**Summary of Significant Changes to the 2018 Edition of the International Plumbing Code**

| Description of Change | Change Summary | Change Significance |
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| **202 GENERAL DEFINITIONS**<br><br>**Accessible.** Describes a site, building, facility or portion thereof that complies with Chapter 11 of the International Building Code. | A definition was added to eliminate confusion between requirements for accessibility by disabled persons, and access requirements for repair personnel to reach and work on various components of plumbing systems. | There were many locations in the code where the term accessible was used to describe access requirements for the purposes of service and repair. As the code is intended to be used in conjunction with other I-Codes and especially with the *International Building Code* for Chapter 11 accessibility requirements, clarification is necessary to eliminate confusion. This change also incorporated changes to many code sections to eliminate the use of the term "accessible" and replace with wording having the correct defined terms of "access" and "ready access". |
| **303.5 Cast iron soil pipe, fittings and components**. Cast iron soil pipes and fittings, and the couplings used to join these products together, shall be third party listed and labeled. Third party certifiers or inspectors shall comply with the minimum inspection requirements of Annex A or Annex A1 of the ASTM and CISPI product standards indicated in the code for such products. | This new section invokes additional inspection and certification requirements for third party certification agencies that inspect the products at the manufacturing location. | Section 303.4 already requires "listing", by a third-party certification agency, of all plumbing products made according to code-referenced standards. This change adds "labeling", by a third-party certification agency, for cast iron soil pipes and fittings, and the couplings for those products. The purpose of the labeling requirement is to minimize manufacturing defects in these products. Although the terms "listed" and "labeled" are not defined in the IPC, they are well understood in the third-party certification industry. (Other I-Codes such as the IBC, define these terms.) A labeled product will have the mark of the third-party testing or inspection agency whereas, a listed product is only identified on a document indicating that the product has been evaluated by a third-party certification agency.<br><br>Because not all third-party certification agencies or inspectors are familiar with the essential items which must be inspected at the manufacturing location of these products, the Annexes of the ASTM and CISPI standards are invoked to indicate the minimum requirements that are necessary for "labeling" the product. |

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| **305.1 ~~Corrosion~~ Protection against contact.** ~~Pipes passing through~~ Metallic piping, except for cast iron, ductile iron and galvanized steel, shall not be placed in direct contact with steel framing members, concrete or cinder walls and floors or other masonry. Metallic piping shall not be placed in direct contact with corrosive ~~material~~ soil. Where sheathing is used to prevent direct contact, the sheathing shall ~~be protected against external corrosion by~~ have a ~~protective sheathing or wrapping or other means that will withstand any reaction from the lime and acid of concrete, cinder or other corrosive material. Sheathing or wrapping shall allow for movement including expansion and contraction of piping. The wall~~ thickness of ~~the material shall be~~ not less than ~~0.025~~ 0.008 inch (8 mil) (~~0.64~~ 0.203 mm) and the sheathing shall be made of plastic. Where sheathing protects piping that penetrates concrete or masonry walls or floors, the sheathing shall be installed in a manner that allows movement of the piping within the sheathing. | This change clarifies where and what type of metallic piping is required to be protected from corrosion. | The language of this section was improved to make clear the locations where corrosion protection is required for metallic piping. The first sentence is primarily aimed at protecting copper piping and tubing as these are relatively thin-walled products as compared to cast iron, ductile iron and galvanized steel products. For example, copper tubing should not be in direct contact with the edges of holes punched in steel framing studs. Note that the second sentence concerns the protection of all metallic piping where in contact with soil that is known to be corrosive. The required minimum thickness of sheathing was reduced to coordinate with the thicknesses that are commonly used to protect metallic piping. |
| **305.6 Protection against physical damage.** In concealed locations where piping, other than cast-iron or galvanized steel, is installed through holes or notches in studs, joists, rafters or similar members less than ~~1 1/2~~ 1 1/4 inches (~~38~~ 32 mm) from the nearest edge of the member, the pipe shall be protected by steel shield plates. Such shield plates shall have a thickness of not less than 0.0575 inch (1.463 mm) (No. 16 gage). Such plates shall cover the area of the pipe where the member is notched or bored, and shall extend not less than 2 inches (51 mm) above sole plates and below top plates. | For concealed piping installed through holes or notches, the minimum distance to the face of the framing member without protection has been reduced. | The minimum dimension from the face of a framing member has been reduced slightly to match the minimum distance permitted by the *National Electrical Code*® for this same situation where wiring penetrates framing members in concealed locations. This will make it easier for inspectors to remember the minimum distance. The reduced dimension will make is easier to place piping in walls. For the common application of ½ inch gypsum board on framing members, the use of 1 1/2-inch long screws still offers sufficient leeway for a screw that might be slightly over-driven without causing damage to the piping. |

