

**Revisions to Chapter 6
of the 2018 International
Plumbing Code**

WATER SUPPLY AND DISTRIBUTION

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Minimum Standard Construction Codes in Georgia

While you are reading and studying these classes on construction codes in Georgia it is important to understand what Georgia says about the codes. Codes are law and are to be enforced as such.

From the early 1960s until 1991 there were no statewide construction codes. It was entirely up to a local government to decide which codes they would enforce on construction projects in their jurisdiction. This caused a lot of confusion in the construction industry. The state decided to remedy the situation by adopting statewide Minimum Standard Construction Codes so no matter where you worked in the state you would be required to meet the same level of quality and standard on all construction projects. This bill passed and became law in 1991 and was known as “Uniform Codes Act”. It set up eight mandatory codes that covered all phases of construction and set the minimum standards for all work performed. An additional six permissive codes were also adopted that cover existing buildings and other issues. The Georgia Department of Community Affairs is the state agency that manages the Code program.

While codes are state laws, the state delegated code enforcement to the local governments. It is required that they adopt administrative procedures on how they will enforce codes and declare which codes they will enforce. As with many state laws. If the local jurisdiction does not enforce codes, the person installing a plumbing, electrical or heating system or building a structure must still meet these minimum standards. If a person is found guilty of not complying with these requirements, they will be held responsible by the courts. The next slide shows the current Minimum Standard codes for Georgia.

2020 State Adopted Mandatory Construction Codes

- 2018 International Building Code (IBC)
 - 2018 International Residential Building Code (IRC)
 - 2018 International Plumbing Code (IPC)
 - 2018 International Mechanical Code (IMC)
 - 2018 International Fuel Gas Code (IFGC)
 - 2018 International Fire Code (IFC)
 - 2015 International Energy Code (IECC)
 - 2017 National Electrical Code. (NEC)
 - 2018 International Swimming Pool and Spa Code (IPSC)
- Except for the National Electrical Code, all codes listed above have Georgia Amendments which change the requirements of the code. Amendments must be used in conjunction with the code to determine compliance of work performed.
- The Latest edition of the Code are adopted by the state every six years. Amendments can be adopted yearly
- Amendments can be found on the DCA: website dca.ga.gov

Revisions to the 2018 International Plumbing Code

Chapter 6

WATER SUPPLY AND DISTRIBUTION

(Water Piping)

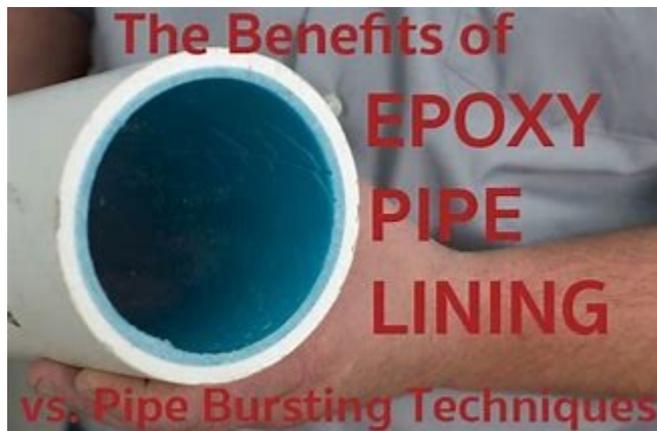
Revision to 2018 IPC Chapter 6

Chapter 6 of the International Plumbing Code (IPC) covers all water piping used in a plumbing system. The minimum standards required on plumbing pipes deal with items such as piping material, pipe size, joints, temperature and pressure ratings required in the application for which the pipe is used..

It gives minimum standards for the service piping which carries the water from the source such as a individual well or meter connected to a public water system. It also covers water distribution system which takes the water delivered to the building and distributes it to the various fixtures connected to the system. Other areas covered are requirements on hot water delivered to fixtures, backflow protection of the potable water system and requirements on systems carrying non-potable water.

Revision to 2018 IPC Chapter 6

601.5 Rehabilitation of Piping Systems. The 2018 IPC added the rehabilitation of water piping by use of an epoxy lining. The system is not new as it is been used in the plumbing industry for over 20 years. Normally it is used where the replacement of the water piping is either too costly or impractical. For example water piping under a slab in a hospital, restaurant or office building might be too expensive to tear out and replace because of loss of use of the building. There are different methods used to coat the interior the pipes with epoxy. One uses a mopping system that uses a roller system which applies the coating directly to the pipe. The other fills the pipe with epoxy and then it is evacuated after the outer epoxy layer hardens. Epoxy lining can be used for almost all types of piping.

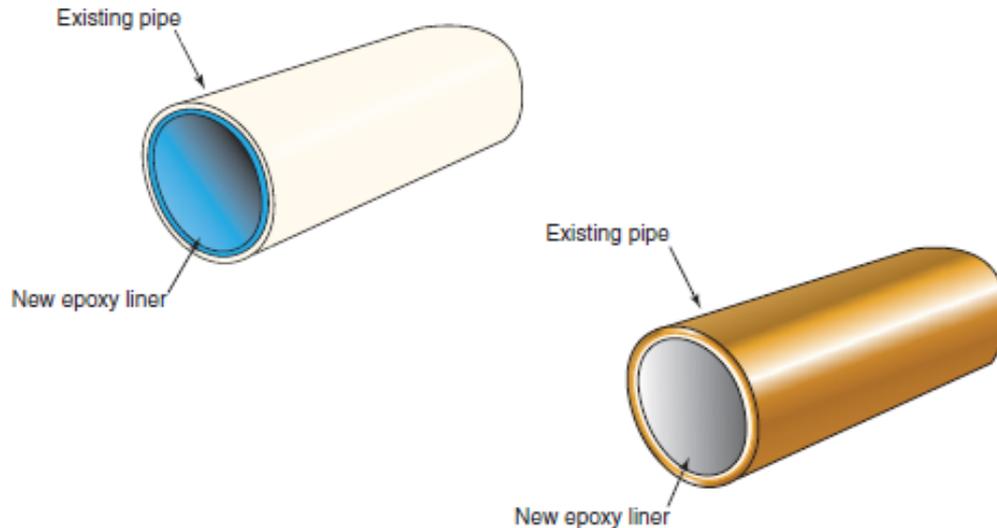


CODE REVISION TO THE 2018 IPC

601.5 Rehabilitation of Piping Systems by Internal Lining

An epoxy lining system standard has been added to the code.

601.5 Rehabilitation of Piping Systems. Where pressure piping systems are rehabilitated using an epoxy lining system, such lining system shall comply with ASTM F 2831.



Rehabilitation of existing piping with an epoxy lining system

Revision to 2018 IPC Chapter 6

602.31 Sources. This section falls under the standards for water well construction. The revision references the National Ground Water Association (NGWA-01 standard). First it is important to understand that the state of Georgia does not use the IPC as a standard for well drilling and maintenance operations. Georgia has its own set of guidelines concerning these activities that falls under Georgia's Environmental Protection Division (EPD). Anyone wishing to drill, repair or maintain wells must obtain certification from their department.

