and lavatories are in the same room, have waste outlets not more than 30 inches apart, and have flood level rims at the same level. The ''P'' trap must be installed at the center fixture when three such fixtures are installed.

(3) *Prohibited traps.* A trap which depends for its seal upon concealed interior partitions shall not be used. Full ''S'' traps, bell traps, drum traps, crown-vented traps, and running traps are prohibited. Fixtures shall not be double-trapped.

(4) *Material and design.* Each trap shall be self-cleaning with a smooth and uniform interior waterway. Traps shall be manufactured of cast iron, cast brass, or drawn brass tubing of not less than No. 20 Brown and Sharpe gage, or approved or listed plastic, or other approved or listed material. Union joints for a trap shall be beaded to provide a shoulder for the union nut. Each trap shall have the manufacturer's name stamped or cast in the body of the trap, and each tubing trap shall show the gage of the tubing.

(5) *Trap seal.* Each ''P'' trap shall have a water seal of not less than 2 inches and not more than 4 inches and shall be set true to its seal.

(6) *Size.* Traps shall be not less than 1¼ inches in diameter. A trap shall not be larger than the waste pipe to which it is connected.

(7) *Location.* Each trap shall be located as close to its vent and to its fixture outlet as structural conditions will permit.

(8) *Length of tailpiece.* The vertical distance from a trap to the fixture outlet shall not exceed 24 inches.

(9) *Installation.* (i) *Grade of trap arm.* The piping between a ''P'' trap and the fixture tee or the vented waste line shall be graded ¼ inch per foot towards the vent and in no event shall have a slope greater than its diameter. The vent opening at fixture tees shall not be below the weir of the ''P'' trap outlet.

(ii) *Trap arm offset.* The piping between the ''P'' trap and vent may change direction or be offset horizontally with the equivalent of no more than 180 degrees total change in direction with a maximum of 90 degrees by any one fitting.

(iii) *Concealed traps.* Traps with mechanical joints shall be accessible for repair and inspection.

(iv) *Removability of traps, etc.* Traps shall be designed and installed so the ''U'' bend is removable without removing the strainers from the fixture. Continuous waste and tail pieces which are permanently attached to the ''U'' bend shall also be removable without removing the strainer from the fixture.

(b) *Cleanout openings*—(1) *Location of cleanout fittings.* (i) Cleanouts shall be installed if the drainage system cannot be cleaned through fixtures, drains, or vents. Cleanouts shall also be provided when fittings of more than 45 degrees are used to affect an offset except where long turn ells are used which provide sufficient ''sweep'' for cleaning.

(ii) A full size cleanout shall be installed at the upper end of any section of drain piping which does not have the required minimum slope of ¼ inch per foot grade.

(iii) A cleaning tool shall not be required to pass through more than 360 degrees of fittings, excluding removable ''P'' traps, to reach any part of the drainage system. Water closets may be removed for drainage system access.

(2) *Access to cleanouts.* Cleanouts shall be accessible through an unobstructed minimum clearance of 12 inches directly in front of the opening. Each cleanout fitting shall open in a direction opposite to the flow or at right angles to the pipe. Concealed cleanouts that are not provided with access covers shall be extended to a point above the floor or outside of the manufactured home, with pipe and fittings installed, as required, for drainage piping without sags and pockets.

(3) *Material.* Plugs and caps shall be brass or approved or listed plastic, with screw pipe threads.

(4) *Design.* Cleanout plugs shall have raised heads except that plugs at floor level shall have counter-sunk slots.

[40 FR 58752, Dec. 18, 1975. Redesignated at 44 FR 20679, Apr. 6, 1979, as amended at 58 FR 55014, Oct. 25, 1993; 78 FR 73985, Dec. 9, 2013]

§ 3280.607 Plumbing fixtures.

(a) *General requirements*—(1) *Quality of fixtures.* Plumbing fixtures shall have smooth impervious surfaces, be free

from defects and concealed fouling surfaces, be capable of resisting road shock and vibration, and shall conform in quality and design to listed standards. Fixtures shall be permanently marked with the manufacturer's name or trademark.

(2) *Strainers.* The waste outlet of all plumbing fixtures, other than toilets, shall be equipped with a drain fitting that will provide an adequate unobstructed waterway.

(3) *Fixture Connections.* Fixture tailpieces and continuous wastes in exposed or accessible locations must be of not less than No. 20 Brown and Sharpe gauge seamless drawn-brass tubing or other approved pipe or tubing materials. Inaccessible fixture connections must be constructed according to the requirements for drainage piping. The diameter of each fixture tailpiece, continuous waste, or waste and overflow must be not less than:

(i) 1½ inches, for sinks of two or more compartments, dishwashers, clothes washing machines, laundry tubs, bathtubs, and showers; and

(ii) Not less than 1¼ inches for lavatories or single compartment sinks having a 2-inch maximum drain opening.

(4) *Concealed connections.* Concealed slip joint connections shall be provided with adequately sized unobstructed access panels and shall be accessible for inspection and repair.