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| **308.6 Sway bracing.** ~~Rigid support sway bracing shall be provided at~~ Where horizontal pipes 4 inches (102 mm) and larger convey drainage or waste, and where a pipe fitting in that piping changes ~~in~~ the flow direction greater than 45 degrees (0.79 rad) ~~for~~, rigid bracing or other rigid support arrangements shall be installed to resist movement of the upstream pipe ~~sizes 4 inches (102 mm) and larger.~~ in the direction of pipe flow. A change of flow direction into a vertical pipe shall not require the upstream pipe to be braced. | Additional information clarifies where sway bracing is needed for drainage piping. | The piping sway discussed in this section is the result of drainage flow significantly changing direction because of turns in horizontal piping. The forces on the turning fitting (the elbow) cause the upstream piping to move axially. These movements can become amplified in the piping downstream of the fitting and causing the piping to sway (side-to-side motion). Such sway action could cause problems with piping joints and hanger systems. A change in horizontal direction that is 45 degrees or less is not considered significant enough to cause the piping system to move. Although the required sway bracing could also serve as a seismic support as might be required in Section 308.2, the purpose of Section 308.6 is only for resisting flow-induced movements. |
| **308.10 Thermal expansion tanks.** A thermal expansion tank shall be supported in accordance with the manufacturer's instructions. Thermal expansion tanks shall not be supported by the piping that connects to such tanks. | A thermal expansion tank cannot be supported by the piping connected to the tank. | Large thermal expansion tanks are usually floor-mounted and the manufacturer's instructions indicate how to attach the tank to the floor. However, proper support for smaller expansion tanks is often neglected as some manufacturers are silent as to how the tank is to be supported. A common practice has been to "hang" these smaller tanks from the piping that connects to the tank. This did not always result in a safe piping installation. Although there could be a myriad of tank support arrangements, this section eliminates the piping from being used for support. |
| **405.5 Plumbing fixtures with a pumped waste.** Plumbing fixtures with a pumped waste shall comply with ASME A112.3.4/CSA B45.9. The plumbing fixture with a pumped waste shall be installed in accordance with the manufacturer's instructions. | Plumbing fixtures having a pumped waste arrangement must comply with a standard that covers the integral waste pumping system. | New designs for various plumbing fixtures have become available that have an integral pumping system to expel waste to the gravity drainage system. One such example is a walk-in tub (a typical age-in-place renovation) that pumps the waste out of the tub to avoid the user having to wait a long period of time for gravity to drain the tub in order for the walk-in door to be opened. This same standard also covers "up flush" water closets having an integral macerating pump system. |
| **409.1 Approval.** Commercial dishwashing machines shall conform to ASSE 1004 and NSF 3. Residential dishwashers shall conform to NSF 184. | Residential dishwashers must now comply with the standard NSF 184. | Standard NSF 184 regulates the performance of a residential dishwasher. Two of the requirements in the standard are achieving a minimum 99.999 percent or 5-log reduction of bacteria and having the capability of a final rinse temperature of 150º F. The sanitization performance is verified when the unit is operated on the sanitizing cycle. There are hundreds of models of residential dishwashers that have been certified to this standard. |

