAPMO/ANSI 12063-2021	Water Quality Program Professional Qualifications Standard for Sprinkler Fitters	Professional Qualifications
ASSE/IAPMO/ANSI 12080-2021	Professional Qualifications Standard for Legionella Water Safety and Management Specialist	Professional Qualifications
ASSE/IAPMO/ANSI Series 13000-2015 (R2020)	Service Plumber and Residential Mechanical Service Technician Professional Qualifications Standard	Professional Qualifications
ASSE/IAPMO/ANSI 13010-2015 (R2020)	Professional Qualifications Standard for the Service Plumber	Professional Qualifications
ASSE/IAPMO/ANSI Series 16000-2019	Professional Qualifications Standard for Inspectors and Plans Examiners	Professional Qualifications
ASSE/IAPMO/ANSI 16010-2019	Plumbing Inspector	Professional Qualifications
ASSE/IAPMO/ANSI 16040-2019	Plumbing Plan Examiner	Professional Qualifications
ASSE/ARCSA/IAPMO/ ANSI Series 21000-2017	Rainwater Catchment Systems Personnel	Professional Qualifications
ASSE/IAPMO/ANSI 21110-2017	Rainwater Catchment Systems Installers	Professional Qualifications
ASSE/IAPMO/ANSI 21120-2017	Rainwater Catchment Systems Designers	Professional Qualifications
ASSE/IAPMO/ANSI 21130-2017	Inspectors of Rainwater and Stormwater Catchment Systems	Professional Qualifications
ASTM		
ASTM A48/A48M-2003 (R2021)	Standard Specification for Gray Iron Castings	Piping, Ferrous

DOCUMENT NUMBER	DOCUMENT TITLE	APPLICATION
ASTM A126-2004 (R2019)	Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings	Piping, Ferrous
ASTM A377-2018	Standard Index of Specifications for Ductile Iron Pressure Pipe	Piping, Ferrous
ASTM A479/A479M-2020	Standard Specification for Stainless Steel Bars and Shapes for Use in Boilers and Other Pressure Vessels	Piping, Ferrous
ASTM A536-1984 (R2019)[e1]	Standard Specification for Ductile Iron Castings	Piping, Ferrous
ASTM A733-2016	Standard Specification for Welded and Seamless Carbon Steel and Austenitic Stainless Steel Pipe Nipples	Piping, Ferrous
ASTM A1045-2010 (R2021)	Standard Specification for Flexible Poly (Vinyl Chloride) (PVC) Gaskets used in Connection of Vitreous China Plumbing Fixtures to Sanitary Drainage Systems	Piping, Plastic
ASTM B29-2019	Standard Specification for Refined Lead	Joints
ASTM B370-2012 (R2019)	Standard Specification for Copper Sheet and Strip for Building Construction	Miscellaneous
ASTM B687-1999 (R2016)	Standard Specification for Brass, Copper, and Chromium-Plated Pipe Nipples	Piping, Copper Alloy
ASTM C14-2020	Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe	Piping, Non-Metallic
ASTM C412-2019	Standard Specification for Concrete Drain Tile	Piping, Non-Metallic
ASTM C443-2021	Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets	Joints
ASTM C444-2021	Standard Specification for Perforated Concrete Pipe	Piping, Non-Metallic
ASTM C478/C478M-2020	Standard Specification for Circular Precast Reinforced Concrete Manhole Sections	Miscellaneous
ASTM C1227-2020	Standard Specification for Precast Concrete Septic Tanks	DWV Components
ASTM C1440-2021	Standard Specification for Thermoplastic Elastomeric (TPE) Gasket Materials for Drain, Waste, and Vent (DWV), Sewer, Sanitary and Storm Plumbing Systems	Joints
ASTM D1784-2020	Standard Classification System and Basis for Specifications for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds	Piping, Plastic
ASTM D2321-2020	Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications	Piping, Plastic
ASTM D2517-2018	Standard Specification for Reinforced Epoxy Resin Gas Pressure Pipe and Fittings	Piping, Plastic
ASTM D2657-2007 (R2015)	Standard Practice for Heat Fusion Joining of Polyolefin Pipe and Fittings	Joints
ASTM D2774-2021a	Standard Practice for Underground Installation of Thermoplastic Pressure Piping	Piping, Plastic
ASTM D2855-2020	Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets	Joints
ASTM D3122-2015	Standard Specification for Solvent Cement for Styrene-Rubber (SR) Plastic Pipe and Fittings	Joints
ASTM D3311-2017 (R2021)	Standard Specification for Drain, Waste, and Vent (DWV) Plastic Fittings Patterns	Fittings
ASTM F402-2018	Standard Practice for Safe Handling of Solvent Cements, Primers, and Cleaners Used for Joining Thermoplastic Pipe and Fittings	Joints
ASTM F480-2014	Standard Specification for Thermoplastic Well Casing Pipe and Couplings Made in Standard Dimension Ratios (SDR), SCH 40 and SCH 80	Piping, Plastic
ASTM F810-2012 (R2018)	Standard Specification for Smoothwall Polyethylene (PE) Pipe for Use in Drainage and Waste Disposal Absorption Fields	Piping, Plastic
ASTM F949-2020	Standard Specification for Poly (Vinyl Chloride) (PVC) Corrugated Sewer Pipe with a Smooth Interior and Fittings	Piping, Plastic
ASTM F1476-2007 (R2019)	Standard Specification for Performance of Gasketed Mechanical Couplings for Use in Piping Applications	Joints
ASTM F1499-2017	Standard Specification for Coextruded Composite Drain, Waste, and Vent Pipe (DWV)	Piping, Plastic

DOCUMENT NUMBER	DOCUMENT TITLE	APPLICATION
ASTM F1743-2017	Standard Practice for Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP)	Piping, Plastic
ASTM F1924-2019	Standard Specification for Plastic Mechanical Fittings for Use on Outside Diameter Controlled Polyethylene Gas Distribution Pipe and Tubing	Fittings
ASTM F1948-2020	Standard Specification for Metallic Mechanical Fittings for Use on Outside Diameter Controlled Thermoplastic Gas Distribution Pipe and Tubing	Fittings
ASTM F2165-2019	Standard Specification for Flexible Pre-Insulated Piping	Piping, Plastic
ASTM F2206-2019	Standard Specification for Fabricated Fittings of Butt-Fused Polyethylene (PE)	DWV Components
ASTM F2306/F2306M-2021	Standard Specification for 12 to 60 in. [300 to 1500 mm] Annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for Gravity-Flow Storm Sewer and Subsurface Drainage Applications	Piping, Plastic
AWS		
AWS B2.4-2012	Welding Procedure and Performance Qualification for Thermoplastics	Joints, Certification
AWWA		
AWWA C203-2020	Coal-Tar Protective Coatings and Linings for Steel Water Pipe	Miscellaneous
AWWA C213-2015	Fusion-Bonded Epoxy Coatings and Linings for Steel Water Pipe and Fittings	Miscellaneous
AWWA C215-2016	Extruded Polyolefin Coatings for Steel Water Pipe	Miscellaneous
CFR		
10 CFR 430	Energy Conservation Program for Consumer Products	Energy Conservation
10 CFR 431.106	Uniform Test Method for The Measurement of Energy Efficiency of Commercial Water Heating Equipment	Water Heating Equipment
49 CFR 192	Transportation of Natural and Other Gas by Pipeline: Minimum Federal Standards	Miscellaneous
CGA		
CGA C-9-2019	Standard Color Marking of Compressed Gas Containers for Medical Use	Miscellaneous
CGA S-1.3-2020	Pressure Relief Device Standards-Part 3-Stationary Storage Containers for Compressed Gases	Fuel Gas
CGA V-1-2021	Compressed Gas Cylinder Valve Outlet and Inlet Connections	Valves
CSA		
CSA A257 Series-2019	Standards for Concrete Pipe and Manhole Sections	Piping
CSA B55.2-2020	Drain Water Heat Recovery Units	Miscellaneous
CSA B64.7-2021	Laboratory Faucet Vacuum Breakers (LFVB)	Backflow Protection
CSA B66-2021	Design, Material, and Manufacturing Requirements for Prefabricated Septic Tanks and Sewage Holding Tanks	DWV Components
CSA B128.1-2006/B128.2-2006 (R2016)	Design and Installation of Non-Potable Water Systems/Maintenance and Field Testing of Non-Potable Water Systems	Miscellaneous
CAN/CSA B356-2010 (R2020)	Water Pressure Reducing Valves for Domestic Water Supply Systems	Valves
CAN/CSA G401-2014 (R2019)	Corrugated Steel Pipe Products	Piping, Ferrous
ANSI Z21.12b-1994 (R2020)	Draft Hoods	Fuel Gas, Appliances
CSA Z21.13-2017	Gas-Fired Low-Pressure Steam and Hot Water Boilers (same as CSA 4.9)	Fuel Gas, Appliances
ANSI Z21.81a-2007/ CSA 6.25a-2007 (R2020)	Cylinder Connection Devices	Fuel Gas
CSA Z21.86-2016	Vented Gas-Fired Space Heating Appliances (same as CSA 2.32)	Fuel Gas, Appliances

DOCUMENT NUMBER	DOCUMENT TITLE	APPLICATION
ANSI Z83.11-2016 (R2021)/CSA 1.8-2016 (R2021)	Gas Food Service Equipment	Fuel Gas, Appliances
CSA Z317.1-2021	Special Requirements for Plumbing Installations in Health Care Facilities	Miscellaneous
ENERGY STAR		
Energy Star-2007	Program Requirements for Commercial Ice Machines	Miscellaneous
Energy Star-2012 (version 2.0)	Program Requirements Product Specification for Commercial Dishwashers	Appliances
Energy Star-2016 (version 6.0)	Program Requirements for Residential Dishwashers	Appliances
Energy Star-2018 (version 8.0)	Program Requirements Product specification for Clothes Washers (effective February 5, 2018)	Appliances
EPA		
EPA/600/R-12/618-2012	Guidelines for Water Reuse	Miscellaneous
EPA WaterSense-2007	High-Efficiency Lavatory Faucet Specification	Fixtures
EPA WaterSense-2009	Specification for Flushing Urinals	Fixtures
EPA WaterSense-2014	Specification for Tank-Type Toilets	Fixtures
EPA WaterSense-2015	Specification for Flushometer-Valve Water Closets	Fixtures
EPA WaterSense-2017	Specification for Spray Sprinkler Bodies	Miscellaneous
EPA WaterSense-2018	Specification for Showerheads	Fixtures
EPA WaterSense-2021	Specification for Soil Moisture-Based Irrigation Controllers	Irrigation
EPA WaterSense-2021	Specification for Weather-Based Irrigation Controllers	Irrigation
IAPMO		
ASSE/IAPMO/ANSI 5110-2015	Backflow Prevention Assembly Testers	Professional Qualifications
ASSE/IAPMO/ANSI 5120-2015	Cross-Connection Control Surveyors	Professional Qualifications
ASSE/IAPMO/ANSI 5130-2015	Backflow Prevention Assembly Repairers	Professional Qualifications
ASSE/IAPMO/ANSI 5140-2015	Fire Protection System Cross-Connection Control Tester	Professional Qualifications
ASSE/IAPMO/ANSI 5150-2015	Backflow Prevention Program Administrators	Professional Qualifications
ASSE/IAPMO/ANSI 6015-2021	Bulk Medical Gas/Cryogenic Fluid Central Supply Systems Installers	Professional Qualifications
ASSE/IAPMO/ANSI 6040-2021	Medical Gas Systems Maintenance Personnel	Professional Qualifications
ASSE/IAPMO/ANSI 7010-2020	Installers of Residential Potable Water Fire Sprinkler Systems for One- and Two-Family Dwellings	Professional Qualifications
ASSE/IAPMO/ANSI 7020-2020	Inspectors of Residential Potable Water Fire Sprinkler Systems for One- and Two-Family Dwellings	Professional Qualifications
ASSE/IAPMO/ANSI Series 12000-2021	Professional Qualifications Standard for Water Management and Infection Control Risk Assessment for Building Systems	Professional Qualifications
ASSE/IAPMO/ANSI 12020-2021	Environment of Care, Infection Control and Construction Risk Assessment Professional Qualification Standard for Construction and Maintenance Employers	Professional Qualifications
ASSE/IAPMO/ANSI 12060-2021	Water Quality Program Professional Qualifications Standard for Employers and Designated Representatives	Professional Qualifications
ASSE/IAPMO/ANSI 12061-2021	Water Quality Program Professional Qualifications Standard for Plumbers	Professional Qualifications

DOCUMENT NUMBER	DOCUMENT TITLE	APPLICATION
ASSE/IAPMO/ANSI 12062-2021	Water Quality Program Professional Qualifications Standard for Pipefitters and HVAC Technicians	Professional Qualifications
ASSE/IAPMO/ANSI 12063-2021	Water Quality Program Professional Qualifications Standard for Sprinkler Fitters	Professional Qualifications
ASSE/IAPMO/ANSI 12080-2021	Professional Qualifications Standard for Legionella Water Safety and Management Specialist	Professional Qualifications
ASSE/IAPMO/ANSI Series 13000-2015 (R2020)	Service Plumber and Residential Mechanical Service Technician Professional Qualifications Standard	Professional Qualifications
ASSE/IAPMO/ANSI 13010-2015 (R2020)	Professional Qualifications Standard for the Service Plumber	Professional Qualifications
ASSE/IAPMO/ANSI Series 16000-2019	Professional Qualifications Standard for Inspectors and Plans Examiners	Professional Qualifications
ASSE/IAPMO/ANSI 16010-2019	Plumbing Inspector	Professional Qualifications
ASSE/IAPMO/ANSI 16040-2019	Plumbing Plan Examiner	Professional Qualifications
ASSE/ARCSA/IAPMO/ ANSI Series 21000-2017	Rainwater Catchment Systems Personnel	Professional Qualifications
ASSE/IAPMO/ANSI 21110-2017	Rainwater Catchment Systems Installers	Professional Qualifications
ASSE/IAPMO/ANSI 21120-2017	Rainwater Catchment Systems Designers	Professional Qualifications
ASSE/IAPMO/ANSI 21130-2017	Inspectors of Rainwater and Stormwater Catchment Systems	Professional Qualifications
ANSI/CAN/IAPMO/ISO 30500-2019	Non-Sewered Sanitation Systems - Prefabricated Integrated Treatment Units - General Safety and Performance Requirements for Design and Testing	Miscellaneous
IAPMO IGC 67-2014[e1]	Specialized ABS and PVC DWV Fittings	DWV Components
IAPMO IGC 193-2020	Safety Plates, Plate Straps, Notched Plates and Safety Collars	Miscellaneous
IAPMO IGC 226-2019	Drinking Water Fountains with or Without Chiller or Heater	Fixtures
IAPMO IGC 244-2021	Tub and Shower Flow-Reduction Systems	Valves
IAPMO IGC 262-2020	Corrugated Thermoplastic Tanks	DWV Components
IAPMO IGC 267-2015[e1]	Hydrants Without Integral Backflow Preventers	Valves
IAPMO IGC 276-2019	Bundled Expanded Polystyrene (EPS) Synthetic Aggregate Units	DWV Components
IAPMO IGC 315-2016	Water Manifold Systems	Fittings
IAPMO IGC 327-2016	Flexible Metallic Expansion Joints for Pressure Systems	Joints
IAPMO IGC 330-2018	Recirculating Shower Systems	Fixtures
IAPMO IGC 332-2017a	Hydronic Radiators	Miscellaneous
IAPMO IS 26-2019[e2]	Trenchless Insertion of Polyethylene (PE) Pipe for Sewer Laterals	Piping
IAPMO PS 1-2019	Tank Risers	DWV Components
IAPMO PS 23-2021	Dishwasher Drain Airgaps	Backflow Protection
IAPMO PS 25-2019	Metallic Fittings Joining Polyethylene Pipe for Water Service and Yard Piping	Joints
IAPMO PS 34-2019	Encasement Sleeves for Potable Water Pipe and Tubing	Piping
IAPMO PS 36-2014[e]	Lead-Free Sealing Compounds for Threaded Joints	Joints
IAPMO PS 37-2019	Black Plastic PVC or PE Pressure Sensitive Corrosion Preventive Tape	Miscellaneous
IAPMO PS 42-2013[e1]	Pipe Alignment and Secondary Support Systems	Miscellaneous
IAPMO PS 50-2019	Flush Valves with Dual Flush Device for Water Closets or Water Closet Tanks with Integral Flush Valves with a Dual Flush Device	Fixtures

