

# 2015 GROUP A PROPOSED CHANGES TO THE I-CODES MEMPHIS COMMITTEE ACTION HEARINGS

April 19–28, 2015 Memphis Cook Convention Center Memphis, Tennessee



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# 2015 GROUP A – PROPOSED CHANGES TO THE INTERNATIONAL PLUMBING CODE

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# TENTATIVE ORDER OF DISCUSSION 2015 PROPOSED CHANGES TO THE INTERNATIONAL PLUMBING CODE

The following is the tentative order in which the proposed changes to the code will be discussed at the public hearings. Proposed changes which impact the same subject have been grouped to permit consideration in consecutive changes.

Proposed change numbers that are indented are those which are being heard out of numerical order. Indentation does not necessarily indicate that one change is related to another. Proposed changes may be grouped for purposes of discussion at the hearing at the discretion of the chair. Note that some P code change proposals may not be included on this list, as they are being heard by another committee.

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Proponent: James Richardson, Jr (jarichardson@columbus.gov)

## 2015 International Plumbing Code

Revise as follows:

#### SECTION 202 DEFINITIONS

BUILDING DRAIN. That part of the lowest piping of a drainage system that receives the discharge from soil, waste and other drainage pipes inside and that extends 30 inches (762 mm) in developed length of pipe beyond the exterior walls of the building and conveys the drainage to the building sewer.

Combined. A building drain that conveys both sewage and storm water or other drainage.

Sanitary. A building drain that conveys sewage only.

Storm. A building drain that conveys storm water or other drainage, but not sewage.

**Reason:** Most building sewer laterals are terminated 5 to 10 feet away from the building foundation prior to the foundation construction. This has caused some issues for contractors with regard to making the connection to the building sewer since the building sewer is inspected by the local sewer purveyor and typically requires an additional permit or additional inspections paid for when the piping could be extended from the building by the plumbing contractor. Additionally, this also creates some issues with regard to grease and oil interceptors.

Cost Impact: Will not increase the cost of construction

This is simply a change about where the building drainage pipe ends and other conenctions begin. Overall, there is not a change in the cost of construction as a pipe has to be run from A to B anyhow.

P 1-15 : 202-BUILDING DRAIN-RICHARDSON6018

# P 2-15

# 202 (New)

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## 2015 International Plumbing Code

#### Add new definition as follows:

#### SECTION 202 DEFINITIONS

#### CLEAR-WATER WASTE. A water discharge from equipment that is translucent and devoid of solids.

Reason: There are frequent arguments within the plumbing industry about what constitutes clear-water waste. Some believe that such waste water must be as clear as potable water while others believe that is much too severe of definition. The existing code sections that use the term clear-water waste are provided below. From the context of where the term is used in the code, it should be obvious that clear-water might not necessarily be transparent (like looking through window glass) but on the other hand, the water might be a little murky because of suspended solids. In other words, translucent. The intent of including "devoid of solids" is to identify applications where large particles floated along by the water will immediately drop out of the water. How big of solids are of concern? The allowance in Section 802.3 for not having to provide a strainer for clear-water wastes give a hint about the solids size that doesn't seem to be an issue.

Sections in the IPC that use the term "clear water waste:

709.4.1 Clear-water waste receptors. Where waste receptors such as floor drains, floor sinks and hub drains receive only clear-water waste from display cases, refrigerated display cases, ice bins, coolers and freezers, such receptors shall have a drainage fixture unit value of one-half.

801.1 Scope. This chapter shall govern matters concerning indirect waste piping and special wastes. This chapter shall further control matters concerning food-handling establishments, sterilizers, clear-water wastes, swimming pools, methods of providing air breaks or air gaps, and neutralizing devices for corrosive wastes.

802.1.3 Potable clear-water waste. Where devices and equipment, such as sterilizers and relief valves, discharge potable water to the building drainage system, the discharge shall be through an indirect waste pipe by means of an air gap.

802.1.5 Nonpotable clear-water waste. Where devices and equipment such as process tanks, filters, drips and boilers discharge nonpotable water to the building drainage system, the discharge shall be through an indirect waste pipe by means of an air break or an air gap.

802.2 Installation. Indirect waste piping shall discharge through an air gap or air break into a waste receptor. Waste receptors shall be trapped and vented and shall connect to the building drainage system. All indirect waste piping that exceeds 30 inches (762 mm) in developed length measured horizontally, or 54 inches (1372 mm) in total developed length, shall be trapped.

Exception: Where a waste receptor receives only clear-water waste and does not directly connect to a sanitary drainage system, the receptor shall not require a trap.

802.3 Waste receptors. For other than hub drains that receive only clear-water waste and standpipes, a removable strainer or basket shall cover the waste outlet of waste receptors. Waste receptors shall not be installed in plenums, crawl spaces, attics, interstitial spaces above ceilings and below floors. Ready access shall be provided to waste receptors.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 19.

#### Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 2-15 : 202-CLEAR-WATER WASTE (New)-SNYDER3909

# P 3-15

Part I: 202 (New) Part II: 202 (New)

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

# Part I

## 2015 International Plumbing Code

Add new definition as follows:

#### SECTION 202 DEFINITIONS

**FULL-OPEN VALVE** A water control or shut off component in the water supply system piping that, where adjusted for maximum flow, the flow path through the component's closure member is not a restriction in the component's through-flow area.

# Part II

## 2015 International Residential Code

Add new definition as follows:

#### SECTION 202 DEFINITIONS

FULL-OPEN VALVE. A water control or shut off component in the water supply system piping that, where adjusted for maximum flow, the flow path through the component's closure member is not a restriction in the component's through-flow area.

Reason: PART I: This phrase is used in various places in the code. In Section 606.1, there are a list of 7 locations where full-open valves are required. Many assumptions have been made as to what type of valve is intended. Many years ago before plastic water piping was installed, gate valves and ball valves were the only type that were available that were not globe valves. But many other types of valves for plastic piping are available that do not present a restriction when the valve is in the full-open position. This definition encompasses all type of valves that do not appreciably restrict the flow of water.

PART II: This phrase is used in several places in the code. In Sections P2903.9.1 and P2903.9.2, full-open valves are required. Many assumptions have been made as to what type of valve is intended. Many years ago before plastic water piping was installed, gate valves and ball valves were the only type that were available that were not globe valves. But many other types of valves for plastic piping are available that do not present a restriction when the valve is in the full-open position. This definition encompasses all type of valves that do not appreciably restrict the flow of water.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC 196.

#### Cost Impact:

Part I: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

Part II: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 3-15 : 202-FULL-OPEN VALVE (New)-SNYDER3912 Proponent: James Richardson, Jr (jarichardson@columbus.gov)

## 2015 International Plumbing Code

Revise as follows:

#### SECTION 202 DEFINITIONS

HOT WATER. Water at a temperature greater than or equal to 110135°F (4357.2°C).

**Reason:** As pointed out in October 2013 vol.19 num.10 of PME magazine, Legionella bacteria has become and increased concern in the potable water distribution system, specifically hot water systems. The temperature typically maintained in a residential water heater is insufficient to kill the bacteria, even at long intervals (we typically see a temperature setting of 120 °F on residential and some small commercial occupancies). This temperature leaves the hot water tank at an optimum range for the bacteria to grow. As documented in This Week Community News August 8, 2013, Ohio experienced the largest outbreak in history, 39 confirmed cases including 6 deaths. Disinfection is achieved at 158 °F and above, however, I could not personally recommend setting temperatures at that level as it would present a very serious scald hazard and place the temperature at a level which would require a tempering device to be installed at any fixture which discharges water to the sanitary drainage system in order to comply with 803.1 of the 2011 OPC ("water above 140 degrees Fahrenheit shall not be discharged into any part of a drainage system"). Changing the definition of "hot water" to "Water at a temperature greater than or equal to 131°F (I recommend at least 135°F.)" would at least place the temperature in a range that would be able to kill the bacteria in less than 6 hours of sustained temperature.

The current definition of "hot water" in the 2011 OPC is "Water at a temperature greater than or equal to 110°F (43°C)."

Additional benefits of changing the definition would require the installer to set the high limit stop on the ASSE 1016 devices to limit the hot water temperature to 120 degrees Fahrenheit as required by Ohio Plumbing Code section 423.3. Since the definition of "hot water" is 110 degrees and above, there is no requirement to set the high limit stop if they are setting the temperature between 110 – 120 degrees Fahrenheit at the water thermostat.

See also section 501.8 from the 2009 ICC International Plumbing Code & Commentary.

Also, in speaking with several water heater manufacturers' reps, storage type water heaters should be kept at 140 degrees Fahrenheit in order to provide an adequate supply of hot water to the building. They have indicated their sizing charts are based off of the 140 degree temperature, not 110 to 120

Bibliography: October 2013 vol.19 num.10 of PME magazine This Week Community News August 8, 2013

Cost Impact: Will not increase the cost of construction A change in a definition does not require more mateiral or labor to be expended.

> P 4-15 : 202-HOT WATER-BICHARDSON6028

Proponent: James Richardson, Jr (jarichardson@columbus.gov)

# 2015 International Plumbing Code

Revise as follows:

#### SECTION 202 DEFINITIONS

LOCAL VENT STACK. A vertical pipe to which connections are made from the fixture side of traps and through which vapor or foul air is removed from the fixture or device-utilized on bedpan washers.

Reason: Specifically mentioning bedpan washers leads people to think this section only applies to bed pan washer. There are other situations which typically would require the installation of a local vent stack such as interceptors and separators.

Cost Impact: Will not increase the cost of construction This proposal just clarifies what a local vent stack is. No additional materials or labor is needed for a clarification.

> P 5-15 : 202-LOCAL VENT STACK-RICHARDSON6019

# P 6-15

202 (New)

Proponent: Curtis Dady, representing Viega, LLC (curtis.dady@viega.us)

# 2015 International Plumbing Code

Add new definition as follows:

#### SECTION 202 DEFINITIONS

**PRESS-CONNECT JOINT.** A permanent mechanical joint incorporating an elastomeric seal or an elastomeric seal and corrosion-resistant grip ring. The joint is made with a pressing tool and jaw or ring approved by the fitting manufacturer.

Reason: The IMC includes this definition but the IPC does not.

**Cost Impact:** Will not increase the cost of construction It is simply the addition of a definition and has nothing to do with cost.

P 6-15 : 202-PRESS-CONNECT JOINT (New)-DADY3628

# 202

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## 2015 International Plumbing Code

Delete without substitution:

#### SECTION 202 DEFINITIONS

SWIMMING POOL. Any structure, basin, chamber or tank containing an artificial body of water for swimming, diving or recreational bathing having a depth of 2 feet (610 mm) or more at any point.

Reason: There is no need for such a specific definition for a swimming pool within the context of how the term is used in the few places in the IPC. Water from a swimming pool is handled in the same manner no matter how a swimming pool is actually defined. And this definition conflicts with the definition of a swimming pool according to the International Swimming Pool and Spa Code.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 85.

#### Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 7-15 : 202-SWIMMING POOL-SNYDER3914

# 303.4

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## 2015 International Plumbing Code

#### Revise as follows:

**303.4 Third-party certification.** All plumbing products and materials required by the code to be in compliance with a referenced standard shall be listed by a third-party certification agency as complying with the referenced standards. Products and materials shall be identified in accordance with Section 303.1.

Reason: For the 2015 IRC, a proposal was submitted and approved that changed the IRC to clarify that only those materials that are required to comply with a reference standard in the code, are to be third party certified. When the change for required listing of components came about for the 2012 code code cycle for both the IRC and the IPC, it was not discovered that there was a potential for misinterpretation of this section until after the proposals for Group A codes (the IPC) were underway. The issue could only be addressed in the IRC.

The need for the rewording is this: Some interpreted this section that all plumbing products and materials had to be listed. That is, a third party agency had to evaluate every item used in the installation of a plumbing system. The problem is that a number of common items such as steel shield plates, thread seal tape, hanger strap, brackets for supporting pipes and many other similar items are not made to a standard that is referenced in the code. Listing such plumbing products to unknown criteria that is not indicated in the code is unnecessary and would only serve to increase the cost of construction without an improvement in the quality of construction. Where the code does find a need for materials to be of controlled quality, standards are brought into the code for those items and are thus required to be third party listed to prove that the manufacturer has complied with the standard.

#### This proposal is needed for consistency with the IRC.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMCAC 144.

#### Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 8-15 : 303.4-SNYDER3915

# P 9-15

# 303.5 (New)

Proponent: Bill LeVan, Cast iron Soil Pipe Institute, representing Cast Iron Soil Pipe Institute (blevan@mindspring.com)

## 2015 International Plumbing Code

#### Add new text as follows:

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 wih the minimum inspection requirements of Annex A or Annex A1 of the ASTM and CISPI product standards indicated in the code for such products.

**Reason:** Third Party inspections of manufacturers of cast iron soil pipes and fittings and the couplings used to join theses products together are required however not all third party inspectors are familiair with these essential items which must be inspected to asure complaince. The ASTM and CISPI standards were modified adding the minimum requirements which are reasonable and to minimize manufacturing defects. The ASTM and CISPI committees worked closely with third party certifiers to develop these inspection schemes.

#### Cost Impact: Will not increase the cost of construction

Improved inspection prodcedures at the manufacturing locations will reduce the amount of defects on jobsites before the instalaltion is begun and reduce the amount of time needed for instalaltion.

P 9-15 : 303.5 (New)-LEVAN4523

# P 10-15

# 304.4, 304.5 (New), 504.6, 504.7.2

Proponent: Richard Avery, Self, representing Self (ravery59@gmail.com); Stephen Avery (smavery77@yahoo.com)

## 2015 International Plumbing Code

Revise as follows:

#### 304.4 Openings in structures for pipes. No change to text.

**304.5 Opening in terminal end of pipes.** The terminal end of piping exiting a structure to the outside where the terminal end remains open as a vent or drain shall be rodent proofed to prevent crawling or flying insects, termites, birds, or other creatures from gaining unrestricted access to the interior of the structure and thereby weaken the structural integrity of the building, or disable pipes, fittings, components or equipment from their designed purpose. Likewise, the end of piping that terminates on the interior of the structure, but remains vulnerable to insects, termites, and other creatures that gain access to the inside of the structure through other means shall be rodent proofed in the same manner as above.

504.6 Requirements for discharge piping. The discharge piping serving a pressure relief valve, temperature relief valve or combination thereof shall:

- 1. Not be directly connected to the drainage system.
- 2. Discharge through an *air gap* located in the same room as the water heater.
- 3. Not be smaller than the diameter of the outlet of the valve served and shall discharge full size to the air gap.
- 4. Serve a single relief device and shall not connect to piping serving any other relief device or equipment.
- 5. Discharge to the floor, to the pan serving the water heater or storage tank, to a waste receptor or to the outdoors.
- 6. Discharge in a manner that does not cause personal injury or structural damage.
- 7. Discharge to a termination point that is readily observable by the building occupants.
- 8. Not be trapped.
- 9. Be installed so as to flow by gravity.
- 10. Terminate not more than 6 inches (152 mm) above and not less than two times the discharge pipe diameter above the floor or *flood level rim* of the waste receptor.
- 11. Not have a threaded connection at the end of such piping.
- 12. Not have valves or tee fittings.
- 13. Be constructed of those materials listed in Section 605.4 or materials tested, rated and *approved* for such use in accordance with ASME A112.4.1.
- 14. Be fitted with a nylon mesh sock or other suitable material that will allow water to drain from the line while preventing insects, termites, mud daubers, or other creatures from entering and clogging the discharge pipe and/or from disabling the temperature and pressure relief valve. Each opening in the mesh shall be no larger than 0.0165 inches (0.4191 mm or 419.1 microns, commonly reported as 420 microns), which corresponds to U.S. sieve size number 40.

**504.7.2** Pan drain termination. The pan drain shall extend full size and terminate over a suitably located indirect waste receptor or floor drain or extend to the exterior of the building and terminate not less than 6 inches (152 mm) and not more than 24 inches (610 mm) above the adjacent ground surface. The terminal end of the pipe shall be covered with a nylon mesh sock or other suitable material that will allow water to drain from the line while preventing insects, termites, mud daubers, or other creatures from entering and clogging the discharge pipe and/or from gaining access to the interior frameworks and thereby weaken the structural integrity of the building, or further damage other pipes, fittings, components or equipment from their designed purpose. Each opening in the mesh shall be no larger than 0.0165 inches (0.4191 mm or 419.1 microns, commonly reported as 420 microns), which corresponds to U.S. sieve size number 40. Where a pan drain was not previously installed, a pan drain shall not be required for a replacement water heater installation.

Reason: Hot water heaters and their associated components and drain lines present three areas of concern that are addressed in this proposal. All three areas are summarized below and further explained following the summaries:

- This proposal seeks to prevent crawling and flying insects, termites, mud daubers, roaches, ants, rodents, and other creatures from:
- 1. disabling the water heater's temperature and pressure relief valve thus rendering the valve a danger to the occupants of the home or building and to the structure itself.
- 2. clogging the discharge pipes exiting from both the temperature and pressure relief valve and water heater pan drain.

3. gaining access to the interior of homes and buildings and thereby compromise the structural integrity of the home or building's internal frameworks.

Justification for each item above follows:

1. Watts Water Technologies, Inc., formerly known as Watts Regulator Company demonstrated the dangers inherent in overheated water tanks in 1939 by raising the water temperature inside the tank to excessive levels. In each case, the water tanks exploded with violent force and likewise destroyed the structures in which the tanks were housed. In one instance, a 30 gallon water tank heated to 297 degrees with 50 pounds of pressure exploded with 2 million foot pounds of energy. Watt's engineers calculated that the destructive force was equal to two pounds of dynamite. Watts concluded that "it is very essential that safety measures be adopted to require proper temperature and pressure relief protection for public safety" (Watts, 13:35). Later tests such as those conducted in 2007 by Adam Savage and Jamie Hyneman confirm the deadly combination of temperature and pressure buildup inside of a 52 gallon tank, which, upon exploding, sent out lethal shock waves at over one-hundred G forces. Both examples support the hypothesis that water heated to excessive temperature and subjected to pressure within a storage tank is a ticking time bomb with potentially deadly consequences to humans and devastating destruction to property. The lesson from experiments like those discussed here were accounted for in the inaugural edition of the International Plumbing Code (IPC) in that since its incerption, the IPC requires that all water heaters be supplied with an approved temperature and pressure relief valve that complies with ANSI Z21.22, but the code does not further protect the valve from potential damage by insects, termites, and other creatures that can gain access to the T&P relief valve through the discharge pipe that, in many cases, terminates outside the home or structure. Care must be taken to prevent damage to or disabling of the temperature and pressure relief valve through valve to avoid fatalities to people in homes and buildings and catastrophic consequences to ceilings, walls, and floors of structures.