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| **409.4 Residential dishwasher waste connection.** The waste connection of a residential dishwasher shall connect directly to a wye branch fitting on the tailpiece of the kitchen sink, directly to the dishwasher connection of a food waste disposer, or through an air break to a standpipe. The waste line of a residential dishwasher shall rise and be securely fastened to the underside of the sink rim or counter top.<br>~~**802.1.6 Domestic dishwashing machines.** Domestic dishwashing machines shall discharge indirectly through an air gap or air break into a waste receptor in accordance with Section 802.2, or discharge into a wye branch fitting on the tailpiece of the kitchen sink or the dishwasher connection of a food waste disposer. The waste line of a domestic dishwashing machine discharging into a kitchen sink tailpiece or food waste disposer shall connect to a deck-mounted air gap or the waste line shall rise and be securely fastened to the underside of the sink rim or counter.~~ | The requirement for residential dishwasher waste connections was moved from Section 802.1.6 to new Section 409.4. The language was modified for clarity. | An indirect connection for a residential dishwasher waste has always been optional. Therefore, these waste connection requirements belong in Section 409 and not in Chapter 8 (Section 802.1.6). The first two connection options in this new section are the most common and are not considered indirect connections. For any of these connections, the waste line from the dishwasher must rise and be fastened to the underside of the counter top or sink rim. |
| ~~**424.7**~~ **412.7 Temperature-actuated, flow reduction ~~valves~~ devices for individual fixture fittings.** Temperature-actuated, flow reduction devices, where installed for individual fixture fittings, shall conform to ASSE 1062. A temperature-actuated, flow reduction device shall be an approved method for limiting the water temperature to not greater than 120º F (49º C) at the outlet of a faucet or fixture fitting. Such ~~valves~~ devices shall not be used alone as a substitute for the balanced-pressure, thermostatic or combination shower valves required in Section ~~424.3~~ 412.3 or as a substitute for bathtub or whirlpool tub water-temperature limiting valves required in Section 412.5. | Where other requirements outside of the code require limiting the discharge water temperature at a faucet or fixture fitting, installation of an ASSE 1062 device is an approved method of control. | Beyond the requirements of the code, there are fixture applications where it might be desirable to limit the temperature of discharged hot water to not more than 120º F. Examples are lavatories and kitchen sinks in “private use” applications such as independent living quarters of elderly persons, apartments and time share condominiums. For existing buildings built before the codes required water temperature limiting controls for showers and bathtubs, these devices offer an easy method for building owners to protect users. Instead of limiting the temperature of the flowing water, these devices reduce the flow of the water to a dribble when the water temperature reaches 120º F. These devices automatically resume flow when the water flowing temperature drops below 120º F. |

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| **502.1 General.** Water heaters shall be installed in accordance with the manufacturer's instructions. Oil-fired water heaters shall conform to the requirements of this code and the International Mechanical Code. Electric water heaters shall con- form to the requirements of this code and provisions of NFPA70. Gas-fired water heaters shall conform to the requirements of the International Fuel Gas Code. Solar thermal water heating systems shall conform to the requirements of the International Mechanical Code and ICC 900/SRCC 300. | Solar thermal water heating systems must conform to the IMC and standard ICC 900/SRCC 300. | Chapter 14 of the International Mechanical Code has numerous general requirements for solar thermal systems, whether they are for space heating or for potable water heating. The standard ICC 900/SRCC 300 has requirements for these systems that are focused not only on safety but on design, performance, longevity and maintainability of such systems. Note that Section 303.4 of the IPC requires listing, by a third-party certification agency, of products that are required to comply with the reference standards to which the code requires compliance. This requires that a third-party certification agency review the design details (drawings, calculations, installation instructions, etc.) of a specific type/model of a solar thermal system by a manufacturer to verify compliance with all of the requirements of the standard. When compliance is determined, the third-party certification agency indicates that specific type/model for that manufacturer on a publicly available list. |
| **504.6 Requirements for discharge piping.** The discharge piping serving a pressure relief valve, temperature relief valve or combination thereof shall:<br><br>Items 1. through 13. are unchanged.<br><br>14. Be one nominal size larger than the size of the relief valve outlet, where the relief valve discharge piping is installed with insert fittings. The outlet end of such tubing shall be fastened in place. | Where insert fittings are used in T & P valve discharge piping, the piping must be of a larger size. | Flexible tubing complying with Section 605.4 can be used for temperature and pressure valve discharge piping. Insert fittings are the common method for connecting this type of tubing together and to threaded openings. The inside diameter of many insert fittings is significantly smaller than what the manufacturers of temperature and pressure relief (T & P) valves anticipated for discharge piping. Such reduction(s) could result in restricted flow during a "full trip" event of the relief valve and thus a concern for the water heater to become over-pressurized. The outlet of flexible T&P discharge tubing needs to be fastened in place to make sure the discharge is to the intended location. |
| **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. | Thermal expansion control devices, other than thermal expansion tanks, can be used for control of hot water system pressures. | Limiting thermal expansion-caused pressure increases in a water distribution system by use of only a thermal expansion tank may be an impractical and unnecessarily costly method for some systems. Other types of control devices, such as a pressure relief valve, could be used to relieve pressure increases. For example, a large hotel with a central water heating system has numerous "outlets" (faucets) that are being opened by guests at any given time that thermal expansion-caused pressure increase would most likely never occur during normal service. Only at initial startup of the system or at a restart after a long utility outage would there be a potential for such pressure increase. A pressure relief valve set just above the normal system pressure could serve to protect the system from high pressures. |