DOCUMENT NUMBER	DOCUMENT TITLE	APPLICATION
IAPMO PS 51-2021	Expansion Joints and Flexible Expansion Joints for DWV Piping Systems	Joints
IAPMO PS 52-2021	Pump/Dose, Sumps and Sewage Ejector Tanks with or without a Pump	DWV Components
IAPMO PS 54-2021a	Metallic and Plastic Utility Boxes	Miscellaneous
IAPMO PS 63-2019	Plastic Leaching Chambers	DWV Components
IAPMO PS 64-2012a[e1]	Roof Pipe Flashings	Miscellaneous
IAPMO PS 67-2019	Early-Closure Replacement Flappers or Early Replacement Flapper with Mechanical Assemblies	Fixtures
IAPMO PS 69-2019	Bathwaste and Overflow Assemblies with Tub Filler Spout	DWV Components
IAPMO PS 73-2015	Dental Liquid-Ring Vacuum Pumps	Miscellaneous
IAPMO PS 79-2019	Multiport Electronic Trap Primers	DWV Components
IAPMO PS 81-2019	Precast Concrete Seepage Pit Liners and Covers	DWV Components
IAPMO PS 85-2019	Tools for Mechanically Formed Tee Connections in Copper Tubing	Miscellaneous
IAPMO PS 86-2019	Rainwater Diverter Valves for Non-Roofed Area Slabs	DWV Components
IAPMO PS 91-2019	Plastic Stabilizers for Use with Plastic Closet Bends	DWV Components
IAPMO PS 92-2013[e1]	Heat Exchangers and Indirect Water Heaters	Miscellaneous
IAPMO PS 94-2012[e1]	Insulated Protectors for P-Traps, Supply Stops and Risers	Miscellaneous
IAPMO PS 95-2018[e3]	Pipe Support Hangers and Hooks	DWV Components
IAPMO PS 101-2019	Suction Relief Valves	Valves
IAPMO PS 110-2019	PVC Cold Water Compression Fittings	Fittings
IAPMO PS 111-2019	PVC Cold Water Gripper Fittings	Fittings
IAPMO PS 112-2019	PVC Plastic Valves for Cold Water Distribution Systems Outside a Building and CPVC Plastic Valves for Hot and Cold Water Distribution Systems	Valves
IAPMO PS 115-2019	Hot Water On-Demand or Automatic Activated Hot Water Pumping Systems	Miscellaneous
IAPMO PS 119-2012a[e3]	Water-Powered Sump Pumps	Miscellaneous
IAPMO/ANSI Z124.7-2013 (R2018)	Prefabricated Plastic Spa Shells	Fixtures, Swimming Pools, Spas, and Hot Tubs
IAPMO/ANSI Z124.8-2013[e2] (R2018)	Plastic Liners for Bathtubs and Shower Receptors	Fixtures
IAPMO/ANSI Z1000-2019	Prefabricated Septic Tanks	DWV Components
ICC		
ASABE/ICC 802-2014	Landscape Irrigation Sprinkler and Emitter Standard	Irrigation
ISO		
ANSI/CAN/IAPMO/ISO 30500-2019	Non-Sewered Sanitation Systems - Prefabricated Integrated Treatment Units - General Safety and Performance Requirements for Design and Testing	Miscellaneous
MSS		
MSS SP-25-2018	Standard Marking System for Valves, Fittings, Flanges, and Unions	Miscellaneous
MSS SP-42-2013	Corrosion-Resistant Gate, Globe, Angle, and Check Valves with Flanged and Butt Weld Ends (Classes 150, 300, & 600)	Piping, Ferrous
MSS SP-44-2019	Steel Pipeline Flanges	Fittings
MSS SP-83-2018	Class 3000 and 6000 Pipe Unions, Socket Welding and Threaded (Carbon Steel, Alloy Steel, Stainless Steels, and Nickel Alloys)	Joints
MSS SP-104-2018	Wrought Copper, Solder-Joint Pressure Fittings	Fittings
MSS SP-106-2019	Cast Copper Alloy Flanges and Flanged Fittings: Class 125, 150, and 300	Fittings
MSS SP-109-2018	Weld-Fabricated, Copper Solder-Joint Pressure Fittings	Fittings

DOCUMENT NUMBER	DOCUMENT TITLE	APPLICATION
MSS SP-123-2018	Non-Ferrous Threaded and Solder-Joint Unions for Use with Copper Water Tube	Joints
NFPA		
NFPA 13R-2022	Standard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies	Miscellaneous
NFPA 80-2022	Standard for Fire Doors and Other Opening Protectives	Miscellaneous
NFPA 501A-2021	Standard for Fire Safety Criteria for Manufactured Home Installations, Sites, and Communities	Miscellaneous
NFPA 1981-2019	Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services	Miscellaneous
NFPA 1989-2019	Standard on Breathing Air Quality for Emergency Services Respiratory Protection	Miscellaneous
NFPA 5000-2021	Building Construction and Safety Code	Miscellaneous
NSF		
NSF/ANSI 2-2019	Food Equipment	Appliances
NSF/ANSI 4-2020	Commercial Cooking, Rethermalization, and Powered Hot Food Holding and Transportation Equipment	Appliances
NSF/ANSI 5-2019	Water Heaters, Hot Water Supply Boilers, and Heat Recovery Equipment	Appliances
NSF/ANSI 12-2018	Automatic Ice Making Equipment	Appliances
NSF/ANSI 18-2020	Manual Food and Beverage Dispensing Equipment	Appliances
NSF/ANSI 29-2021	Detergent and Chemical Feeders for Commercial Spray-Type Dishwashing Machines	Appliances
NSF/ANSI 40-2020	Residential Wastewater Treatment Systems	DWV Components
NSF/ANSI 41-2018	Non-Liquid Saturated Treatment Systems	DWV Components
NSF/ANSI 46-2021	Evaluation of Components and Devices Used in Wastewater Treatment Systems	DWV Components
NSF/ANSI/CAN 60-2021	Drinking Water Treatment Chemicals - Health Effects	Water Treatment
NSF/ANSI 169-2020	Special Purpose Food Equipment and Devices	Appliances
NSF/ANSI/CAN 372-2020	Drinking Water System Components - Lead Content	Miscellaneous
SAE		
SAE J512-1997	Automotive Tube Fittings	Fittings
SAE J1670-2008	Type “F” Clamps for Plumbing Applications	Joints
TCNA		
TCNA A118.10-2014 (R2019)	Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation	Miscellaneous
UL		
UL 70-2001	Septic Tanks, Bituminous-Coated Metal	DWV Components
UL 80-2007	Steel Tanks for Oil-Burner Fuels and Other Combustible Liquids (with revisions through April 26, 2019)	Fuel Gas
UL 144-2021	LP-Gas Regulators (with revisions through August 26, 2021)	Fuel Gas
UL 252-2017	Compressed Gas Regulators (with revisions through August 10, 2018)	Fuel Gas
UL 296-2017	Oil Burners (with revisions through January 8, 2021)	Fuel Gas, Appliances
UL 404-2010	Gauges, Indicating Pressure, for Compressed Gas Service (with revisions through February 11, 2015)	Fuel Gas
UL 429-2013	Electrically Operated Valves (with revisions through March 19, 2021)	Valves
UL 536-2021	Flexible Metallic Hose	Fuel Gas

DOCUMENT NUMBER	DOCUMENT TITLE	APPLICATION
UL 563-2009	Ice Makers (with revisions through May 26, 2021)	Appliances
UL 569-2013	Pigtails and Flexible Hose Connectors for LP-Gas (with revisions through July 28, 2017)	Fuel Gas
UL 726-1995	Oil-Fired Boiler Assemblies (with revisions through October 9, 2013)	Fuel Gas, Appliances
UL 1206-2003	Electric Commercial Clothes-Washing Equipment (with revisions through June 14, 2021)	Appliances
UL 1331-2005	Station Inlets and Outlets (with revisions through February 5, 2020)	Medical Gas
UL 1795-2016	Hydromassage Bathtubs (with revisions through December 8, 2017)	Fixtures
UL 1951-2011	Electric Plumbing Accessories (with revisions through June 27, 2020)	Miscellaneous
UL 2157-2018	Electric Clothes Washing Machines and Extractors (with revisions through September 20, 2019)	Appliances
WQA		
WQA S-300-2000	Point-of-Use Low-Pressure Reverse Osmosis Drinking Water Systems	Appliances
WQA/ASPE/ANSI S-803-2017	Sustainable Drinking Water Treatment Systems	Miscellaneous

Adopted Appendices (A, B, I and M)

Appendix A

Residual Pressure	**A 104.1**	**A 104.1**	Clarifying code language	**Accept Change**	**Accept Change**	

A 104.1 Residual Pressure. Decide what is the desirable minimum residual pressure that shall be maintained at the highest fixture in the supply system. The available residual pressure shall be not less than 15 pounds-force per square inch (psi) (103 kPa). Where fixtures, fixture fittings, or both are installed that require a residual pressure exceeding 15 psi (103 kPa), that minimum residual pressure shall be provided.

WATER SUPPLY FIXTURE UNITS (WSFU) AND MINIMUM FIXTURE BRANCH PIPE SIZES3	**TABLE A 103.1**	**TABLE A 103.1**	Update to add With or without dishwasher	**Accept Change**	**Accept Change**	

APPLIANCES, APPURTENANCES, OR FIXTURES[2]	MINIMUM FIXTURE BRANCH PIPE SIZE[1,4] (inches)	PRIVATE	PUBLIC	ASSEMBLY[6]
Bathtub or Combination Bath/Shower (fill)	½	4.0	4.0	–
¾ inch Bathtub Fill Valve	¾	10.0	10.0	–
Bidet	½	1.0	–	–
Clothes Washer	½	4.0	4.0	–
Dental Unit, cuspidor	½	–	1.0	–
Dishwasher, domestic	½	1.5	1.5	–
Drinking Fountain or Water Cooler	½	0.5	0.5	0.75
Hose Bibb	½	2.5	2.5	–
Hose Bibb, each additional[7]	½	1.0	1.0	–
Lavatory	½	1.0	1.0	1.0
Lawn Sprinkler, each head[5]	–	1.0	1.0	–
Mobile Home, each (minimum)	–	12.0	–	–
Sinks	–	–	–	–
Bar	½	1.0	2.0	–
Clinical Faucet	½	–	3.0	–
Clinical Flushometer Valve with or without faucet	1	–	8.0	–
Kitchen, domestic with or without dishwasher	½	1.5	1.5	–
Laundry	½	1.5	1.5	–
Service or Mop Basin	½	1.5	3.0	–
Washup, each set of faucets	½	–	2.0	–
Shower per head	½	2.0	2.0	–
Urinal, 1.0 GPF Flushometer Valve	¾	3.0	4.0	5.0
Urinal, greater than 1.0 GPF Flushometer Valve	¾	4.0	5.0	6.0
Urinal, flush tank	½	2.0	2.0	3.0
Wash Fountain, circular spray	¾	–	4.0	–
Water Closet, 1.6 GPF Gravity Tank	½	2.5	2.5	3.5
Water Closet, 1.6 GPF Flushometer Tank	½	2.5	2.5	3.5
Water Closet, 1.6 GPF Flushometer Valve	1	5.0	5.0	8.0
Water Closet, greater than 1.6 GPF Gravity Tank	½	3.0	5.5	7.0
Water Closet, greater than 1.6 GPF Flushometer Valve	1	7.0	8.0	10.0

For SI units: 1 inch = 25 mm

Notes:

1 Size of the cold branch pipe, or both the hot and cold branch pipes.

2 Appliances, appurtenances, or fixtures not included in this table shall be permitted to be sized by reference to fixtures having a similar flow rate and frequency of use.

3 The listed fixture unit values represent their total load on the cold water building supply. The separate cold water and hot water fixture unit value for fixtures having both cold and hot water connections shall be permitted to be three-quarters of the listed total value of the fixture.

4 The listed minimum supply branch pipe sizes for individual fixtures are the nominal (I.D.) pipe size.

5 For fixtures or supply connections likely to impose continuous flow demands, determine the required flow in gallons per minute (gpm) (L/s) and add it separately to the demand in gpm (L/s) for the distribution system or portions thereof.

6 Assembly [Public Use (see Table 422.1)].

7 Reduced fixture unit loading for additional hose bibbs is to be used where sizing total building demand and for pipe sizing where more than one hose bibb is supplied by a segment of water distribution pipe. The fixture branch to each hose bibb shall be sized by 2.5 fixture units.

Appendix B						
General Requirements	**B 101.2**	**B 101.2**	Update to define what amendment for combination vent systems	**Accept Change**	Code Change proposal	Code Change proposal

B 101.2 General Requirements. Combination waste and vent systems, (which at best are merely an expedient designed to be used in locations where it would be structurally impractical to provide continuous venting of fixtures) as outlined in Section 910.0 of this code, cover the horizontal wet venting of a series of traps using a common waste and vent pipe. Pipe sizes not less than two pipe sizes larger than those required for a conventional system are designed to maintain a wetted perimeter or flow line low enough in the waste pipe to allow adequate air movement in the upper portion, thus balancing the system. One and two unit fixtures that rough in above the floor, shall be permitted to connect to a combination waste and vent system when located as required in Section 910.7. Combination waste and vent systems are intended primarily for extensive floor or shower drain installations where separate venting is not practical, for floor sinks in markets, demonstration or work tables in school buildings, or for similar applications where the fixtures are not adjacent to walls or partitions. Due to its oversize characteristics, such a waste system is not self-scouring and, consequently, care shall be exercised as to the type of fixtures connected to it and the location of cleanouts. Given its grease-producing potential, restaurant kitchen equipment shall not be connected to a combination waste and vent system.

Appendix C						
General	**C 201.1**	**C 201.1**	Updating language	**State Does not Adopt**	**State Does not Adopt**	

C 201.1 General. For the purpose of this appendix, the following definitions shall apply: Branch Interval. A length of soil or waste stack corresponding in general to a story height, but in no case less than 8feet (2438 mm), within which the horizontal branches from one floor or story of the building are connected to the stack. Engineered Plumbing System. A system designed for a specific building project with drawings and specifications indicating plumbing materials to be installed, all as prepared by a registered design professional.

WATER SUPPLY FIXTURE UNITS (WSFU) FOR BATHROOM GROUPS1, 2	**TABLE C 303.2**	**TABLE C 303.2**	Update for serving 3 or more bathrooms	**State Does not Adopt**	**State Does not Adopt**	

	PRIVATE USE BATHROOM GROUP		SERVING 3 OR MORE PRIVATE USE BATHROOM GROUPS	
	COLD	HOT[3]	COLD	HOT
Bathroom Groups Having up to 1.6 GPF Gravity-Tank and Pressure Tank Water Closets				
Half-Bath or Powder Room	3.5	0.8	2.5	0.5
1 Bathroom Group	5.0	2.5	3.5	1.8
1½ Bathrooms	6.0	2.5	3.0	3.0
2 Bathrooms	7.0	3.5	3.4	3.4
2½ Bathrooms	8.0	3.6	3.8	3.8
3 Bathrooms	9.0	4.5	4.1	4.1
Each Additional ½ Bath	0.5	0.1	0.4	0.4
Each Additional Bathroom Group	1.0	0.5	0.8	0.8
Other Groups of Fixtures				
Bathroom Group (1.6 GPF Flushometer Value)	6.0	2.5	4.0	1.7
Kitchen Group (Sink and Dishwasher)	2.0	2.0	1.5	1.5
Laundry Group (Sink and Clothes Washer)	5.0	5.0	3.0	3.0

Notes:

[1] A bathroom group, for this table, consists of one water closet, up to two lavatories, and either one bathtub or one shower.

[2] A half-bath or powder room, for this table, consists of one water closet and one lavatory.

[3] Multi-unit dwellings with individual water heaters use the same WSFU as for individual dwellings.