2. Insects seeking shelter from the elements can clog the discharge line from the water heater pan drain or from the temperature and pressure relief valve by nest building activity. Of particular interest are those insects whose nest will not be washed away by exiting water through the discharge pipe when the line is in use. Dirt daubers are notorious creatures for building nests in unlikely places like in the air flow indictor of airplanes known as a pitot tube, which registers air speed as air passes through the tube. In one instance on a flight from the Dominican Republic to Frankfurt, Germany in February 1996, Birgenair Flight 301 crashed just minutes after takeoff when a blocked pitot tube indicated contradictory and incorrect airspeeds on the pilot and co-pilot's airspeed indicators, respectively. Attempts to reduce an erroneously high airspeed resulted in a stall that rolled the Boeing 757 upside down and into the Atlantic Ocean, killing 189 people on board: 176 passengers and 13 crew members. According to the Flight Safety Foundation report, a contributory cause of the crash was dirt from an insect that clogged the pitot tube while the aircraft was on the ground. An inspection of the pitot tube was not performed in the preflight procedures; therefore, the problem was not corrected prior to takeoff.

Researchers from the Coweeta Long Term Ecological Research Network in Otto, North Carolina, studied mud daubers and their preferences for substrate material. It seems that organ pipe mud daubers gravitate toward woody, rocky, or concrete substrates as the preferred material upon which to build a nest; however, 2.67% of nests were built on other types of substrates, including a light bulb, a chain, and electrical wire. The common link between pitot tubes, light bulbs, chains, and electrical wire is that all of these material environments include smooth substrates that, at first, might not appear to have the optimal texture to hold mud together, yet these persistent insects will build whenever and wherever opportunity and resources are available, including inside plastic or copper drain pipes. To date, the International Plumbing Code makes no provision for preventing insects and other creatures from inhabiting the discharge pipes from the water heater pan drain or from the temperature and pressure relief valve.

3. Dr. Ron Harrison, Entomologist and Technical Director for Orkin, Inc., states that "Termites are considered the top threat to wood-based structures, ahead of fire, flood and wind." According to Dan Suiter from the Entomology Department of the University of Georgia, "Termites are found in every state in the U.S., except Alaska." Further, the National Pest Management Association estimates that termites alone account for over \$5 billion dollars in damages to homes and buildings. Termites are not just an American problem. Dr. Suiter goes on to say, "Out of the more than 2,000 termite species worldwide, only about 50 species can be found in the United States." The problem extends far beyond the boundaries of America into every major continent on the planet. Experts for the United Nations Environment Programme meeting at the Stockholm Convention indicate that termites are indigenous to Europe, mostly in the southern regions with warmer climates; most of Africa due to its diversity of warm, dry, and wet climates; ideal for different species of termites; Asia, and generally in China. The report adds that, "Termite distribution in China is restricted to the tropical, subtropical, and milder habitats south of the Yangtze River." Termites are also found on the Australian continent where "All termite ecological groups (subterranean, drywood, harvester, and mound buildiers) are represented..."

Whether entering through the discharge pipe leading to the temperature and pressure relief valve, or through the discharge pipe from the water heater pan drain, flying or crawling insects and other creatures must be stopped from gaining access to and damaging components, fittings, or equipment installed in the home or business, and, more importantly, from causing harm to people by disabling said components, fittings, and/or equipment. Likewise, the structural integrity of a home or business must be protected from damage by restricting access to the terminal end of pipes whether inside or outside the home or building. A nylon mesh sock of the type proposed here will allow water to drain from the discharge pipe while keeping out insects and other creatures that bring undesirable consequences to people, equipment, and structures. In the event of a small trickle of water, the pop-off sock will let water pass while protecting the terminal opening in the pipe. On the other hand, if the temperature and pressure relief valve opened, the sudden rush of water would cause the nylon mesh sock to pop-off the end of the pipe thus allowing an unrestricted flow of water to exit the full diameter of the discharge pipe. The attached images provide an illustration of the pop-off sock on and off a standard 3/4" CPVC elbow





a conceptual example of the form and function of the proposed idea

. The sock in the attached images was hand sewn and offers



A professionally sewn sock by a textile manufacturer would be seamless and likely include a small amount of spandex material woven into the final product.



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[Five Signs Your Home May Be Infested With Termites] [Ron Harrison] [2014] [Para 1] [http://www.realtor.com/home-garden/home-maintenance/summer-maintenance/five-signs-your-home-may-be-infested-with-termites.aspx]

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#### Cost Impact: Will increase the cost of construction

Estimates for the cost of using the pop-off sock have been calculated based upon a typical installation of a water heater with a 3/4" CPVC discharge pipe from the temperature and pressure relief valve, and a 1" PVC discharge pipe from the water heater pan drain. In both cases, it is assumed that the discharge piping terminates with a 90 degree elbow where the terminal end faces downward.

For the 3/4" CPVC discharge pipe, the terminal end of the elbow will require approximately 3 square inches of nylon mesh to cover the outside diameter of the opening up to the bend in the elbow nearest to the structure. {{3}} {{4}}

For the 1" PVC discharge pipe, the terminal end of the elbow will require approximately 7 square inches of nylon mesh to cover the outside diameter of the opening up to the bend in the elbow nearest to the structure.

Estimates for material costs vary by supplier; however, Industrial Netting in Minneapolis, MN quoted \$5.00 for 864 square inches of woven nylon mesh (12" x 72").

Two-hundred eighty-eight (288) socks can be manufactured from 864 square inches of nylon mesh for the 3/4" CPVC elbow. {{1}

One-hundred twenty-three (123) socks can be manufactured from 864 square inches of nylon mesh for the 1" PVC elbow.

The material to make one sock to cover the terminal end of a 3/4" CPVC elbow will cost approximately two cents. {{3}}

The material to make one sock to cover the terminal end of a 1" PVC elbow will cost approximately four cents.

Labor and other expenses to manufacture each sock will increase the end price; however, it seems reasonable that mass production on today's computerized machines will keep the retail cost of each sock at or below one dollar each; therefore, requiring the use of a pop-off sock on the terminal end of discharge pipes from the temperature and pressure relief valve and from the pan drain discharge line will increase the cost of construction by no more than two dollars.

P 10-15 : 304.4-AVERY3763

305.1

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

# 2015 International Plumbing Code

Revise as follows:

**305.1** GerrosionProtection against corrosion. 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 <del>cinder</del> walls and floors or othermasonry. Metallic piping shall not be placed in direct contact with corrosive materialsoil. Where sheathing is used to prevent direct contact, the sheathing shall be protected against external corrosive material. 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 0.0250.008 inch (0.648 mil) (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.

Reason: The 2015 IRC has this new language for this section. The IPC should be coordinated that confusion does not occur. There are no new requirements being proposed.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 152.

#### Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 11-15 : 305.1-SNYDER3916

# P 12-15

# 305.6

**Proponent:** Gary Kozan, CPD, Ridgeway Plumbing, representing Florida Association of Plumbing Heating Cooling Contractors (garyk@ridgewayplumbing.com)

# 2015 International Plumbing Code

#### Revise as follows:

**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  $1^1 / \frac{24}{24}$  inches (<del>3031.8</del> 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.

**Reason:** The safest place to install water piping is in the middle of the wall. But in a typical 3-1/2 inch stud wall, even a 1/2-inch pipe (5/8-inch o.d.) ends up slightly nearer than the requisite 1-1/2 inch setback from either edge. Depending on enforcement, installers are often required to put stud guards on *both* sides of the stud. This makes no sense. By simply reducing the setback from 1-1/2 inches to 1-1/4 inches, both 1/2-inch and 3/4-inch water lines can be safely installed in the center of the wall without triggering the need for strike plates on both sides. This encourages quality workmanship instead of penalizing it. The pipes are still safely out of range of drywall screws up to 1-1/2 inches long. This proposal is consistent with the National Electrical Code, which specifies a 1-1/4 inch setback from the edge of a stud. It is also consistent with the IRC, which also specifies a 1-1/4 inch

This proposal is consistent with the National Electrical Code, which specifies a 1-1/4 inch setback from the edge of a stud. It is also consistent with the IRC, which also specifies a 1-1/4 inch setback. The Uniform Plumbing Code requires only a 1-inch setback. This proposal will bring consistency to the I-Codes.

Cost Impact: Will not increase the cost of construction

A typical 3" x 6" metal stud guard costs about 20 cents. This proposal would reduce the quantity of stud guards on any given project by about 15-20%, depending on local enforcement.

P 12-15 : 305.6-KOZAN3474

# P 13-15

# 306.2.4 (New)

Proponent: Brian Conner, Charlotte Pipe and Foundry, representing Charlotte Pipe and Foundry (bconner@charlottepipe.com)

## 2015 International Plumbing Code

#### Add new text as follows:

**306.2.4** Plastic sewer and DWV piping installation. Plastic sewer piping and DWV piping installed underground shall be installed in accordance with the manufacturer's instructions. Trench width shall be controlled to not exceed either the pipe outside diameter plus 16 inches (406 mm) or the pipe outside diameter multiplied by 1.25 plus 12 inches (305 mm), whichever is greater. The piping shall be bedded in 4 inches of granular fill and then backfilled compacting the side fill in 6 inch layers on each side of the piping. The compaction shall be to a minimum of 85 percent standard Proctor density and extend to a minimum of 6 inches above the top of the pipe.

Reason: Plastic sewer and DWV piping manufacturers require that the plastic pipe be installed in accordance with ASTM D2321 but installers and inspectors in the field seldom have the standard readily available and might not be aware of the requirement. The minimum requirements are contained in this code change and provide guidance to the installer and the inspector. Improperly installing plastic piping can result in over deflection of the piping and result in leaks allowing the waste water to contaminate the soil and allowing groundwater to enter the piping causing the waste water treatment plants to treat rainwater.

#### Cost Impact: Will not increase the cost of construction

No additional cost of this code change is expected. Savings in treatment costs by waste water plants is likely.

P 13-15 : 306.2.4 (New)-CONNER5392

# P 14-15

307.1, 307.2, 307.2.1 (New), 307.2.2 (New), 307.2.3 (New), 307.2.4 (New), 307.5 (New), 307.5.1 (New), 307.5.2 (New), 307.5.3 (New)

Proponent: James Richardson, Jr (jarichardson@columbus.gov)

## 2015 International Plumbing Code

#### Revise as follows:

**307.1 General.** In The building or structure shall not be weakened by the installation of mechanical systems. Where floors, walls, ceilings or any other portion of the building or structure are required to be altered or replaced in the process of installing or repairing any part of a plumbing and drainage installationsystem, the finished floors, walls, ceilings, tile work or any other part of the building or premises that must be changed or replacedstructure shall be left in a safe structural condition in accordance with the requirements of the *International Building Code*.

**307.2 Cutting, notching or bored holes.** AThe cutting, notching and boring of wood framing membermembers shall not be cut, notched or bored in excess of limitations specified in the International Building Code.comply with Sections 307.2.1 through 307.2.4.

#### Add new text as follows:

**307.2.1 Joist notching.** Notches on the ends of joists shall not exceed one-fourth the joist depth. Holes bored in joists shall not be within 2 inches (51 mm) of the top or bottom of the joist, and the diameter of any such hole shall not exceed one third the depth of the joist. Notches in the top or bottom of joists shall not exceed one-sixth the depth and shall not be located in the middle third of the span.

**307.2.2 Stud cutting and notching.** In exterior walls and bearing partitions, a wood stud shall not be cut or notched in excess of 25 percent of its depth. In nonbearing partitions that do not support loads other than the weight of the partition, a stud shall not be cut or notched in excess of 40 percent of its depth.

**307.2.3 Bored holes.** The diameter of bored holes in wood studs shall not exceed 40 percent of the stud depth. The diameter of bored holes in wood studs shall not exceed 60 percent of the stud depth in nonbearing partitions. The diameter of bored holes in wood studs shall not exceed 60 percent of the stud depth in any wall where each stud is doubled, provided that not more than two such successive doubled studs are so bored. The edge of the bored hole shall be not closer than 5 /8 inch (15.9 mm) to the edge of the stud. Bored holes shall be not located at the same section of stud as a cut or notch.

307.2.4 Engineered wood products. Cuts, notches and holes bored in trusses, structural composite veneer lumber, structural glue-laminated members and ljoists are prohibited except where permitted by the manufacturer's recommendations or where the effects of such alterations are specifically considered in the design of the member.

307.5 Cutting, notching and boring in steel framing. The cutting, notching and boring of steel framing members shall comply with Sections 307.5.1 through 307.5.3.

307.5.1 Cutting, notching and boring holes in structural steel framing. The cutting, notching and boring of holes in structural steel framing members shall be as prescribed by the registered design professional.

**307.5.2 Cutting, notching and boring holes in cold-formed steel framing.** Flanges and lips of load-bearing cold-formed steel framing members shall not be cut or notched. Holes in webs of load-bearing cold-formed steel framing members shall be permitted along the centerline of the web of the framing member and shall not exceed the dimensional limitations, penetration spacing or minimum hole edge distance as prescribed by the registered design professional. Cutting, notching and boring holes of steel floor/roof decking shall be as prescribed by the registered design professional.

307.5.3 Cutting, notching and boring holes in nonstructural cold-formed steel Flanges and lips of nonstructural cold-formed steel wall studs shall not be cut or notched. Holes in webs of nonstructural cold-formed steel wall studs shall be permitted along the centerline of the web of the framing member, shall not exceed 11/2 inches (38 mm) in width or 4 inches (102 mm) in length, and shall not be spaced less than 24 inches (610 mm) center to center from another hole or less than 10 inches (254 mm) from the bearing end.

**Reason:** Many States only adopt the ICC plumbing code and have their own building code or within States there are areas which are inspected by Health Departments not Building Departments. In these cases, the contractors and/or inspectors may or may not have the appropriate building code for reference concerning structural safety. The mechanical code includes the references and keeping it in the plumbing code would keep them more in line with each other.

#### Cost Impact: Will not increase the cost of construction

The International Building Code already has these limitations and requirements. Putting the information in the IPC is a necessity for those jurisdictions that do not adopt the IBC but never the less, should have been already following these requirements.

P 14-15 : 307.1-RICHARDSON6021

# P 15-15

Part I: 308.10 (New) Part II: P2605.2 (New)

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

# Part I

# 2015 International Plumbing Code

Add new text as follows:

308.10 Thermal expansion tanks. A thermal expansion tank shall not be supported by the piping that connects to the thermal expansion tank.

# Part II

# 2015 International Residential Code

Add new text as follows:

P2605.2 Thermal expansion tanks. A thermal expansion tank shall not be supported by the piping that connects to the thermal expansion tank.

Reason: Too often, inspectors see thermal expansion tanks hanging on the piping that the tank connects to. Even the smallest size of tank could weigh up to 16 pounds when full of water. where these tanks are installed at the end of a horizontal rigid pipe from the side outlet of a tee, there is significant moment being applied to the piping. Larger tanks or longer pipes result in bigger moments. And perhaps a significant "moment" when the pipe cracks or breaks off. Although the this proposed section started off trying to identify where it was OK to support the tank from the piping, the realization was made that it would be easiest to just not have the piping support the tank. Strap the tank to the building structure or the water heater tank, or place the tank on top of the water heater where it will not be disturbed (and hopefully not exposed to heat from a nearby flue of a gas water heater.)

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 36.

#### Cost Impact:

Part I: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

 $\label{eq:part II: Will not increase the cost of construction} \end{tabular}$ 

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 15-15 : 308.10 (New)-SNYDER3925

# P 16-15

# Table 308.5

Proponent: Mike Cudahy, representing Plastic Pipe and Fittings Association (mikec@cmservnet.com)

## 2015 International Plumbing Code

# **Revise as follows:**

#### TABLE 308.5 HANGER SPACING

PIPING MATERIAL	MAXIMUM HORIZONTAL SPACING (feet)	MAXIMUM VERTICAL SPACING (feet)
Cross-linked polyethylene (PEX) pipe <u>1 inch and</u> <u>smaller</u>	2.67 (32 inches)	10 <sup>b</sup>
Cross-linked polyethylene (PEX) pipe 1 1/4 inch and larger	4	10b
Polyethylene of raised temperature (PE-RT) pipe <u>1</u> inch and smaller	2.67 (32 inches)	10 <sup>b</sup>
Polyethylene of raised temperature (PE-RT) pipe 1 1/4 inch and larger	<u>4</u>	<u>10b</u>

(Portions of table not shown remain unchanged)

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

- a. The maximum horizontal spacing of cast-iron pipe hangers shall be increased to 10 feet where 10-foot lengths of pipe are installed.
- b. For sizes 2 inches and smaller, a guide shall be installed midway between required vertical supports. Such guides shall prevent pipe movement in a direction perpendicular to the axis of the pipe

**Reason:** The 2015 code cycle for the IRC included updates to the support spacing for both PEX and PE-RT tubing for sizes larger than 1". The IRC-P Table P2605.1 is current and correct and should be used as the base template for all other tables within the ICC codes as identified in this amendment proposal. The horizontal support spacing for both PEX and PE-RT tubing (piping) up to and including 1" size is 32" (2-2/3Ft) and 48" (4Ft) for sizes 1- 1/4" and larger. These dimensions are consistent with all published PEX literature and manufacture's installation instructions.

#### Cost Impact: Will not increase the cost of construction

This proposal modifies the spacing for piping material support into the code and thus the code with this proposal added will not cause the cost of construction to increase, and could decrease the cost as less support is required for larger pipe.

P 16-15 : T308.5-CUDAHY4741

# P 17-15

# Table 308.5

Proponent: Pennie L Feehan, representing Copper Development Association (penniefeehan@me.com)

# 2015 International Plumbing Code

Revise as follows:

#### TABLE 308.5 HANGER SPACING

PIPING MATERIAL	MAXIMUM HORIZONTAL SPACING (feet)	MAXIMUM VERTICAL SPACING (feet)
Brass pipe	<del>10</del>	<del>10</del>
Copper or copper-alloy pipe <u>and tubing</u>	<del>12</del> 8	10
Copper or copper alloy tubing, 1 <sup>+, 1</sup> /4 - inch diameter and Smaller	φ	<del>10</del>
Copper or copper alloy tubing.1 <sup>1</sup> -/ <sub>2-inch</sub> diameter and <sup>larger</sup>	<del>10</del>	<del>10</del>

(Portions of table not shown remain unchanged)

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. The maximum horizontal spacing of cast-iron pipe hangers shall be increased to 10 feet where 10-foot lengths of pipe are installed.

b. For sizes 2 inches and smaller, a guide shall be installed midway between required vertical supports. Such guides shall prevent pipe movement in a direction perpendicular to the axis of the pipe

Reason: Brass is a copper alloy and the supporting requirements are covered under the Copper and Copper Alloy Pipe and Tubing line. The 6 foot requirement is to restrictive. The Copper Tubing Handbook written by Copper Development Association recommends horizontal support every 8 feet.