Attention to plumbers, your plumbing license does not allow you to drill or repair wells including pump replacement. The Georgia Environmental Protection Division will issue citations if you are caught doing this work without a well driller's or pump changing certification.

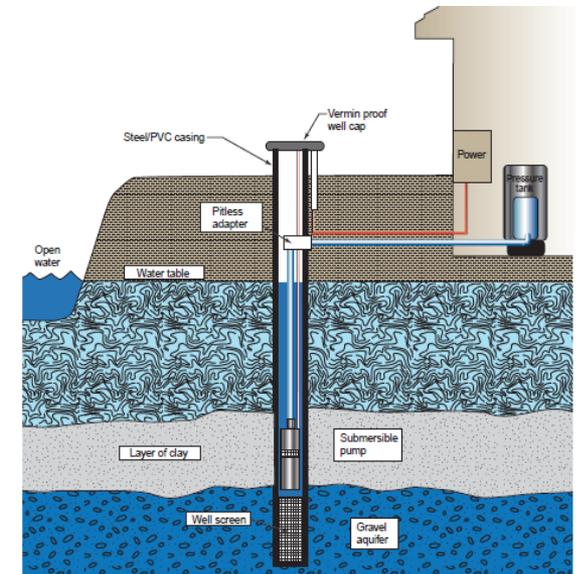
CODE REVISION TO THE 2018 IPC

602.3.1 Standard for Water Well Construction

Where local regulations for the construction of water wells do not exist or are lacking in details, the code requires well construction to comply with Standard NGWA-01.

602.3.1 Sources. Dependent on geological and soil conditions and the amount of rainfall, individual water supplies are of the following types: drilled well, driven well, dug well, bored well, spring, stream or cistern. Surface bodies of water and land cisterns shall not be sources of individual water supply unless properly treated by *approved* means to prevent contamination. Individual water supplies shall be constructed and installed in accordance with the applicable state and local laws. Where such laws do not address all of the requirements set forth in NGWA-01, individual water supplies shall comply with NGWA-01 for those requirements not addressed by state and local laws.

The State of Georgia has its own laws covering the drilling and repair of wells.



Revision to 2018 IPC Chapter 6

605.2.1 Lead Content of Drinking Water Pipe and Fittings. In 2011 the EPA reduced the amount of lead that could be incorporated in metals used to manufacture plumbing pipes, fittings and valves which supplied water for drinking or cooking. This revision was due to a change in the Federal Safe Drinking Water Act (SDWA). The law lowered the amount of lead from 8% to 0.25%, it was passed and signed by the federal government in 2011. It became effective January 4, 2014 and is enforced by the U. S. Environmental Protection Division (EPA.). The EPA later transferred enforcement powers to the states. Currently this law is enforced in Georgia by its Environment Protection Division (EPD).

Under this federal law piping, fittings and valves that supply water not used for human consumption can still have a maximum of 8% lead content. This would mean piping to a shower or a washing machine would not need to use leadfree pipe and fittings.

Attention to Plumbers. The EPD also enforces the Federal law on RRR program dealing with renovations remodeling and repair work performed on buildings built prior to 1978. The law states that before work is started on these structures, a test for the presence of lead must be performed. If lead is detected construction must follow the guidelines set forth under this law for dealing with lead. At least one person on every contractor's crew must have attended the certification class and received a "**Lead Cards**". Information on this program and classes can be found at epd.ga.gov

CODE REVISION TO THE 2018 IPC

605.2.1 Lead Content of Components Conveying Drinking Water

The code now has a more stringent limitation for lead content in pipe, pipe fittings, joints, valves, faucets and fixture fittings that convey water used for drinking and cooking.

605.2.1 Lead Content of Drinking Water Pipe and Fittings. Pipe, pipe fittings, joints, valves, faucets and fixture fittings utilized to supply water for drinking or cooking purposes shall comply with NSF 372 and shall have a weighted average lead content of **0.25 percent or less**.



Low-lead third-party certification

Revision to 2018 IPC Chapter 6

Table 605.3, 605.4 and Sections 605.16 Water Service and Water Distribution Piping. A new type piping was listed on the tables and is acceptable for both water service and water distribution piping. Chlorinated Polyvinyl Chloride/Aluminum/Chlorinated Polyvinyl Chloride (CPVC/Al/CPVC). This pipe has an inner layer of CPVC, a layer of aluminum and then outer layer of CPVC. This piping has been used in hydronic and other heating systems is now listed for both water distribution and service piping.

New piping materials are being introduced into the plumbing industry every year. Most of these are new plastics which have been developed. Generally these are introduced into the European market before coming to the United States. This is because many of the companies developing these products are located overseas. This does work to our advantage because these products are used in other countries for a couple of years before they are introduced into our market. It gives us a chance to see how they perform.

CODE REVISION TO THE 2018 IPC

Tables 605.3 and 605.4, Section 605.16 CPVC/AL/CPVC Water Service and Water Distribution Piping

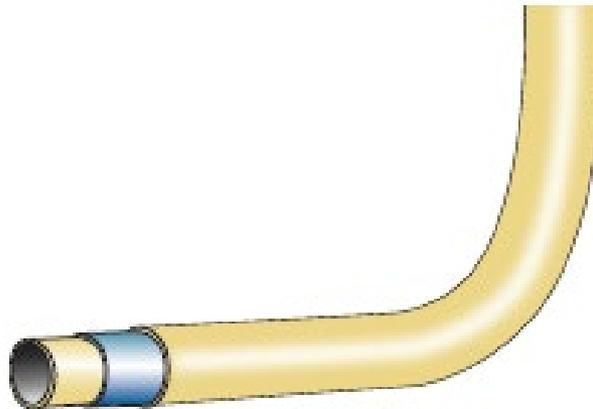
A new type of CPVC pipe has been added to Chapter 6.

TABLE 605.3 Water Service Pipe

Material	Standard
<u>Chlorinated polyvinyl chloride/aluminum/ chlorinated polyvinyl chloride (CPVC/AL/CPVC)</u>	<u>ASTM F2855</u>

TABLE 605.4 Water Distribution Pipe

Material	Standard
<u>Chlorinated polyvinyl chloride/aluminum/chlorinated polyvinyl chloride (CPVC/AL/CPVC)</u>	<u>ASTM F2855</u>



CPVC-AL-CPVC pipe

Revision to 2018 IPC Chapter 6

Tables 605.3, 702.2, 702.3, 704.2 1102.4 and 1102.5. These tables listed piping listed and approved to be used as water and drainage piping. Asbestos cement piping has been used in plumbing systems for over 50 years. While asbestos is considered a dangerous material, it was never considered hazardous as long as it was wet. With the development of new and better materials asbestos cement piping has been removed from the code and no longer allowed for use in plumbing systems. In the past six years it is the second type piping to be deleted from the code the other being polybutylene.

Note to Plumbers. A class action suit have been filed against the manufacturer of Durapex piping. This is a pex tubing that was manufactured by NIBCO. They purchased this line from Consolidated Plumbing Industry (CPI) around the year 2000. Due to a manufacturing defect. the piping suffers from oxidation which causes the pipe to become brittle and crack. Customers who have this product in their home and must have it replaced can become part of the class action suit by going to classaction.org/plumbing.