DRAINAGE FIXTURE UNIT VALUES (DFU) FOR BATHROOM GROUPS1, 2	**TABLE C 303.3**	**TABLE C 303.3**	Update for serving 3 or more bathrooms	**State Does not Adopt**	**State Does not Adopt**	

	PRIVATE USE BATHROOM GROUP	SERVING 3 OR MORE PRIVATE USE BATHROOM GROUP
Bathroom Groups having 1.6 GPF Gravity-Tank Water Closets		
Half-Bath or Powder Room	3.0	2.0
1 Bathroom Group	5.0	3.0
1½ Bathrooms	6.0	3.5
2 Bathrooms	7.0	4.5
2½ Bathrooms	8.0	5.0
3 Bathrooms	9.0	5.5
Each Additional ½ Bath	0.5	0.5
Each Additional Bathroom Group	1.0	1.0
Bathroom Groups having 1.6 GPF Pressure-Tank Water Closets		
Half-Bath or Powder Room	3.5	2.5
1 Bathroom Group	5.5	3.5
1½ Bathrooms	6.5	4.0
2 Bathrooms	7.5	5.0
2½ Bathrooms	8.5	5.5
3 Bathrooms	9.5	6.0
Each Additional ½ Bath	0.5	0.5
Each Additional Bathroom Group	1.0	1.0
Bathroom Groups having 3.5 GPF Gravity-Tank Water Closets		
Half-Bath or Powder Room	3.0	2.0
1 Bathroom Group	6.0	4.0
1½ Bathrooms	8.0	5.5
2 Bathrooms	10.0	6.5
2½ Bathrooms	11.0	7.5
3 Bathrooms	12.0	8.0
Each Additional ½ Bath	0.5	0.5
Each Additional Bathroom	1.0	1.0
Bathroom Group (1.6 GPF Flushometer Valve)	3.0	3.0
Bathroom Group (3.5 GPF Flushometer Valve)	4.0	4.0

Notes:

[1] A bathroom group, for this table, consists of not more than one water closet, up to two lavatories, and either one bathtub or one shower.

[2] A half-bath or powder room, for this table, consists of one water closet and one lavatory.

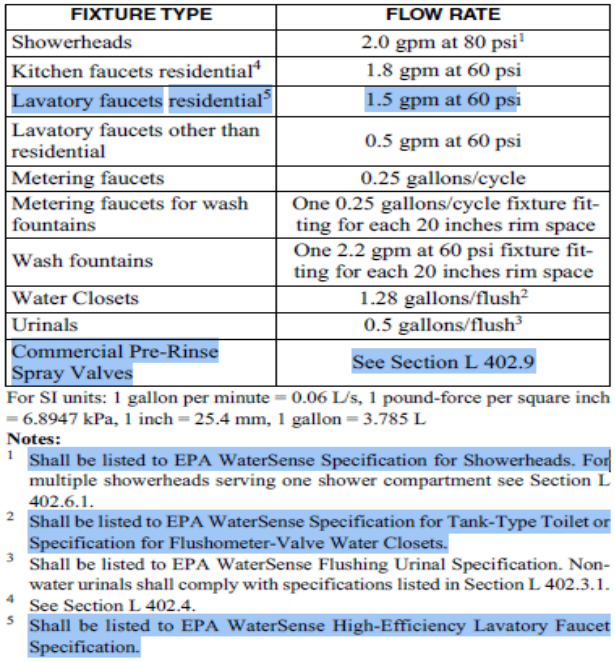
	Where Permitted	**C 601.1**	**C 601.1**	Update to Table Location	**State Does not Adopt**	**State Does not Adopt**	
	C 601.1 Where Permitted. Single-stack venting shall be designed by a registered design professional as an engineered design. A drainage stack shall be permitted to serve as a single-stack vent system where sized and installed in accordance with Section C 601.2 through Section C 601.10. The drainage stack and branch piping in a single-stack vent system shall provide for the flow of liquids, solids, and air without exceeding the pressure differential described in Section 901.3.						
	Length of Vertical Piping	**C 601.4.2**	**C 601.4.2**	Code language update	**State Does not Adopt**	**State Does not Adopt**	
	C 601.4.2 Length of Vertical Piping. The length of vertical piping from a fixture trap to a horizontal branch shall not be considered in computing the fixture's horizontal distance from the stack.						
	Additional Venting Required	**C 601.6**	**C 601.6**	Code language update	**State Does not Adopt**	**State Does not Adopt**	
	C 601.6 Additional Venting Required. Additional venting shall be provided where more than one water closet is on a horizontal branch and where the distance from a fixture trap to the stack exceeds the limits in Section C 601.4. Where additional venting is required, the fixture(s) shall be vented by one of the methods described in Sections 908.0 through Section 911.5. The dry vent extensions for the additional venting shall connect to a branch vent, vent stack, stack vent, or be extended outdoors and terminate to the open air.						
	Prohibited Connections Near Base of Stack	C 601.8	C 601.8	Code language update	**State Does not Adopt**	**State Does not Adopt**	
	C 601.8 Prohibited Connections Near Base of Stack. Where stacks are more than 75 feet (22 860 mm) high, a separate stack shall be provided for the fixtures on the lower two stories. The stack for the lower two stories shall be permitted to be connected to the branch of the building drain that serves the stack for the upper stories at a point that is not less than 8 feet (2438 mm) downstream from the base of the upper stack. Where stacks are less than 75 feet (22 860 mm) high but more than two stories high, the lowest story shall not connect within 8 feet (2438 mm) downstream from the base of the stack. Venting for the lowest story shall be provided in accordance with Section C 601.8.1 and Section C 601.8.2.						
	Conditional Vent	**(N/A)**	**C 601.8.1**	**New Section**	**State Does not Adopt**	**State Does not Adopt**	
	C 601.8.1 Conditional Vent. Venting of fixtures on the lowest floor shall be in accordance with Section 908.0 through Section 911.5 and may connect into the single-stack as a conditional vent. The conditional vent connects into the stack by means of a wye-fitting to prevent ingress of drainage into the vent. No more than 12 drainage fixture units (DFU) may be connected into the conditional vent and shall connect not less than 8 feet (2438 mm) above the stack base.						
	Other Branch Vent	**(N/A)**	**C 601.8.2**	**New Section**	**State Does not Adopt**	**State Does not Adopt**	
	C 601.8.2 Other Branch Vent. Other branch vents shall be vented in accordance with Section 908.0 through Section 911.5.						
	Parallel Vent Stacks	**(N/A)**	**C 601.10**	**New Section**	**State Does not Adopt**	**State Does not Adopt**	
	C 601.10 Parallel Vent Stacks. Drainage stacks extending more than 75 feet (22 860 mm) shall be provided with a parallel vent stack and shall meet the requirements of Section 907.0.						

	General.	**E 201.1**	**E 201.1**	**Update Code language**	**State Does not Adopt**	**State Does not Adopt**	
	E 201.1 General. For the purpose of this appendix, the following definitions shall apply:						
	Size	**403.3**	**403.3**	**Updated reference location**	**State Does not Adopt**	**State Does not Adopt**	
	E 403.3 Size. The size of each section of a gas piping system shall be determined in accordance with NFPA 54/ANSI Z223.1 or by other standard engineering methods acceptable to the Authority Having Jurisdiction. [NFPA 501A:4.3.5.1]						
	Plastic Piping	**E 403.7**	**E 403.7**	**Updated to CFR requirement**	**State Does not Adopt**	**State Does not Adopt**	
	E 403.7 Plastic Piping. Plastic piping shall only be used underground and shall meet the requirements of ASTM D2513 or ASTM D2517, as well as the design pressure and design limitations of 49 CFR 192.123 and shall otherwise conform to the installation requirements thereof. {NFPA501A:4.3.6.3}						
	Oil Supply Connections	**E 403.13**	**E 403.13**	**Update to code requirements**	**State Does not Adopt**	**State Does not Adopt**	
	E 403.13 Oil Supply Connections. Oil supply connections at manufactured home sites, where provided from a centralized oil distribution system, shall be located and arranged to permit attachment to a manufactured home utilizing the stand. [NFPA 501A:4.3.11.1] The installation of such facilities shall comply with the following requirements: (1) The main distribution pipeline shall be permitted to be connected to a tank or tanks having an aggregate capacity not exceeding 20 000 gallons (75 708 L) at a point below the liquid level. (2) Where this piping is so connected, a readily accessible internal or external shutoff valve shall be installed in the piping as close as practicable to the tank. (3) If external and aboveground, the shutoff valve and its tank connections shall be made of steel. (4) Connections between the tank(s) and the main pipeline shall be made with double swing joints or flexible connectors, or shall otherwise be arranged to permit the tank(s) to settle without damaging the system. (5) If located aboveground, the connections specified in Section E 403.13(4) shall be located within the diked area. (6) A readily accessible and identified manual shutoff valve shall be installed either inside or outside of the structure in each branch supply pipeline that enters a building, mobile home, travel trailer, or other structure. If inside, the valve shall be located directly adjacent to the point at which the supply line enters the structure. If outside, the valve shall be protected from weather and damage. (7) A device shall be provided in the supply line at or ahead of the point where it enters the interior of the structure that will automatically shut off the oil supply, if the supply line between this device and the appliance is broken. This device shall be located on the appliance side of the manual shutoff valve required in Section E 403.13(6) and shall be solidly supported and protected from damage. (8) Means shall be provided to limit the oil pressure at the appliance inlet to a maximum gauge pressure of 3 pounds-force per square inch gauge (psig) (21 kPa). If a pressure-reducing valve is used, it shall be a type approved for the service. (9) A device shall be provided that will automatically shut off the oil supply to the appliance if the oil pressure at the appliance inlet exceeds a gauge pressure of 8 psig (55 kPa). The device shall not be required under either of the following conditions: (a) Where the distribution system is supplied from a gravity tank and the maximum hydrostatic head of oil in the tank is such that the oil pressure at the appliance inlet will not exceed a gauge pressure of 8psig (55 kPa). (b) Where a means is provided to automatically shut off the oil supply if the pressure-regulating device provided in accordance with Section E 403.13(8) fails to regulate the pressure as required. (10) Only appliances equipped with primary safety controls specifically listed for the appliance shall be connected to a centralized oil distribution system. [NFPA 31:9.2.10 – 9.2.15]						

	General	**F 201.1**	**F 201.1**	**Updated Code Language**	**State Does not Adopt**	**State Does not Adopt**	
	F 201.1 General. For the purpose of this appendix, the following definitions shall apply						
	General	**H 301.1**	**H 301.1**	**Update to code and added new section**	**State Does not Adopt**	**State Does not Adopt**	
	H 301.1 General. The minimum effective absorption area in disposal fields in square feet (m2), and in seepage pits in square feet (m2) of sidewall, shall be predicated on the required septic tank capacity of gallons (liters), estimated waste/sewage flow rate, or whichever is greater, and shall be in accordance with Table H 201.1(2) as determined by the type of soil found in the excavation, and shall be as follows: **(1) Where disposal fields are installed, not less than 150 square feet (13.9 m2) of trench bottom shall be provided for each system exclusive of any hard pan, rock, clay, or other impervious formations. Sidewall area more than the required 12 inches (305 mm) and not exceeding 36inches (914 mm) below the leach line shall be permitted to be added to the trench bottom area where computing absorption areas.** **(2) Where leaching beds are permitted instead of trenches, the area of each such bed shall be not less than 50 percent greater than the tabular requirements for trenches. Perimeter sidewall area more than the required 12 inches (305 mm) and not exceeding 36 inches (914 mm) below the leach line shall be permitted to be added to the trench bottom area where computing absorption areas.** **(3) No excavation for a leach line or leach bed shall be located within 5 feet (1524 mm) of the water table nor to a depth where sewage is capable of contaminating the underground water stratum that is usable for domestic purposes. Exception: In areas where the records or data indicate that the groundwaters are grossly degraded, the 5 foot (1524 mm) separation requirement shall be permitted to be reduced by the Authority Having Jurisdiction. The applicant shall supply evidence of groundwater depth to the satisfaction of the Authority Having Jurisdiction.** **(4) The minimum effective absorption area in any seepage pit shall be calculated as the excavated sidewall area below the inlet exclusive of any hardpan, rock, clay, or other impervious formations. The minimum required area of porous formation shall be provided in one or more seepage pits. No excavation shall extend within 10 feet (3048 mm) of the water table nor to a depth where sewage is capable of contaminating underground water stratum that is usable for domestic purposes. Exception: In areas where the records or data indicate that the groundwaters are grossly degraded, the 10 foot (3048 mm) separation requirement shall be permitted to be reduced by the Authority Having Jurisdiction. The applicant shall supply evidence of groundwater depth to the satisfaction of the Authority Having Jurisdiction.** **(5) Leaching chambers that comply with IAPMO PS 63 and bundled expanded polystyrene synthetic aggregate units that comply with IAPMO IGC 276 shall be sized using a 0.70 multiplier applied to the required area in Table H201.1(2).** **(6) Systems that combine treatment and disposal of sewage within a single footprint and comply with NSF 40 Class 1 shall be sized using a 0.70 multiplier applied to the required area in Table H 201.1(2) for both leach lines and leach beds. No system component for a combined treatment and disposal leach line or leach bed shall be located within 2 feet (610 mm) of the water table nor to a depth where sewage is capable of contaminating the underground water stratum that is usable for domestic purposes. Combined treatment and disposal system operation and maintenance shall be in accordance with the manufacturer's instructions. Exception: Combined treatment and disposal systems tested and certified in a bed configuration in accordance with NSF 40 Class 1 are exempted from the requirements of Section H 301.1(2).**						
	Prefabricated Septic Tanks	**H 501.14**	**H 501.14**	**Updated Reference Location**	**State Does not Adopt**	**State Does not Adopt**	
	H 501.14 Prefabricated Septic Tanks. Prefabricated septic tanks shall comply with the following requirements: (1) Manufactured or prefabricated septic tanks shall comply with IAPMO/ANSI Z1000, IAPMO IGC 262, or CSA B66 and be approved by the Authority Having Jurisdiction. Prefabricated bituminous coated septic tanks shall comply with UL 70. (2) Independent laboratory tests and engineering calculations certifying the tank capacity and structural stability shall be provided as required by the Authority Having Jurisdiction.						

	Bundled Expanded Polystyrene Synthetic Aggregate Units	H 601.1.1	H 601.1.1	New Section Added	**State Does not Adopt**	**State Does not Adopt**	
	H 601.1.1 Bundled Expanded Polystyrene Synthetic Aggregate Units. Bundled expanded polystyrene synthetic aggregate units with an integrated distribution line consisting of perforated, corrugated high-density polyethylene pipe that complies with IAPMO IGC 276 shall be permitted.						
	Filter Material	H 601	H 601	Update to the Exception	**State Does not Adopt**	**State Does not Adopt**	
	H 601.2 Filter Material. Before placing filter material or drain lines in a prepared excavation, smeared or compacted surfaces shall be removed from trenches by raking to a depth of 1 inch (25.4 mm) and the loose material removed. Clean stone, gravel, slag, or similar filter material acceptable to the Authority Having Jurisdiction, varying in size from 3⁄4 of an inch to 2 1⁄2 inches (19.1 mm to 64 mm), shall be placed in the trench to the depth and grade required by this section. Drainpipe shall be placed on filter material in an approved manner. The drain lines shall then be covered with filter material to the minimum depth required by this section, and this material covered with untreated building paper, straw, or similar porous material to prevent the closure of voids with earth backfill. No earth backfill shall be placed over the filter material cover until after inspection and acceptance. Exception: Listed or approved plastic leaching chambers bundled expanded polystyrene synthetic aggregate units, and systems that treat and dispose of sewage within a single footprint, as described in Section H 301.1(5) and Section H301.1(6), shall be permitted to be used in lieu of pipe and filter material. Chamber, bundled expanded polystyrene synthetic aggregate unit, and systems that treat and dispose of sewage within a single footprint, installations shall follow the rules for disposal fields, where applicable, and shall be in accordance with the manufacturer's instructions.						
	Example of Combination Indoor and Outdoor Combustion Air Opening Design.	**J 101.2**	**J 101.2**	**Update to the title**	**State Does not Adopt**	**State Does not Adopt**	
	J 101.2 Example of Combination Indoor and Outdoor Combustion Air Opening Design. Determine the required combination of indoor and outdoor combustion air opening sizes for the following appliance installation example. Example Installation: A fan-assisted furnace and a drafthood-equipped water heater with the following inputs are located in a 15 foot by 30 foot (4572 mm by 9144 mm) basement with an 8 foot (2438 mm) ceiling. No additional indoor spaces can be used to help meet the appliance combustion air needs. Fan-Assisted Furnace Input: 100 000 British thermal units per hour (Btu/h) (29 kW) Draft Hood-Equipped Water Heater Input: 40 000 Btu/h (11.7kW) Solution: (1) Determine the total available room volume. Appliance room volume: 15 feet by 30 feet (4572 mm by 9144 mm) with an 8 foot (2438 mm) ceiling = 3600 cubic feet (101.94 m3) (2) Determine the total required volume. The standard method to determine combustion air is used to calculate the required volume. The combined input for the appliances located in the basement is calculated as follows: 100 000 Btu/h (29 kW) + 40 000 Btu/h (11.7 kW) =140 000 Btu/h (41 kW) The standard method requires that the required volume be determined based on 50 cubic feet per 1000 Btu/h (4.83 m3/kW). Using Table J 101.2, the required volume for a 140 000 Btu/h (41 kW) combined input is 7000 cubic feet (198.22 m3).						
	System Design	**K 101.2**	**K 101.2**	**Rainwater catchment requirement**	**State Does not Adopt**	**State Does not Adopt**	
	K 101.2 System Design. Potable rainwater catchment systems in accordance with this appendix shall be designed by a registered design professional or person deemed competent by the Authority Having Jurisdiction to perform potable rainwater catchment system design work. Where required, rainwater catchment systems shall be seismically restrained against earthquakes in accordance with the building code.						
	Minimum Water Quality Requirements	**K 101.7**	**K 101.7**	**Update to EPA requirement**	**State Does not Adopt**	**State Does not Adopt**	
	K 101.7 Minimum Water Quality Requirements. The minimum water quality for potable rainwater catchment systems shall comply with the applicable water quality requirements as determined by the Authority Having Jurisdiction. In the absence of water quality requirements, the guidelines EPA/600/R-12/618 contains recommended water reuse guidelines to assist regulatory agencies develop, revise, or expand alternate water source water quality standards.						