#### Cost Impact: Will not increase the cost of construction

This proposal wil not increase the cost of construction as this is only a clarification in the name of a product

P 17-15 : T308.5-FEEHAN3788

# P 18-15

# Table 308.5

Proponent: Larry Gill, representing IPEX USA LLC (larry.gill@ipexna.com)

# 2015 International Plumbing Code

Revise as follows:

#### TABLE 308.5 HANGER SPACING

PIPING MATERIAL	MAXIMUM HORIZONTAL SPACING (feet)	MAXIMUM VERTICAL SPACING (feet)
Polyethylene of raised temperature (PE-RT) pipe <u>1" and less</u>	2.67 (32 inches)	10 <sup>b</sup>
Polyethylene of raised temperature (PE-RT) pipe 1 1/4" and greater	<u>4 (48 inches)</u>	<u>10<sup>b</sup></u>

(Portions of table not shown remain unchanged)

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. The maximum horizontal spacing of cast-iron pipe hangers shall be increased to 10 feet where 10-foot lengths of pipe are installed.

b. For sizes 2 inches and smaller, a guide shall be installed midway between required vertical supports. Such guides shall prevent pipe movement in a direction perpendicular to the axis of the pipe

Reason: PE-RT 1-1/4 inches and greater can be supported at 48 inches. The 48 inch support spacing is already in the 2015 IMC.

#### Cost Impact: Will not increase the cost of construction

This is a simple change to add support spacing requirements of 4 feet for larger PE-RT sizes and the change will result in less supports and a cost savings without compromising the integrity of the installation.

P 18-15 : T308.5-GILL3759

# P 19-15

Part I: 308.6 Part II: P2605.1

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

# Part I

## 2015 International Plumbing Code

#### Revise as follows:

**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 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 a direction opposite the pipe flow. A change of flow direction into a vertical pipe shall not require the upstream pipe to be braced.

# Part II

## 2015 International Residential Code

# Revise as follows:

P2605.1 General. Piping shall be supported in accordance with the following:

- 1. Piping shall be supported to ensure alignment and prevent sagging, and allow movement associated with the expansion and contraction of the piping system.
- 2. Piping in the ground shall be laid on a firm bed for its entire length, except where support is otherwise provided.
- Hangers and anchors shall be of sufficient strength to maintain their proportional share of the weight of pipe and contents and of sufficient width to
  prevent distortion to the pipe. Hangers and strapping shall be of *approved* material that will not promote galvanic action. Rigid support sway bracing
  shall be provided at
- 4. Where horizontal pipes 4 inches (102 mm) and larger convey drainage or waste, and where a pipe fitting changes inthe 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 a direction opposite the pipe flow. A change of flow direction into a vertical pipe shall not require the upstream pipe to be braced.
- 5. Piping shall be supported at distances not to exceed those indicated in Table P2605.1.

Reason: PART I: The requirements of this section are vague enough such that several contractors working large projects have been "caught" mid-project not knowing exactly what the code was requiring. This section is about preventing undue stress on the joints in a drainage piping system. It is known that drainage piping systems can be moved about by "slugs" of waste hitting 90 degree bends in the piping where the pipe downstream is "horizontal". Where the pipe downstream of the elbow is no longer "horizontal", that is, 45 degrees or greater from the horizontal plane, the waste is falling and is less likely to impact the inside of the elbow and therefore, not impart significant forces that would cause the piping system to move.

PART II: The requirements of this section are vague enough such that several contractors working large projects (under the IPC) have been "caught" mid-project not knowing exactly what the code was requiring. Certainly, the same situation could occur for contractors working on large IRC buildings. The same clarification proposal has been proposed for the IPC so for coordination, it is proposed to this code.

This section is about preventing undue stress on the joints in a drainage piping system. It is known that drainage piping systems can be moved about by "slugs" of waste hitting 90 degree bends in the piping where the pipe downstream is "horizontal". Where the pipe downstream of the elbow is no longer "horizontal", that is, 45 degrees or greater from the horizontal plane, the waste is falling and is less likely to impact the inside of the elbow and therefore, not impart significant forces that would cause the piping system to move.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 120.

#### Cost Impact:

Part I: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

#### Part II: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 19-15 : 308.6-SNYDER3918

# P 20-15

Part I: 312.1 Part II: P2503.7

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Mike Cudahy, representing Plastic Pipe and Fittings Association (mikec@cmservnet.com)

# Part I

# 2015 International Plumbing Code

## Revise as follows:

**312.1 Required tests.** The permit holder shall make the applicable tests prescribed in Sections 312.2 through 312.10 to determine compliance with the provisions of this code. The permit holder shall give reasonable advance notice to the code official when the plumbing work is ready for tests. The equipment, material, power and labor necessary for the inspection and test shall be furnished by the permit holder and he or she shall be responsible for determining that the work will withstand the test pressure prescribed in the following tests. All plumbing system piping shall be tested with either water or, for piping systems other than plastic, by air. After the plumbing fixtures have been set and their traps filled with water, the entire drainage system shall be submitted to final tests. The code official shall require the removal of any cleanouts if necessary to ascertain whether the pressure has reached all parts of the system.

**Exception:** For plastic piping systems, testing with a compressed gas shall be an alternative to hydrostatic testing where compressed air or other gas pressure testing is specifically authorized by all of the manufacturer's instructions for the plastic pipe and fittings products installed at the time the system is being tested, and compressed air or other gas testing is not otherwise prohibited by applicable codes, laws, or regulations outside of this code.

# Part II

## 2015 International Residential Code

#### Revise as follows:

**P2503.7 Water-supply system testing.** Upon completion of the water-supply system or a section of it, the system or portion completed shall be tested and proved tight under a water pressure of not less than the working pressure of the system or, for piping systems other than plastic, by an air test of not less than 50 psi (345 kPa). This pressure shall be held for not less than 15 minutes. The water used for tests shall be obtained from a potable water source.

**Exception:** For plastic piping systems, testing with a compressed gas shall be an alternative to hydrostatic testing where compressed air or other gas pressure testing is specifically authorized by all of the manufacturer's instructions for the plastic pipe and fittings products installed at the time the system is being tested, and compressed air or other gas testing is not otherwise prohibited by applicable codes, laws, or regulations outside of this code.

Reason: PPFA has a new air testing policy, which allows for some limited air testing of plastic piping systems, if a number of conditions are met.

#### Bibliography:

Part II: PLASTIC PIPE AND FITTINGS ASSOCIATION POLICY ON TESTING PLASTIC PIPE AND FITTINGS INSTALLATIONS WITH COMPRESSED GAS, PPFA, 2014,

http://www.ppfahome.org/ub4.aspx Compressed air or any other compressed gases should not be used for pressure testing plastic plumbing systems.

EXCEPTIONS:

1.) With trap seal pull testing, where a completed DWV system is vacuum tested with all of its traps filled with water, and the trap seals are tested with a vacuum typically between one and two inches of water column.

2.) For plastic piping systems specifically designed for use with compressed air or gasses;

• Manufacturers' instructions must be strictly followed for installation, visual inspection, testing and use of the systems,

#### (and)

Compressed air or other gas testing is not prohibited by the authority having jurisdiction (AHJ).

3.) When compressed air or other gas pressure testing is specifically authorized by the applicable written instructions of the manufacturers of all plastic pipe and plastic pipe fittings products installed at the time the system is being tested and compressed air or other gas testing is not prohibited by the authority having jurisdiction (AHJ).

The manufacturer should be contacted if there is any doubt as to how a specific system should be tested.

## Cost Impact:

Part II: Will not increase the cost of construction

This proposal simply adds another option for air testing some specific piping materials into the code and as such, the option is not requiring that this method be chosen. Thus the code with this proposal added will not cause the cost of construction to increase.

P 20-15 : 312.1-CUDAHY4674

# P 21-15

# 312.1.1, 312.1.2 (New), 312.5.1 (New), 107.4.1.1 (New)

Proponent: Ronald George, Self; www.ScaldPrevention.org, representing Self; www.ScaldPrevention.org (Ron@Plumb-TechLLC.com)

### 2015 International Plumbing Code

#### Revise as follows:

312.1.1 TestPressure test gauges. Gauges used for pressure testing shall be as follows:

- 1. Tests requiring a pressure of 10 pounds per square inch (psi) (69 kPa) or less shall utilize a testing gauge having increments of 0.10 psi (0.69 kPa) or less.
- Tests requiring a pressure of greater than 10 psi (69 kPa) but less than or equal to 100 psi (689 kPa) shall utilize a testing gauge having increments of 1 psi (6.9 kPa) or less.
- 3. Tests requiring a pressure of greater than 100 psi (689 kPa) shall utilize a testing gauge having increments of 2 psi (14 kPa) or less.

#### Add new text as follows:

312.1.2 Temperature test gauges. Temperature gauges shall have a range of 32°F to 220°F (0°C to 104.4°C). The accuracy of gauges shall be ±2°F (1.1°C).

312.5.1 Maximum hot water temperature tests. Upon completion of the hot water system and installation of the water heater, the water heater shall be turned on and set to the design operating temperature. The water heater shall be allowed to heat up until the water heater burner or heating elements shut off. The hot or tempered water temperature discharged at each plumbing fixture required by Chapter 4 to have a limit on the maximum water temperature, shall be verified that the temperature does not exceed the limits.

107.4.1.1 Hot or tempered water temperature testing. Altered, extended or repaired systems that affect the hot or tempered water temperatures at plumbing fixtures shall have the water temperature tested as prescribed herein to disclose excessive water temperatures.

**Reason:** This code change is intended to address testing of the maximum temperature limiting ddevices on fixtures like showers and tub/shower combination valves, whirlpool bathtubs and other fixtures with temperature limits to prevent scalding when water heaters are originally installed or replaced. Checking the temperature and readjustment of the limit stops should also be done after a master thermostatic mixing valve has been adjusted to a new temperature.



A Seminar and Technical Paper for the 25-28 Oct. 98 Annual ASPE Meeting at the Indianapolis Convention Center in Indianapolis, Indiana. Reprinted by Watts Regulator Company with permission of Dr. D. Symm. Jr. Figure 1 – Hot Water Scald Burns – Time vs Temperature Relationship for Second and Third Degree Burns for Adults and Children. (Notes By: Ron George, CPD, See: www.ScaldPrevention.org)

Bibliography: www.ScaldPrevention.org

Cost Impact: Will not increase the cost of construction

# P 22-15 312.2

**Proponent:** Gary Kozan, CPD, Ridgeway Plumbing, representing Florida Association of Plumbing Heating Cooling Contractors (garyk@ridgewayplumbing.com)

# 2015 International Plumbing Code

#### Revise as follows:

**312.2 Drainage and vent water test.** A water test shall be applied to the drainage system either in its entirety or in sections. If applied to the entire system, all openings in the piping shall be tightly closed, except the highest opening, and the system shall be filled with water to the point of overflow. If the system is tested in sections, each opening shall be tightly plugged except the highest openings of the section under test, and each section shall be filled with water, but no section shall be tested with less than a <del>10 foot5-foot</del> (3048 mm) head of water. In testing successive sections, at least the upper <del>105</del> feet (<del>30481524</del> mm) of the next preceding section shall be tested so that no joint or pipe in the building, except the uppermost <del>105</del> feet (<del>30481524</del> mm) of the system, shall have been submitted to a test of less than a <del>10 foot5-foot</del> (<del>30481524</del> mm) head of water. This pressure shall be held for not less than 15 minutes. The system shall then be tight at all points.

Reason: When testing a DWV system, the actual head pressure applied is not nearly as important as the ability to see the water in the stack. 10-foot head tests are typically verified by the inspector just "shaking the stack." If water splashes out, the system is considered to be watertight, even though it may not be. Mirrors and ladders are seldom used in the real world. By lowering the fill stack to 5 feet, both the installer and the inspector can visually verify the water level, and see if the system is holding tight.

There is nothing magical about a 10-foot head. The plain truth is that a 10-foot head (4.34 psi) is unilkely to reveal any leaks or defects that would not be detected with a 5-foot head (2.17 psi). Many jurisdictions throughout the country regard the 5-foot head test as equal or better because you can actually see if the water level drops. Florida, for example, officially adopted the 5-foot head test statewide in 2000. It was likewise approved in the 2015 IRC. It is time for the IPC also to recognize this proven common sense practice, and bring consistency to the I-Codes.

Cost Impact: Will not increase the cost of construction Reducing the fill stack from 10 feet to 5 feet will have no cost impact whatsover.

P 22-15 : 312.2-KOZAN3479

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## 2015 International Plumbing Code

#### Revise as follows:

**312.2 Drainage and vent water test.** A water test shall be applied to the drainage system either in its entirety or in sections. If applied to the entire system, all openings in the piping shall be tightly closed, except the highest opening, and the system shall be filled with water to the point of overflow. If the system is tested in sections, each opening shall be tightly plugged except the highest openings of the section under test, and each section shall be filled with water, but no section shall be tested with less than a <del>10 foot5-foot</del> (<del>30481524</del> mm) head of water. In testing successive sections, at least the upper <del>10 feet5-foot</del> (<del>30481524</del> mm) of the next preceding section shall be tested so that no joint or pipe in the building, except the uppermost <del>10 feet5-foot</del> (<del>30481524</del> mm) of the system, shall have been submitted to a test of less than a <del>10 foot5-foot</del> (<del>30481524</del> mm) head of water. This pressure shall be held for not less than 15 minutes. The system shall then be tight at all points.

Reason: In the last cycle, the IRC was changed to reduce the DWV water test pressure from 10 feet of head to 5 feet of head. This change to the IPC is to coordinate the IPC with the IRC. There was not a companion proposal in the last cycle for changing the IPC. This is the first time that this is being proposed for the IPC.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 16.

#### Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 23-15 : 312.2-SNYDER3928

# P 24-15

# 312.6

**Proponent:** Gary Kozan, CPD, Ridgeway Plumbing, representing Florida Association of Plumbing Heating Cooling Contractors (garyk@ridgewayplumbing.com)

## 2015 International Plumbing Code

#### Revise as follows:

**312.6 Gravity sewer test.** Gravity *sewer* tests shall consist of plugging the end of the *building sewer* at the point of connection with the public sewer, <u>completely</u> filling the *building sewer* with water from the lowest to the highest point thereof, testing with not less than a 10-foot (3048 mm) head of water\_and maintaining such pressure for 15 minutes. The building sewer shall be watertight at all points.

**Reason:** Subjecting a gravity sewer to a 10-foot head test is outdated and impractical. By the time the building sewer is connected, fixtures have usually been installed, so both ends have to be plugged off before testing in order to protect the building from flooding. Leaks on gravity sewers are rare, considering that most today are constructed with plastic pipe and contain few fittings and joints. Simply filling the sewer with water is sufficient to identify any leaks. It should be noted that public sewer mains and branch laterals downstream of the building sewer are not water tested at all.

This testing method is identical to that found in the other model code (UPC), used in many states. Florida adopted similar requirements in 2000. It is time that the IPC recognizes this proven practice and bring the codes closer together.

#### Bibliography: 2012 Uniform Plumbing Code:

## 723.0 Building Sewer Test

723.1 General. Building sewers shall be tested by plugging the end of the building sewer at its points of connection with the public sewer or private sewage disposal system and *completely filling the building sewer with water from the lowest to the highest point thereof* (emphasis added), or by approved equivalent low-pressure air test. Plastic DWV piping systems shall not be tested by the air test method. The building sewer shall be watertight.

#### 2010 Florida Building Code - Plumbing:

312.6 Gravity sewer test. Gravity sewer tests shall consist of plugging the end of the building sewer with water at the point of connection with the public sewer, completely filling the building sewer with water from the lowest to the highest point thereof (emphasis added), and maintaining such pressure for 15 minutes. The building sewer shall be watertight at all points.

#### Cost Impact: Will not increase the cost of construction

Reducing the head test for gravity sewers will shorten the length of the fill stack, and eliminate the need for additional test fittings, test balls, and labor to plug off the upper end of the sewer. This should translate to a modest reduction in cost of approx. \$20 - \$40 per sewer test.

P 24-15 : 312.6-KOZAN3452

# P 25-15

## 312.10.1

Proponent: Michael Anthony, University of Michigan, representing University of Michigan (maanthon@umich.edu)

## 2015 International Plumbing Code

#### Revise as follows:

**312.10.1 Inspections.** Annual Periodic inspections shall be made of all backflow prevention assemblies and *air gaps* to determine whether they the assemblies are operable and the air gaps exist. The inspection intervals shall be determined by an approved reliability-centered inspection, testing and maintenance program or, in absence of such a program, inspections shall occur annually.

#### Reason:

We are over-testing on annual fixed interval testing in some installations and under-testing in others. Reliability centered maintenance is a method used by the airline industry and the military to use resources wisely. Large research universities such as ours prioritize our testing according to hazard and sometimes exceed minimum levels set by the host municipality. In other installations our testing records show that testing intervals should be relaxed in order to reduce maintenance-induced failures.

Utilizing Reliability Centered Maintenance - RCM- principles makes it possible for the process to be data-driven, rather than utilizing an arbitrary prescriptive testing interval, which may result in over-testing. RCM analyzes the failure modes and the mean time between failures. This improvement to the code allows us to present the results of this analysis, along with proposed optimized testing intervals to the ASJ.

## Bibliography: Reliability Centered Maintenance:

https://en.wikipedia.org/wiki/Reliability centered maintenance

It is generally used to achieve improvements in fields such as the establishment of safe minimum levels of maintenance, changes to operating procedures and strategies and the establishment of capital maintenance regimes and plans. Successful implementation of RCM will lead to increase in cost effectiveness, machine uptime, and a greater understanding of the level of risk that the organization is managing.

The late John Moubray, in his industry leading book RCM2, characterized Reliability-centered Maintenance as a process to establish the safe minimum levels of maintenance. This description echoed statements in the Nowlan and Heap report from United Airlines.