CODE REVISION TO THE 2018 IPC

Tables 605.3, 702.2, 702.3, 702.4, 1102.4, 1102.5

References to asbestos cement pipe and applicable referenced standards have been removed from the code.



Revision to 2018 IPC Chapter 6

Table 605.6, Sections 605.14.3, 605.14.5, 605.18.3, 605.22.2, 605.23.3 Press Connect Joints. Press connect joints became widely used in the plumbing industry starting in 2003. Although considered relatively new they have been used in multiple industries since the early 80s. Today it one of the more popular methods of installing and repairing piping systems for both water and gas. The code considers this connection method to be a mechanical joint and requires the installation of such fittings to be done per manufacturer's instructions.

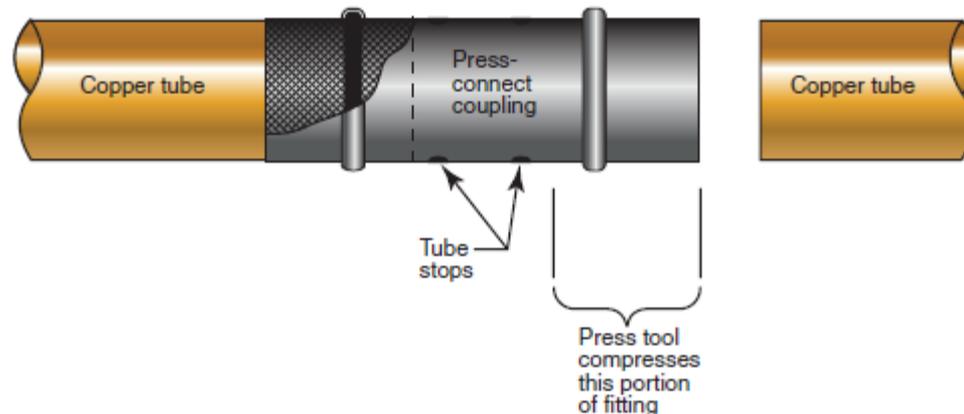
Note to plumbers! These fittings are approved for use in both water piping systems and gas piping. It is important to remember that the fittings are not interchangeable, and fittings approved for water piping cannot be used for gas and vice versa. The O-ring used to seal water piping is of a different material than the one used for gas piping. A new 10 Gage Carbon steel gas piping has been approved by the gas industry and the press connect fittings are approved for use with this piping.

CODE REVISION TO THE 2018 IPC

Table 605.5, Sections 605.14.3, 605.14.5, 605.18.3, 605.22.2, 605.23.3 Groove and Shouldered Mechanical Joints and Press-Connect Fittings

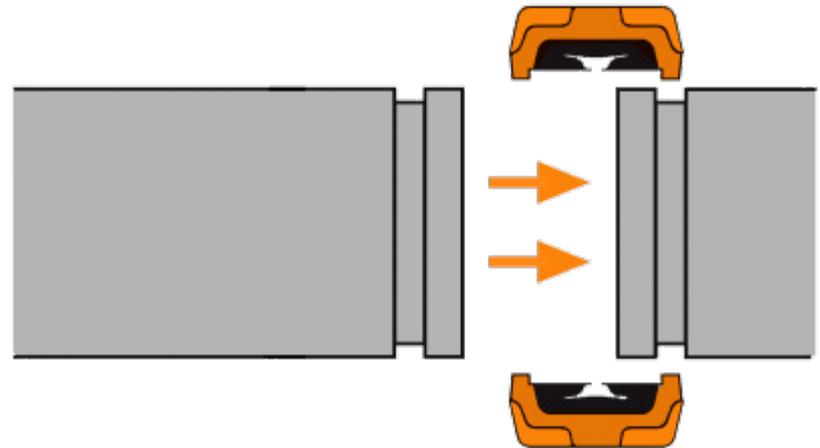
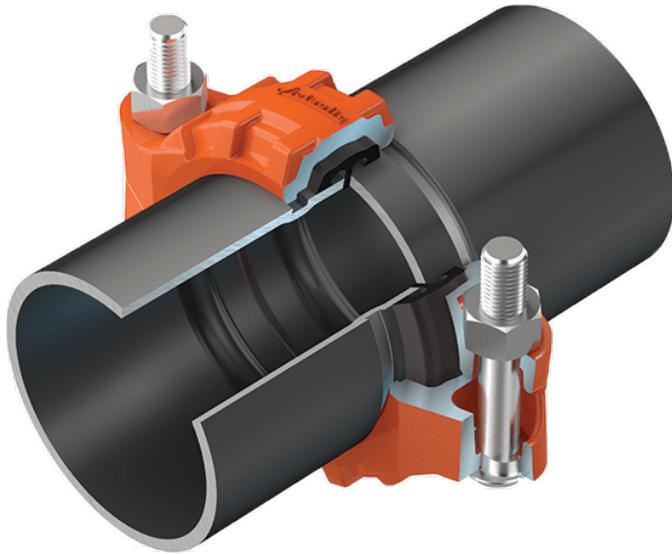
Two standards for groove and shouldered mechanical joints and a press-connect fitting standard have been added to the code.

605.14.5 Press-connect Joints. Press-connect joints shall conform to one of the standards listed in Table 605.5. Press-connect joints shall be installed in accordance with the manufacturer's instructions. Cut tube ends shall be reamed to the full inside diameter of the tube end. Joint surfaces shall be cleaned. The tube shall be fully inserted into the press-connect fitting. Press-connect joints shall be pressed with a tool certified by the manufacturer. Example code section addition for grooved and shouldered mechanical joints:



Revision to 2018 IPC Chapter 6

Table 605.5, Sections 605.14.3, 605.14.5, 605.18.3, 605.22.2, and 605.23.3. Grooved and Shouldered Mechanical Joints. The joints are used mainly in larger pipes water mains and in larger water distribution piping. The code is not referenced this joining method and early additions although it is been used in the plumbing industry for many years. As it is considered a mechanical joint it is required to be installed per manufacturer's instructions.



CODE REVISION TO THE 2018 IPC

Table 605.5, Sections 605.14.3, 605.14.5, 605.18.3, 605.22.2, 605.23.3 Groove and Shouldered Mechanical Joints and Press-Connect Fittings

Two standards for groove and shouldered mechanical joints and a press-connect fitting standard have been added to the code.

605.18.3 Grooved and Shouldered Mechanical Joints. Grooved and shouldered mechanical joints shall comply with ASTM F1476, shall be made with an approved elastomeric seal and shall be installed in accordance with the manufacturer's instructions. Such joints shall be exposed or concealed.



Revision to 2018 IPC Chapter 6

605.7 Valves. The revision of this section requires that any valves that supplies water for drinking or cooking him shall meet the National Sanitary Foundation Standard 61 (NSF 61). NSF 61 regulates the purity standards for drinking water. It restricts certain materials and lead content in the manufacture of piping, fittings and valves that will be installed in the systems. The obvious fact in regards to this requirement would mean that any shut off valve for a building meant for human occupancy would be required to meet NSF 61. Shut off valves washing machines, hose bibbs and toilets would not need to meet the standard.