	Filtration Devices	K 104.4.1	K 104.4.1	**New Reference location**	**State Does not Adopt**	**State Does not Adopt**	
	K 104.4.1 Filtration Devices. Potable water filters shall comply with NSF/ANSI 53 and shall be installed in accordance with the manufacturer's installation instructions.						
	Above Grade	K 105.3	K 105.3	**Updated Code Language**	**State Does not Adopt**	**State Does not Adopt**	
	K 105.3.1 Above Grade. Above grade, storage tanks shall be of an opaque material, approved for aboveground use in direct sunlight, or shall be shielded from direct sunlight. Tanks shall be installed in an accessible location to allow for inspection and cleaning. The tank shall be installed on a foundation or platform that is constructed to accommodate the weight and loads when filled to maximum capacity in accordance with the building code.						
	Size	**K 106.2**	**K 106.2**	**New Reference Location**	**State Does not Adopt**	**State Does not Adopt**	
	K 106.2.1 Size. The roof washer shall be sized to direct rainwater containing debris that has accumulated on the collection surface away from the storage tank. ARCSA/ASPE/ANSI 63 contains additional guidance on acceptable methods of sizing roof washers.						
	L. General	**L 201.1**	**L 201.1**	**Updated Code Definition**	**State Does not Adopt**	**State Does not Adopt**	
	L 201.1 General. For the purpose of this appendix, the following definitions shall apply:						
	Definitions	**L 201.1**	**L 201.1**	**New Definition**	**State Does not Adopt**	**State Does not Adopt**	
	Dedicated Meter. A water measuring device used at a subsection or end use of a water supply system for any of the following purposes: billing, water management, collecting and analyzing water usage data, detection of leaks, equipment failure, water waste, and irregular or abnormal use for a specific application. Also called a submeter.						
	Definitions	**L 201.1**	**L 201.1**	**New Definition**	**State Does not Adopt**	**State Does not Adopt**	
	Dry Weather Runoff. Water that flows along a surface, in a channel or sub-surface including groundwater seepage, and is not associated with a rain event.						
	Definitions	L 201.1	L 201.1	New Definition	**State Does not Adopt**	**State Does not Adopt**	
	ETc. Evapotranspiration rate of the plants derived by multiplying ETo by the appropriate plant factor or coefficient.						
	Definitions	L 201.1	L 201.1	New Definition	**State Does not Adopt**	**State Does not Adopt**	
	ETo. Reference evapotranspiration for a cool-season grass as calculated by the standardized Penman-Monteith equation based on weather-station data.						
	Definitions	L 201.1	L 201.1	**Update to definition**	**State Does not Adopt**	**State Does not Adopt**	
	Kitchen and Bar Sink Faucets. A faucet that discharges into a kitchen or bar sinks in domestic or commercial installations. Supply fittings that discharge into other type sinks, including clinical sinks, floor sinks, service sinks and laundry sinks are not included.						

	Definitions	L 201.1	L 201.1	Update to definition	**State Does not Adopt**	**State Does not Adopt**	
	Low Flow Emitter. Low-flow irrigation emission device designed to dissipate water pressure and discharge a small uniform flow or trickle of water at a constant flow rate.						
	Definitions	L 201.1	L 201.1	New definition	**State Does not Adopt**	**State Does not Adopt**	
	On-Site Renewable Energy. Energy generated from renewable sources produced at the building site. [ASHRAE 90.1:3.2]						
	Definitions	L 201.1	L 201.1	New definition	**State Does not Adopt**	**State Does not Adopt**	
	Renewable Energy Resources. Energy from solar, wind, biomass or hydro, or extracted from hot fluid or steam heated within the earth. [ASHRAE 90.1:3.2]						
	MAXIMUM FIXTURE AND FIXTURE FITTINGS FLOW RATES	TABLE L 402.1	TABLE L 402.1	**Update to table code language and new EPA standards for notes**	**State Does not Adopt**	**State Does not Adopt**	
							
	Nonwater Urinals with Drain Cleansing Action	**(N/A)**	**402.3.2**	**Added new section**	**State Does not Adopt**	**State Does not Adopt**	
	L 402.3.2 Nonwater Urinals with Drain Cleansing Action. Nonwater urinals with drain cleansing action shall comply with ASME A112.19.19 and shall be cleaned, maintained, and installed in accordance with the manufacturer's installation instructions.						
	Bath and Shower Diverters	**402.6.2**	**402.6.2**	**Updated leakage requirement**	**State Does not Adopt**	**State Does not Adopt**	
	L 402.6.2 Bath and Shower Diverters. Tub spout bath and shower diverters, while operating in the shower mode, shall not exceed 0.1 gpm (0.4 L/m) rate of leakage in accordance with ASME A112.18.1/CSA B125.1.						

FIXTURE TYPE	FLOW RATE
Showerheads	2.0 gpm at 80 psi[1]
Kitchen faucets residential[4]	1.8 gpm at 60 psi
Lavatory faucets residential[5]	1.5 gpm at 60 psi
Lavatory faucets other than residential	0.5 gpm at 60 psi
Metering faucets	0.25 gallons/cycle
Metering faucets for wash fountains	One 0.25 gallons/cycle fixture fitting for each 20 inches rim space
Wash fountains	One 2.2 gpm at 60 psi fixture fitting for each 20 inches rim space
Water Closets	1.28 gallons/flush[2]
Urinals	0.5 gallons/flush[3]
Commercial Pre-Rinse Spray Valves	See Section L 402.9

For SI units: 1 gallon per minute = 0.06 L/s, 1 pound-force per square inch = 6.8947 kPa, 1 inch = 25.4 mm, 1 gallon = 3.785 L

Notes:

1. Shall be listed to EPA WaterSense Specification for Showerheads. For multiple showerheads serving one shower compartment see Section L 402.6.1.
2. Shall be listed to EPA WaterSense Specification for Tank-Type Toilet or Specification for Flushometer-Valve Water Closets.
3. Shall be listed to EPA WaterSense Flushing Urinal Specification. Nonwater urinals shall comply with specifications listed in Section L 402.3.1.
4. See Section L 402.4.
5. Shall be listed to EPA WaterSense High-Efficiency Lavatory Faucet Specification.

	Shower Valves	**402.6.3**	**402.6.3**	**Updated Reference Location**	**State Does not Adopt**	**State Does not Adopt**	
	L 402.6.3 Shower Valves. Shower valves shall comply with the temperature control performance requirements of ASSE 1016/ASME A112.1016/CSA B125.16 when tested for the rated flow rate of the installed showerhead.						
	Marking	**(N/A)**	**L 402.6.3.1**	**Added New Section**	**State Does not Adopt**	**State Does not Adopt**	
	L 402.6.3.1 Marking. Control valves for showers and tub/shower combinations shall be tagged, labeled, or marked in accordance with the applicable standards.						
	Bath and Shower Flow-Reduction Devices	**(N/A)**	**402.8**	**Added New Section**	**State Does not Adopt**	**State Does not Adopt**	
	L 402.8 Bath and Shower Flow-Reduction Devices. Bath and shower flow-reduction devices shall comply with IAPMO IGC 244.						
	Commercial Pre-Rinse Spray Valves.	**L 402.8**	**L 402.9**	**Moved location and updated table location**	**State Does not Adopt**	**State Does not Adopt**	
	L 402.9 Commercial Pre-Rinse Spray Valves. The flow rate for a pre-rinse spray valve installed in a commercial kitchen to remove food waste from cookware and dishes before cleaning shall not be more than the maximum flow rate, as specified in Table L 402.9. Where pre-rinse spray valves with maximum flow rates of 1.0 gpm (3.8 L/m) or less are installed, the static pressure shall be not less than 30 psi (207 kPa). Commercial kitchen pre-rinse spray valves shall be equipped with an integral automatic shutoff.						
	COMMERCIAL PRE-RINSE SPRAY VALVE MAXIMUM FLOW RATE	**TABLE L 402.9**	**TABLE L 402.9**	**New Commercial spray flow rate**	**State Does not Adopt**	**State Does not Adopt**	
	TABLE L 402.9 **COMMERCIAL PRE-RINSE SPRAY VALVE** **MAXIMUM FLOW RATE** **PRODUCT CLASS BY SPRAY FORCE** / **MAXIMUM FLOW RATE (GPM)** Product Class 1 (≤ 5.0 ounces-force) — 1.00 Product Class 2 (> 5.0 ounces-force and ≤ 8.0 ounces-force) — 1.20 Product Class 3 (> 8.0 ounces-force) — 1.28 For SI units: 1 gallon per minute = 3.785 L/min, 1 ounce-force = 0.278 N.						
	Emergency Safety Showers and Eye Wash Stations.	**L 402.9**	**L 402.10**	**Moved location**	**State Does not Adopt**	**State Does not Adopt**	
	L 402.10 Emergency Safety Showers and Eye Wash Stations. Emergency safety showers and emergency eyewash stations shall not be limited to their water supply flow rates.						
	Drinking Fountains and Bottle Filling Stations	**L 402.10**	**L 402.11**	**Moved location**	**State Does not Adopt**	**State Does not Adopt**	
	L 402.11 Drinking Fountains and Bottle Filling Stations. Bottle filling stations shall be included on or used as a substitute to meet the requirements of drinking fountains in at least 50 percent of the requirements for drinking fountains. Bottle filling stations and drinking fountains shall be self-closing.						
	Ice Makers	**L 404.2**	**L 404.2**	Updated to add requirements	**State Does not Adopt**	**State Does not Adopt**	
	L 404.2 Ice Makers. Ice makers shall be air cooled and shall be in accordance with Energy Star for energy use for commercial ice machines. Ice makers producing cubed-type ice shall not exceed 20 gallons (75.7 L) of water per 100 pounds (45.4 kg) of ice produced. Ice makers producing nugget and flake ice shall not exceed 14 gallons (63.6 L) of water per 100 pounds (45.4 kg) of ice produced.						

	Temperature	**(N/A)**	**L 404.5.1**	New Section added	**State Does not Adopt**	**State Does not Adopt**	
	L 404.5.1 Temperature. Grease Interceptors shall be designed and installed to maintain a mean temperature not exceeding 95°F (35°C). FOG (fats, oils, and greases) disposal systems in compliance with ASME A112.14.6 using biological cultures shall not exceed 104°F (40°C). Passive or active cooling and heat recovery to be employed where applicable.						
	Dipper Well Faucets	**L 404.6**	**L 404.6**	**Updated code language, and removed unneeded sections**	**State Does not Adopt**	**State Does not Adopt**	
	L 404.6 Dipper Well Faucets. Where dipper wells have a permanent water supply, the faucet shall have metered or sensor activated flow. The volume of water dispensed into a dipper well in each activation cycle of a self-closing fixture fitting shall not exceed the water capacity of the dipper well, and the maximum flow shall not exceed 0.2 gpm (0.8 L/m) at a supply pressure of 60 psi (414 kPa)**.**						
	Pulpers and Mechanical Strainers.	**L 404.7.1**	**L 404.7.1**	**Updated gpm requirement**	**State Does not Adopt**	**State Does not Adopt**	
	L 404.7.1 Pulpers and Mechanical Strainers. The water use for pulpers or mechanical strainers shall not exceed 2 gpm (7.6 L/m). A flow restrictor shall be installed on the water supply to limit the water flow.						
	Tempering Water	**(N/A)**	**L 404.8**	**New section for 140* requirement**	**State Does not Adopt**	**State Does not Adopt**	
	L 404.8 Tempering Water. The discharge waste from commercial dishwashers, ware washers, combination ovens, and food steamers that exceeds 140°F (60°C) shall not be tempered with potable water.						
	Medical and Laboratory Facilities	**L 404.8**	**L 404.9**	**Moved locations**	**State Does not Adopt**	**State Does not Adopt**	
	L 404.9 Medical and Laboratory Facilities. Medical and laboratory facilities shall comply with the water efficiency requirements in Section L 404.10 through Section L 404.12.						
	Steam Sterilizers	**L 404.9**	**L 404.10**	Moved locations	**State Does not Adopt**	**State Does not Adopt**	
	L 404.10 Steam Sterilizers. Controls shall be installed to limit the discharge temperature of condensate or water from steam sterilizers to 140°F (60°C) or less. A venturi-type vacuum system shall not be utilized with vacuum sterilizers.						
	X-Ray Film Processing Units	**L 404.10**	**L 404.11**	Moved locations	**State Does not Adopt**	**State Does not Adopt**	
	L 404.11 X-Ray Film Processing Units. Processors for X-ray film exceeding 6 inches (152 mm) in any dimension shall be equipped with water recycling units.						
	Exhaust Hood Liquid Scrubber Systems	**L 404.11**	**L 404.12**	Moved locations	**State Does not Adopt**	**State Does not Adopt**	
	L 404.12 Exhaust Hood Liquid Scrubber Systems. Liquid scrubber systems for exhaust hoods and ducts shall be of the recirculation type. Liquid scrubber systems for perchloric acid exhaust hoods and ducts shall be equipped with a timer-controlled water recirculation system. The collection sump for perchloric acid exhaust systems shall be designed to drain automatically after the wash down process has completed.						
	General	**L 405.1**	**L 405.1**	Updated reference location, and code regulations	**State Does not Adopt**	**State Does not Adopt**	
	L 405.1 General. Where installed, leak detection and control devices shall comply with ANSI/CAN/IAPMO Z1349.Leak detection with control devices shall not be installed where they isolate fire sprinkler systems.						