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| **608.11 ~~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. | 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 nonacceptable levels of contamination by components in contact with drinking water. | Many components of the potable water system such as piping, valves and fittings that supply drinking water are already required to be NSF 61 compliant. Water tanks and internal components that make up the contact surfaces of water tanks could be contribute an unknown amount of contaminates to the drinking water system if not tested to be certified in compliance with NSF 61. |
| **608.16.10 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. | 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. | A humidifier can contain contaminated water that would not be desirable to have flow into the potable water system, should a backflow event occur in the system. Some humidifiers could have internal backflow protection and where that can be ascertained through inspection or review of equipment details, then no further backflow protection is needed. However, it is sometimes difficult to determine if internal backflow protection exists. In those cases, this new section provides direction. Note that an ASSE 1012 device has an intermediate atmospheric vent where a discharge of water could occur. Thus, arrangements for disposing of this “vented” water is necessary. |
| **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. | Point-of-use reverse osmosis drinking water treatment units must now comply entirely with NSF 58 or CSA B483.1. | Although standard NSF 58 was already indicated in the code to cover drainage system discharge connections from, and the tubing of, reverse osmosis drinking water systems, compliance of the actual unit to NSF 58 was not an option. The addition of this compliance option allows for a wider selection of compliant systems. |

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| **703.4 Existing building sewers and building drains.** ~~Existing~~ Where the entire sanitary drainage system of an existing building is replaced, existing building drains under concrete slabs and existing building sewers ~~and drains shall connect with new building sewer and drainage systems only where found by examination and test to conform to~~ that will serve the new system shall be internally examined to verify that the piping is sloping in ~~quality~~ the correct direction, is not broken, is not obstructed and is sized for the drainage load of ~~material. The code official shall notify~~ the ~~owner~~ new plumbing drainage system to ~~make the changes necessary to conform to this code.~~ be installed. | The use of existing building sewers and existing building drains for new building plumbing system is clarified. | **"**Testing" of old, existing buried building drains or building sewers might not ever be successful, eliminating the possibility for their reuse. As such piping is non-pressurized gravity flow a test means very little. What is important is a visual internal examination (typically by video camera equipment) to make sure that the piping is viable for reuse. This is especially beneficial where the piping would be difficult to replace such as where it crosses under parking lots and streets. |
| **704.2 ~~Change~~ No reduction in size in the direction of flow.** The size of the drainage piping shall not be reduced in ~~size in~~ the direction of the flow. ~~A 4-inch by 3-inch (102 mm by 76 mm) water closet connection~~ The following shall not be considered as a reduction ~~in size.~~ in the direction of flow:<br><br>1. A 4-inch by 3-inch (102 mm by 76 mm) water closet flange.<br><br>2. A water closet bend fitting having a 4-inch (102 mm) inlet and a 3-inch (76 mm) outlet provided that the 4 inch leg of the fitting is upright and below, but not necessarily directly connected to, the water closet flange.<br><br>3. An offset closet flange. | Allowable reductions of pipe size are clarified and expanded. | Although a water closet bend (a 4-inch by 3-inch quarter bend fitting) has been a commonly-used fitting for over 100 years, it is a reduction of pipe size that the code did not address. This exception for its use comes with the required provision that the 4-inch leg of the fitting is "upright" and below the water closet. The fitting itself is not required to be connected to the water closet flange: a length of vertical pipe can exist between the fitting and the flange. Offset (water) closet flanges are another type of fitting that the code did not address. The PVC/ABS fitting standards for plastic drainage piping do include an offset closet flange design. The fitting standards for cast iron piping do not include a design for an offset closet flange. Thus, a PVC or ABS offset closet flange that is marked with the corresponding fitting standard is code approved. Any other offset closet flanges, including those of cast iron material, would require approval in accordance with Section 105.2. Note that many different offset closet flange designs are available in the market place but not all are marked with the fitting standard. |