NSF/ANSI Standard 61 (NSF-61) is a set of national standards that relates to [water treatment](#) and establishes stringent requirements for the control of equipment that comes in contact with either potable water or products that support the production of potable water. The tests vary from a basic cold water test using water at different pH levels, to the more challenging chemical certification. In all cases the equipment is tested before and after exposure to a given fluid to determine whether anything has been leached out or extracted from the equipment. NSF-61 was developed by the National Sanitation Foundation (NSF), a global independent public health and environmental organization, and the American National Standards Institute (ANSI), which oversees the consensus for developing standards for manufacturing and procedures in the United States.

CODE REVISION TO THE 2018 IPC

605.7, Table 605.7 Valve Compliance to Standards

All types of valves that supply drinking water must now comply with NSF 61. Standards for numerous types of valves have been added to the code.

605.7 Valves. All valves shall be of an approved type and compatible with the type of piping material installed in the system. Ball valves, gate valves, butterfly valves, globe valves and plug. Valves intended to supply drinking water shall meet the requirements of NSF 61. Valves shall conform to one of the standards listed in Table 605.7 or shall be approved.



Revision to 2018 IPC Chapter 6

605.13.7, 605.14.4 and 605.16.3 Push Fit Joints. While there are a number of manufacturers for the push type joints, the most commonly known brand are Sharp Bite fittings. While these fittings were introduced to the plumbing industry in the early 2000's they are not new and were used in other industries years earlier. Back then they were called grip ring fittings or grip lock fittings. They employ a combination of a grip ring that locks into the piping material to hold it in place and a elastomeric O-ring or a rubber sleeves to seal the joint. These fall under the definition of a mechanical joints and the plumbing code required it to be installed per manufacturer's instructions.

Push-fit fittings are becoming available in home improvement centers and hardware stores. They are popular mostly because people find them easy to use. Compared to solvent-cement joints on CPVC and PVC, or sweat-soldering copper pipes with a torch, push-fit fittings are easy to use and require no dangerous torches or solvents. The fittings are engineered with a ring of metal spurs inside the fittings that tightly grip the pipes when they are inserted into the fitting sockets. Neoprene O-rings inside the fittings form tight, waterproof seals against the pipes. Studies have shown these to be dependable connections appropriate for any pipe unions, even those that are hidden inside finished walls and ceilings.

CODE REVISION TO THE 2018 IPC

605.13.7, 605.14.4, 605.16.3 Push-fit Joints for Copper, CPVC, PEX and PE-RT Tubing

The push-fit method of joining was not explicitly described in the “types of joints” sections for various piping materials. This change makes the acceptability of this type of mechanical joint more clear.

605.13.7, 605.14.4 and 605.16.3 Push-fit joints. Push-fit joints shall conform to ASSE 1061 and shall be installed in accordance with the manufacturer’s instructions.



Revision to 2018 IPC Chapter 6

607.2.1 Circulation System and Heat Trace Systems for Maintaining Heated Water Temperature and Distribution Systems. If a fixture is located more than 50 feet of developed pipe length from the hot water source the plumbing code requires steps be taken to deliver the hot water to the fixture faster. This can be done by shortening the distance between the heater and the fixture or a recirculation system can be installed that will move the hot water closer. Provisions for the systems are found in the international energy conservation code. In order to make these systems more energy-efficient requirements were revised so that when there was no demand for hot water or when the temperature of the water in the supply line met thermostat setting the circulation pumps were turned off. Requirements are the same whether the system is located in a commercial or residential building. The sections of the energy code referenced here give more information on the installation of the systems.

Not to plumbers! Sections R403.5.3 and C404.4 of the Energy Code require hot water piping to be insulated with a minimum R-3 insulation. Both sections require all hot water piping $\frac{3}{4}$ inch and larger to be insulated. Smaller pipes may be required to be insulated if outside the building envelope.

CODE REVISION TO THE 2018 IPC

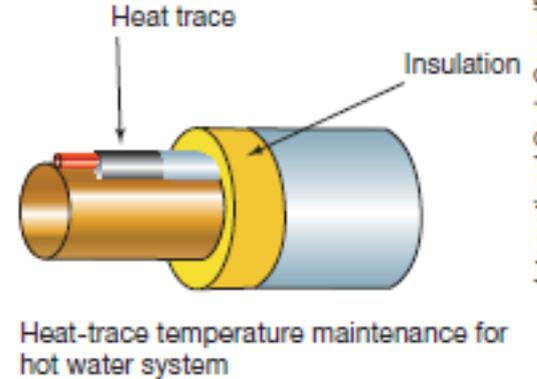
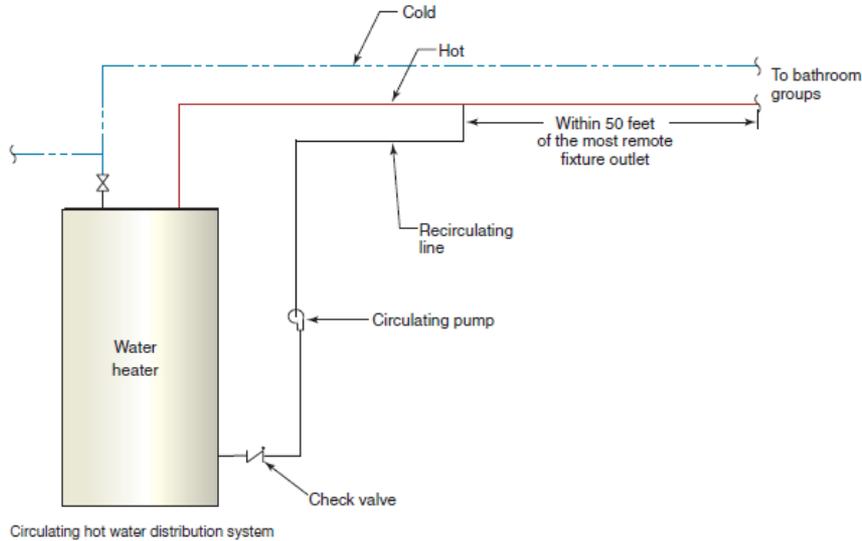
607.2.1 Hot Water Temperature Maintenance System Controls

Changes in the commercial portion of the *International Energy Conservation Code (IECC)* caused changes in this IECC-controlled section of the IPC. This section requires temperature maintenance systems (for maintaining hot water temperature near plumbing fixtures) to be automatically turned off when there is not a demand for hot water. The code change also makes it clear that the Section 607.2.1 and its subsection 607.2.1.1 do not apply to Group R2, R3 and R4 occupancies that are 3 stories or less in height above grade plane, because those occupancies are covered by the residential portion of the IECC.