Required	**L 407.1**	**L 407.1**	**Updated model code language**	**State Does not Adopt**	**State Does not Adopt**	
L 407.1 Required. A water meter shall be required for each building site connected to a public water system, including municipally supplied reclaimed (recycled) water. In other than single-family houses, a dedicated meter shall be installed in accordance with Table L 407.1.						
Remote Data Transfer Requirements	**L 407.3**	**L 407.3**	**Updated code section on multiple water utility's**	**State Does not Adopt**	**State Does not Adopt**	
L 407.3 Remote Data Transfer Requirements. Where more than 10 non-utility-owned water meters are located at a building site, the meters shall include remote data transfer capability to collect and analyze the data at a single location.						
DEDICATED WATER METERING REQUIREMENTS	**(N/A)**	**TABLE L 407.1**	**Created a new table**	**State Does not Adopt**	**State Does not Adopt**	

TABLE L 407.1
DEDICATED WATER METERING REQUIREMENTS

APPLICATION	REQUIREMENTS
Cooling Towers	The makeup water supply to cooling towers, evaporative condensers, and fluid coolers. Cooling towers sharing a common basin can be grouped together using one meter.
Evaporative Coolers	The makeup water supply to an evaporative cooler having an air flow exceeding 30 000 cubic feet per minute (ft^3/min).
Fluid Coolers and Chillers – Open Systems	The makeup water supply on water-cooled fluid coolers and chillers not utilizing closed- loop recirculation.
Hydronic Cooling Systems – Closed Loop	Systems with 50 ton or greater of cooling capacity and where a make-up water supply is connected.
Hydronic Heating Systems	The makeup water supply to one or more boilers collectively exceeding 1 000 000 British thermal units per hour (Btu/h).
Industrial Processes	The water supply to an industrial water-using process where the average consumption exceeds 1000 gallons per day (gal/d). Like equipment sharing one common water supply can be grouped together using one meter. **Exception:** Processes using untreated water where the water is directly returned to the original source after use.
Landscape Irrigation	Landscape irrigation water where either of the following conditions exist: (1) Total accumulated landscape area with in-ground irrigation system exceeds 2500 square feet (ft^2), or (2) Total accumulated landscape area using an automatic irrigation controller exceeds 1500 square feet (ft^2) **Exception:** Where the water purveyor provides a separate water supply meter that serves only the irrigation system, an additional dedicated meter is not required.
Onsite Water Collection Systems	Potable or reclaimed water supplies for supplementing onsite alternative water collection systems.
Ornamental Water Features	Potable or reclaimed water supplies for ornamental water features where the water feature uses an automatic refill valve.
Roof Spray Systems	Roof spray systems for irrigating vegetated roofs or thermal conditioning covering an area greater than 300 square feet (ft^2). **Exception:** Temporary above-surface spray systems connected to a hose bibb and without an automatic controller are not required to have a dedicated meter
Tenant Buildings - Common Areas	Water supplies used in common areas of a site. The dedicated meter for common area water use shall not include water supplied inside tenant space. Water supplies for sanitary fixtures and other water use in common areas can be grouped together for metering requirements, except where dedicated water meter installations are otherwise required.
Tenant Spaces - Residential	All water supplies to each residential tenant space for indoor water use. **Exception:** Where a water purveyor has individual meters for each tenant space, and the other meter requirements included in Table L 407.1 do not apply, no additional dedicated meter is required.
Tenant Spaces - Non-residential, car washes	All water supplies to individual non-residential tenant spaces for indoor water use where any of the following conditions exist: (1) The nominal size of a water supply pipe(s) to the individual tenant space is greater than ½ inch, or (2) Water consumption within in the tenant space is estimated or expected to average greater than 1000 gallons/day (gal/d). Where water is supplied to tenant space that is not required to have dedicated meter, the water supply pipe (s) shall be accessible to install a meter. **Exception:** Where a water purveyor has individual meters for each tenant space and the other meter requirements included in Table L 407.1 do not apply, no additional dedicated meter is required.

For SI units: 1 gallon per day = 3.785 L/day, 1 inch = 25.4 mm, 1 square foot = 0.0929 m^2, 1000 British thermal units per hour = 0.293 kW, 1 cubic foot per minute (CFM) = 0.4719 L/s, 1 ton = 3.5169 kW

	General	**L 409.1**	**L 409.1**	**Updated Reference Location**	**State Does not Adopt**	**State Does not Adopt**	
	L 409.1 General. Sump pumps powered by potable or reclaimed (recycled) water pressure shall be used as an emergency backup pump and shall comply with IAPMO PS 119. The water-powered pump shall be equipped with a battery powered alarm having a minimum rating of 85 dBa at 10 feet (3048 mm). Water-powered pumps shall have a water efficiency factor of pumping at least 1.4 gallons (5.3 L) of water to a height of 10 feet (3048 mm) for every gallon of water used to operate the pump, measured at a water pressure of 60 psi (414 kPa). Pumps shall be labeled as to the gallons of water pumped per gallon of potable water consumed. Water-powered stormwater sump pumps shall be equipped with a reduced pressure principle backflow prevention assembly.						
	Water Softeners	**L 410.1**	**L 410.1**	**Updated Reference Location**	**State Does not Adopt**	**State Does not Adopt**	
	L 410.1 Water Softeners. Water softeners shall be listed to NSF/ANSI 44. Water softeners shall have a rated salt efficiency exceeding 3400 grains (gr) (0.222 kg) of total hardness exchange per pound (0.5 kg) of salt, based on sodium chloride (NaCl) equivalency, and shall not generate more than 4 gallons (15.1 L) of water per 1000 grains (0.0647 kg) of hardness removed during the service cycle.						
	Point-of-Use Reverse Osmosis Water Treatment Systems	**L 410.3**	**L 410.3**	**Update code language**	**State Does not Adopt**	**State Does not Adopt**	
	L 410.3 Point-of-Use Reverse Osmosis Water Treatment Systems. Reverse osmosis water treatment systems shall be equipped with automatic shutoff valves to prevent discharge when there is no call for producing treated water. Reverse osmosis water treatment systems shall comply with NSF/ANSI 58 and ASSE 1086.						
	Drinking Water Treatment Systems	**L 410.4**	**L 410.4**	**New section added to code**	**State Does not Adopt**	**State Does not Adopt**	
	L 410.4 Drinking Water Treatment Systems. Drinking water treatment systems shall be listed to WQA/ASPE/ANSIS-803.						
	General	**L 411.1**	**L 411.1**	**Irrigation requirement to meet with new sections**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.1 General. Where landscape irrigation systems are installed, they shall be in accordance with Section L 411.1.1 through Section L 411.17.						
	Irrigation Design and Installation.	**L 411.1.1**	**L 411.1.1**	**New Requirements for Irrigation installation**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.1.1 **Irrigation Design and Installation**. The Authority Having Jurisdiction shall have the authority to require landscape irrigation contractors, installers, or designers to demonstrate competency. The system shall be designed and record drawings showing changes during installation shall be made available for the owner and for any required inspections. Where required by the Authority Having Jurisdiction, the contractor, installer, or designer shall be licensed, certified, or both to perform such work.						
	Plant and Irrigation System Limitations	**(N/A)**	**L 411.2**	**New Requirements for Irrigation installation**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.2 Plant and Irrigation System Limitations. Nuisance, invasive and noxious plants as defined by the Authority Having Jurisdiction shall not be used in the landscape. Plants not requiring supplement irrigation and not principally used as an athletic field or public recreation shall be used in no less than 60 percent of the landscape that is not principally used as an athletic field or public recreation. Inground irrigation system shall not be installed in more than 40 percent of the landscaped area. Exceptions: (1) Where average annual rainfall is less than 12 inches (305mm) and in landscape areas where the plant materials have an annual ETc of not exceeding 15 inches (381mm), an in-ground irrigation system shall be allowed. (2) Where neither potable or reclaimed (recycled) water is used in the irrigation system, an in-ground irrigation system shall be allowed in 100 percent of the landscaped area and vegetative roofs.						

	Vegetative Roofs and Walls	**(N/A)**	**L 411.3**	**New Requirements for Irrigation walls**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.3 Vegetative Roofs and Walls. Irrigation systems using potable water for vegetative roofs and walls are prohibited.						
	Maximum Velocity	**L 411.4**	**L 411.4**	**New section for velocity of water flow**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.4 Maximum Velocity. Velocity of water flow shall not exceed 5 feet per second (1.5 m/s) for thermoplastic irrigation pipes. Velocity of water flow shall not exceed 7.5 feet per second (2.3 m/s) for metal irrigation pipes.						
	Backflow Protection	**L 411.5**	**L 411.5**	**Updated Backflow requirements**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.5 Backflow Protection. Potable water and reclaimed water supplies to landscape irrigation systems shall be protected from backflow in accordance with this code and the Authority Having Jurisdiction.						
	Use of Alternate Water Sources for Landscape Irrigation	**(N/A)**	**L 411.6**	**Requirement for when there is adequate alternative water to use it.**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.6 Use of Alternate Water Sources for Landscape Irrigation. Where available by pre-existing treatment, storage, or distribution network, and where approved by the Authority Having Jurisdiction, alternative water source(s) shall be utilized for landscape irrigation. Where adequate capacity and volumes of pre-existing alternative water sources are available, the irrigation system shall be designed to use a minimum of 75 percent of alternative water for the annual irrigation demand before supplemental potable water is used. Exception: Plants grown for food production for direct human consumption.						
	Master Valve.	(N/A)	L 411.6.1	**Requirement to have a valve**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.6.1 Master Valve. Where continuously pressurized alternate water sources supply an existing irrigation system, a master valve shall be installed at the point where the alternate water sources supply piping connects to the existing irrigation system downstream of the backflow preventer where required.						
	Identification	**(N/A)**	**L 411.6.2**	**Requirement to follow previous chapter requirements**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.6.2 Identification. Where alternate water sources supply an existing irrigation system, the existing sprinkler heads, valve boxes, the continuously pressurized line supplying the irrigation master valve, or any other components required by the Authority Having Jurisdiction, shall be colored purple. The piping supplying the irrigation master valve shall be identified in accordance with Chapter 15 of this code.						
	Additional Zones	**(N/A)**	**L 411.6.2.1**	**Pipe color requirement**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.6.2.1 Additional Zones. Newly installed zones shall have purple pipe.						

Irrigation Control Systems	**L 411.4**	**L 411.7**	**Updated irrigation requirements to meet up with EPA standard**	**State Does not Adopt**	**State Does not Adopt**	

L 411.7 Irrigation Control Systems. Where installed as part of a landscape irrigation system, irrigation control systems shall:

(1) Automatically adjust the irrigation schedule to respond to plant water needs determined by weather or soil moisture conditions. Shall be listed to the EPA WaterSense Specification for Weather-Based Irrigation Controllers or the EPA WaterSense Specification for Soil Moisture-Based Irrigation Controllers.

(2) Utilize onsite sensors or remote weather data to inhibit or to suspend irrigation when adequate soil moisture is present or during a rainfall or freezing conditions.

(3) Utilize either one or more on-site sensors or a weather based irrigation controller listed to the US EPA WaterSense Weather Based Irrigation Controllers Specification to suspend irrigation where adequate soil moisture is present for plant growth.

(4) Have the capability to program multiple and different run times for each irrigation zone to enable cycling of water applications and durations to mitigate water flowing off of the intended irrigation zone.

(5) Be capable of indicating to the user when it is not receiving a signal or local sensor input.

(6) Be capable of allowing for a manual operation troubleshooting test cycle and shall automatically return to sensor input mode within some period of time as designated by the manufacturer, even when the switch is still positioned for manual operation.

(7) The site-specific settings of the irrigation control system shall be posted at the control system location. The posted data, where applicable to the settings of the controller, shall include:

(a) Precipitation rate for each zone.

(b) Plant evapotranspiration coefficients for each zone.

(c) Soil absorption rate for each zone.

(d) Rain sensor settings.

(e) Soil moisture setting.

(f) Peak demand schedule including run times for each zone and the number of cycles to mitigate runoff and monthly adjustments or percentage change from peak demand schedule

Irrigation Flow Sensing System	**(N/A)**	**L 411.8**	**New section on irrigation flow senser**	**State Does not Adopt**	**State Does not Adopt**	

L 411.8 Irrigation Flow Sensing System. On commercial landscape irrigation systems, an irrigation flow sensing system shall be installed that shall interface with the control system to suspend irrigation for abnormal flow conditions. If equipped with totalizer capabilities, the irrigation flow sensing system shall also function as a meter for irrigation water.

Low Flow Irrigation	**L 411.8**	**L 411.9**	**Update to code reference location**	**State Does not Adopt**	**State Does not Adopt**	

L 411.9 Low Flow Irrigation. Irrigation zones using low flow irrigation emitters [with emitter flow rates not to exceed 6.3 gallons (24 L) per hour] shall comply with ASABE/ICC 802 Landscape Irrigation Sprinkler and Emitter Standard and shall be equipped with filters sized according to the manufacturer's recommendation for the specific low flow emitter, and with a pressure regulator installed upstream of the irrigation emission devices as necessary to reduce the operating water pressure in accordance with the manufacturers' equipment requirements.

	Mulched Planting Areas	**L 411.6**	**L 411.10**	**Flow maximum requirement**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.10 Mulched Planting Areas. Only low flow emitters with flow rates not to exceed 6.3 gallons (24 L) per hour are allowed to be installed in mulched planting areas with vegetation taller than 12 inches (305 mm).						
	System Performance Requirements	**L 411.7**	**L 411.11**	**Updated to add exception**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.11 System Performance Requirements. The landscape irrigation system shall be designed and installed to: (1) Prevent irrigation water from runoff out of the irrigation zone. (2) Prevent water in the supply line drainage from draining out between irrigation events. (3) Not allow irrigation water to be applied onto or enter nontargeted areas including adjacent property and vegetation areas, adjacent hydrozones not requiring the irrigation water to meet its irrigation demand, non-vegetative areas, impermeable surfaces, roadways, and structures. Exception: Landscape features outside of the public right of way such as paved walkways, jogging paths, and golf cart paths, are exempted from this requirement where run off drains into the same hydrozone without puddling.						
	Narrow or Irregularly Shaped Landscape Areas	**L 411.12**	**L 411.12**	**Flow maximum requirement**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.12 Narrow or Irregularly Shaped Landscape Areas. Narrow or irregularly shaped landscape areas, less than 4 feet (1219 mm) in any direction across opposing boundaries, shall not be irrigated by an irrigation emission device except low flow emitters with flow rates not to exceed 6.3 gallons (24 L) per hour.						
	Irrigation System Inspection and Performance Check	**(N/A)**	**L 411.13**	**Code requirements added for irrigation**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.13 Irrigation System Inspection and Performance Check. The irrigation system shall be inspected to verify compliance with the irrigation design in accordance with the following: (1) Inspection and performance check shall be by an independent third party having credentials in accordance with the US EPA WaterSense program or the Authority Having Jurisdiction. (2) Sprinklers shall be installed as specified with proper spacing and required nozzle. (3) Sprinklers shall be activated and visually inspected for covering areas without causing overspray or runoff. (4) Valves shall be installed as specified. (5) Drip irrigation systems shall be inspected to verify the proper valve, pressure regulation, filtering device, location of flush valves, and that the installed emitters comply with the irrigation plan. (6) Control system shall be installed as specified and listed as a US EPA Water Sense labeled controller, and all sensors shall be installed and verified for proper installation and operation. (7) The peak demand irrigation schedule shall be posted near the controller, or the scheduling parameters for the controller shall be listed for each station including cycle and soak times. (8) Record drawings of the irrigation system shall be completed and provided for the irrigation inspection. (9) An inspection report shall be provided to the property owner or management company identifying problems and what corrective actions are required.						
	Sprinkler Head Installations	**411.10**	**L 411.14**	**Moved in code book**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.14 Sprinkler Head Installations. All installed sprinkler heads shall comply with ASABE/ICC 802 or other approved standard(s).						

	Sprinkler Heads in Common Irrigation Zones	**L 411.10.1**	**L 411.14.1**	**Moved in code book, and code requirement for performance**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.14.1 Sprinkler Heads in Common Irrigation Zones. Sprinkler heads installed in irrigation zones served by a common valve shall be limited to applying water to plants with similar irrigation needs, and shall have matched precipitation rates (identical inches of water application per hour plus or minus 7 percent as labeled or declared in manufacturer's published performance data).						
	Sprinkler Head Pressure Regulation	**L 411.10.2**	**L 411.14.2**	**Moved in code book and code requirement to meet EPA standards**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.14.2 Sprinkler Head Pressure Regulation. Sprinkler heads shall utilize pressure regulating devices (as part of an irrigation system or integral to the sprinkler body) to maintain manufacturer's recommended operating pressure for each sprinkler and nozzle type. Spray sprinkler bodies with integral pressure regulation shall be listed to the EPA Water Sense Specification for Spray Sprinkler Bodies						
	Pop-up Type Sprinkler Heads.	**(N/A)**	**L 411.14.3**	**Moved in code book**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.14.3 Pop-up Type Sprinkler Heads. Where pop-up type sprinkler heads are installed, the sprinkler heads shall rise to a height above vegetation level and of not less than 4 inches (102 mm) above the soil level where emitting water.						
	Sprinkler Head Maximum Precipitation Rate	**(N/A)**	**L 411.14.4**	**New section added to code book**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.14.4 Sprinkler Head Maximum Precipitation Rate. Where the slope of the landscape exceeds 25 percent, the precipitation rate of sprinkler heads shall not exceed 1.75 inches (44 mm) per hour when tested to ASABE/ICC 802.						
	Outside Hose Bibbs	**(N/A)**	**L 411.15**	**This code allows hose bibs on alternative water piping**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.15 Outside Hose Bibbs. Outside hose bibbs shall be allowed on irrigation pipe downstream of the backflow preventer. Hose bibbs supplying water from the irrigation system shall be indicated by posted signs marked with the words: "CAUTION: NONPOTABLE WATER. DO NOT DRINK" and the symbol in Figure 1505.10 of this code.						
	Depth of Irrigation Pipe	**L 411.12**	**L 411.16**	**Moved in code book**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.16 Depth of Irrigation Pipe. Irrigation pipe downstream from the backflow preventer shall be buried at a minimum depth according to Section L 411.16.1 and Section L 411.16.2.						
	Landscape Areas	**L 411.12.1**	**L 411.16.1**	**Moved in code book**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.16.1 Landscape Areas. Irrigated landscaped areas not exceeding 10 000 square feet (929 m2) shall have irrigation main lines buried a minimum of 12 inches (305mm) and irrigation lateral lines buried a minimum of 8 inches (203 mm). Irrigated landscaped areas greater than 10 000 square feet (929 m2) shall have irrigation main lines buried a minimum of 18 inches (457 mm) and irrigation lateral lines buried a minimum of 12 inches (305 mm).						
	Vehicular Surfaces	**L 411.12.2**	**L 411.16.2**	**Moved in code book**	**State Does not Adopt**	**State Does not Adopt**	
	L 411.16.2 Vehicular Surfaces. Irrigation pipe installed under vehicular paving and pervious pavers, including landscaped fire lanes, shall be sleeved with a minimum of one 1-inch pipe (25 mm) size greater than the irrigation pipe and buried at a minimum depth of 24 inches (610 mm) in all cases.						