It is defined by the technical standard SAE JA1011, Evaluation Criteria for RCM Processes, which sets out the minimum criteria that any process should meet before it can be called RCM. This starts with the 7 questions below, worked through in the order that they are listed:

1. What is the item supposed to do and its associated performance standards?

2. In what ways can it fail to provide the required functions?

3. What are the events that cause each failure?

4. What happens when each failure occurs?

5. In what way does each failure matter?

6. What systematic task can be performed proactively to prevent, or to diminish to a satisfactory degree, the consequences of the failure?

7. What must be done if a suitable preventive task cannot be found?

Reliability centered maintenance is an engineering framework that enables the definition of a complete maintenance regime. It regards maintenance as the means to maintain the functions a user may require of machinery in a defined operating context. As a discipline it enables machinery stakeholders to monitor, assess, predict and generally understand the working of their physical assets. This is embodied in the initial part of the RCM process which is to identify the operating context of the machinery, and write a Failure Mode Effects and Criticality Analysis (FMECA). The second part of the analysis to apply the "RCM logic", which helps determine the appropriate maintenance tasks for the identified failure modes in the FMECA. Once the logic is complete for all elements in the FMECA, the resulting list of maintenance is "packaged", so that the periodicities of the tasks are rationalised to be called up in work packages; it is important not to destroy the applicability of maintenance in this phase. Lastly, RCM is kept live throughout the "in-service" life of machinery, where the effectiveness of the maintenance is kept under constant review and adjusted in light of the experience gained.

RCM can be used to create a cost-effective maintenance strategy to address dominant causes of equipment failure. It is a systematic approach to defining a routine maintenance program composed of cost-effective tasks that preserve important functions.

The important functions (of a piece of equipment) to preserve with routine maintenance are identified, their dominant failure modes and causes determined and the consequences of failure ascertained. Levels of criticality are assigned to the consequences of failure. Some functions are not critical and are left to "run to failure" while other functions must be preserved at all cost. Maintenance tasks are selected that address the dominant failure causes. This process directly addresses maintenance preventable failures. Failures caused by unlikely events, non-predictable acts of nature, etc. will usually receive no action provided their risk (combination of severity and frequency) is trivial (or at least tolerable). When the risk of such failures is very high, RCM encourages (and sometimes mandates) the user to consider changing something which will reduce the risk to a tolerable level.

The result is a maintenance program that focuses scarce economic resources on those items that would cause the most disruption if they were to fail.

RCM emphasizes the use of Predictive Maintenance (PdM) techniques in addition to traditional preventive measures.

#### Cost Impact: Will not increase the cost of construction

Likely less, because IT&M costs will be rationalized so that our testing costs are applied proportionate to the risk. Large research universities such as ours prioritize our testing according to hazard and sometimes exceed minimum levels set by the host municipality. In other installations our testing records show that testing intervals should be relaxed in order to reduce maintenance-induced failures.

P 25-15 : 312.10.1-ANTHONY5302

# P 26-15

## 401, 402, 403, 404, 405, 407, 408, 409, 410, 411, 424, 412, 427, 425, 413, 414, 422, 415, 416, 426, 417, 418, 423, 419, 420, 421

Proponent: Julius Ballanco, representing JB Engineering and Code Consulting, P.C. (JBENGINEER@aol.com)

#### 2015 International Plumbing Code

Revise as follows:

CHAPTER 4 FIXTURES, FAUCETS AND FIXTURE FITTINGS

> SECTION 401 GENERAL

SECTION 402 FIXTURE MATERIALS

SECTION 403 MINIMUM PLUMBING FACILITIES

SECTION 404 ACCESSIBLE PLUMBING FACILITIES

SECTION 405 INSTALLATION OF FIXTURES

> SECTION 407 BATHTUBS

> SECTION 408 BIDETS

SECTION 409 DISHWASHING MACHINES

SECTION 410 DRINKING FOUNTAINS

SECTION 411 EMERGENCY SHOWERS AND EYEWASH STATIONS

SECTION 424-412 FAUCETS AND OTHER FIXTURE FITTINGS

> SECTION 412-413 FLOOR AND TRENCH DRAINS

> > SECTION 427 414 FLOOR SINKS

SECTION 425 415 FLUSHING DEVICES FOR WATER CLOSETS AND URINALS

> SECTION 413 416 FOOD WASTE DISPOSER UNITS

SECTION 414-417 GARBAGE CAN WASHERS

SECTION <del>422 418</del> HEALTH CARE FIXTURES AND EQUIPMENT

> SECTION 415 419 LAUNDRY TRAYS

> SECTION 416 420 LAVATORIES

SECTION 426 421 MANUAL FOOD AND BEVERAGE DISPENSING EQUIPMENT

#### SECTION 417 422 SHOWERS

SECTION 418 423 SINKS

SECTION 423-424 SPECIALTY PLUMBING FIXTURES

## SECTION 419 425 URINALS

#### SECTION 420 426 WATER CLOSETS

#### SECTION 421-427 WHIRLPOOL BATHTUBS

Reason: When Chapter 4 was originally laid out, the concept was to have the fixture categories in alphabetical order after the section on Installation of Fixtures. This was simply to make the code easier to use. Someone not as familiar with the code could find the section on a particular fixture. Over the years, newer section were added and placed at the end of the chapter. This change merely reorganizes the chapter into a listing of fixtures in alphabetical order.

The only substantial change to the listing is the striking of the word "other" before fixture fittings. The section addresses faucets and fixture fittings. There is no "other" fixture fittings.

Cost Impact: Will not increase the cost of construction There is no cost impact by renumbering code sections for clarity.

> P 26-15 : CHAPTER 4-BALLANCO3375
## P 27-15 403.3 (IBC 2902.3)

Proponent: David Kulina, representing Engel Architects (david@engelarch.com)

### 2015 International Plumbing Code

#### Revise as follows:

**403.3 Required public toilet facilities.** Customers, patrons and visitors shall be provided with *public* toilet facilities in structures and tenant spaces intended for public utilization. The number of plumbing fixtures located within the required toilet facilities shall be provided in accordance with Section 403 for all users. Employees shall be provided with toilet facilities in all *occupancies*. Employee toilet facilities shall be either separate or combined employee and *public* toilet facilities.

Exception: Public toilet facilities shall not be required in:

- 1. Open or enclosed parking garages where there are no parking attendants.
- Structures and tenant spaces intended for quick transactions, including takeout, pickup and dropoff, having a public access area less than or equal to 300 square feet (28 m<sup>2</sup>).
- 3. Farmstands having a public access area less than or equal to 300 square feet.

Reason: Farm stands offer customers a quick transaction to purchase produce. They are not looked upon by the public as being a standard retail store with restroom facilities.

Cost Impact: Will not increase the cost of construction Costs will be lessened by eliminating the need for restrooms to serve the public.

P 27-15 : 403.1-KULINA4564

## P 28-15

## Table 403.1 (IBC Table 2902.1)

Proponent: David Kulina, representing Engel Architects (david@engelarch.com)

### 2015 International Plumbing Code

#### **Revise as follows:**

 TABLE 403.1

 MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES<sup>a</sup> (See Sections 403.1.1 and 403.2)

				WATER (URINALS: 41	WATER CLOSETS (URINALS: SEE SECTION 419.2)		LAVATORIES		DRINKING FOUNTAIN (SEE SECTION	
NO.	CLASSIFICATION	OCCUPANCY	DESCRIPTION	MALE	FEMALE	MALE	FEMALE	SHOWERS	410)	OTHER
	Assembly	A-1 <sup>d</sup>								
		A-2 <sup>d</sup>								
1										
		A-3 <sup>d</sup>	Places of worship and other religious services <sup>f</sup>	1 per 150	1 per 75	1 per	200	_	1 per 1,000	1 service sink

(Portions of table not shown remain unchanged)

a. The fixtures shown are based on one fixture being the minimum required for the number of persons indicated or any fraction of the number of persons indicated. The number of occupants shall be determined by the International Building Code.

b. Toilet facilities for employees shall be separate from facilities for inmates or care recipients.

c. A single-occupant toilet room with one water closet and one lavatory serving not more than two adjacent patient sleeping units shall be permitted provided that each patient sleeping unit has direct access to the toilet room and provision for privacy for the toilet room user is provided.

d. The occupant load for seasonal outdoor seating and entertainment areas shall be included when determining the minimum number of facilities required.

e. For business and mercantile occupancies with an occupant load of 15 or fewer, service sinks shall not be required.

f. The overall occupant load for places of religious worship shall be based on the occupant load of the assembly spaces only, excluding classrooms and offices.

Reason: Places of worship do not use all spaces at once. People typically occupy, at most, two of the three types of spaces at once: the sanctuary/worship space, the fellowship/social space, or the classrooms.

Cost Impact: Will not increase the cost of construction

Costs will actually be lessened by not requiring worship facilities to provide more restrooms than necessary.

P 28-15 : 403.1-KULINA4571

## P 29-15

## Table 403.1 (IBC Table 2902.1)

Proponent: Paul Stockert, representing Self

## 2015 International Plumbing Code

Revise as follows:

 TABLE 403.1

 MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES<sup>a</sup> (See Sections 403.1.1 and 403.2)

				WATER CLOSETS (URINALS: SEE SECTION 419.2)		LAVAT	LAVATORIES		DRINKING FOUNTAIN (SEE	
NO.	CLASSIFICATION	OCCUPANCY	DESCRIPTION	MALE	FEMALE	MALE	FEMALE	SHOWERS	410)	OTHER
		R-1	Hotels, motels, boarding houses (transient)	1 pei	r sleeping unit	1 per sleeping unit		1 per sleeping unit	_	1 service sink
		R-2	Dormitories, fraternities, sororities and boarding houses (not transient)	1	per <del>10-<u>20</u></del>	1 per-	<del>10</del> <u>20</u>	1 per <del>8 <u>16</u></del>	1 per <del>100</del> 200	1 service sink
7		R-2	Apartment house	1 pe	r dwelling unit	1 per dwe	elling unit	1 per dwelling unit	_	1 kitchen sink per dwelling unit; 1 auto- matic clothes washer con- nection per 20 dwelling units
,	residential	R-3	Congregate living facilities with 16 or fewer persons	1 per 10 1 per 10		1 per 8	1 per 100	1 service sink		
		R-3	One- and two- family dwellings and lodging houses with five or fewer guestrooms	1 pe	r dwelling unit	1 per dwe	Illing unit	1 per dwelling unit	_	1 kitchen sink per dwelling unit; 1 auto- matic clothes washer con- nection per dwelling unit
		R-4	Congregate living facilities with 16 or fewer persons		1 per 10	1 pe	r 10	1 per 8	1 per 100	1 service sink

(Portions of table and notes not shown remain unchanged)

Reason: When IBC was created, the occupant load for dormitories was taken from the UBC at 1/50 and the plumbing fixture ratios were taken from BOCA.

Under BOCA, dormitory occupant load fell under general residential occupant load of 1/200 - which is too low and unrealistic, especially for exiting purposes.

By adopting pieces from the different codes, the IBC requires 4 times the number of fixtures required under BOCA and approximately twice as many as UBC.

A majority of dormitories constructed at this time utilize suites with semi-private bathrooms and do not contain gang type bath room facilities. A typical suite with 2 double bedrooms and a bath usually does not satisfy the fixture count under IBC, since the occupant load is based on the gross area of the residential occupancy.

The IBC allows the building official to to reduce the occupant load as indicated in Exception to IBC Section 1004.1.2; however, some jurisdictions strike this provision and require a higher level of scrunity or variance be granted by a higher level agency to reduce occupant load - even for plumbing fixture counts.

The revision would still increase the fixture counts from those found in the legacy codes.

#### TABLE 4-1 Minimum Plumbing Facilities<sup>1</sup>

Each building shall be provided with sanitary facilities, including provisions for the physically handicapped as prescribed by the Department having jurisdiction. For requirements for the handicapped, ANSI A117.1-1992, Accessible and Usable Buildings and Facilities, may be used. The total occupant load shall be determined by minimum exiting requirements. The minimum number of fixtures shall be calculated at fifty (50) percent male and fifty (50) percent male and fifty (50) percent female based on the total occupant load.

Type of Building or Occupancy <sup>2</sup>	Water Closets <sup>14</sup> (Fixtures per Person)	Urinals <sup>5, 10</sup> (Fixtures per Person)	Lavatori (Fixtures per	Lavatories Bat (Fixtures per Person) (Fi		Drinking Fountains <sup>3, 13</sup> (Fixtures per Person)
Assembly Places – Theatres, Auditoriums, Convention Halls, etc. – for permanent employee use	Male         Female           1: 1-15         1: 1-15           2: 16-35         3: 16-35           3: 36-55         4: 36-55           Over 55, add 1 fixtume           each additional 40 per	Male 0: 1-9 1: 10-50 Add one fixture for each a for additional 50 males. Irsons.	Male 1 per 40	Female 1 per 40		
Assembly Places – Theatres, Auditoriums, Convention Halls, etc. – for public use	Male         Female           1: 1-100         3: 1-50           2: 101-200         4: 51-10           3: 201-400         8: 101-2           11: 201-           Over 400, add one fii           for each additional 50           males and 1 for each           additional 125 female	Male           1: 1-100           0         2: 101-200           00         3: 201-400           400         4: 401-600           cture         Over 600 add 1 fixture for           00         each additional 300 males.           ss.         State	Male 1: 1-200 2: 201-400 3: 401-750 Over 750, ad for each addi persons.	Female 1: 1-200 2: 201-40 3: 401-75 d one fixture itional 500	10 10	1: 1-150 2: 151-400 3: 401-750 Over 750, add one fixtun for each additional 500 persons.
Dormitories <sup>9</sup> School or Labor	Male Female 1 per 10 1 per 8 Add 1 fixture for each additional 25 males ( 10) and 1 for each ac 20 females (over 8).	Male 1 per 25 Over 150, add 1 fixture for over each additional 50 males. Iditional	Male 1 per 12 Over 12 add each addition and 1 for eac additional fer	Female 1 per 12 one fixture fo hal 20 males ch 15 males.	1 per 8 For females, a 1 bathtub per Over 150, add per 20.	1 per 150 <sup>12</sup> add 30. d 1

# TABLE 404.1—continued MINIMUM NUMBER OF PLUMBING FACILITIES<sup>a</sup> (see Sections 404.2 and 404.3)

		WATER C (Urina Section	LOSETS is see 420.2)		BATHTUBS/	DRINKING FOUNTAINS (see Section	
	OCCUPANCY	Male	Female	LAVATORIES	SHOWERS	411.1)	OTHERS
1	Residential care	1 pe	r 10	1 per 10	1 per 8	1 per 100	1 service sink
NS	Hospitals, ambulatory nursing home patients <sup>c</sup>	1 per i	room <sup>e</sup>	1 per room <sup>e</sup>	1 per 15	1 per 100	1 service sink per floor
T 1 T	Day nurseries, sanitariums, nonambulatory nursing home patients, etc. <sup>c</sup>	l pe	r 15	1 per 15	1 per 15 <sup>f</sup>	1 per 100	1 service sink
T	Employees, other than residential care <sup>c</sup>	1 pe	r 25	1 per 35	-	1 per 100	-
0 N	Visitors, other than residential care	l pe	r 75	1 per 100		1 per 500	3. <del></del>
A	Prisonsc	1 per cell		1 per cell	1 per 15	1 per 100	1 service sink
L	Asylums, reformatories, etc.c	1 per 15		1 per 15	1 per 15	1 per 100	1 service sink
_	Mercantile (see Sections 404.2, 404.4 and 404.5)	1 per 500		1 per 750	-	1 per 1,000	1 service sink
	Hotels, motels	l per gu	estroom	1 per guestroom	1 per guestroom	-	1 service sink
R	Lodges	1 pe	r 10	1 per 10	1 per 8	1 per 100	1 service sink
ESIDEN	Multiple family 1 per		elling unit	l per dwelling unit	l per dwelling unit	-	1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per 20 dwelling units
T	Dormitories	1 pe	r 10	1 per 10	1 per 8	1 per 100	1 service sink
1					and the second se		1 kitchen sink per
AL	One- and two-family dwellings	l per dwelling unit		1 per dwelling unit	1 per dwelling unit	-	dwelling unit; 1 automatic clothes washer connection per dwelling unit <sup>d</sup>
-	Storage (see Sections 404.2 and 404.4)	l pe	r 100	1 per 100	(see Section 412)	1 per 1,000	1 service sink

\* The fixtures shown are based on one fixture being the minimum required for the number of persons indicated or any fraction of the number of persons indicated. The number of occupants shall be determined by the building code.

b Fixtures located in adjacent buildings under the ownership or control of the church shall be made available during periods the church is occupied.

c Toilet facilities for employees shall be separate from facilities for inmates or patients.

<sup>d</sup> For attached one- and two-family dwellings, one automatic clothes washer connection shall be required per 20 dwelling units.

A single-occupant toilet room with one water closet and one lavatory serving not more than two adjacent patient rooms shall be permitted where such room is provided with direct access from each patient room and with provisions for privacy.

f For day nurseries, a maximum of one bathtub shall be required.

Cost Impact: Will not increase the cost of construction The proposal will not increase costs.