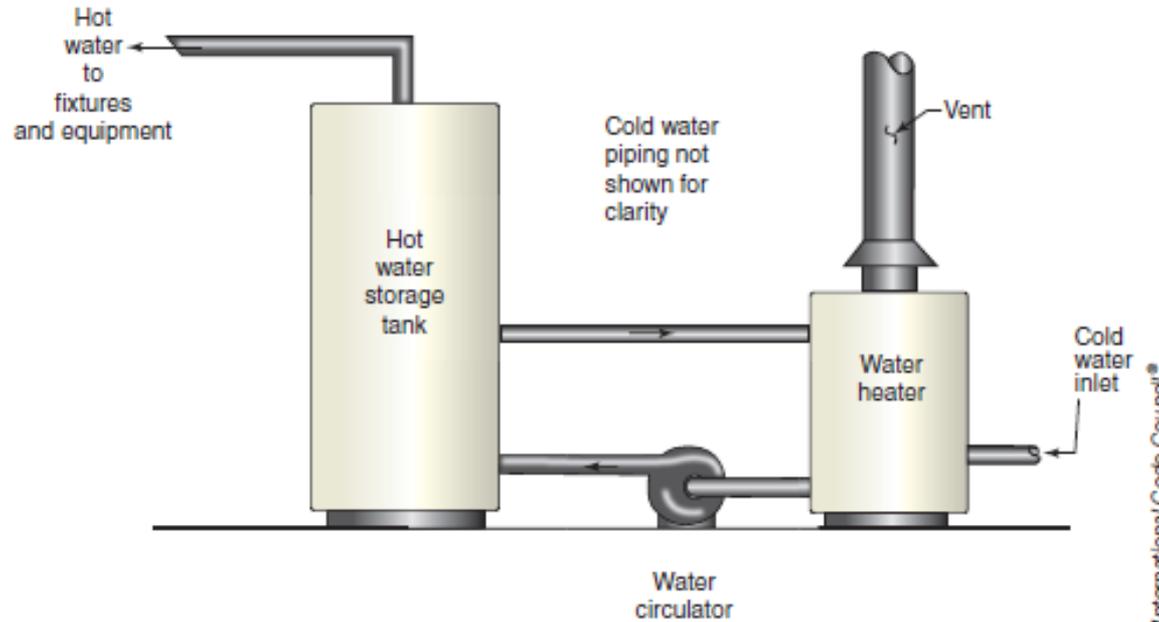
607.2.1 Hot Water Temperature Maintenance System Controls. For hot water distribution system circulating pumps or and heat trace, the pumps and heat trace shall be arranged to be turned off either automatically when there is no hot water demand. Ready access shall be provided to the operating controls. This section and Section 607.2.1.1 shall not apply to hot water temperature maintenance system controls in Group R2, R3 and R4 occupancies that are 3 stories or less in height above grade plane. Hot water temperature maintenance system controls in Group R2, R3 and R4 occupancies that are 3 stories or less in height above grade plane shall be in accordance with Section R403.4.1 of the *International Energy Conservation Code*.

CODE REVISION TO THE 2018 IPC

607.2.1 Hot Water Temperature Maintenance System Controls



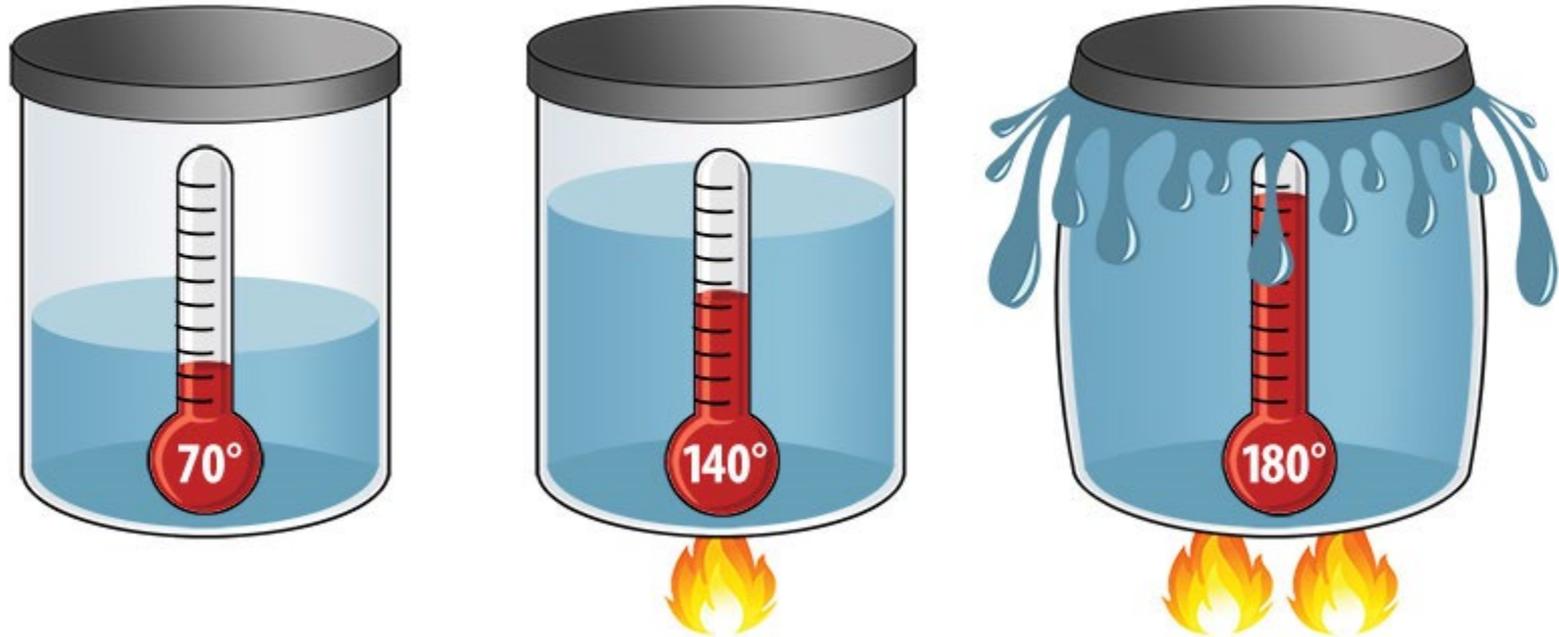
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Revision to 2018 IPC Chapter 6

607.3 Thermal Expansion Control. In a 2015 plumbing code, requirements were changed in this section which made a bladder tank the only acceptable device for controlling thermal expansion. You were no longer allowed to use a pressure relief valve or other devices. Those groups promoting this change did not like that devices such as a pressure relief valve released water from the system to lower the pressure and thus defeated efforts to conserve water. The 2018 code reinstated the pressure relief valve and other such devices as acceptable means of controlling thermal expansion.



Revision to 2018 IPC Chapter 6

What is Thermal Expansion? Water doesn't compress very much at all when subjected to pressure. And when heated, it expands in volume: the contents of a 40 gallon water tank can expand by half a gallon or more when heated! Neither of these properties bode well for closed plumbing systems.