	Backfill	**L 411.13**	**L 411.17**	Moved in code book	**State Does not Adopt**	**State Does not Adopt**	
	L 411.17 Backfill. All excavation for irrigation pipe installation shall be backfilled in thin layers to 12 inches (305 mm) with clean earth, which shall not contain stones, boulders, cinderfill, frozen earth, construction debris, or other materials that would damage or break the piping. Fill shall be properly compacted. Suitable precautions shall be taken to ensure permanent stability for pipe laid in filled or made ground.						
	Water Supplied Trap Primers	**L 412.1**	**L 412.1**	**Updated Reference Location**	**State Does not Adopt**	**State Does not Adopt**	
	L 412.1 Water Supplied Trap Primers. Water supplied trap primers shall be electronic or pressure activated and shall use not more than 30 gallons (114 L) per year per drain. Where an alternate water source, as defined by this code, is used for fixture flushing or other uses in the same room, the alternate water source shall be used for the trap primer water supply. Exception: Flushometer tailpiece trap primers in accordance with ASSE 1044 or IAPMO PS 76.						
	Building Cavities	**(N/A)**	L 501.2.2	**New section about sizing for cavities**	**State Does not Adopt**	**State Does not Adopt**	
	L 501.2.2 Building Cavities. Building cavities used for hot water supply and return piping shall be large enough to accommodate the combined diameter of the pipe plus the insulation, plus any other objects in the cavity that the piping must cross.						
	Hot Water On-Demand Pumping Systems.	**(N/A)**	**L 501.4.1**	**New section to comply with IAPMO Water On-Demand water heater**	**State Does not Adopt**	**State Does not Adopt**	
	L 501.4.1 Hot Water On-Demand Pumping Systems. Hot water on-demand pumping systems manually actuated or automatically activated hot water pumping systems shall comply with IAPMO PS 115.						
	Maximum Volume and Length of Hot Water.	**L 502.7**	**L 502.7**	**Updated Code language for easier reading**	**State Does not Adopt**	**State Does not Adopt**	
	L 502.7 Maximum Volume and Length of Hot Water. The maximum volume of water contained in a hot water branch shall be in accordance with Section L 502.7.1. The maximum length per volume of piping shall comply with Section L 502.7.2						

Maximum Volume of Hot Water in a Branch	**L 502.7.1**	**L 502.7.1**	**Set standard for both sing and series branch lines**	**State Does not Adopt**	**State Does not Adopt**	

L 502.7.1 Maximum Volume of Hot Water in a Branch. The water volume per foot of piping shall be calculated using Table L 502.7.1. The maximum volume of water in a fixture branch between any source of hot water (water heaters, recirculation loops and electrically heat traced pipe shall be considered sources of hot water) and the fixture fitting shall be:

(1) 24 oz (710 mL) where a single branch serves a single fixture.

(2) 40 oz (1183 mL) where a series branch incorporating one or more flow-through design configurations that serves two or more fixtures. (3) 60 oz (1774 mL) where a ring branch incorporating two or more flow-through design configurations that serves two or more fixtures.

Exceptions:

(1) The maximum volume of a single branch or series branch between any source of hot water and a kitchen sink and dishwasher located on an island or a peninsula where the floor is a concrete slab shall not contain more than 40 oz (1183 mL).

(2) The maximum volume of a single branch to a standalone tub shall not contain more than 80 oz (2366mL).

Maximum Length Per Volume of Water in a Branch.	**L 502.7.2**	**L 502.7.2**	**Updated code language**	**State Does not Adopt**	**State Does not Adopt**	

L 502.7.2 Maximum Length Per Volume of Water in a Branch. For fixture branches in accordance with Section L 502.7.1, the maximum length of piping shall be calculated using Table L 502.7.2(1) through Table 502.7.2(4). Where a fixture fitting shut off valve (supply stop) is installed ahead of the fixture fitting, the maximum length is measured between the source of hot water and the fixture fitting shut off valve (supply stop).

Requirements for All Compliance Paths	**L 503.2.1**	**L 503.2.1**	**Updated table location. Updated title**	**State Does not Adopt**	**State Does not Adopt**	

L 503.2.1 Requirements for All Compliance Paths. Service water heating systems and equipment shall comply with Section L 503.1, Section L 503.3, and Section L **503.5. [ASHRAE 90.1:7.2.1]**

WATER VOLUME FOR DISTRIBUTION PIPING MATERIALS*	TABLE L 502.7.1	TABLE L 502.7.1	**Updated table location, and water value distribution**	**State Does not Adopt**	**State Does not Adopt**	

TABLE L 502.7.1
WATER VOLUME FOR DISTRIBUTION PIPING MATERIALS*

	OUNCES OF WATER PER FOOT LENGTH OF PIPING													
NOMINAL SIZE (inch)	COPPER M	COPPER L	COPPER K	CPVC CTS SDR 11	CPVC SCH 40	PEX-AL- PEX	PE-AL- PE	CPVC SCH 80	PEX CTS SDR 9	PE-RT SDR 9	PP SDR 6	PP SDR 7.3	PP SDR 11	CPVC PIPE SDR 11
⅜	1.06	0.97	0.84	0.68	1.17	0.59	0.59	0.85	0.64	0.64	0.85	1.02	NA	1.48
½	1.69	1.55	1.45	1.23	1.89	1.22	1.22	1.44	1.18	1.18	1.35	1.64	NA	2.33
¾	3.43	3.22	2.90	2.52	3.38	3.28	3.28	2.72	2.35	2.35	2.14	2.54	NA	3.68
1	5.81	5.49	5.17	4.24	5.53	5.37	5.37	4.58	3.88	3.88	3.46	4.22	NA	5.83
1¼	8.70	8.36	8.09	6.38	9.66	8.65	8.65	8.23	5.80	5.80	5.47	6.59	NA	9.35
1½	12.18	11.83	11.45	8.95	13.20	13.91	13.91	11.38	8.08	8.08	8.64	10.27	NA	12.27
2	21.50	20.58	20.04	15.38	21.88	23.16	23.16	19.11	13.86	13.86	13.64	16.42	NA	19.19

For SI units: 1 ounce = 29.573 mL, 1 inch = 25 mm, 1 foot = 304.8 mm

* NA: Not Applicable

LENGTH (FT) PER VOLUME OF PIPING	**(N/A)**	**TABLE L 502.7.2(1)**	**New Table**	**State Does not Adopt**	**State Does not Adopt**	

TABLE L 502.7.2(1)
LENGTH (FT) PER VOLUME OF PIPING

	COPPER TYPE M			COPPER TYPE L			COPPER TYPE K		
NOMINAL SIZE (inch)	24 oz	40 oz	60 oz	24 oz	40 oz	60 oz	24 oz	40 oz	60 oz
3/8	22.7	37.8	56.7	24.9	41.4	62.1	28.4	47.4	71.1
1/2	14.2	23.7	35.5	15.5	25.8	38.7	16.5	27.6	41.4
3/4	7.0	11.6	17.5	7.5	12.4	18.6	8.3	13.8	20.7
1	4.1	6.9	10.3	4.4	7.3	10.9	4.6	7.7	11.6
1 1/4	2.8	4.6	6.9	2.9	4.8	7.2	3.0	4.9	7.4
1 1/2	2.0	3.3	4.9	2.0	3.4	5.1	2.1	3.5	5.2
2	1.1	1.9	2.8	1.2	1.9	2.9	1.2	2.0	3.0

For SI units: 1 foot = 304.8 mm, 1 ounce = 29.573 mL, 1 inch = 25 mm

LENGTH (FT) PER VOLUME OF PIPING	**(N/A)**	**TABLE L 502.7.2 (2)**	**New Table**	**State Does not Adopt**	**State Does not Adopt**	

TABLE L 502.7.2 (2)
LENGTH (FT) PER VOLUME OF PIPING

	CPVC CTS SDR 11			CPVC SCH 40 PIPE			CPVC SCH 80 PIPE			CPVC SDR 11 PIPE		
NOMINAL SIZE (inch)	24 oz	40 oz	60 oz	24 oz	40 oz	60 oz	24 oz	40 oz	60 oz	24 oz	40 oz	60 oz
3/8	35.5	59.1	88.6	20.5	34.2	51.4	28.3	47.2	70.7	16.2	27.0	40.4
1/2	19.5	32.6	48.8	12.7	21.1	31.7	16.6	27.7	41.5	10.3	17.2	25.7
3/4	9.5	15.9	23.8	7.1	11.8	17.8	8.8	14.7	22.0	6.5	10.9	16.3
1	5.7	9.4	14.2	4.3	7.2	10.9	5.2	8.7	13.1	4.1	6.9	10.3
1 1/4	3.8	6.3	9.4	2.5	4.1	6.2	2.9	4.9	7.3	2.6	4.3	6.4
1 1/2	2.7	4.5	6.7	1.8	3.0	4.5	2.1	3.5	5.3	2.0	3.3	4.9
2	1.6	2.6	3.9	1.1	1.8	2.7	1.3	2.1	3.1	1.3	2.1	3.1

For SI units: 1 foot = 304.8 mm, 1 ounce = 29.573 mL, 1 inch = 25 mm

LENGTH (FT) PER VOLUME OF PIPING	**(N/A)**	**TABLE L 502.7.2 (3)**	**New Table**	**State Does not Adopt**	**State Does not Adopt**	

TABLE L 502.7.2 (3)
LENGTH (FT) PER VOLUME OF PIPING

	PEX & PE-RT CTS SDR 9			PEX-AL-PEX (DN)			PE-AL-PE (DN)		
NOMINAL SIZE, inches (DN)*	24 OZ	40 OZ	60 OZ	24 OZ	40 OZ	60 OZ	24 OZ	40 OZ	60 OZ
3/8 (12)	37.5	62.5	93.8	40.7	67.8	101.8	40.7	67.8	101.8
1/2 (16)	20.4	33.9	50.9	19.6	32.7	49.0	19.6	32.7	49.0
3/4 (25)	10.2	17.0	25.5	7.3	12.2	18.3	7.3	12.2	18.3
1 (32)	6.2	10.3	15.5	4.5	7.4	11.2	4.5	7.4	11.2
1 1/4 (40)	4.1	6.9	10.3	2.8	4.6	6.9	2.8	4.6	6.9
1 1/2 (50)	3.0	4.9	7.4	1.7	2.9	4.3	1.7	2.9	4.3
2 (63)	1.7	2.9	4.3	1.0	1.7	2.6	1.0	1.7	2.6

For SI units: 1 foot = 304.8 mm, 1 ounce = 29.573 mL, 1 inch = 25 mm
* DN is outside diameter

LENGTH (FT) PER VOLUME OF PIPING	**(N/A)**	**TABLE L 502.7.2 (4)**	**New Table**	**State Does not Adopt**	**State Does not Adopt**	

TABLE L 502.7.2 (4)
LENGTH (FT) PER VOLUME OF PIPING

	PP SDR 6 (DN)			PP SDR 7.3 (DN)			PP SDR 11 (DN)[1]		
NOMINAL SIZE, inches (DN)[2]	24 OZ	40 OZ	60 OZ	24 OZ	40 OZ	60 OZ	24 OZ	40 OZ	60 OZ
⅜ (16)	28.2	46.9	70.4	23.5	39.2	58.8	NA	NA	NA
½ (20)	17.7	29.6	44.3	14.7	24.4	36.6	NA	NA	NA
¾ (25)	11.2	18.7	28.0	9.5	15.8	23.6	NA	NA	NA
1 (32)	6.9	11.6	17.3	5.7	9.5	14.2	NA	NA	NA
1¼ (40)	4.4	7.3	11.0	3.6	6.1	9.1	NA	NA	NA
1½ (50)	2.8	4.6	6.9	2.3	3.9	5.8	NA	NA	NA
2 (63)	1.8	2.9	4.4	1.5	2.4	3.7	NA	NA	NA

For SI units: 1 foot = 304.8 mm, 1 ounce = 29.573 mL, 1 inch = 25 mm

Notes:

1 PP SDR 11 products are not typically used or rated at 180°F (82.2°C).

2 DN is outside diameter.

LENGTH (FT) PER VOLUME OF PIPING	**(N/A)**	**L 503.2.2**	**New section on servicing water heater**	**State Does not Adopt**	**State Does not Adopt**	

L 503.2.2 Additional Requirements for Service Water Heating. Service water heating systems and equipment shall comply with Section L 503.4.1 through Section L 503.4.3. [ASHRAE 90.1:7.2.2]

Load Calculations	**L 503.3.1**	**L 503.3.1**	**New regulation to follow manufacture guidelines**	**State Does not Adopt**	**State Does not Adopt**	

L 503.3.1 Load Calculations. Service water-heating system design loads for the purpose of sizing systems and equipment shall be determined in accordance with manufacturer's published sizing guidelines or generally accepted engineering standards and handbooks acceptable to the adopting authority (e.g., ASHRAE Handbook–HVAC Applications). [ASHRAE 90.1:7.4.1]

Service Hot Water Piping Insulation	**(N/A)**	**L 503.3.3**	**New section and refers to new table**	**State Does not Adopt**	**State Does not Adopt**	

L 503.3.3 Service Hot Water Piping Insulation. Insulation of hot water and return piping shall meet the provisions in Section L 501.2.

Hot Water System Design		**L 503.3.4**	**Update code language new rule to follow**	**State Does not Adopt**	**State Does not Adopt**	

L 503.3.4 Hot Water System Design. Hot water systems shall comply with the following:

(1) Circulating hot water systems shall be arranged so that the circulating pump(s) are capable of being turned off (automatically or manually) where the hot water system is not in operation. Exception: For healthcare facilities, long term care facilities, hotels, or motels, devices that automatically turn off the circulation pump(s) shall not be required.

(2) Where used to maintain storage tank water temperature, circulating pump(s) shall be equipped with controls limiting operation to a period from the start of the heating cycle to a maximum of 5 minutes after the end of the heating cycle.

(3) The maximum volume of water contained in hot water distribution lines between the water heater and the fixture stop or connection to showers, kitchen faucets, and lavatories shall be determined in accordance with Section L 502.7.

Service Water Heating System Controls	**L 503.3.5**	**L 503.3.5**	**Updated code language**	**State Does not Adopt**	**State Does not Adopt**	

L 503.3.5 Service Water Heating System Controls. Service water heating system controls shall comply with Section L 503.3.5(1) and Section L 503.3.5(2).

(1) Temperature controls shall be provided that allow for storage temperature adjustment from 120°F (49°C) or lower to a maximum temperature compatible with the intended use. Exception: Where the manufacturer's installation instructions specify a higher minimum thermostat setting to minimize condensation and resulting corrosion. [ASHRAE 90.1:7.4.4.1] (2) Temperature controlling means shall be provided to limit the maximum temperature of water delivered from lavatory faucets in public facility restrooms to 110°F (43°C). [ASHRAE 90.1:7.4.4.3]

Pools	**L 503.3.6**	**L 503.3.6**	**Updated reference location**	**State Does not Adopt**	**State Does not Adopt**	

L 503.3.6 Pools. Pool heating systems shall comply with Section L 503.3.6(1) through Section L 503.3.6(3).