P 29-15 : 403.1-STOCKERT4607

## P 30-15

## Table 403.1 (IBC Table 2902.1)

**Proponent:** Stephen DiGiovanni, Clark County Building Department, representing Southern Nevada Chapter of ICC (sdigiovanni@clarkcountynv.gov)

### 2015 International Plumbing Code

Revise as follows:

## TABLE 403.1 MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES<sup>a</sup> (See Sections 403.1.1 and 403.2)

				WATER CLOSETS (URINALS: SEE SECTION 419.2)		LAVATORIES			DRINKING FOUNTAIN (SEE	
NO.	CLASSIFICATION	OCCUPANCY	DESCRIPTION	MALE	FEMALE	MALE	FEMALE	BATHTUBS/ SHOWERS	SECTION 410)	OTHER
		A-1 <sup>d</sup>	Theaters and other buildings for the performing arts and motion pictures	1 per 125	1 per 65	1 per 200		Ι	1 per 500	1 service sink
			Nightclubs, bars, taverns, dance halls and buildings for similar purposes	1 per 40	1 per 40	1 pe	r 75	_	1 per 500	1 service sink
		A-2 <sup>d</sup>	Restaurants, banquet halls and food courts	1 per 75	1 per 75	1 pei	200	_	1 per 500	1 service sink
1	Assembly		<u>Casinos</u>	<u>1 per 50 for</u> <u>the first 400</u> <u>and 1 per</u> <u>150 for the</u> <u>remainder</u> <u>exceeding</u> <u>400</u>	<u>1 per 100 for</u> <u>the first 400</u> <u>and 1 per</u> <u>250 for the</u> <u>remainder</u> <u>exceeding</u> <u>400</u>	<u>1 per 250 for the first</u> <u>750 and 1 per 500 for</u> <u>the remainder</u> <u>exceeding 750</u>		=	<u>1 per 1.000</u>	<u>1 service</u> <u>sink</u>
		A-3 <sup>d</sup>	Auditoriums without perma- nent seating, art galleries, exhibition halls, museums, lecture halls, libraries, arcades and gymnasiums	1 per 125	1 per 65	1 pei	200	_	1 per 500	1 service sink
			Passenger terminals and transportation facilities	1 per 500	1 per 500	1 per 750 1 per 200		_	1 per 1,000	1 service sink
			Places of worship and other religious services	1 per 150	1 per 75			_	1 per 1,000	1 service sink

(Portions of table not shown remain unchanged)

a. The fixtures shown are based on one fixture being the minimum required for the number of persons indicated or any fraction of the number of persons indicated. The number of occupants shall be determined by the *International Building Code*.

b. Toilet facilities for employees shall be separate from facilities for inmates or care recipients.

c. A single-occupant toilet room with one water closet and one lavatory serving not more than two adjacent patient sleeping units shall be permitted provided that each patient sleeping unit has direct access to the toilet room and provision for privacy for the toilet room user is provided.

d. The occupant load for seasonal outdoor seating and entertainment areas shall be included when determining the minimum number of facilities required.

e. For business and mercantile occupancies with an occupant load of 15 or fewer, service sinks shall not be required.

Reason: The Plumbing Fixture Count Table 403.1 (IBC [P] 2902.1) does not address casinos as a specific use. The building codes are beginning to recognize the unique nature of the use and occupancy for these structures; as an example the code recognizes an occupant load factor of 1:11 for gaming areas. Casinos have been constructed outside of Las Vegas for years and it appears that this trend is continuing nationally. A fixture count for this use is a necessary addition to the code.

As an A-2 occupancy, the code user is currently required to select either the Restaurants/Banquet Halls or Nightclubs/Bars uses under the A-2 occupancy in Table 403.1 (IBC [P] 2902.1) to set fixture counts, 1:75 and 1:40, respectively. The fixture counts provided in this amendment closely resemble the fixture count table used in the Southern Nevada, including the Las Vegas strip. There has been no history in Las Vegas of long lines at Casino restrooms. Casinos represent a unique place where restaurants, gaming, retail and shows are combined into one expansive building. However, even with large crowds on gaming floors, restroom facilities are not so overcrowded as to produce long lines.

Specifically, for a 30,000-ft<sup>2</sup> Casino, Table 403.1 (IBC [P] 2902.1) would require 152% of the number of fixtures that are currently required *if* Casinos are tabulated as large assembly space (nightclub/bar). As a restaurant or banquet hall, Table 403.1 (IBC [P] 2902.1) would require 238% of the number of fixtures required by Table 403.1 (IBC [P] 2902.1).

This amendment also accounts for increase usage and need for female restroom similar to A-4 and A-5 occupancies.

#### Cost Impact: Will not increase the cost of construction

This proposal provides a more lenient fixture count for casinos, so the cost of construction would presumably decrease.

P 30-15 : T403.1 (IBC [P] 2901.1)-DIGIOVANNI3854

## P 31-15

## Table 403.1 (IBC Table 2902.1)

**Proponent:** Stephen DiGiovanni, Clark County Building Department, representing Southern Nevada Chapter of ICC (sdigiovanni@clarkcountynv.gov)

## 2015 International Plumbing Code

Revise as follows:

#### **TABLE 403.1**

#### MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES<sup>a</sup>(See Sections 403.1.1 and 403.2)

				WATER CLOSETS (URINALS: SEE SECTION 419.2)		LAVATORIES		BATHTUBS	DRINKING FOUNTAIN (SEE SECTION	
NO.	CLASSIFICATION	OCCUPANCY	DESCRIPTION	MALE	FEMALE	MALE	FEMALE	SHOWERS	410)	OTHER
		A-1 <sup>d</sup>	Theaters and other buildings for the performing arts and motion pictures							1 service sink <sup>e</sup>
	Assembly	A-2 <sup>d</sup>	Nightclubs, bars, taverns, dance halls and buildings for similar purposes							1 service sink <sup>e</sup>
			Restaurants, banquet halls and food courts							1 service sink <sup>e</sup>
1		A-3 <sup>d</sup>	Auditoriums without perma- nent seating, art galleries, exhibition halls, museums, lecture halls, libraries, arcades and gymnasiums							1 service sink <sup>e</sup>
			Passenger terminals and transportation facilities							1 service sink <sup>e</sup>
			Places of worship and other religious services							1 service sink <sup>e</sup>

				WATER CLOSETS (URINALS: SEE SECTION 419.2)		LAVATORIES		BATHTUDO/	DRINKING FOUNTAIN (SEE SECTION	
NO.	CLASSIFICATION	OCCUPANCY	DESCRIPTION	MALE	FEMALE	MALE	FEMALE	SHOWERS	410)	OTHER
		A-4	Coliseums, arenas, skating rinks, pools and tennis courts for indoor sporting events and activities							1 service sink <sup>g</sup>
1										

(cont.) Assembly

		A-5	Stadiums, amusement parks, bleachers and grandstands for outdoor sporting events and activities				1 service sink <sup>e</sup>
2	Business	В	Buildings for the transaction of business, professional services, other services involving merchandise, office buildings, banks, light industrial and similar uses				1 service sink <u>e</u>
3	Educational	E	Educational facilities				1 service sink <sup>e</sup>
4	Factory and industrial	F-1 and F-2	Structures in which occupants are engaged in work fabricating, assembly or processing of products or materials				1 service sink <sup>e</sup>
		l-1	Residential care				1 service sink <sup>e</sup>
			Hospitals, ambulatory nursing home care recipient				1 service sink per floor <sup><u>e</u></sup>
		I-2	Employees, other than residential careb				_
5	Institutional		Visitors, other than residential care				
			Prisonsb				1 service sink <sup>e</sup>
		I-3	Reformitories, detention centers, and correctional centersb				1 service sink <sup>e</sup>
			Employeesb			 	_
		I-4	Adult day care and child day care				1 service sink <sup>e</sup>

				WATER CLOSETS (URINALS: SEE SECTION 419.2)		LAVAT	ORIES	BATHTUBS/	DRINKING FOUNTAIN (SEE	
NO.	CLASSIFICATION	OCCUPANCY	DESCRIPTION	MALE	FEMALE	MALE	FEMALE	SHOWERS	SECTION 410)	OTHER
6	Mercantile	М	Retail stores, service stations, shops, salesrooms, markets and shopping centers							1 service sink <sup>e</sup>
		R-1	Hotels, motels, boarding houses (transient)							1 service sink <sup>e</sup>
		R-2	Dormitories, fraternities, sororities and boarding houses (not transient)							1 service sink <sup>e</sup>
		R-2	Apartment house							1 kitchen sink per dwelling unit; 1 auto- matic clothes washer con- nection per 20 dwelling units
7	Residential	R-3	Congregate living facilities with 16 or fewer persons							1 service sink <sup>e</sup>
		R-3	One- and two- family dwellings and lodging houses with five or fewer guestrooms							1 kitchen sink per dwelling unit; 1 auto- matic clothes washer con- nection per dwelling unit
		R-4	Congregate living facilities with 16 or fewer persons							1 service sink <sup>e</sup>

8	Storage	S-1 S-2	Structures for the storage of goods, warehouses, store- house and freight depots. Low and Moderate Hazard.					1 service sink <sup>e</sup>
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(Portions of table not shown remain unchanged)

a. The fixtures shown are based on one fixture being the minimum required for the number of persons indicated or any fraction of the number of persons indicated. The number of occupants shall be determined by the *International Building Code*.

b. Toilet facilities for employees shall be separate from facilities for inmates or care recipients.

c. A single-occupant toilet room with one water closet and one lavatory serving not more than two adjacent patient sleeping units shall be permitted provided that each patient sleeping unit has direct access to the toilet room and provision for privacy for the toilet room user is provided.

d. The occupant load for seasonal outdoor seating and entertainment areas shall be included when determining the minimum number of facilities required.

e. - For business and mercantile occupancies with an occupant load of 15 or fewer,sService sinks shall not be required. where the occupant load is 30 or fewer.

Reason: This proposal revises note e and applies note "e" to each of the service sink entries in the table, so that it addresses all occupancies required to have service sinks, not just B and M occupancies. Note "e" is revised to trigger the service sink at an occupant load of over 30, rather than the current trigger of 15 found in the note.

Cost Impact: Will not increase the cost of construction

This proposal provides a more lenient approach for fixture requirements, so the cost of construction is not increased.

P 31-15 : T403.1-DIGIOVANNI3856

## P 33-15

## Table 403.1 (IBC Table 2902.1)

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

#### 2015 International Plumbing Code

Revise as follows:

TABLE 403.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES <sup>a</sup> (See Sections 403.1.1 and 403.2)

				WATER CLOSETS (URINALS: SEE SECTION 419.2)		LAVATORIES		DATUTUDO	DRINKING FOUNTAIN (SEE	
NO.	CLASSIFICATION	OCCUPANCY	DESCRIPTION	MALE	FEMALE	MALE	FEMALE	SHOWERS	410)	OTHER
4	Factory and industrial	F-1 and F-2	Structures in which occupants are engaged in work fabricating, assembly or processingof products or materials					<del>(see Section</del> <del>411)</del>		
					-					

				WAT (UR SEC	ER CLOSETS INALS: SEE CTION 419.2)	LAVAT	ORIES		DRINKING FOUNTAIN (SEE	
NO.	CLASSIFICATION	OCCUPANCY	DESCRIPTION	MALE	FEMALE	MALE	FEMALE	SHOWERS	410)	OTHER
8	Storage	S-1 S-2	Structures for the storage of goods, warehouses, store- house and freight depots. Low and Moderate Hazard.					See Section 411 —		

(Portions of table and notes not shown remain unchanged)

**Reason:** This proposal resolves long standing confusion about what Table 403.1 requires for Showers in Factory and Storage facilities. The Table never intended to require showers but was only directing readers to the safety shower section (Section 411) in case the building designer was going to use safety showers in the design of the building. The note has no purpose in this table. Such notes could be put in the table for every other type of fixture that doesn't indicate a ratio or quantity. The note needs removed.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 87.

#### Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 33-15 : T403.1-SNYDER3929

## P 34-15

## Table 403.1 (IBC Table 2902.1)

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## 2015 International Plumbing Code

Revise as follows:

				WATER (URINALS: 41	CLOSETS SEE SECTION 19.2)	LAVAT	ORIES		DRINKING FOUNTAIN (SEE S/ SECTION	
NO.	CLASSIFICATION	OCCUPANCY	DESCRIPTION	MALE	FEMALE	MALE	FEMALE	SHOWERS	SECTION 410)	OTHER
		A-1 <sup>4</sup>	Theaters and other buildings for the performing arts and motion pictures							
		A-2 <sup>4</sup>	Nightclubs, bars, taverns, dance halls and buildings for similar purposes							
	Assembly		Restaurants, banquet halls and food courts							
1		<del>A 3</del> <sup>4</sup>	Auditoriums without perma- nent seating, art galleries, exhibition halls, museums, lecture halls, libraries, arcades and gymnasiums							
			Passenger terminals and transportation facilities							
			Places of worship and other religious services							

 TABLE 403.1

 MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES<sup>a</sup> (See Sections 403.1.1 and 403.2)

				WATER (URINA SECTIC	CLOSETS ILS: SEE IN 419.2)	LAVAT	ORIES	DATUTUDO	DRINKING FOUNTAIN (SEE	
NO.	CLASSIFICATION	OCCUPANCY	DESCRIPTION	MALE	FEMALE	MALE	FEMALE	SHOWERS	410)	OTHER
		<del>A</del> .4	Coliseums, arenas, skating rinks, pools and tennis courts for indoor sporting events and activities							
1 (cont.)	Assembly									

		<del>A 5</del>	Stadiums, amusement parks, bleachers and grandstands for outdoor sporting events and activities				
2	Business	В	Buildings for the transaction of business, professional services, other services involving merchandise, office buildings, banks, light industrial and similar uses				
3	Educational	Æ	Educational facilities				
4	Factory and industrial	F-1 and F-2	Structures in which occupants are engaged in work fabricating, assembly or processing of products or materials				
		++	Residential care				
			Hospitals, ambulatory nursing home care recipient				
		+2	Employees, other than residential careb				
5	Institutional		Visitors, other than residential care				
			Prisonsb				
		+3	Reformitories, detention centers, and correctional centersb				
			Employeesb				
		+4	Adult day care and child day care				

				WATER CLOSETS (URINALS: SEE SECTION 419.2)		LAVATORIES			DRINKING FOUNTAIN (SEE	
NO.	CLASSIFICATION	OCCUPANCY	DESCRIPTION	MALE	FEMALE	MALE	FEMALE	BATHTUBS/ SHOWERS	SECTION 410)	OTHER

6	Mercantile	₩	Retail stores, service stations, shops, salesrooms, markets and shopping centers					
		<del>R 1</del>	Hotels, motels, boarding houses (transient)					
		<del>R 2</del>	Dormitories, fraternities, sororities and boarding houses (not transient)					
		<del>R 2</del>	Apartment house					
7	Residential	<del>R-3</del>	Congregate living facilities with 16 or fewer persons					
		<del>R-3</del>	One- and two- family dwellings and lodging houses with five or fewer guestrooms					
		<del>R-4</del>	Congregate living facilities with 16 or fewer persons	<del>1 per 10</del>	<del>1 per 10</del>	<del>1 per 8</del>	<del>1 per 100</del>	<del>1 service</del> <del>sink</del>
8	Storage	<del>\$1\$2</del>	Structures for the storage of goods, warehouses, store- house and freight depots. Low and Moderate Hazard.					

(Portions of table not shown remain unchanged)

a. The fixtures shown are based on one fixture being the minimum required for the number of persons indicated or any fraction of the number of persons indicated. The number of occupants shall be determined by the *International Building Code*.

b. Toilet facilities for employees shall be separate from facilities for inmates or care recipients.

c. A single-occupant toilet room with one water closet and one lavatory serving not more than two adjacent patient sleeping units shall be permitted provided that each patient sleeping unit has direct access to the toilet room and provision for privacy for the toilet room user is provided.

d. The occupant load for seasonal outdoor seating and entertainment areas shall be included when determining the minimum number of facilities required.

e. For business and mercantile occupanciesclassifications with an occupant load of 15 or fewer, service sinks shall not be required.

Reason: Section 403.1 was revised for the 2015 IPC to direct the reader to the use of a building rather than its IBC occupancy classification (Group) for determining the number of plumbing fixtures. The occupancy column is Table 403.1 is now really confusing as Section 403.1 says to use the Description column but this Occupancy column implies that the IBC classification is to be used. This proposal removes the occupancy column for clarity and coordination with what Section 403.1 states.

Table 403.1 will still retain the classification column, although that column doesn't seem to add any clarification to the table as the IPC doesn't speak of "classifications" for various uses. However, as Table 403.1 is reprinted in the IBC (as Table [P] 2902.1), the classification column might incorrectly lead IBC readers to assume that the IBC occupancy classification (Group) has something to do with selection of an appropriate row for plumbing fixture requirements. IBC Section [P] 2902.1 is identical to Section 403.1 in the IPC but if the reader neglects reading the IBC section and jumps directly to the table, the existence of classification column could cause a misunderstanding.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 191.

Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 34-15 : T403.1-SNYDER3931

## P 35-15

### Table 403.1 (IBC Table 2902.1)

**Proponent:** Gerald Curran, Government of the District of Columbia, representing Dept of Community and Regulatory Affairs, Government of the District of Columbia (gerald.curran@dc.gov)

#### 2015 International Plumbing Code

Revise as follows:

#### TABLE 403.1 MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES<sup>a</sup> (See Sections 403.1.1 and 403.2)

				WATER CLOSETS (URINALS: SEE SECTION 419.2) LAVATORIES		DATUTUDO	DRINKING FOUNTAIN (SEE S/ SECTION			
NO.	CLASSIFICATION	OCCUPANCY	DESCRIPTION	MALE	FEMALE	MALE	FEMALE	SHOWERS	410)	OTHER
		A-1 <sup>d</sup>	Theaters and other buildings for the performing arts and motion pictures	1 per 125	1 per 65	1 per	200	_	1 per 500	1 service sink
		A-2 <sup>d</sup>	Nightclubs, bars, taverns, dance halls and buildings for similar purposes	1 per 40	1 per <del>40-<u>20</u></del>	1 per 75		_	1 per 500	1 service sink
			Restaurants, banquet halls and food courts	1 per 75	1 per <del>75<u>38</u></del>	1 per 200		-	1 per 500	1 service sink
1	Assembly	A-3 <sup>d</sup>	Auditoriums without perma- nent seating, art galleries, exhibition halls, museums, lecture halls, libraries, arcades and gymnasiums	1 per 125	1 per 65	1 per	200	Ι	1 per 500	1 service sink
			Passenger terminals and transportation facilities	1 per 500	1 per <del>500<u>250</u></del>	1 per 750		_	1 per 1,000	1 service sink
			Places of worship and other religious services	1 per 150	1 per 75	1 per	200	_	1 per 1,000	1 service sink

(Portions of table not shown remain unchanged)

a. The fixtures shown are based on one fixture being the minimum required for the number of persons indicated or any fraction of the number of persons indicated. The number of occupants shall be determined by the *International Building Code*.

b. Toilet facilities for employees shall be separate from facilities for inmates or care recipients.

c. A single-occupant toilet room with one water closet and one lavatory serving not more than two adjacent patient sleeping units shall be permitted provided that each patient sleeping unit has direct access to the toilet room and provision for privacy for the toilet room user is provided.

d. The occupant load for seasonal outdoor seating and entertainment areas shall be included when determining the minimum number of facilities required.

e. For business and mercantile occupancies with an occupant load of 15 or fewer, service sinks shall not be required.