If the building has a [Pressure Reducing Valve](#) (PRV), a backflow prevention valve, recirculating pump with check valve, or anything else that prevents backflow of water, its plumbing system is considered "closed". A closed system is one in which potable water has no way to exit a home's plumbing (in an open system, water can be forced back into the city water main through the supply line).

When heated water expands in a closed system, that additional volume has nowhere to go if fixtures aren't being used: the PRV, backflow preventer, or check valve blocks the only other path of exit. This is a very good thing should backflow from your home threaten to contaminate the water supply, but a very bad thing for fixtures, pipes and water heater if precautions aren't taken.

The pressure added to a closed system by thermal expansion can wear out seals, damage solenoid valves (like those found on washing machines, dishwashers) and even [rupture pipe](#). Water heaters can find their lives severely shortened thanks to the added stress. In extreme cases, increased pressure in a gas or propane powered water heater can cause the flue inside to collapse, creating a carbon monoxide leak.

CODE REVISION TO THE 2015 IPC

2015 IPC 607.3 Thermal Expansion Control Devices

The available method to control closed-system pressure increases caused by the heating of water has been limited to the use of thermal expansion tanks only.

2015 Code: 607.3 Thermal Expansion Control. ~~A means of controlling increased pressure caused by thermal expansion shall be provided where required in accordance with Sections 607.3.1 and 607.3.2.~~ Where a storage water heater is supplied with cold water that passes through a check valve, pressure reducing valve or backflow preventer, a thermal expansion tank shall be connected to the water heater cold water supply pipe at a point that is downstream of all check valves, pressure reducing valves and backflow preventers. Thermal expansion tanks shall be sized in accordance with the tank manufacturer's instructions and shall be sized such that the pressure in the water distribution system shall not exceed that required by Section 604.8.

~~**607.3.1 Pressure-Reducing Valve.** For water service system sizes up to and including 2 inches (51 mm), a device for controlling pressure shall be installed where, because of thermal expansion, the pressure on the downstream side of a pressure-reducing valve exceeds the pressure-reducing valve setting.~~

~~**607.3.2 Backflow Prevention Device or Check Valve.** Where a backflow prevention device, check valve or other device is installed on a water supply system utilizing storage water heating equipment such that thermal expansion causes an increase in pressure, a device for controlling pressure shall be installed.~~

CODE REVISION TO THE 2018 IPC

2018 IPC 607.3 Thermal Expansion Control Devices

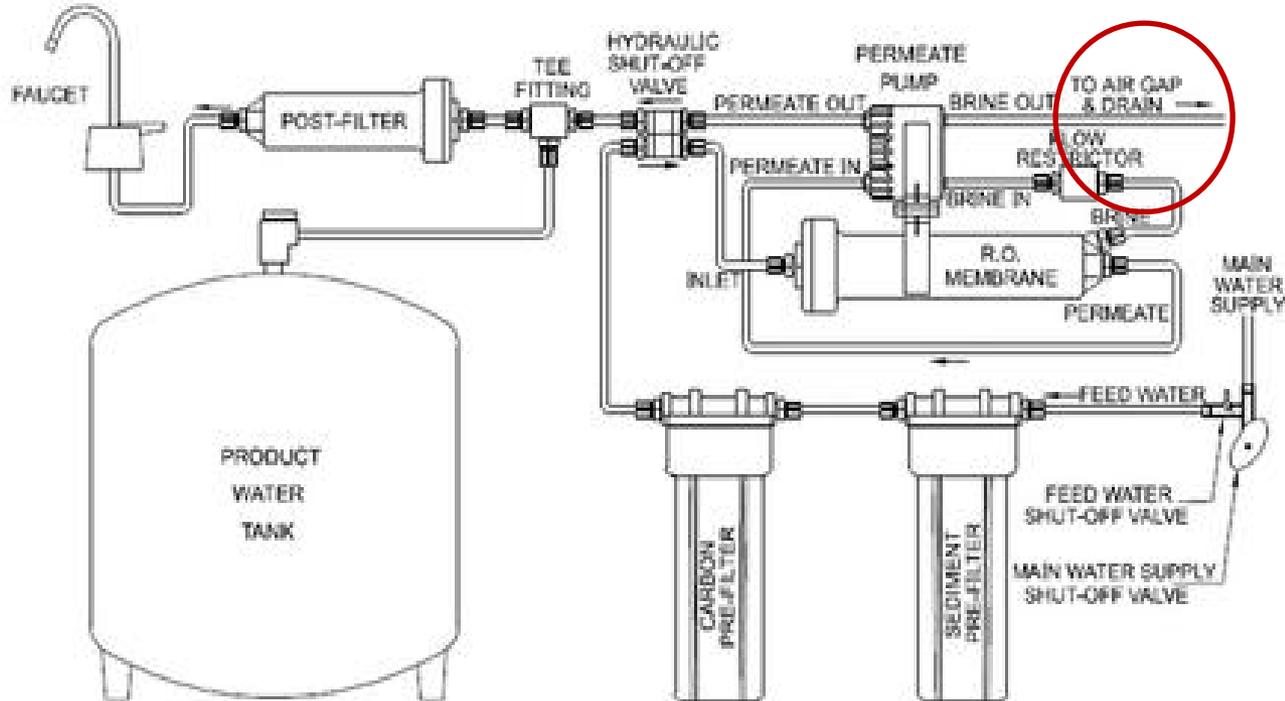
Thermal expansion control devices, other than thermal expansion tanks, can be used for control of hot water system pressures.

607.3 Thermal expansion control. Where a storage water heater is supplied with cold water that passes through a check valve, pressure reducing valve or backflow preventer, a thermal expansion ~~tank~~ control device shall be connected to the water heater cold water supply pipe at a point that is downstream of all check valves, pressure reducing valves and backflow preventers. Thermal expansion tanks shall be sized in accordance with the tank manufacturer's instructions and shall be sized such that the pressure in the water distribution system shall not exceed that required by Section 604.8.



Revision to 2018 IPC Chapter 6

608.4 Portable Water Handling and Treatment Equipment. Water pumps, filters, softeners, and other appliances that handle and treat potable water often have a discharge pipe through which contaminated water or debris is discharged to their drainage system. This section was revised to add the requirement that these discharge pipes could not be directly connected to the drainage system and had to be indirectly connected through an air gap. This was to ensure that if there was a back surge of sewage it would not be able to enter into the water treatment equipment.



CODE REVISION TO THE 2018 IPC

608.3, 608.4 Backflow Protection for Water Handling Equipment

Some of the requirements in Section 608.3 were extracted, reworded and put into a new section to provide clarity about backflow protection requirements.

2018 CODE: 608.3 Devices, appurtenances, appliances and apparatus. Devices, appurtenances, appliances and apparatus intended to serve some special function, such as sterilization, distillation, processing, cooling, or storage of ice or foods, and that connect to the water supply system, shall be provided with protection against backflow and contamination of the water supply system. ~~Water pumps, filters, softeners, tanks and other appliances and devices that handle or treat potable water shall be protected against contamination.~~

608.4 Potable water handling and treatment equipment. Water pumps, filters, softeners, tanks and other appliances and devices that handle or treat potable water to be supplied to the potable water distribution system shall be located to prevent contamination from entering the appliances and devices. Overflow, relief valve and waste discharge pipes from such appliances and devices shall terminate through an air gap..