(1) Pool heaters shall be equipped with a readily accessible ON/OFF switch to allow shutting off the heater without adjusting the thermostat setting. Pool heaters fired by natural gas shall not have continuously burning pilot lights. [ASHRAE 90.1:7.4.5.1]

(2) Heated pools shall be equipped with a vapor retardant pool cover on or at the water surface. Pools heated to more than 90°F (32°C) shall have a pool cover with a minimum insulation value of R-12. Exception: Pools that are deriving over 60 percent of the energy for heating from site-recovered energy or on-site renewable energy. [ASHRAE 90.1:7.4.5.2]

(3) Time switches shall be installed on swimming pool heaters and pumps. Exceptions:

(1) Where public health standards require 24-hour pump operation.

(2) Where pumps are required to operate solar and waste heat recovery pool heating systems.[ASHRAE 90.1:7.4.5.3]

Space Heating and Service Water Heating	**L 503.4.1**	**L 503.4.1**	**Updated Code Title**	**State Does not Adopt**	**State Does not Adopt**	

L 503.4.1 Space Heating and Service Water Heating. The use of a gas-fired or oil-fired space heating boiler system, otherwise in accordance with Section L 503.0, to provide the total space heating and service water heating for a building is allowed where one of the following conditions is met:

(1) The single space-heating boiler, or the component of a modular or multiple boiler system that is heating the service water, has a standby loss in Btu/h (kW) not exceeding (13.3 × pmd + 400)/n, where (pmd) is the probable maximum demand in gallons per hour, determined in accordance with the procedures described in generally accepted engineering standards and handbooks, and (n) is the fraction of the year where the outdoor daily mean temperature exceeds 64.9°F (18.28°C). The standby loss is to be determined for a test period of 24 hours duration while maintaining a boiler water temperature of not less than 90°F (50°C) above ambient, with an ambient temperature between 60°F (16°C) and 90°F (32°C). For a boiler with a modulating burner, this test shall be conducted at the lowest input.

(2) It is demonstrated to the satisfaction of the Authority Having Jurisdiction that the use of a single heat source will consume less energy than separate units.

(3) The energy input of the combined boiler and water heater system is less than 150 000 British thermal units per hour (Btu/h) (44 kW). [ASHRAE 90.1:7.5.1]

Service Water-Heating Equipment	**L 503.4.2**	**L 503.4.2**	**Updated code language**	**State Does not Adopt**	**State Does not Adopt**	

L 503.4.2 Service Water-Heating Equipment. Service water-heating equipment used to provide the additional function of space heating as part of a combination (integrated) system shall satisfy all stated requirements for the service water-heating equipment. [ASHRAE 90.1:7.5.2]

3 Large Service Water-Heating Systems	**L 503.4.3**	**L 503.4.3**	Raises efficiency standards, adds clearer definitions	**State Does not Adopt**	**State Does not Adopt**	

L 503.4.3 Large Service Water-Heating Systems. New buildings with service water-heating systems with a total installed input capacity of 1 000 000 Btu/h (293 kW) or greater, provided by high-capacity gas-fired service water-heating equipment shall meet either or both of the following requirements:

(1) Where a single unit of high-capacity gas-fired service water-heating equipment is installed, it shall have a minimum thermal efficiency (Et) of 92 percent.

(2) Multiple units of high-capacity gas-fired service water-heating equipment connected to the same service water-heating system shall have a total input-capacity-weighted average thermal efficiency (Et) of at least 90 percent, and a minimum of 30 percent of the input of the high-capacity gas-fired service water-heating equipment in the service water heating-system shall have a thermal efficiency (Et)of at least 92 percent.

High-capacity gas-fired service water-heating equipment comprises gas-fired instantaneous water heaters with a rated input both greater than 200 000 Btu/h (58.6 kW) and not less than 4000 British thermal units per hour per gallon [Btu/(h•gal)] (0.3097 kW/L) of stored water, and gas-fired storage water heaters with a rated input both greater han 105 000 Btu/h (30.8 kW) and less than 4000 British thermal units per hour per gallon [Btu/(h•gal)] (0.3097 kW/L) of stored water. Exceptions:

(1) Water heaters installed in individual dwelling units.
(2) Individual gas water heaters with input capacity not greater than 100 000 Btu/h (29.3 kW). [ASHRAE90.1:7.5.3]

Heat Recovery for Service Water Heating	**L 503.4.4**	**L 503.4.4**	**Updated code language**	**State Does not Adopt**	**State Does not Adopt**	

L 503.4.4 Heat Recovery for Service Water Heating. Condenser heat recovery systems shall be installed for heating or preheating of service hot water provided all of the following are true:

(1) The facility operates 24 hours a day.

(2) The total installed heat rejection capacity of the water-cooled systems exceeds 6 000 000 Btu/h (1758 kW) of heat rejection.

(3) The design service water-heating load exceeds 1 000000 Btu/h (293 kW). [ASHRAE 90.1:6.5.6.2.1]

Capacity	**L 503.4.5**	**L 503.4.5**	**Updated code language new code reference location**	**State Does not Adopt**	**State Does not Adopt**	

L 503.4.5 Capacity. The required heat recovery system shall have the capacity to provide the smaller of:

(1) Sixty percent of the peak heat-rejection load at design conditions or

(2) Preheat of the peak service hot-water draw to 85°F (29°C).

Exceptions:

(1) Facilities that employ condenser heat recovery for space heating with a heat recovery design exceeding 30 percent of the peak water-cooled condenser load at design conditions.

(2) Facilities that provide 60 percent of their service water heating from onsite renewable energy or siterecovered energy or from other sources. [ASHRAE90.1:6.5.6.2.2]

	PERFORMANCE REQUIREMENTS FOR WATER-HEATING EQUIPMENT MINIMUM EFFICIENCY REQUIREMENTS (continued)	**TABLE L 503.3.2**	**TABLE L 503.3.2**	**Updated table with new test procedure**	**State Does not Adopt**	**State Does not Adopt**	

TABLE L 503.3.2
PERFORMANCE REQUIREMENTS FOR WATER-HEATING EQUIPMENT MINIMUM EFFICIENCY REQUIREMENTS
[ASHRAE 90.1: TABLE 7.8]

EQUIPMENT TYPE	SIZE CATEGORY (INPUT)	SUBCATEGORY OR RATING CONDITION	PERFORMANCE REQUIRED[1]	TEST PROCEDURE[2,3]
Electric table-top water heaters	≤12 kW	<4000 (Btu/h)/gal ≥20 gal and ≤120 gal	For applications outside U.S., see footnote (h). For U.S. applications, see footnote (7).	Appendix E of 10 CFR 430
Electric storage water heaters	≤12 kW	<4000 (Btu/h)/gal ≥20 gal and ≤55 gal	For applications outside U.S., see footnote (8). For U.S. applications, see footnote (7).	Appendix E of 10 CFR 430
		<4000 (Btu/h)/gal >55 gal and ≤120 gal	For applications outside U.S., see footnote (8). For U.S. applications, see footnote (7).	Appendix E of 10 CFR 430
	>12 kW[5]	<4000 (Btu/h)/gal	SL ≤ 0.3 + 27/V_m%/h	10 CFR 431.106
Electric instantaneous water heaters	≤12 kW	≥4000 (Btu/h)/gal <2 gal	For applications outside U.S., see footnote (8). For U.S. applications, see footnote (7).	Appendix E of 10 CFR 430
	>12 kW and ≤58.6 kW[3]	≥4000 (Btu/h)/gal ≤2 gal ≤180°F	Very Small DP: UEF = 0.80 Low DP: UEF = 0.80 Medium DP: UEF = 0.80 High DP: UEF = 0.80	Appendix E of 10 CFR 430
	≤58.6 kW[3]	≥4000 (Btu/h)/gal <10 gal	No requirement	
		≥4000 (Btu/h)/gal ≥10 gal	No requirement	
Gas storage water heaters	≤75 000 Btu/h	<4000 (Btu/h)/gal ≥20 gal and ≤55 gal	For applications outside U.S., see footnote (8). For U.S. applications, see footnote (7).	Appendix E of 10 CFR 430
		<4000 (Btu/h)/gal >55 gal and ≤100 gal	For applications outside U.S., see footnote (8). For U.S. applications, see footnote (7).	Appendix E of 10 CFR 430
	>75 000 Btu/h and ≤105 000 Btu/h[4]	<4000 (Btu/h)/gal ≤120 gal ≤180°F	Very Small DP: UEF = 0.2674 – (0.0009 × V_r) Low DP: UEF = 0.5362 – (0.0012 × V_r) Medium DP: UEF = 0.6002 – (0.0011 × V_r) High DP: UEF = 0.6597 – (0.0009 × V_r)	Appendix E of 10 CFR 430
	>105 000 Btu/h[4, 6]	<4000 (Btu/h)/gal	SL ≤ $\frac{80\% \, E_t}{(Q/800 + 110\sqrt{V})}$, Btu/h	10 CFR 431.106

TABLE L 503.3.2
PERFORMANCE REQUIREMENTS FOR WATER-HEATING EQUIPMENT MINIMUM EFFICIENCY REQUIREMENTS (continued)
[ASHRAE 90.1: TABLE 7.8]

EQUIPMENT TYPE	SIZE CATEGORY (INPUT)	SUBCATEGORY OR RATING CONDITION	PERFORMANCE REQUIRED[1]	TEST PROCEDURE[2,3]
Gas instantaneous water heaters	>50 000 Btu/h and ≤200 000 Btu/h	≥4000 (Btu/h)/gal <2 gal	For applications outside U.S., see footnote (8). For U.S. applications, see footnote (7).	Appendix E of 10 CFR 430
	≥200 000 Btu/h[4,6]	≥4000 (Btu/h)/gal <10 gal	80% E_t	10 CFR 431.106
	≥200 000 Btu/h[6]	≥4000 (Btu/h)/gal ≥10 gal	80% E_t SL ≤ $(Q/800 + \sqrt{V})$, Btu/h	
Oil storage water heaters	≤105 000 Btu/h	<4000 (Btu/h)/gal ≤50 gal	For applications outside U.S., see footnote (8). For U.S. applications, see footnote (7).	Appendix E of 10 CFR 430
	≥105 000 Btu/h and ≤140 000 Btu/h[5]	≤120 gal <4000 (Btu/h)/gal ≤180°F	Very Small DP: UEF = $0.2932 - (0.0015 \times V_r)$ Low DP: UEF = $0.5596 - (0.0018 \times V_r)$ Medium DP: UEF = $0.6194 - (0.0016 \times V_r)$ High DP: UEF = $0.6740 - (0.0013 \times V_r)$	Appendix E of 10 CFR 430
	>140 000 Btu/h	<4000 (Btu/h)/gal	80% E_t SL ≤ $(Q/800 + 110\sqrt{V})$, Btu/h	10 CFR 431.106
Oil instantaneous water heaters	≤210 000 Btu/h	≥4000 (Btu/h)/gal <2 gal	80 % E_t EF ≥ $0.59 - 0.0005 \times V$	Appendix E of 10 CFR 430 as it appeared as of 1/1/2014
	>210 000 Btu/h	≥4000 (Btu/h)/gal <10 gal	80% E_t	10 CFR 431.106
	>210 000 Btu/h	≥4000 (Btu/h)/gal ≥10 gal	78% E_t SL ≤ $(Q/800 + 110\sqrt{V})$, Btu/h	
Hot-water supply boilers, gas and oil[6]	≥300 000 Btu/h and <12 500 000 Btu/h	≥4000 (Btu/h)/gal <10 gal	80% E_t	10 CFR 431.106
Hot-water supply boilers, gas[6]	≥300 000 Btu/h and <12 500 000 Btu/h	≥4000 (Btu/h)/gal ≥10 gal	80% E_t SL ≤ $(Q/800 + 110\sqrt{V})$, Btu/h	
Hot-water supply boilers, oil	≥300 000 Btu/h and <12 500 000 Btu/h	≥4000 (Btu/h)/gal ≥10 gal	78% E_t SL ≤ $(Q/800 + 110\sqrt{V})$, Btu/h	

TABLE L 503.3.2
PERFORMANCE REQUIREMENTS FOR WATER-HEATING EQUIPMENT MINIMUM EFFICIENCY REQUIREMENTS (continued)
[ASHRAE 90.1: TABLE 7.8]

EQUIPMENT TYPE	SIZE CATEGORY (INPUT)	SUBCATEGORY OR RATING CONDITION	PERFORMANCE REQUIRED[1]	TEST PROCEDURE[2,3]
Pool heaters, gas	All	—	82% E_t for commercial pool heaters and for applications outside U.S. For U.S. applications, see footnote (7).	Appendix P of 10 CFR 430
Heat pump pool heaters	All	50°F db 44.2°F wb Outdoor air 80.0°F entering water	4.0 COP	Appendix P of 10 CFR 430
Unfired storage tanks	All	—	R-12.5	(none)

For SI units: 1 gallon = 3.785 L, 1000 British thermal units per hour = 0.293 kW, °C = (°F-32)/1.8

Notes:

1 Thermal efficiency (Et) is a minimum requirement, while standby loss (SL) is a maximum requirement. In the SL equation, V is the rated volume in gallons and Q is the nameplate input rate in Btu/h (kW). Vm is the measured volume in the tank in gallons. Standby loss for electric water heaters is in terms of %/h and denoted by the term "S," and standby loss for gas and oil water heaters is in terms of Btu/h and denoted by the term "SL." Draw pattern (DP) refers to the water draw profile in the Uniform Energy Factor (UEF) test. UEF and Energy Factor (EF) are minimum requirements. In the UEF standard equations, V_r refers to the rated volume in gallons.

2,3 ASHRAE 90.1 contains a complete specification, including the year version, of the referenced test procedure.

3 Electric instantaneous water heaters with input capacity >40 946 Btu/h (12 kW) and ≤200 000 Btu/h (58.6 kW) must comply with the requirements for the 200 000 Btu/h (58.6 kW) if the water heater either:
(a) has a storage volume >2 gallons (7.6 L);
(b) is designed to provide outlet hot water at temperatures greater than 180°F (82°C); or
(c) uses three phase power.

4 Gas storage water heaters with input capacity >75 000 Btu/h (22 kW) and ≤105 000 Btu/h (30.8 kW) must comply with the requirements for the >105 000 Btu/h (30.8 kW) if the water heater either:
(a) has a storage volume >120 gallons (454 L);
(b) is designed to provide outlet hot water at temperatures greater than 180°F (82.2°C); or
(c) uses three-phase power

5 Oil storage water heaters with input capacity >105 000 Btu/h (30.8 kW) and ≤140 000 Btu/h (41.0 kW) must comply with the requirements for the >140 000 Btu/h (41.0 kW) if the water heater either
(a) has a storage volume >120 gallons (454 L);
(b) is designed to provide outlet hot water at temperatures greater than 180°F (82.2°C); or
(c) uses three-phase power

6 Refer to Section L 503.4.3 for additional requirements for gas storage and instantaneous water heaters and gas hot-water supply boilers.

7 Water heaters or gas pool heaters in this category or subcategory are regulated as consumer products by the USDOE as defined in 10 CFR 430.

8 Where this standard is being applied to a building outside the U.S. and Canada and water heaters in this subcategory are being installed in that building, those water heaters shall meet the local efficiency requirements. If there are no local efficiency standards for residential water heaters, consideration should be given to using the USDOE efficiency requirements shown in Appendix F, Table F-2 of ASHRAE 90.1.

Applicability	**N 101.1**	**N 101.1**	**Updating Code language. New reference location**	**State Does not Adopt**	**State Does not Adopt**	

N 101.1 Applicability. This appendix provides guidelines on the impact of water temperature in minimizing both scalding and Legionella growth potential associated with occupiable commercial, institutional, multi-unit residential, and industrial building plumbing systems. This appendix shall not include single-family residential buildings. This appendix shall not be considered a risk management guidance document for scalding or Legionella. Where required by the Authority Having Jurisdiction, Legionella risk management shall be in accordance with ASHRAE 188 and ASHRAE Guideline 12. Note: There are additional factors associated with the potential for scalding and Legionella growth other than temperature. For scalding potential, other factors include, but are not limited to, user age, health, body part, length of contact time, and water source. For Legionella growth potential other factors include, but are not limited to, water source and plumbing system: size, design, circulation rate, water age, disinfectant residual, piping material and component complexity.