**403.1.1 Fixture calculations.** To determine the occupant load of each sex, the total occupant load shall be divided in half. To determine the required number of fixtures, the fixture ratio or ratios for each fixture type shall be applied to the occupant load of each sex in accordance with Table 403.1. Fractional numbers resulting from applying the fixture ratios of Table 403.1 shall be rounded up to the next whole number. For calculations involving multiple *occupancies*, such fractional numbers for each *occupancy* shall first be summed and then rounded up to the next whole number.

**Exception:** The total occupant load shall not be required to be divided in half where *approved* statistical data indicates a distribution of the sexes of other than 50 percent of each sex.

Reason: A disparity exists among the ratios of restroom elimination plumbing fixtures (i.e. water closets/urinals) in the various Assembly occupancies in Table 403.1 of the 2012 IPC (Table 2902.1 in the 2012 IBC). For example: for theatre goers the fixture ratio is 1:2 for male to female whereas, for 'transportation facilities' etc., the ratio is 1:1. Some of these ratios represent a one to one distribution of fixtures while others represent a distribution more closely related to what Queuing Theory (Reference # 1.) would have us recognize. This distribution is based on the differences in building use type and on the intermittent or 'bulk arrival' flows of people. It is apparent that Queuing Theory is not uniformly applied to the Assembly occupancies in Table 403.1. To correct the disparities, this proposal recommends treating A-2 and A-3 with the same assumptions of 'bulk arrival' flows as apply to the other Assembly occupancies. Further to the above: in Table 403.1 of the 2012 IPC the ratio of restroom elimination fixtures in the A-1 and the 1st and 3rd occupancies of A-3 is 1:2 for male to female. The ratio of elimination fixtures in the A-2 and the 2nd A-3 occupancies (e.g. 'Passenger terminals and transportation facilities') is 1:1. Research into elimination differences between males and females has been completed by P.J. Davidson and R.G. Courtney of the Building Research Establishment [Reference # 1. under 'Activities']. Their results show that: 'males spend an average of 39 seconds at the urinal' and that the 'average time spent in the water close tor females...80 seconds'. In light of this result it would appear that 1:2 is the preferable ratio for all Assembly occupancy restrooms.

Women using A-2 and the 2nd A-3 occupancy restrooms face the same time constraints and ambulatory circulation issues as women using A-1 and the 1st and 3rd A-3 restrooms. Long lines can result in inconvenience and exposure to stress and health issues [Reference # 1. under 'The Problem']. The present ratios seem to discriminate against the former group of users. Using the same logic of flows, and times, to get through a line in theatres, auditoriums, sporting arenas and places of worship, leads to an obvious conclusion. The correction of ratio disparities among the A-1, A-2 and A-3 occupancy restrooms is needed.

We propose that the A-2 and the 2nd A-3 restroom elimination plumbing fixture ratios be brought into line with those of the A-1, A-4 and A-5 fixture ratios - that is 1:2 for male to female. We appreciate the support of all ICC members.

Note: Reference # 1. refers to the document available on-line titled: 'Queuing Theory in the Analysis of Public Restroom Use and Behavior: Implications for Research, Design, Management and Public Policy' pages 286 thru 292 by Sandra K. Rawls et al.

## RESTROOM QUEUING MODEL AND ITS COMPONENTS



Bibliography: Queuing Theory in the Analysis of Public Restroom Use and Behavior: Implications for Research, Design, Management and Public Policy. Sandra K. Rawles & Savannah S. Day. Pages 286 thru292. [edra.org/sites/.../publications/EDRA20-Rawls-286-292.pdf. Rawls, Sandra K., Savannah S. Day. Web] Fundamentals of Queuing Theory, Gross, D. & Harris, C.M., John Wiley & Sons. 1985

Revised Scales for Sanitary Accommodation in Offices, Building and Environment, Davidson, P.J. & Courtney, R.G., 1976, 11:51-56.

Queuing Theory. Panico, J.A. 1969.

Gothamist.com/2003/12/03/restroom\_rights\_for\_women.php. Chung, Jen. Web

Ticketingtoday.com/the\_fan\_experience\_starts\_with\_womens\_restrooms/. Kirby, Troy. Web

The Bathroom, Kira, A. 1976

#### Cost Impact: Will increase the cost of construction

Restroom facilities typically constitute about 10 percent of new construction costs. The proposal calls for a change in the ratio of restroom elimination plumbing fixtures (wc's/urinals) only, from a 1:1 ratio to a 1:2 ratio in the A-2 and the 2nd A-3 Assembly occupancies. The change would be for the benefit of female users of these occupancies. The change would involve doubling the number of cubicles/WC's and an increased cost of approximately 60 percent for a women's restroom. Total restroom construction costs would increase by approximately 30%. Total construction costs for these Assembly occupancies would therefore increase by approximately 3%.

P 35-15 : T403.1.1-CURRAN4989

## P 36-15 Part I: 202 (New), Table 403.1 (IBC 2902.1), 403.1.1 (New) (IBC 2902.1.1 (New)) Part II: IBC 2902.1.1 (New), IBC Table 2902.1

THIS IS A 2 PART CODE CHANGE. BOTH PARTS WILL BE HEARD BY THE IPC COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THIS COMMITTEE.

**Proponent:** Cornelia M Orzescu, Town of Parker, representing Colorado Chapter of the ICC, Code Change Committee, representing Town of Parker (corzescu@parkeronline.org)

## Part I

#### 2015 International Plumbing Code

#### Add new text as follows:

403.1.1 Outdoor public swimming pool fixtures Outdoor public swimming pools used for aquatic recreation and having a water area of less than 7500 ft<sup>2</sup> (697 m<sup>2</sup>) shall have not less than one water closet, one urinal, one lavatory and one shower for males and not less than two water closets, one lavatory and one shower for females.

<u>Outdoor public swimming pools used for aquatic recreation having a water area of 7500 ft<sup>2</sup> (697 m2) or more shall have. for every 7500 ft<sup>2</sup> (697 m<sup>2</sup>) or portion thereof, not less than 0.7 water closets, one urinal, 0.85 lavatory and one shower for males and not less than two water closets, one lavatory and one shower for females. Where the result of a fixture calculation is a portion of a whole number, the result shall be rounded up to the nearest whole number.</u>

Section 403.1.1 (Fixture calculations) shall not apply where complying with this section.

#### Add new definition as follows:

#### SECTION 202 DEFINITIONS

PUBLIC SWIMMING POOL A pool, other than a residential pool, that is intended to be used for swimming or bathing and is operated by an owner, lessee, operator, licensee or concessionaire, regardless of whether a fee is charged for use.

Revise as follows:

TABLE 403.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES <sup>a</sup> (See Sections 403.1.1 and 403.2)

				WATER CLOSETS (URINALS: SEE SECTION 419.2)		LAVATORIES		- DATUTURS/	DRINKING FOUNTAIN (SEE	
NO.	CLASSIFICATION	OCCUPANCY	DESCRIPTION	MALE	FEMALE	MALE	FEMALE	BATHTUBS/ SHOWERS	SECTION 410)	OTHER
1 (cont.)	Assembly	A-4	Coliseums, arenas, skating rinks, pools and tennis courts for indoor sporting events and activities	1 per 75 for the first 1,500 and 1 per 120 for the remainder exceeding 1,500	1 per 40 for the first 1,520 and 1 per 60 for the remainder exceeding 1,520	1 per 200	1 per 150	_	1 per 1,000	1 service sink
		A-5	Stadiums, amusement parks, bleachers and grandstands for outdoor sporting events and activities <u>f</u>	1 per 75 for the first1,500 and 1 per 120 for the remainder exceeding 1,500	1 per 40 for the first 1,520 and 1 per 60 for the remainder exceeding 1,520	1 per 200	1 per 150	_	1 per 1,000	1 service sink

(Portions of table not shown remain unchanged)

a. The fixtures shown are based on one fixture being the minimum required for the number of persons indicated or any fraction of the number of persons indicated. The number of occupants shall be determined by the *International Building Code*.

b. Toilet facilities for employees shall be separate from facilities for inmates or care recipients.

c. A single-occupant toilet room with one water closet and one lavatory serving not more than two adjacent patient sleeping units shall be permitted provided that each patient sleeping unit has direct access to the toilet room and provision for privacy for the toilet room user is provided.

d. The occupant load for seasonal outdoor seating and entertainment areas shall be included when determining the minimum number of facilities required.

e. For business and mercantile occupancies with an occupant load of 15 or fewer, service sinks shall not be required.

#### ICC COMMITTEE ACTION HEARINGS ::: April, 2015

## Part II

#### 2015 International Building Code

Add new text as follows:

2902.1.1 Outdoor public swimming pool fixtures Outdoor public swimming pools used for aquatic recreation and having a water area of less than 7500 ft<sup>2</sup> (697 m<sup>2</sup>) shall be provided with not less than one water closet, one urinal, one lavatory and one shower for males and not less than two water closets, one lavatory and one shower for females.

<u>Outdoor public swimming pools used for aquatic recreation having a water area of 7500 ft<sup>2</sup> (697 m<sup>2</sup>) or more shall be provided with, for every 7500 ft<sup>2</sup> (697 m<sup>2</sup>) or portion thereof, not less than 0.7 water closets, one urinal, 0.85 lavatory and one shower for males and not less than two water closets, one lavatory and one shower for females. Where the result of a fixture calculation is a portion of a whole number, the result shall be rounded up to the nearest whole number.</u>

Section 2902.1.1 (Fixture calculations) shall not apply where complying with this section.

Reason: Trying to figure out a plumbing fixture count associated with outdoor public swimming pools when there is not a "building occupant load" is a doubting task. The proposed fixture count is based on the 2015 International Swimming Pool and Spa Code provisions Section 609 for Toilet rooms and bathrooms.

Note f is added to Table 403.1 to point the code user to this new section and to not attempt to use "building occupant load" numbers, Table 403.1 fixture ratios for A-5 and the calculation method of existing 403.1.1. That will result in far too many fixtures for an outdoor public swimming pool application.

This new section would not apply to buildings that might be associated with a public pool such as a club house.

Instead of just referencing the 2015 ISPSC for the number of required plumbing fixtures, the verbage is included in the IPC for jurisdictions that otherwise will not adopt or have not adopted the 2015 ISPSC.

This proposed langauge for the IBC will hopefully be carried into Chapter 29 the 2018 IBC as it is integral to the information that is normally in IBC Chapter 29.

#### Bibliography:

Part I: Title of book- 2015 International Swimming Pool and Spa Code Year published-2014 Page #35

#### Cost Impact:

Part 1: Will not increase the cost of construction Because this proposal is not based on an occupant load, this will result in a cost decrease as compared to the cost of the number of required fixtures based on IPC Table 403.1.

Part II: Will not increase the cost of construction

Because this proposal is not based on an occupant load, this will result in a cost decrease as compared to the cost of the number of required fixtures based on IPC Table 403.1.

#### Analysis:

Part II: Changes to IPC Table 403.1 made by PART I will automatically change IBC Table 2902.1.

P 36-15 : 403.1.1.1 (New)-ORZESCU3686

## P 37-15

## 403.1.2 (New) (IBC 2902.1.2 (New))

Proponent: Julius Ballanco, JB Engineering and Code Consulting, P.C., representing Self (JBENGINEER@aol.com)

#### 2015 International Plumbing Code

#### Add new text as follows:

**403.1.2** Excess number of elimination fixtures for males. Where the combined number of water closets and urinals for males exceeds the number of male water closets required by Section 403.1, the total number of water closets for females shall be increased by the number of combined fixtures for males that exceeds the required number of water closets for males, adjusted as necessary by the statistical requirements of Section 403.1.1.

Reason: Potty parity was a part of the Plumbing Code from its inception. The goal of the code requirements on number of fixtures between the sexes is to provide the same waiting time for men and women using the facilities.

Because of space differentials, the combined number of water closets and urinals in the men's room often exceeds the number required by code. However, the women's room may have the required number of water closets. This results in an unequal waiting time for use of the plumbing fixtures. As a result, potty parity is not achieved.

This code requirement will mandate that the number of water closets in the women's room must be increased by the same percentage as the number of water closets and urinals in the men's room. The result will be potty parity with the same waiting time between the men and women.

**Cost Impact:** Will increase the cost of construction This will add cost when additional water closets are required to be installed in the women's room.

> P 37-15 : 403.1.2 (New)-BALLANCO3813

## P 38-15

## 403.1.2 (IBC 2902.1.2), 403.2.1 (IBC 2902.2.1), 403.4 (IBC 2902.4)

Proponent: Bob Kief, University of Puget Sound, representing University of Puget Sound (bkief@pugetsound.edu)

#### 2015 International Plumbing Code

#### **Revise as follows:**

403.1.2 Family or assisted-use or gender-neutral toilet facilities and bathbathroom fixtures. Fixtures located within family or assisted-use toilet and bathing rooms required by Section 1109.2.1 of the International Building Codeare permitted to be included in the number of required fixtures for either the male or female. or gender-neutral occupants in assembly and mercantile occupancies.

**403.2.1 Family or assisted-use** or gender-neutral toilet facilities serving as separate facilities. Where a building or tenant space requires a separate toilet facility for each sex or gender-neutral and each toilet facility is required to have only one water closet, two family or assisted-use or gender-neutral toilet facilities shall be permitted to serve as the required separate facilities. Family or assisted-use or gender-neutral toilet facilities for exclusive use by either sex as required by Section 403.4.

**403.4 Signage.** Required *public* facilities shall be provided with signs that designate the sex, or gender-neutral as required by Section 403.2. Signs shall be readily visible and located near the entrance to each toilet facility. Signs for accessible toilet facilities shall comply with Section 1111 of the *International Building Code.* 

**Reason:** As you may be aware, providing gender neutral bathrooms is becoming an important issue at many colleges and universities. A rapidly growing number of colleges and universities are creating gender neutral bathrooms, either through renovations or by simply changing the signs on single-stall male/female restrooms. Gender neutral bathrooms are a place where students, faculty and staff of any gender can go in and use the bathroom and feel safe regardless of gender expression or gender identity. (see attached supporting letter)

The 2015 International Plumbing Code (IPC) and 2015 International Building Code (IBC) do not recognize gender neutral individuals. Fixture calculations are based on only male and female. The code recognizes "Family or assisted-use toilet and bath fixtures" and requires signage "required public facilities shall be provided with signs that designate the sex". The code is not preventing any university or college from having gender neutral single-stall bathrooms, however, it does prevent converting multi-stall "Men's" and "Women's" bathrooms to gender neutral bathrooms in public buildings.

IBC 1109.2.1 Family or assisted-use toilet or bathing rooms.

403.2.1 (IBC [P] 2902.1.2) Family or assisted-use toilet and bath fixture count.

403.2.1 (IBC [P] 2902.2.1) Family or assisted-use toilet facilities serviing aa separate facilities.

The family or assisted-use requirements will not be effected in terms of accessibility and fixture counts but will allow a 3rd individual type to gain access to such facilities. Signage indicating the bathroom is *gender neutral* would be required.

We respectfully request that the IBC and IPC codes recognize and require a gender neutral single-stall bathroom, with the same equality as family and/or assisted-use bathrooms, to be available in every building when constructing new and/or renovating existing buildings.

I am submitting the appropriate code section change request along with a supporting letter from The Associated Students of Puget Sound (ASUPS) student government with the endorsement of our University President as well as various groups and members of our campus community.

#### Cost Impact: Will not increase the cost of construction

The gender neutral bathrooms should not increase the cost of construction, because single stall accessible bathrooms are already required by code, and existing single stall accessible bathrooms can easily be converted to gender neutral bathrooms by changing their signage. Shifting from gender-specific single-stall bathrooms to gender-neutral single-stall bathrooms ones is a simple no cost or low-cost way to help ensure that facilities are welcoming and open to all people, regardless of the way one presents or identifies their gender identity.

P 38-15 : 403.1.2-KIEF3626

## P 39-15

### 403.1.2 (New) (IBC 2902.1.2 (New))

**Proponent:** Billy Smith, American Society of Plumbing Engineers Legislative Committee, representing American Society of Plumbing Engineers Legislative Committee (bsmith@aspe.org)

#### 2015 International Plumbing Code

Add new text as follows:

**403.1.2** Excess number of male fixtures. Where the sum of the numbers of installed water closets and urinals for males will be in excess of the required number of male water closets, and the sum is greater than the required number of female water closets, the number of installed female water closets shall be the total of the number of required female water closets and the excess number of male fixtures.

Reason: ASPE has long been a proponent of potty parity. The original values found in the International Plumbing Code were based on a paper published by ASPE. The goal of the code is to provide the same waiting time for men and women using the facilities.

Because of space differentials, the combined number of water closets and urinals in the men's room exceeds the number required by code. However, the women's room has the required number of water closets. This results in an unequal waiting time for use of the plumbing fixtures. As a result, potty parity is not achieved.

This code requirement will mandate that the number of water closets in the women's room must be increased by the same percentage as the number of water closets and urinals in the men's room. The result will be potty parity with the same waiting time between the men and women.

Cost Impact: Will not increase the cost of construction

This does not increase the cost since the change merely provides options for the installer or designer.

P 39-15 : 403.1.2 (New)-SMITH5374

## P 40-15

#### 403.1.2 (IBC 2902.1.2)

Proponent: David Collins, representing The American Institute of Architects (dcollins@preview-group.com)

#### 2015 International Plumbing Code

#### Revise as follows:

#### 403.1.2 Family or assisted-useSingle-user toilet facility and bathbathing room fixtures. Fixtures

The plumbing fixtures located within single-user toilet facilities and bathing rooms, including family or assisted-use toilet and bathing rooms that are required by Section 1109.2.1 of the International Building Codeare permitted to be included in, shall contribute towards the total number of required plumbing fixtures for either the malea building or female occupants in assemblytenant space. Single-user toilet facilities and mercantile occupancies.bathing rooms, and family or assisted-use toilet and bathing rooms shall not be required to be identified for exclusive use by either sex.

**Reason:** The use of single-user toilets has become increasingly beneficial system of providing not only better facilities, but more user friendly facilities. A higher level of privacy is achieved, the facilities are typically better maintained by the users, and the efficiencies of having unisex facilities where the users are of a dominate sex are significantly increased. Similarly, this code change removes the limitation of use for family or assisted-use facilities to mercantile and assembly occupancies. Families or persons requiring assisted-use can be found in various occupancies and should be allowed as providing required toilets. Currently, when there are multiple single-user toilets 50% of them are required to be accessible. If this is compared with the standard ganged toilet rooms where there are multiple toilet fixtures, the number of accessible toilets and thus a greater number of useful toilets by everyone will be increased by this change.