CODE REVISION TO THE 2018 IPC

608.3, 608.4 Backflow Protection for Water Handling Equipment



Photo courtesy of Lowe's

Water softener



Photo courtesy of US Water Systems

Water filter housing

Revision to 2018 IPC Chapter 6

608.8.1 signage required. To water conservation programs steps have been taken to collect and reuse water for various applications. The code lists such uses as flushing toilets and urinals and limited applications of underground irrigation. Chapter 13 of the plumbing code covers all requirements on the collection treatment and piping of this water. This section states that any open-ended pipes or hose connection on nonportable water systems must be labeled with permanently attached signage. The labeling must be no less than ½ inch in height colors contrasting with the background of the label and it must read **“Caution Nonportable Water DO NOT DRINK”**.

Chapter 13 of the 2018 IPC has added some usages for reclaimed water for such purposes such as firefighting. The IPC requires the quality of the water to meet the standard for the water quality required for the application.



CODE REVISION TO THE 2018 IPC

608.8, 608.8.1, 608.8.2 Identification of Nonpotable Water

Fixtures such as water closets and urinals that utilize nonpotable water must be identified with words and a symbol indicating that nonpotable water is being used. The color purple is established for identifying distribution piping conveying nonpotable water.

608.8.1 Signage Required. All non-potable water outlets such as hose connections, open ended pipes, and faucets shall be identified with signage that reads as follows: “Non-potable water is utilized for [application name]. Caution: **Nonpotable water. DO NOT DRINK.**” The words shall be legibly and indelibly printed on a tag or sign constructed of corrosion-resistant waterproof material or shall be indelibly printed on the fixture. The letters of the words shall be not less than 0.5 inches in height and in colors in contrast to the background on which they are applied. In addition to the required wordage, the pictograph shown in Figure 608.8.1 shall appear on the signage required by this section.



**CAUTION: NONPOTABLE
WATER – DO NOT DRINK.”**

Revision to 2018 IPC Chapter 6

608.8.12 Distribution Pipe Labeling and Marking. This section was revised to make it easier to understand the requirements of marking and labeling piping in water distribution systems that convey nonportable water. Any piping used to collect or distribute nonportable water is required to be purple in color. All pipes must be labeled as containing nonportable water in the label has to be repeated every 25 feet. Charlotte pipe and several other pipe manufacturing companies have a line of piping for these systems that is purple in color and has a labeling printed on the pipe. The labeling is the correct size and spacing.

NON-POTABLE WATER



CODE REVISION TO THE 2018 IPC

608.8, 608.8.1, 608.8.2 Identification of Nonpotable Water

608.8.12 Information. Distribution Pipe Labeling and Marking.

Non-potable distribution piping shall be of the color purple and shall be embossed or integrally stamped or marked with the words: “CAUTION: NONPOTABLE WATER – DO NOT DRINK” or shall be installed with a purple identification tape or wrap. Pipe identification shall include the contents of the piping system and an arrow indicating the direction of flow. Hazardous piping systems shall also contain information addressing the nature of the hazard. Pipe identification shall be repeated at intervals not exceeding 25 feet (7620 mm) and at each point where the piping passes through a wall, floor or roof. Lettering shall be readily observable within the room or space where the piping is located. Only the significant sections of this revised section are shown.



Revision to 2018 IPC Chapter 6

608.12 Painting of bottled water tanks. Various types of coatings are used for the inside water storage times. This section is revised to require that whatever coding is applied it must meet NSF 61 standard which is the standard for drinking water quality. This is to ensure that the material used will not affect the taste odor color or potability of the water.



CODE REVISION TO THE 2018 IPC

608.12 NSF 61-compliant Tanks for Drinking Water

Drinking water must be protected from contamination from contact with water tanks, coatings on the inside of water tanks and liners on the inside of water tanks. Standard NSF 61 is the testing protocol for determining non-acceptable levels of contamination by components in contact with drinking water.

608.12 Painting of Potable water tanks. Where in contact with potable water intended for drinking water, water tanks, coatings for the inside of tanks and liners for water tanks shall conform to NSF 61. The interior surface of a potable water tank shall not be lined, painted or repaired with any material that changes the taste, odor, color or potability of the water supply when the tank is placed in, or returned to, service.

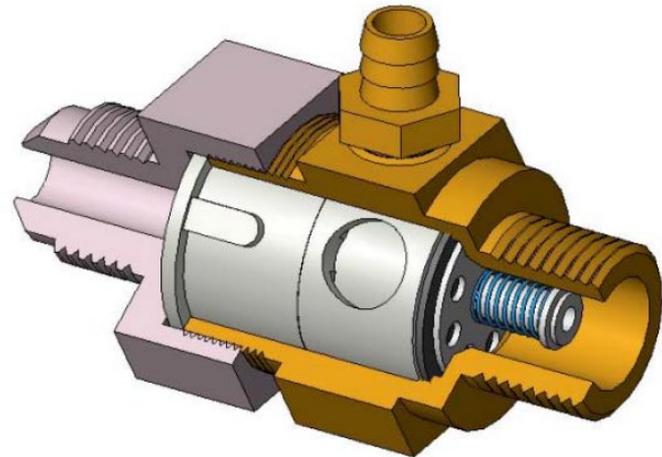


Revision to 2018 IPC Chapter 6

608.17.1.2 Coffee Machines and Non-carbonated Drink Dispensers. As these devices are connected to the potable water system backflow protection was required to be provided by means of a backflow preventer or the use of an air gap. Earlier code did not allow a backflow preventer that met ASSE 1022 standard. The 2018 revised the requirement to allow these devices to be used on noncarbonated drink dispensers and coffee machines