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| **705.16.4 Plastic pipe or tubing to other piping material.** Joints between different types of plastic pipe shall be made with an approved adapter fitting, or by a solvent cement joint only where a single joint is made between ABS and PVC pipes at the end of a building drainage pipe and the beginning of a building sewer pipe using a solvent cement complying with ASTM D3138. Joints between plastic pipe and other piping material shall be made with an approved adapter fitting. Joints between plastic pipe and cast-iron hub pipe shall be made by a caulked joint or a mechanical compression joint. | One joint between ABS plastic building drain piping and PVC plastic building sewer drain piping can be solvent cemented with special cement. | In some areas, ABS plastic drainage piping is predominantly installed inside of buildings. However, PVC plastic piping is often used for the building sewer piping. The connection between these different materials required the use of an elastomeric mechanical coupling. For some time, a number of jurisdictions have allowed the use of a special solvent cement for solvent cementing the joint, eliminating the mechanical joint which can become offset due to ground movement. The ASTM D3138 cement (green in color) does not require priming of the surfaces to be joined. |
| **802.4.3.1 Connection of laundry tray to standpipe.** As an alternative for a laundry tray fixture connecting directly to a drainage system, a laundry tray waste line without a fixture trap shall connect to a standpipe for an automatic clothes washer drain. The standpipe shall extend not less than 30 inches (732 mm) above the weir of the standpipe trap and shall extend above the flood level rim of the laundry tray. The outlet of the laundry tray shall not be greater than 30 inches (762 mm) horizontal distance from the side of the standpipe. | An alternative method for connecting a laundry tub drain, without a fixture trap, to a clothes washer standpipe is added to the code. | In the many building arrangements, especially in residential occupancies, a laundry tub is located directly adjacent to a clothes washer. To provide for economy in installing plumbing systems, the code offers an alternative for connecting a laundry tub drain to the clothes washer standpipe. This alternative has been available in the *International Residential Code* for several editions. |

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| **918.8 Prohibited installations.** Air admittance valves shall not be installed in nonneutralized special waste systems as described in Chapter 8 except where such valves are in compliance with ASSE 1049, are constructed of materials approved in accordance with Section 702.5 and are tested for chemical resistance in accordance with ASTM F 1412. Air admittance valves shall not be located in spaces utilized as supply or return air plenums. Air admittance valves ~~without an engineered design~~ shall not be ~~utilized~~ used to vent sumps or tanks ~~of any type~~ except where the vent system for the sump or tank has been designed by an engineer. Air admittance valves shall not be installed on outdoor vent terminals for the sole purpose of reducing clearances to gravity air intakes or mechanical air intakes. | An air admittance valve cannot be used to resolve the problem of an open vent terminal that is too close to a building air intake. | The location of air intake openings for a building's ventilation in relation to the termination of plumbing vents can sometimes end up violating the minimum clearance requirements of Section 903.6. For a number of reasons, the solution must not be the installation of an air admittance valve on the vent terminal: 1) the vent terminal might be the only plumbing system vent to the outdoors, 2) the air admittance valve could be too easily knocked off the vent terminal or inadvertently removed, and 3) the valve might not function as intended under all outdoor weather conditions. |