(5) *Directional fitting.* An approved or listed ''Y'' or other directional-type branch fitting shall be installed in every tailpiece or continuous waste that receives the discharge from food waste disposal units, dishwashing, or other force-discharge fixture or appliance. (See also § 3280.607(b)(4)(ii).)

(6) *Water conservation.* All lavatory faucets, showerheads, and sink faucets must not exceed a flow of 2.5 gallons per minute (gpm).

(b) *Fixtures*—(1) *Spacing.* All plumbing fixtures shall be so installed with regard to spacing as to be reasonably accessible for their intended use.

(2) *Water closets.* (i) Water closets shall be designed and manufactured according to approved or listed standards and shall be equipped with a water flushing device capable of adequately flushing and cleaning the bowl at each operation of the flushing mechanism.

(ii) Water closet flushing devices shall be designed to replace the water seal in the bowl after each operation. Flush valves, flushometer valves, flushometer tanks and ballcocks shall operate automatically to shut off at the end of each flush or when the tank is filled to operating capacity.

(iii) All water closets must be low consumption (1.6 gallons per flush (gpf)) closets.

(iv) Flush tanks shall be fitted with an overflow pipe large enough to prevent flooding at the maximum flow rate of the ball cock. Overflow pipes shall discharge into the toilet, through the tank.

(v) *Floor Connection.* Water closets must be securely bolted to an approved flange or other approved fitting that is secured to the floor by means of corrosion-resistant screws. The bolts must be of solid brass or other corrosion-resistant material and must not be less than ¼ inch in diameter. A watertight seal must be made between the water closet and flange or other approved fitting by use of a gasket, sealing compound, or listed connector device.

(vi) *Floor connection.* Water closets shall be securely bolted to an approved flange or other approved fitting which is secured to the floor by means of corrosion-resistant screws. The bolts shall be of solid brass or other corrosion-resistant material and shall be not less than one-fourth inch in diameter. A watertight seal shall be made between the water closet and flange or other approved fitting by use of a gasket or sealing compound.

(3) *Shower compartment.* (i) Each compartment stall shall be provided with an approved watertight receptor with sides and back extending at least 1 inch above the finished dam or threshold. In no case shall the depth of a shower receptor be less than 2 inches or more than 9 inches measured from the top of the finished dam or threshold to the top of the drain. The wall area shall be constructed of smooth, noncorrosive, and nonabsorbent waterproof materials to a height not less than 6 feet above the bathroom floor level. Such walls shall form a watertight joint with each other and with the bathtub, receptor or

shower floor. The floor of the compartment shall slope uniformly to the drain at not less than one-fourth nor more than one-half inch per foot.

(ii) The joint around the drain connection shall be made watertight by a flange, clamping ring, or other approved listed means.

(iii) Shower doors and tub and shower enclosures shall be constructed so as to be waterproof and, if glazed, glazing shall comply with the Standard for Safety Glazing Materials used in Buildings—Safety Performance Specifications and Methods of Test, ANSI Z97.1–2004 (incorporated by reference, see § 3280.4).

(iv) Prefabricated plumbing fixtures shall be approved or listed.

(v) Shower and tub-shower combination valves must be balanced pressure, thermostatic, or combination mixing valves that conform to the requirements of ASSE 1016–2005, Performance Requirements for Automatic Compensating Valves for Individual Shower and Tub/Shower Combinations (incorporated by reference, see § 3280.4). Such valves must be equipped with handle position stops that are adjustable in accordance with the valve manufacturer's instructions and to a maximum setting of 120 °F. Hot water supplied to bathtubs and whirlpool bathtubs are to be limited to a temperature of not greater than 120 °F by a water temperature limiting device that conforms to the requirements of ASSE 1070–2004, Performance Requirements for Water Temperature Limiting Devices (incorporated by reference, see § 3280.4).

(4) *Dishwashing machines.* (i) A dishwashing machine must discharge its waste through a fixed air gap installed above the machine, through a high loop as specified by the dishwashing machine manufacturer, or into an open standpipe receptor with a height greater than the washing compartment of the machine. When a standpipe is used, it must be at least 18 inches, but not more than 30 inches, above the trap weir. The drain connections from the air gap or high loop are permitted to connect to an individual trap to a directional fitting installed in the sink tailpiece or to an opening provided on the inlet side of a food waste disposal unit.

(ii) Drain from a dishwashing machine shall not be connected to a sink tailpiece, continuous waste line, or trap on the discharge side of a food waste disposal unit.

(5) *Clothes washing machines.* (i) Clothes washing machines shall drain either into a properly vented trap, into a laundry tub tailpiece with watertight connections, into an open standpipe receptor, or over the rim of a laundry tub.

(ii) Standpipes must be either 1½ inch diameter minimum nominal iron pipe size, 1½ inch diameter nominal brass tubing of not less than No. 20 Brown and Sharp gauge, or 1½ inch diameter approved plastic materials. Receptors must discharge into a vented trap or must be connected to a laundry tub appliance by means of an approved or listed directional fitting. Each standpipe must extend not less than 18 inches or more than 42 inches above its trap and must terminate in an accessible location no lower than the top of the clothes washing machine. A removable, tight-fitting cap or plug must be installed on the standpipe when the clothes washer is not provided.