ASSE 1024



ASSE 1022

CODE REVISION TO THE 2018 IPC

608.17.1.1, 608.17.1.2 Independent Backflow Protection for Drink Dispensers

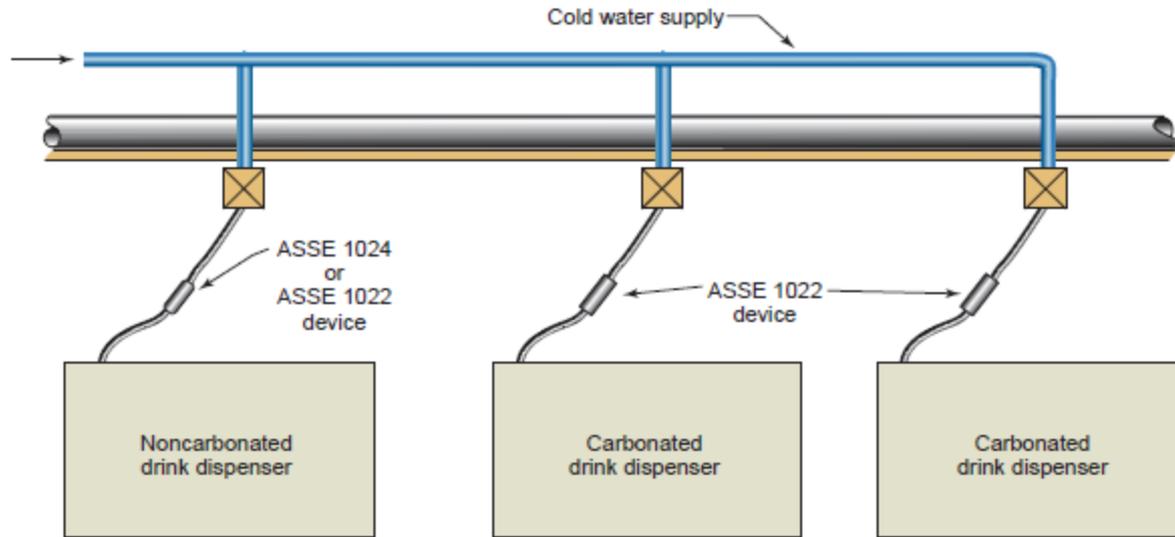
Only carbonated beverage dispensers require a backflow preventer that is designed for exposure to carbon dioxide gas. Also, because of the potential for cross-contamination between noncarbonated drink dispensers and or coffee machines, each dispenser or machine supplied with potable water must have a backflow preventer (or air gap) at the connection to the potable water supply.

608.17.1.1 Carbonated beverage dispensers. The water supply connection to carbonated beverage dispenser shall be protected against backflow by a backflow preventer conforming to ASSE 1022 or by an *air gap*. *The portion of the backflow preventer device downstream from the second check valve of the device* and the piping downstream there from shall not be affected by carbon dioxide gas.

608.17.1.2 Coffee machines and noncarbonated drink dispensers. The water supply connection to each coffee machine and each noncarbonated beverage dispenser shall be protected against backflow by a backflow preventer conforming to ASSE 1022 or ASSE 1024, or protected by an *air gap*.

CODE REVISION TO THE 2018 IPC

608.17.1.1, 608.17.1.2 Independent Backflow Protection for Drink Dispensers



PLAN VIEW

Independent backflow protection

Revision to 2018 IPC Chapter 6

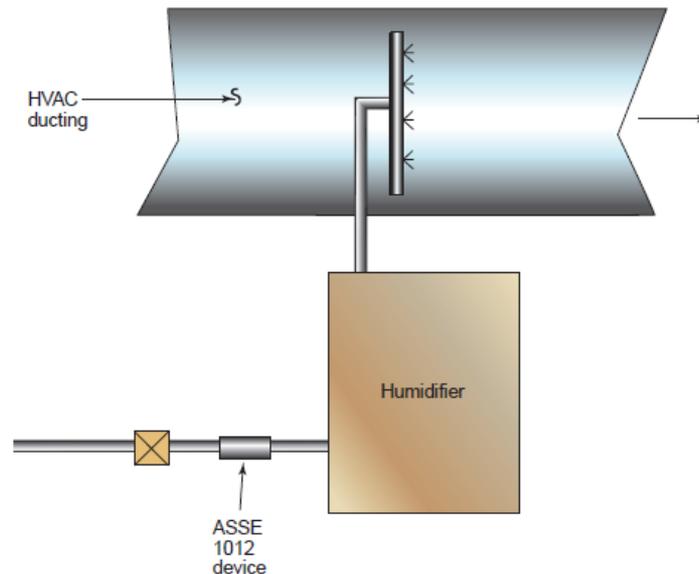
608.17.10 Humidifiers. Backflow protection is required to be installed on the water supply for the humidifier. A backflow prevention device conforming to ASSE 1012 or an air gap must be used to protect potable water system from contamination.

CODE REVISION TO THE 2018 IPC

608.17.10 Humidifier Backflow Preventer

The potable water connection to a humidifier that does not have internal backflow protection must have an ASSE 1012 backflow preventer or an air gap.

608.17.10 Humidifiers. The water supply connection to humidifiers that do not have an internal backflow protection shall be protected against backflow by a backflow preventer conforming to ASSE 1012 or by an *air gap*.



Backflow preventer for humidifier

Revision to 2018 IPC Chapter 6

609.1 Medical Facilities, Scope. Most sections covering requirements for the installation of plumbing system in healthcare facilities have been deleted from the IPC. Only limited requirements on certain fixtures remain. The reason for this is that many systems in hospitals and other healthcare facilities must meet new government and manufacturer's healthcare standards. The wording here is been revised to show which facilities listed would be considered medical facilities and required to meet specific type equipment and system installation requirements.

Hospital Plumbing System

There are a number of plumbing systems that are unique to hospitals. This equipment will have distinctive requirements and maintenance considerations that must be understood for the hospital's infrastructure to run efficiently.

CODE REVISION TO THE 2018 IPC

609.1 Medical Facility Terminology

Outdated terminology for different types of medical facilities has been replaced with terminology that is aligned with industry standards and how the *International Building Code* refers to such facilities.

609.1 Scope. This section shall govern those aspects of health care plumbing systems that differ from plumbing systems in other structures. Health care plumbing systems shall conform to the requirements of this section in addition to the other requirements of this code. The provisions of this section shall apply to the special devices and equipment installed and maintained in the following occupancies: ~~nursing homes~~ Group I-1, ~~homes for the aged~~ Group I-2, ~~orphanages, infirmaries, first aid stations, psychiatric~~ Group B ambulatory care facilities, ~~clinics, professional~~ medical offices ~~of dentists~~ and ~~doctors, mortuaries, educational facilities, surgery, dentistry,~~ research and testing laboratories, ~~establishments~~ and Group F facilities manufacturing pharmaceutical drugs and medicines and ~~other structures with similar apparatus and equipment classified as plumbing.~~

Revision to 2018 IPC Chapter 6

611.1 Point of Use Reverse Osmosis Systems. These small units are now required to meet NSF 58 which governs performance of the system level to which it purifies the water. Until now the larger reverse osmosis systems have been required to meet the standard, but the smaller point of use systems were not. This change means all these systems will now be required to meet that standard.

NSF/ANSI 58: Reverse Osmosis Drinking Water Treatment Systems. NSF/ANSI 58 establishes the minimum requirements for the certification of point-of-use (POU) reverse osmosis systems designed to reduce contaminants that may be present in public or private drinking water.

The scope of NSF/ANSI 58 includes material safety, structural integrity, total dissolved solids (TDS) reduction and other optional contaminant reduction claims. The most common optional claims addressed by NSF/ANSI 58 include cyst reduction, hexavalent and trivalent chromium reduction, arsenic reduction, nitrate/nitrite reduction, and cadmium and lead reduction.

CODE REVISION TO THE 2018 IPC

611.1 Point of Use Reverse Osmosis Systems

Point-of-use reverse osmosis drinking water treatment units must now comply entirely with NSF 58 or CSA B483.1.

611.1 Design. Point-of-use reverse osmosis drinking water treatment units shall comply with NSF 58 or CSA B483.1. Drinking water treatment units shall meet the requirements of NSF 42, NSF 44, NSF 53, NSF 62 or CSA B483.1.