	General	**N 102.1**	**N 102.1**	**Updating code language**	**State Does not Adopt**	**State Does not Adopt**	
	N 102.1 General. For the purpose of this appendix, the following definitions shall apply:						
	Definition	**N 102.1**	**N 102.1**	**Definition Update**	**State Does not Adopt**	**State Does not Adopt**	
	Biofilm. Microorganisms and the slime they secrete that grow on any continually moist surface.						
	Definition	**N 102.1**	**N 102.1**	**Definition Update**	**State Does not Adopt**	**State Does not Adopt**	
	Cold Water. Water at a temperature less than 77°F (25°C).						
	Definition	**N 102.1**	**N 102.1**	**Definition Update**	**State Does not Adopt**	**State Does not Adopt**	
	Control. The management of the operating conditions to maintain compliance with established criteria. {ASHRAE 188:3}						
	Definition	**N 102.1**	**N 102.1**	**Definition Update**	**State Does not Adopt**	**State Does not Adopt**	
	Disinfecting Hot Water. Water at a temperature not less than 160°F (71°C).						
	Definition	**N 102.1**	**N 102.1**	**Definition Update**	**State Does not Adopt**	**State Does not Adopt**	
	Disinfection. The process of killing or inactivating microorganism. [ASHRAE 188:3]						
	Definition	**N 102.1**	**N 102.1**	**Definition Update**	**State Does not Adopt**	**State Does not Adopt**	
	Halogenation. A chemical reaction that involves the addition of one or more halogens, including, but not limited to, chlorine, bromine, or iodine, commonly used to disinfect water systems.						
	Definition	**N 102.1**	**N 102.1**	**Definition Update**	**State Does not Adopt**	**State Does not Adopt**	
	Hazard. See Risk.						

	Definition	**N 102.1**	**N 102.1**	**Definition Update**	**State Does not Adopt**	**State Does not Adopt**	
	Hot Water. Water at a temperature not less than 130°F (54°C) and less than 140°F (60°C).						
	Definition	**N 102.1**	**N 102.1**	**Definition Update**	**State Does not Adopt**	**State Does not Adopt**	
	Legionella Growth Potential. The likelihood that Legionella bacteria will reproduce.						
	Definition	**N 102.1**	**N 102.1**	**Definition Update**	**State Does not Adopt**	**State Does not Adopt**	
	Monitor. Observing and checking the progress or quality of (something) or measuring the physical and chemical characteristics of control measures.						
	Definition	**N 102.1**	**N 102.1**	**Definition Update. Reference location update**	**State Does not Adopt**	**State Does not Adopt**	
	Risk. The potential for harm to humans resulting from exposure to Legionella. [ASHRAE 188:3].						
	Definition	**N 102.1**	**N 102.1**	**Definition Update**	**State Does not Adopt**	**State Does not Adopt**	
	Scald Potential. The likelihood of burning the skin.						
	Definition	**N 102.1**	**N 102.1**	**Definition Update**	**State Does not Adopt**	**State Does not Adopt**	
	Tempered Hot Water. Water at a temperature not less than 120°F (49°C) and less than 130°F (54°C).						
	Definition	**N 102.1**	**N 102.1**	**Definition Update**	**State Does not Adopt**	**State Does not Adopt**	
	Tepid Cold Water. Water at a temperature not less than 77°F (25°C) and less than 85°F (29°C).						
	Definition	**N 102.1**	**N 102.1**	**Definition Update**	**State Does not Adopt**	**State Does not Adopt**	
	Tepid Water. Water at a temperature not less than 85°F (29°C) and less than 110°F (43°C).						
	Definition	**N 102.1**	**N 102.1**	**Definition Update**	**State Does not Adopt**	**State Does not Adopt**	
	Test. The measurement of the physical, chemical, or microbial characteristics or quality of water.						
	Definition	**N 102.1**	**N 102.1**	**Definition Update**	**State Does not Adopt**	**State Does not Adopt**	
	Very Hot Water. Water at a temperature not less than 140°F (60°C) and less than 160°F (71°C).						
	Definition	**N 102.1**	**N 102.1**	**Definition Update**	**State Does not Adopt**	**State Does not Adopt**	
	Warm Water. Water at a temperature not less than 110°F (43°C) and less than 120°F (49°C).						

	Definition	**N 102.1**	**N 102.1**	**Definition Update**	**State Does not Adopt**	**State Does not Adopt**	
	Water Management Plan. A plan to reduce the risk of Legionella growth and spread**.**						
	Definition	**N 102.1**	**N 102.1**	**Definition Update**	**State Does not Adopt**	**State Does not Adopt**	
	N 103.1 Design Documentation. Construction documents shall be required for new construction, renovation, refurbishment, replacement, or repurposing of an occupiable building water system, including a water management plan, and shall be submitted to the Authority Having Jurisdiction.						
	Onsite Documentation.	**(N/A)**	**N 103.2**	**New Definition**	**State Does not Adopt**	**State Does not Adopt**	
	N 103.2 Onsite Documentation. Documentation shall be maintained onsite and shall be readily accessible to the Authority Having Jurisdiction.						
	Legionella Growth Potential	**(N/A)**	**N 104.1**	**Updated table reference**	**State Does not Adopt**	**State Does not Adopt**	
	N 104.1 Legionella Growth Potential. The Authority Having Jurisdiction shall have the authority to require documentation to address Legionella growth potential, where water temperatures in a water distribution system are within ranges shown in Figure N 104.1 that pose a Legionella growth potential.						
	Scald Potential	**N 104.1**	**N 104.2**	**Updated table reference**	**State Does not Adopt**	**State Does not Adopt**	
	N 104.2 Scald Potential. Where the water distribution system's water temperature(s) range poses a scald potential in accordance with Table N 104.2, protection shall be provided in accordance with Chapter 4.						
	Disinfection Documentation	**N 105.1**	**N 105.1**	**Section separated**	**State Does not Adopt**	**State Does not Adopt**	
	N 105.1 Disinfection Documentation. Where required by the Authority Having Jurisdiction, documentation for disinfection of all building water systems shall be provided by the registered design professional in the construction documents.						
	Copper-Silver Ionization	**(N/A)**	**N 105.1.1**	**New Section**	**State Does not Adopt**	**State Does not Adopt**	
	N 105.1.1 Copper-Silver Ionization. Copper-silver ionization methods and procedures, shall include the following documentation: (1) Copper and silver ionization concentrations. (2) Methods and documentation for monitoring ion levels. (3) Electrode cleaning cycles and methods.						

Ultraviolet Light	**(N/A)**	**N 105.1.2**	**New Section**	**State Does not Adopt**	**State Does not Adopt**	

N 105.1.2 Ultraviolet Light. Ultraviolet light methods shall include the following documentation:

(1) Locations of ultraviolet light units.

(2) Cleaning cycles and methods of the quartz sleeves and housing.

Chemical Disinfection	**(N/A)**	**105.2**	**Updated new table**	**State Does not Adopt**	**State Does not Adopt**	

N 105.2 Chemical Disinfection. Chemical biocide treatment shall be permitted to be used in accordance with the following:

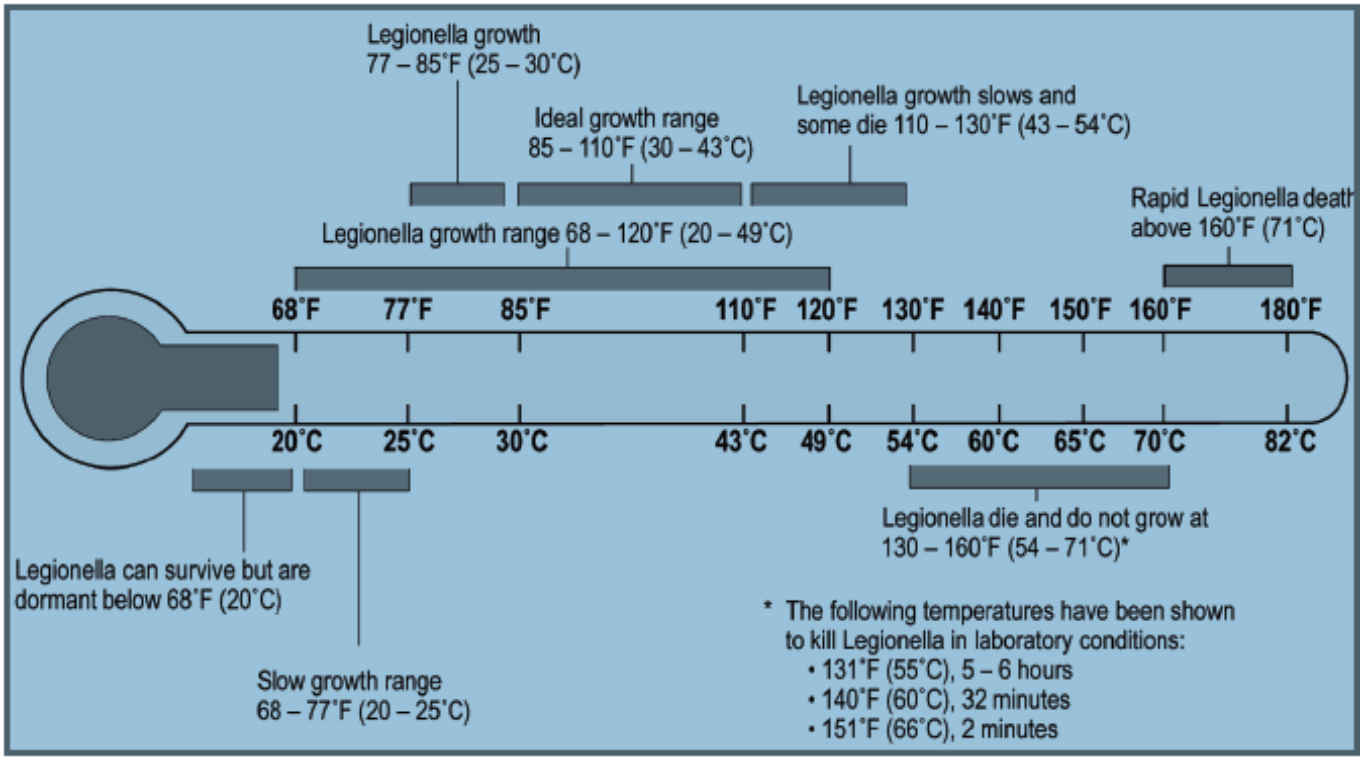
(1) Oxidizing biocides in accordance with manufacturer's guidelines, or as required by the Authority Having Jurisdiction.

(2) Non-oxidizing biocides in accordance with manufacturer's guidelines.

(3) Alternating the use of different types of biocides, dose, and frequency is recommended.

(4) These treatment methods can be used for continuous, online disinfection or shock treatment online or offline.

(5) Biocides intended for potable water applications shall listed in accordance with NSF/ANSI/CAN 60 and approved by the Authority Having Jurisdiction.



For SI units: °C = (°F-32)/1.8

* Temperature ranges reported are experimentally determined in a laboratory setting in the absence of a realistic microbial community. Legionella can survive for longer periods of time at temperatures higher and lower than the growth temperature ranges indicated due to changes in their metabolic state and/or protection from thermal disinfection within biofilm or amoeba host organisms.

	WATER TEMPERATURE RANGES AND SCALD POTENTIAL	(N/A)	TABLE N 104.2	New table with requirements for scalding requirements	State Does not Adopt	State Does not Adopt	

TABLE N 104.2
WATER TEMPERATURE RANGES AND SCALD POTENTIAL

WATER DESCRIPTION	TEMPERATURE (°F)	SCALD POTENTIAL*
Cold	<77	None
Tepid Cold	≥77 and <85	None
Tepid	≥85 and <110	None Hyperthermia is possible after long exposure in a bathtub or whirlpool tub.
Warm	≥110 and <120	Minimal At 111°F, greater than 220 minutes for second-degree burn.
Tempered Hot	≥120 and <130	Low At 120°F, greater than 5 minutes for second-degree burn, and 10 minutes to third-degree burn; At 124°F, 2 minutes for second-degree burn, and 4 minutes, 10 seconds for third-degree burn.
Hot	≥130 and <140	Moderate to High At 130°F, 18 seconds for second-degree burn, and 30 seconds for third-degree burn.
Very Hot	≥140 and <160	High At 140°F, 3 seconds for second-degree burn, and 5 seconds for third-degree burn; At 150°F, instant for second-degree burn, and less than 2 seconds for third-degree burn; At 158°F, instant for second-degree burn, and less than 1 second for third-degree burn.
Disinfecting Hot	≥160	Immediate

For SI units: °C = (°F-32)/1.8

* The infant, elderly, and infirmed have a higher potential for scalding at temperatures lower than listed.

	LEGIONELLA REMEDIATION ACTIONS DOMESTIC WATER SYSTEMS	**(N/A)**	**TABLE N 201.1**	**New table for requirements for domestic water systems**	**State Does not Adopt**	**State Does not Adopt**	

TABLE N 201.1
LEGIONELLA REMEDIATION ACTIONS DOMESTIC WATER SYSTEMS

PERCENTAGE OF POSITIVE LEGIONELLA TEST SITES	REMEDIATION ACTION[1]
< 30	• Maintain environmental assessment and Legionella monitoring in accordance with the water management plan.
≥ 30	• Immediately institute short-term control measures in accordance with the direction of a qualified professional,[2] and notify the Authority Having Jurisdiction, if required. • The water system shall be re-sampled no sooner than 7 days and no later than 4 weeks after disinfection to determine the efficacy of the treatment. • For persistent results, as determined by the Authority Having Jurisdiction, showing = 30 percent positive sites, long-term control measures shall be implemented in accordance with the direction of a qualified professional[2] and the Authority Having Jurisdiction. • Retreat and retest. If retest is = 30 percent positive, repeat short-term control measures. • With receipt of results < 30 percent positive, resume monitoring in accordance with the water management plan. • For persistent results, as determined by the Authority Having Jurisdiction, showing = 30 percent positive sites, long-term control measures shall be implemented in accordance with the direction of a qualified professional[2] and the Authority Having Jurisdiction.

Notes:
[1] In the event that one or more cases of legionellosis are, or may be, associated with the facility, the sampling interpretation shall be in accordance with the Authority Having Jurisdiction.
[2] Control measures shall be included in the water management plan.

New Appendices				
New Appendix O **Non-Sewered Sanitation Systems**	This new appendix covers the essential considerations when a non-sewered sanitation system (NSSS) is installed in a building. Designed for operation without a sewer connection and, in many cases, without a dedicated water supply, NSSSs are anticipated to meet critical public health needs in areas with limited water and wastewater infrastructure, water supply constraints, and/or unfavorable soils for traditional on-site disposal methods. Certain key protections, such as backflow prevention, proper ventilation of combustion-based units, and proper location of storage tanks external to the unit, are each specified in the new appendix	Do not adopt/conflicts with RCW 19.27.031 and local health jurisdiction		

New Appendix Q **Indoor Horticultural Facilities**	The UPC Indoor Horticulture Facilities Task Group has captured important minimum requirements that do not conflict with Federal Regulations and will ensure that local laws and guidelines are followed for the protection of the public. It was important to identify the different categories of “horticulture facilities” as they exist in current federal laws. This will minimize confusion and make the language standard throughout the industry. Just as important also is to identify the occupancy type to determine required toilet facilities. Water sources permitted for indoor horticulture facilities were identified with provisions to protect the potable water supply. The language pertaining to water sources was based on research of existing sources such as technical research documents, standards, local laws, and Federal Regulation.	Do not adopt statewide Can be adopted locally by AHJ or proposed through petition for code change		
New Appendix R **Tiny Houses**	Guidance for tiny house communities to provide safe and reliable plumbing systems by requiring appropriate listed fixtures that prevent contamination to the potable water system. Tiny homes are becoming more popular, and a need exists to address plumbing provisions specific to these structures since they are not considered manufactured homes, recreational vehicles, or campgrounds.			

New Appendix S **Onsite Stormwater Treatment Systems**	Appendix S for onsite water treatment systems includes comprehensive requirements related to the water quality, monitoring, design, construction, commissioning, alteration, repair, and operation requirements of stormwater systems for non-potable water reuse. These requirements for a properly designed system, together with appropriate construction, operation, and maintenance, will help ensure stormwater systems will be implemented safely and reliably.			