#### Cost Impact: Will not increase the cost of construction

The single-user toilet room will reduce the cost of construction. Based on the minimum number of toilets, the larger general area required for circulation for multi-fixtured toilet rooms can be eliminated in large part because areas such as sight-blocking and the multiplier for urinals for credit will be eliminated in multiple single-user toilet designs.

P 40-15 : 403.1.2-COLLINS4506

## P 41-15

### 403.2 (IBC 2902.2)

**Proponent:** Stephen DiGiovanni, Clark County Building Department, representing Southern Nevada Chapter of ICC (sdigiovanni@clarkcountynv.gov)

#### 2015 International Plumbing Code

#### Revise as follows:

403.2 Separate facilities. Where plumbing fixtures are required, separate facilities shall be provided for each sex.

#### Exceptions:

- 1. Separate facilities shall not be required for dwelling units and sleeping units.
- 2. Separate facilities shall not be required in structures or tenant spaces with a total occupant load, including both employees and customers, of 1530 or fewer.
- 3. Separate facilities shall not be required in mercantile occupancies in which the maximum occupant load is 100 or fewerless.
- 4. <u>Separate facilities shall not be required in Group B occupancies in which the maximum occupany load is 50 or less provided a single toilet</u> <u>facility is designed for use by no more than one person at a time.</u>

**Reason:** Section 403.2 (IBC Section 2902.2) requires that separate facilities be provided for males and females when plumbing fixtures are required by Table 403.1 (IBC Table 2902.1). Exception No. 2 to Section 403.2 (IBC Section 2902.2) allows shared facilities for spaces with a maximum occupant load of 15, while Exception No. 3 allows shared facilities for mercantile (Group M) occupancies with a maximum occupant load of 100. The proposed amendment is to modify Exception No. 2 to raise the minimum occupant load that requires separate facilities for males and females from 15 to 30.

With respect to the proposal for Exception #2, the following table identifies the occupant load factors for various occupancies based on IBC Table 1004.1.2 and shows the maximum area that would be allowed for each occupancy in order to avoid providing separate facilities. The table also shows the maximum area that the proposed amendment would allow for each occupancy in order to avoid providing separate facilities.

Occupancy	Occupant Load Factor (OLF)	2015 IBC Max. Area Permitted without Separate Facilities (OLF x 15)	Proposed Amended Max. Area Permitted without Separat Facilities (OLF x 30)			
	(ft~/person)	(ft <sup>2</sup> )	(ft <sup>2</sup> )			
Assembly (unconcentrated use)	15	225	450			
Educational	20	300	600			
Factory/Industrial	100	1500	3000			
Institutional areas:						
Inpatient treatment areas	240	3600	7200			
Outpatient areas	100	1500	3000			
Sleeping areas	120	1800	3600			
Residential	200	3000	6000			
Storage	300	4500	9000			

An additional modification in this proposal is to use terminology and the occupancy description used throughout the code in exception #3 to be consistent with typical code language.

Further, this proposal adds an exception to address Group B occupancies. This proposal is to allowGroup B (business) occupancies, with a total occupant load of 50 or less, including customers and employees, to have a single toilet facility provided that it is designed for use by no more than one person at a time. This appears to be a reasonable standard for small business spaces of 5,000 square feet or less. Current code requires separate facilities for business occupancies that exceed 1,500 square feet.

A single accessible toilet facility occupies approximately 50 ft<sup>2</sup>. Therefore, requiring separate facilities for males and females in small businesses requires the loss of approximately an additional 50 ft<sup>2</sup> of floor area along with the cost of the additional plumbing fixtures and enclosure. Fifty square feet represents a significant percentage of the floor area for the minimum size of spaces that require separate facilities per the base IPC Section 403.2 (IBC Section 2902.2). This change is intended to benefit storefront/strip mall business tenants that individually provide facilities within their space. This proposal will have little impact to standard office buildings that typically share restroom facilities.

Cost Impact: Will not increase the cost of construction

This proposal will provide a more lenient approach for facilities in Group B occupancies, so construction costs are not increased with this proposal.

P 41-15 : 403.2-DIGIOVANNI3855

## P 42-15

## 403.2 (IBC 2902.2)

**Proponent:** Bryan Hampson, representing Washington Association of Building Officials Technical Code Development Committee (bhampson@kenmorewa.gov)

#### 2015 International Plumbing Code

#### Revise as follows:

403.2 Separate facilities. Where plumbing fixtures are required, separate facilities shall be provided for each sex.

#### Exceptions:

- 1. Separate facilities shall not be required for dwelling units and sleeping units.
- 2. Separate facilities shall not be required in structures or tenant spaces with a total occupant load, including both employees and customers, of 15 or fewer.
- 3. Separate facilities shall not be required in mercantile occupancies in which the maximum occupant load is 100 or fewer.
- 4. Separate facilities shall not be required in spaces primarily used for drinking and dining in which the maximum occupant load is 30 or less.

Reason: Currently smaller drinking or dining establishments, e.g. sandwich shops, coffee shops, wineries and breweries with tasting rooms, etc., would be required to provide separate men's and women's restroom facilities when the occupant load exceeds 15, including both employees and customers. Typically there is one existing restroom and a kitchen or service area that may have one or two employees. This means that, if the dining area is greater than 195 square feet, separate restroom facilities are required (based on an assembly, unconcentrated occupant load factor of 15 people per square foot for 13 people). If a new restroom is constructed, it is required to be accessible. A small accessible restroom needs approximately 60 square feet of space. This may require leasing or purchasing additional space to accommodate a second restroom or reducing the size of the dining area. The additional restroom is unnecessary to serve the sanitary needs of the occupants of a small establishment. By requiring a separate restroom at 30 persons, there could be 420 sq. ft. (with two employees) non-fixed seating.

#### Cost Impact: Will not increase the cost of construction

The proposed code amendment will reduce the cost for small businesses. Because in some instances the business may need to lease or purchase added space to accomodate a second restroom and in addition to leasing or purchasing the added space is the cost of physical construction of the facility.

In addition, the restaurant industry assumes a maximum rent or lease of 8% based on gross sales. The separate restroom adds 25% (approximately) in floor space but adds nothing to the gross revenues. Small businesses would have a much better chance of survival by lowering the cost of lease and/or construction when they can spread that cost over a larger customer base.

P 42-15 : 403.2-HAMPSON4334

## P 43-15

#### 403.2 (IBC 2902.2), 403.2.1 (IBC 2902.1), 403.2.2 (New) (IBC 2902.2.2 New)), 403.4 (IBC 2902.4)

Proponent: Shawn Meerkamper, Transgender Law Center, representing Transgender Law Center

#### 2015 International Plumbing Code

#### Revise as follows:

403.2 Separate facilities. Where plumbing fixtures are required, separate facilities shall be provided for each sex.

#### Exceptions:

- 1. Separate facilities shall not be required for dwelling units and sleeping units.
- 2. Separate facilities shall not be required in structures or tenant spaces with a total occupant load, including both employees and customers, of 15 or fewer.
- 3. Separate facilities shall not be required in mercantile *occupancies* in which the maximum occupant load is 100 or fewer.
- 4. <u>Toilet facilities that have only one water closet shall not be identified for exclusive use by either sex, as provided in Sections 403.2.1 and 403.2.2 and shall be deemed to meet the requirements of this section.</u>

**403.2.1 Family or assisted-use toilet facilities serving as separate facilities.** Where a building or tenant space requires a separate toilet facility for each sex and each toilet facility is required to have only one water closet, two family or assisted-use toilet facilities shall be permitted to serve as the required separate facilities. Family or assisted-use toilet facilities shall not be required to be identified for exclusive use by either sex as required by Section 403.4.

#### Add new text as follows:

403.2.2 Single-stall facilities Where toilet facilities have only one water closet, those facilities shall not be identified for exclusive use by either sex.

#### **Revise as follows:**

**403.4 Signage.** Required *public* facilities shall be provided with signs that designateindicate the sex or designated use, as required by SectionSections 403.2, <u>403.2.1, and 403.2.2</u>. Signs shall be readily visible and located near the entrance to each toilet facility. Signs for accessible toilet facilities shall comply with Section 1111 of the *International Building Code*.

**Reason:** This proposal is jointly submitted by Transgender Law Center, National Center for Lesbian Rights, and National Center for Transgender Equality. Many people have been in the frustrating position of waiting in line for a single-stall restroom while the restroom designated for the other gender sits empty. This proposal simply provides that single-stall restrooms must be available to people of all genders, and clarifies that such single-user facilities do not violate existing laws requiring equal facilities to be available for men and for women. Amending the Plumbing Code as set forth above would increase the number of restrooms available to all people while especially benefitting parents with children of a different gender; senior citizens or people with disabilities who may require an attendant; people with bladder conditions; and people who don't fit narrow gender stereotypes, including some lesbian, gay, bisexual, and transgender people, for whom public restrooms can be sources of anxiety and sites of harassment or even violence. The consequences for public health can be serious: individuals who are unable to safely access public restrooms can develop medical problems from delaying or avoiding restroom usage.

This proposal mirrors policies already in effect in a number of major U.S. cities, including New York City, Philadelphia, San Francisco, Washington, D.C., West Hollywood, and Austin, Texas. Designating single-stall restrooms for use by all genders is also a growing trend at universities (including the University of California, which recently adopted this policy system-wide) and private businesses. Unfortunately, some institutions and government bodies find their options limited by codes such as the IPC that require single-stall restrooms to be limited to one gender. Adopting these amendments to the Plumbing Code would give guidance to local and state policymakers seeking to ensure that public restrooms are accessible and inclusive.

Bibliography: Building Practice: Gender-Inclusive, ADA-Accessible, and Family-Friendly Restrooms, University of California Santa Barbara, 2014, <a href="http://www.policy.ucsb.edu/policies/policy-docs/gender-inclusive-restroom.pdf">http://www.policy.ucsb.edu/policies/policy-docs/gender-inclusive-restroom.pdf</a>.

D.C. Municipal Regulations Title 4 Section 802.2, 2006, http://www.dcregs.dc.gov/Gateway/RuleHome.aspx?RuleNumber=4-802.

Potty Parity in Perspective: Gender and Family Issues in Planning and Designing Public Restrooms, Journal of Planning Literature, Vol. 21 No. 3, Kathryn H. Anthony and Meghan Dufresne, 2007, Pg. 267, https://www.ideals.illinois.edu/bitstream/handle/2142/11713/Anthony%20JPL.pdf?sequence=4.

Gender-neutral Bathrooms in Libraries, Jane Sandberg, 2014, <u>http://www.ala.org/glbtrt/sites/ala.org.glbtrt/files/content/popularresources/bathrooms%20brochure%20for%20viewing.pdf</u>. Gendered Restrooms and Minority Stress: The Public Regulation of Gender and its Impact on Transgender People's Lives, Journal of Public Management & Social Policy, Vol. 19 No. 2, Jody L. Herman, 2013, Pg. 65, <u>http://williamsinstitute.law.ucla.edu/wp-content/uploads/Herman-Gendered-Restrooms-and-Minority-Stress-June-2013.pdf</u>. West Hollywood Municipal Code Section 9.28.090, 2014, <u>http://weho.granicus.com/MetaViewer.php?view\_id=22&clip\_id=2505&meta\_id=86373</u>.

#### Cost Impact: Will not increase the cost of construction

Costs associated with our proposed amendments are limited to signage and would have no effect on construction costs. Restroom signs that do not specify gender are available for comparable costs to those that do specify gender. To the extent that there are price reductions for buying in bulk, some establishments will actually save money if they only need to purchase many of one sign.

P 43-15 : 403.2-MEERKAMPER5718

## P 44-15

## 403.2 (IBC 2902.2)

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

#### 2015 International Plumbing Code

#### **Revise as follows:**

403.2 Separate facilities. Where plumbing fixtures are required, separate facilities shall be provided for each sex.

#### Exceptions:

- 1. Separate facilities shall not be required for dwelling units and sleeping units.
- 2. Separate facilities shall not be required in structures or tenant spaces with a total occupant load, including both employees and customers, of 15 or fewer.
- 3. Separate facilities shall not be required in mercantile and business occupancies in which the maximum occupant load is 10050 or fewer.

**Reason:** It has been long standing practice in the codes to group business and mercantile occupancies in regards to plumbing fixtures. It was not clear why the number was changed from 50 to 100 in the 2012 IPC for mercantile with the IBC occupant load remaining the same. These revisions are made to allow for small business occupancies to provide a single toilet facility for up to 50 occupants and reduce the number to the previous value of 50 for mercantile occupancies.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 98.

#### Cost Impact: Will increase the cost of construction

This proposal will increase the cost of construction because additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code. Specifically, for mercantile occupancies having an occupant load of greater than 50 and less than 101, separate toilet facilities (for male and female) will be required whereas in the current code that range does not require separate facilities. Extra space and duplicate fixtures, piping and associated materials and labor will increase the cost of construction for those mercantile establishments in that range.

P 44-15 : 403.2-SNYDER3937

## P 45-15

#### 403.3 (IBC 2902.3)

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

#### 2015 International Plumbing Code

#### Revise as follows:

**403.3 Required public toilet facilities.** Customers For structures and tenant spaces intended for *public* utilization, customers, patrons and visitors shall be provided with *public* toilet facilities in.

Employees associated with structures and tenant spaces intended for public utilizationshall be provided with toilet facilities. The number of plumbing fixtures located within the required toilet facilities shall be provided in accordance with Section 403 for all users. Employees shall be provided with toilet facilities in all occupancies. Employee toilet facilities shall be either separate or combined employee and *public* toilet facilities.

Exception: Public toilet facilities shall not be required infor:

- 1. Open or enclosed parking garages where there are no parking attendants.
- Structures and tenant spaces intended for quick transactions, including takeout, pickup and dropoff, having a public access area less than or equal to 300 square feet (28 m<sup>2</sup>).

**Reason:** This section is being reorganized for clarity of the intent of the section which simply is to require public and employee toilet facilities, as applicable, for buildings and tenant spaces. The location of the required toilet facilities is covered by Sections 403.3.1 through 403.3.4. This reorganization eliminates the word "in" in the first sentence of the existing language and in the Exceptions lead-in sentence because this simple term has frequently been interpreted to mean that toilet facilities had to be within the building or tenant space that created the plumbing fixture demand. However, this interpretation is contrary to many past and current practices of toilet facilities being located in buildings other than the building generating the requirement for plumbing fixtures. Examples are:

- An amusement park with numerous buildings served by several centralized toilet facility buildings.
- An open mall building having multiple tenant spaces, served by one central toilet facility.
- A covered mall building having numerous tenant spaces, served by several centralized toilet facilities.

• A factory outlet "mall" area with several strip buildings where the toilet facilities to serve all of the buildings are located in only one of the strip buildings.

Note that Section 403.3.1 states "Access to the required facilities shall be from within the building or from the exterior of the building."

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Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 45-15 : 403.3-SNYDER3934

## P 46-15

Part I: 403.6 (New) Part II: 2902.3.7 (New)

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IBC-GENERAL COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Ronald Geren, RLGA Technical Services, LLC, representing Self (ron@specsandcodes.com)

## Part I

#### 2015 International Plumbing Code

Add new text as follows:

403.6 Fixture distribution. Where two or more toilet rooms are provided for each sex, the required number of lavatories shall be distributed proportionately to the required number of water closets.

### Part II

THE IBC-G COMMITTEE IS ONLY TO DECIDE WHETHER THIS SECTION SHOULD BE PLACED CHAPTER 29. THE TECHNICAL PART OF THE NEW SECTION WILL BE DECIDED BY THE IPC COMMITTEE.

#### 2015 International Building Code

#### Add new text as follows:

2902.3.7 Fixture distribution. Where two or more toilet rooms are provided for each sex, the required number of lavatories shall be distributed proportionately to the required number of water closets.

Reason: The proposed addition is intended to prevent the uneven distribution of plumbing fixtures for each sex within two or more toilet facilities. For example, if 6 water closets and 3 lavatories are required for males, they cannot be distributed as follows:

Male Toilet Facility 1: 4 water closets and 1 lavatory

Male Toilet Facility 2: 2 water closets and 2 lavatories

The correct distribution shall be as follows:

- Male Toilet Facility 1: 4 water closets and 2 lavatories
- Male Toilet Facility 2: 2 water closets and 1 lavatory

#### Cost Impact:

Part I: Will not increase the cost of construction The same number of fixtures is required, so there is not an increase in cost.

Part II: Will not increase the cost of construction The same number of fixtures is required, so there is not an increase in cost.

P 46-15 : 403.6 (New)-GEREN5708

## P 47-15

## 404.1.1 (New)

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

#### 2015 International Plumbing Code

#### Add new text as follows:

404.1.1 Clustered family-or-assisted-use toilet facilities. Where multiple family-or-assisted-use toilet facilities are clustered at a single location, not less than 50 percent of the cluster of toilet facilities shall be required to be accessible.

**Reason:** IBC Section 1109.2 Exception 2 allow for single occupant toilet rooms that are clustered and of the same type to only have 50% constructed accessible. Since the family or assisted-use toilet room requirements basically describe an accessible single occupant bathroom, the intent of the exception is to allow for the same exception to be applicable when someone uses the allowance in IPC Section 404.2.2. This would be consistent with the 2010 ADA Standard for Accessible Design.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is CTC/PMG Proposal Item 1.

In July/2014 the ICC Board decided to sunset the activities of the Code Technology Committee (CTC). This is being accomplished by re-assigning many of the CTC Areas of Study to the applicable Code Action Committee (CAC). This proposal falls under the CTC Area of Study entitled Acccessibility. Information on the CTC, including: the sunset plan; meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the CTC effort can be downloaded from the <u>CTC website</u>.

#### Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 47-15 : 404.1.1 (New)-SNYDER3938

## P 48-15

#### 405.3.1

**Proponent:** David Beahm, Building Official, Warren County, representing Virginia Plumbing and Mechanical Inspectors Association, Virginia Building Code Officials Association and Warren County Virginia (dbeahm@warrencountyva.net)

#### 2015 International Plumbing Code

#### Revise as follows:

**405.3.1 Water closets, urinals, lavatories and bidets.** A water closet, urinal, lavatory or bidet shall not be set closer than 15 inches (381 mm) from its center to any side wall, partition, vanity or other obstruction, or closer than 30 inches (762 mm) center to center between adjacent fixtures. There shall be not less than a 21-inch (533 mm) clearance in front of the water closet, urinal, lavatory or bidet to any wall, fixture or door. Water closet compartments shall be not less than 30 inches (762 mm) in width and not less than 60 inches (1524 mm) in depth for floormounted water closets and not less than 30 inches (762 mm) in width and 56 inches (1422 mm) in depth for wallhung water closets.