(iii) Clothes washing machine drain shall not be connected to the tailpiece, continuous waste, or trap of any sink or dishwashing machine.

(c) *Installation*—(1) *Access.* Each plumbing fixture and standpipe receptor shall be located and installed in a manner to be accessible for usage, cleaning, repair and replacement. Access to diverter valves and other connections from the fixture hardware is not required.

(2) *Alignment.* Fixtures shall be set level and in true alignment with adjacent walls. Where practical, piping from fixtures shall extend to nearest wall.

(3) *Brackets.* Wall-hung fixtures shall be rigidly attached to walls by metal brackets or supports without any strain being transmitted to the piping connections. Flush tanks shall be securely fastened to toilets or to the wall with corrosive-resistant materials.

(4) *Tub supports.* Bathtub rims at wall shall be supported on metal hangers or on end-grain wood blocking attached to the wall unless otherwise recommended by the manufacturer of the tub.

(5) *Fixture fittings.* Faucets and diverters shall be installed so that the flow of hot water from the fittings corresponds to the left-hand side of the fitting.

(6) *Hydromassage bathtub*—(i) *Access panel.* A door or panel of sufficient size must be installed to provide access to the pump for repair or replacement.

(ii) *Piping drainage.* The circulation pump must be accessibly located above the crown weir of the trap. The pump drain line must be properly sloped to drain the volute after fixture use.

(iii) *Piping.* Hydromassage bathtub circulation piping must be installed to be self-draining.

(iv) *Electrical.* Wiring must comply with Articles 680.70, 680.71, and 680.72 of the National Electrical Code, NFPA No. 70–2005.

[40 FR 58752, Dec. 18, 1975, as amended at 42 FR 961, Jan. 4, 1977. Redesignated at 44 FR 20679, Apr. 6, 1979, as amended at 52 FR 4586, Feb. 12, 1987; 58 FR 55014, Oct. 25, 1993; 70 FR 72049, Nov. 30, 2005; 71 FR 19639, Apr. 17, 2006; 78 FR 73985, Dec. 9, 2013; 79 FR 31863, June 3, 2014]

EFFECTIVE DATE NOTE: At 89 FR 75750, Sept. 16, 2024, § 3280.607 was amended, effective Mar. 17, 2025. At 90 FR 10593, Feb. 25, 2025, the effective date was delayed until Sept. 15, 2025.

§ 3280.608 Hangers and supports.

(a) *Strains and stresses.* Piping in a plumbing system shall be installed without undue strains and stresses, and provision shall be made for expansion, contraction, and structural settlement.

(b) *Piping supports.* Piping must be secured at sufficiently close intervals to keep the pipe in alignment and carry the weight of the pipe and contents. Unless otherwise stated in the standards incorporated by reference for specific materials at § 3280.604(a), or unless specified by the pipe manufacturer, horizontal plastic drainage piping must be supported at intervals not to exceed 4 feet and horizontal plastic water piping must be supported at intervals not to exceed 3 feet. Vertical drainage and water piping must be supported at each story height.

(c) *Hangers and anchors.* (1) Hangers and anchors shall be of sufficient strength to support their proportional share of the pipe alignments and prevent rattling.

(2) Piping shall be securely attached to the structure by hangers, clamps, or brackets which provide protection against motion, vibration, road shock, or torque in the chassis.

(3) Hangers and straps supporting plastic pipe shall not compress, distort, cut or abrade the piping and shall allow free movement of the pipe.

[40 FR 58752, Dec. 18, 1975, as amended at 86 FR 2521, Jan. 12, 2021]

§ 3280.609 Water distribution systems.

(a) *Water supply*—(1) *Supply piping.* Piping systems shall be sized to provide an adequate quantity of water to each plumbing fixture at a flow rate sufficient to keep the fixture in a clean and sanitary condition without any danger of backflow or siphonage. (See table in § 3280.609(f)(1)). The manufacturer shall include in his written installation instructions that the manufactured home has been designed for an inlet water pressure of 80 psi, and a statement that when the manufactured home is to be installed in areas where the water pressure exceeds 80 psi, a pressure reducing valve should be installed.

(2) *Hot water supply.* Each manufactured home equipped with a kitchen sink, and bathtub and/or shower shall be provided with a hot water supply system including a listed water heater.

(b) *Water outlets and supply connections*—(1) *Water connection.* Each manufactured home with a water distribution system shall be equipped with a ¾ inch threaded inlet connection. This connection shall be tagged or marked ''Fresh Water Connection'' (or marked ''Fresh Water Fill''). A matching cap or plug shall be provided to seal the water inlet when it is not in use, and shall be permanently attached to the manufactured home or water supply piping. When a master cold water shutoff full flow valve is not installed on the main feeder line in an accessible location, the manufacturer's installation instructions shall indicate that such a valve is to be installed in the water supply line adjacent to the home. When a manufactured home includes expandable rooms or is composed of two or