Exception: An accessible children's water closet shall be set not closer than 12 inches from its center to the required partition or to the wall on one side.

Reason: Both the 2003 and the 2009 ICC ANSI A117.1 indicate this reduced measurement and this exception allows the user to realize this allowance without having to go out of the IPC.

Cost Impact: Will not increase the cost of construction

This is a reference statement only and is already allowed within the associated referenced standard.

P 48-15 : 405.3.1-BEAHM3629

## P 49-15

## 405.3.1, 405.3.5

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

#### 2015 International Plumbing Code

#### Revise as follows:

**405.3.1 Water closets, urinals, lavatories and bidets.** A water closet, urinal, lavatory or bidet shall not be set closer than 15 inches (381 mm) from its center to any side wall, partition, vanity or other obstruction. Where partitions or other obstructions do not separate adjacent fixtures. or fixtures shall not be set closer than 30 inches (762 mm) center to center between adjacent fixtures. There shall be not less than a 21-inch (533 mm) clearance in front of thea water closet, urinal, lavatory or bidet to any wall, fixture or door. Water closet compartments shall be not less than 30 inches (762 mm) in width and not less than 60 inches (1524 mm) in depth for floormounted water closets and not less than 30 inches (762 mm) in width and 56 inches (1422 mm) in depth for wallhung water closets.

**405.3.5 Urinal partitions.** Each urinal utilized by the *public* or employees shall occupy a separate area with walls or partitions to provide privacy. <u>The width</u> <u>between walls or partitions at each urinal shall be not less than 30 inches (762 mm)</u>. The walls or partitions shall begin at a height not greater than 12 inches (305 mm) from and extend not less than 60 inches (1524 mm) above the finished floor surface. The walls or partitions shall extend from the wall surface at each side of the urinal not less than 18 inches (457 mm) or to a point not less than 6 inches (1522 mm) beyond the outermost front lip of the urinal measured from the finished backwall surface, whichever is greater.

#### Exceptions:

- 1. Urinal partitions shall not be required in a single-occupant or family/assisted-use toilet room with a lockable door.
- 2. Toilet rooms located in child day care facilities and containing two or more urinals shall be permitted to have one urinal without partitions.

Reason: Where partitions are required between adjacent fixtures, the spacing cannot be 30 inches center-to-center between fixtures. We have heard about contractors who have been caught off guard by this, not knowing about the thickness of a partition (because those items are typical not there "in the rough"), only to find out at final inspection that they have a violation because someone later came in and installed the required partitions. This happens frequently with multiple urinal layouts. The added text clarifies that the width between partitions must be 30 inches and the spacing between adjacent fixtures is only applicable where partitions will not be installed.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 140.

#### Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 49-15 : 405.3.1-SNYDER3939

## P 50-15

#### 405.4.1

Proponent: Pennie L Feehan, Copper Development Association, representing Copper Development Association (penniefeehan@me.com)

#### 2015 International Plumbing Code

#### Revise as follows:

**405.4.1 Floor flanges.** Floor flanges for water closets or similar fixtures shall be not less than 0.125 inch (3.2 mm) thick for brasscopper alloy, 0.25 inch (6.4 mm) thick for plastic and 0.25 inch (6.4 mm) thick and not less than a 2-inch (51 mm) caulking depth for cast iron or galvanized malleable iron.

Floor flanges of hard lead shall weigh not less than 1 pound, 9 ounces (0.7 kg) and shall be composed of lead alloy with not less than 7.75-percent antimony by weight. Closet screws and bolts shall be of brasscopper alloy. Flanges shall be secured to the building structure with corrosion-resistant screws or bolts.

Reason: There are many different copper and copper-alloy compositions. Copper alloy is the term used to identify materials manufactured where copper is the base metal and it includes brass and bronze.

#### Cost Impact: Will not increase the cost of construction

This proposal will not impact the cost of construction as this change is only a clarification of the name of a product.

P 50-15 : 405.4.1-FEEHAN3790

## P 51-15

Part I: 405.4.3 Part II: Table P2701.1, P2702.4

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Angel Guzman Rodriguez, representing American Society of Mechanical Engineers

## Part I

#### 2015 International Plumbing Code

#### Revise as follows:

**405.4.3 Securing wall-hung water closet bowls.** Wallhung water closet bowls shall be supported by a concealed metal carrier that is attached to the building structural members so that strain is not transmitted to the closet connector or any other part of the plumbing system. The carrier shall conform to ASME A112.6.1M or\_ASME A112.6.2.

## Part II

### 2015 International Residential Code

Revise as follows:

#### TABLE P2701.1 PLUMBING FIXTURES, FAUCETS AND FIXTURE FITTINGS

MATERIAL	STANDARD
Floor affixed supports for off the floor plumbing fixtures for public use	ASME A 112.6.1M
Framing-affixed supports for off-the-floor water closets with concealed tanks	ASME A 112.6.2

P2702.4 Carriers for wall-hung water closets. Carriers for wall-hung water closets shall conform to ASME A112.6.1 or ASME A112.6.2.

Reason: Update Section 405.4.3 by removing the reference to ASME A112.6.1M since the requirements from standard are now covered in A112.6.2. The A112.6.1M standard is longer published by ASME. Standard ASME A112.6.1M–1997(R2008) Floor affixed Supports for Off-the-floor Plumbing Fixtures for Public Use will be automatically removed from Chapter 15 during processing of the 2018

Standard ASME A112.6.1M–1997(R2008) Floor affixed Supports for Off-the-floor Plumbing Fixtures for Public Use will be automatically removed from Chapter 15 during processing of the 2018 IPC.

#### Cost Impact:

Part I: Will not increase the cost of construction This will not increase the cost of construction since the proposal is editorial/updating in nature.

Part II: Will not increase the cost of construction This will not increase the cost of construction since the proposal is editorial/updating in nature.

> P 51-15 : 405.4.3-GUZMAN RODRIGUEZ4970

## P 52-15

#### 405.5 (New)

Proponent: Julius Ballanco, JB Engineering and Code Consulting, P.C., representing Self (JBENGINEER@aol.com)

#### 2015 International Plumbing Code

#### Add new text as follows:

**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.

Reason: ASME A112.3.4/CSA B45.9 was added to the code during the last revision. This standard covers macerating toilet systems and fixtures with a pumped waste. The requirements for pumped waste systems were added during the latest revision of the standard.

The fixtures with a pumped waste are typically installed during renovation or where pipe pitch cannot be achieved. Often times, plumbing fixtures with pumped waste are accessible fixture add for the physically challenged of for the aging in place. These fixtures must be installed in accordance with the manufacturer's instructions. There are limitation on the length of the pumped waste drain. There can also limitation on the location of the fixture.

This section will compliment Section 712.4.1.

**Cost Impact:** Will not increase the cost of construction Since a fixture with a pumped waste is optional, there is no cost impact.

P 52-15 : 405.5 (New)-BALLANCO3379
# P 53-15

Part I: 405.8, 1002.2 Part II: P2704, P2704.1, P3201.1

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

# Part I

## 2015 International Plumbing Code

### Revise as follows:

**405.8 Slip joint connections.** Slip joints <u>connections shall be installed only for tubular waste piping and only between the outlet of a fixture and the connection to the drainage piping. Slip joint connections shall be made with an *approved*elastomeric sealing gasket-and shall only be installed on the trap outlet, trap inlet and within the trap seal. Fixtures with concealed slip-jointSlip joint connections shall be provided with <u>access. Such access shall provide</u> an <u>access panel or utility spaceopening that is</u> not less than 12 inches (<del>305 mm<u>305mm</u></del>) in its smallest dimension or other <u>approved arrangement so as to provide access to the slip joint connections for inspection and repair</u>.</u>

**1002.2 Design of traps.** Fixture traps shall be self-scouring. Fixture traps shall not have interior partitions, except where such traps are integral with the fixture or where such traps are constructed of an *approved* material that is resistant to corrosion and degradation. Slip joints Traps having slip joint connections shall be madecomply with an *approved* elastomeric gasket and shall be installed only on the trap inlet, trap outlet and within the trap seal. Section 405.8.

# Part II

## 2015 International Residential Code

Revise as follows:

## SECTION P2704 ACCESS TOSLIP JOINT CONNECTIONS

P2704.1 GeneralSlip joints. Slip joints connections shall be installed only for tubular waste piping and only between the trap outlet of a fixture and the connection to the drainage piping. Slip joint connections shall be made with an *approved* elastomeric sealing gasket and shall be installed only on the trap outlet, trap inlet and within the trap seal. Fixtures with concealed slip jointSlip joint connections shall be provided with accessible. Such access shall provide an access panel or utility spaceopening that is not less than 12 inches (<del>305 mm305mm</del>) in its smallest dimension or other *approved* arrangement so as to provide access to the slip connections for inspection and repair.

P3201.1 Design of traps. Traps shall be of standard design, shall have smooth uniform internal waterways, shall be self-cleaning and shall not have interior partitions except where integral with the fixture. Traps shall be constructed of lead, cast iron, copper or copper alloy or *approved* plastic. Copper or copper alloy traps shall be not less than No. 20 gage (0.8 mm) thickness. Solid connections, slip joints and couplings shall be permitted to be used on the trap inlet, trap outlet, or within the trap seal. Slip jointsTrap having slip joint connections shall be accessible.comply with Section P2704.1.

**Reason:** From the existing wording of this section, some inspectors have the misconception that the code doesn't allow slip joints to be installed upstream of a trap inlet nor at the connection of the trap "arm" to the drainage piping. For example, consider a typical lavatory where the drainage piping in the wall was roughed in at a fairly low elevation and the tailpiece from the fixture outlet is not very long. Normally, a slip joint end, tubular waste extension piece is installed to make the connection to the end of the fixture tailpiece to the inlet of the trap. However, if the existing wording is read literally, the code doesn't allow a slip joint above the trap inlet: *only at the trap inlet, outlet and within the trap seal.* Although it would be ideal to have the rough-in elevation of the drain in the wall "coordinate" with the elevation of the fixture outlet tailpiece piece, it is not realistic to make this happen every time. Sometimes the rough-in installer doesn't know the height of the cabinetry for the lavatory or the model of the drain assembly because neither have been chosen yet by the builder designer. The revised wording allows for what is a common practice for fixture installation in the plumbing industry.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 1.

### Cost Impact:

#### Part I: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

## Part II: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 53-15 : 405.8-SNYDER3940

# P 54-15

## Part I: 412.4 (New) Part II: IBC 1211 (New), IBC 1211.1 (New)

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IBC-GENERAL COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Tim Earl, GBH International, representing The Oatey Company (tearl@gbhinternational.com)

# Part I

## 2015 International Plumbing Code

### Add new text as follows:

412.4 Upper floors laundry room floor drain required. Where a room has plumbing provisions for the installation of a stationary automatic clothes washer, and that room is located above a finished space, the floor in the room shall have a floor drain. The floor finish shall be in accordance with Section 1211.1 of the International Building Code.

# Part II

## 2015 International Building Code

Add new text as follows:

### SECTION1211 ROOMS HAVING FLOORS DRAINS

1211.1 Laundry rooms with floor drains. A laundry room having a floor drain shall have an installed floor finish system that is nonabsorbent. Concrete floors shall not be required to have a nonabsorbent floor finish system.

Reason: The average claim for damages related to a ruptured washing machine connection in second floor laundries and first floor laundries over finished basement areas is over \$8,000. Materials that are wetted and not replaced can promote mold growth, resulting in potential health hazards and additional repair costs. The costs associated with this water damage are much higher than the estimated cost of installing a floor drain.

Cost Impact:

Part I: Will increase the cost of construction Estimated cost would be less than \$200 per laundry room, including materials and labor, when part of new construction.

Part II: Will increase the cost of construction Estimated cost would be less than \$200 per laundry room, including materials and labor, when part of new construction.

P 54-15 : 406.3 (New)-EARL4526

# P 55-15

Part I: 407.2 Part II: P2713.1

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Julius Ballanco, representing Self (JBENGINEER@aol.com)

# Part I

## 2015 International Plumbing Code

Revise as follows:

**407.2 Bathtub waste outlets and overflows.** Bathtubs shall be equipped with a waste outlet-and an overflow outlet. The outlets shall be connected to waste tubing or piping not less than 1<sup>1</sup>/<sub>2</sub> inches (38 mm) in diameter. The waste outlet shall be equipped with a water-tight stopper. Where an overflow is installed on a bathtub, the overflow shall be not less than 1-1/2 inches (38 mm) in diameter.

# Part II

## 2015 International Residential Code

Revise as follows:

**P2713.1 Bathtub waste outlets and overflows.** Bathtubs shall be equipped with a waste outlet and an overflow outlet. The outlets shall be connected to waste tubing or pipingthat is not less than  $1^{1/2}$  inches (38 mm) in diameter. The waste outlet shall be equipped with a water-tight stopper. Where an overflow is installed,

the overflow shall be not less than  $1\frac{1}{2}$  inches (38 mm) in diameter.

Reason: The Code is currently not coordinated with the referenced standards. The standards listed in Table 2701.1 do not require an overflow. An overflow is an optional connection for a bathtub. The reason the standard removed the mandate for overflows is because they cannot be properly cleaned. Furthermore, they are rarely if ever used, which is the only way to clean the overflow. Without proper cleaning, there is a build-up of contaminants in the overflow.

As the code currently reads, it prohibits certain tubs because they do not have an overflow. However, Table 2701.1 allows these tubs

The national consensus product standard should be the document that regulates the construction requirements of a bathtub

#### Cost Impact:

Part I: Will not increase the cost of construction This will decrease the cost of construction by not requiring an overflow for every bathtub.

Part II: Will not increase the cost of construction This will decrease the cost of construction by not requiring an overflow for every bathtub.

P 55-15 : P2713.1-BALLANCO3381

# P 56-15

# 409.1, Chapter 14

Proponent: Julius Ballanco, representing Self (JBENGINEER@aol.com)

## 2015 International Plumbing Code

Revise as follows:

409.1 Approval. Commercial dishwashing machines shall conform to ASSE 1004 and NSF 3. Residential dishwashers shall conform to NSF 184.

### Add new standard(s) as follows:

NSF 184-2014 Residential Dishwashers

**Reason:** NSF 184 is the standard that regulates the performance of a residential dishwasher. Some of the requirements in this standard include achieving a minimum 99.999 percent or 5-log reduction of bacteria and reaching a final rinse temperature of 150° F. The sanitization performance is verified when the unit is operated on the sanitizing cycle There are hundreds of residential dishwashers that have been certified to this standard.

**Cost Impact:** Will not increase the cost of construction This simply adds the correct reference standard for residential dishwashers.

Analysis: A review of the standard proposed for inclusion in the code, NSF 184-10, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 56-15 : 409.1-BALLANCO3382

# P 57-15

## 409.3, 409.4 (New), 802.1.6

Proponent: Julius Ballanco, JB Engineering and Code Consulting, P.C., representing Self (JBENGINEER@aol.com)

### 2015 International Plumbing Code

#### Revise as follows:

409.3 Waste connection. The waste connection of a commercial dishwashing machine shall comply with Section 802.1.7, as applicable.

#### Add new text as follows:

**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.

#### Delete without substitution:

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.

Reason: The dishwaser waste connection requirements must be separated between a residential unit and a commercial unit. Commercial dishwashing machines are required to discharge through an indirect connection. The change to 409.3 will identify the indirect waste connections as only applying to commercial units. There is no change to the discharge requirements of a commercial dishwashing machine.

Residential units are technically identified as "residential dishwashers" not "domestic dishwashing machines." The standard regulating residential dishwashers is entitled, "Residential Dishwashers." There, the change is made in the terminology.

The connection of a residential dishwasher has always been permitted to be a direct connection to a kitchen sink tailpiece or a dishwasher connection of a food waste disposer. The indirect connection has always been optional. Therefore, the waste connection requirements belong in Section 409.4, not Chapter 8. Chapter 8 is reserved for indirect connections that are required. Section 802.1.6 does not belong under indirect waste. The section specifically allows a direct connection for dishwashers. This is the common type of connection, not an indirect connection.

The indirect connection is a hold-over from when dishwashers were first introduced. It was incorrectly assumed that an indirect connection was necessary. However, the plumbing profession recognized that an indirect connection is not necessary.

#### Cost Impact: Will not increase the cost of construction

This has no impact on the cost of construction since the connections permitted for a residential dishwasher remain the same.

P 57-15 : 409.3-BALLANCO3383

# P 58-15

# 410.1, Chapter 14

Proponent: John Watson, Elkay, representing Elkay (john.watson@elkay.com)

## 2015 International Plumbing Code

#### **Revise as follows:**

**410.1 Approval.** Drinking fountains shall conform to ASME A112.19.1/CSA B45.2 or ASME A112.19.2/CSA B45.1 and water coolers shall conform to AHRI <del>1010</del>ASHRAE 18. Drinking fountains and water coolers and water dispensers shall conform to NSF 61, Section 9. Electrically operated, refrigerated drinking water coolers and water dispensers shall be listed and labeled in accordance with UL 399.

#### Add new standard(s) as follows:

ASHRAE 18-2008 (RA 2013) Methods of Testing for Rating Drinking-Water Coolers with Self Contained Mechanical Refrigeration

Reason: Products/Devices that are installed to meet the requirements of drinking fountains need to comply to the same approval requirements as drinking fountains and water coolers. With the addition of water dispensers during the 2015 code cycle, we inadvertently failed to outline such requirements.

### Cost Impact: Will not increase the cost of construction

This is a product certification issue which should not impact the product itself; therefore, there should be no cost increase.

Analysis: A review of the standard proposed for inclusion in the code, ASHRAE 18-2008 (RA 2013), with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 58-15 : 410.1-WATSON5458

# P 59-15

# 410.2 (IBC 2902.6)

Proponent: Stephen DiGiovanni, representing Southern Nevada Chapter of ICC (sdigiovanni@clarkcountynv.gov)

## 2015 International Plumbing Code

### Revise as follows:

410.2 Small occupancies. Drinking fountains shall not be required for an occupant load of 1530 or fewer.

Reason: IPC Section 410.2 (IBC Section 2902.6) is revised to increase the occupant load up to 30 for those small occupancies where drinking fountains are not required. The increase in the occupant load for both drinking fountains and service sinks would provide a favorable code limitation to very small occupancies and a decrease in cost to small business owners. Real occupancy of spaces and the calculated occupant loads may differ to the point where the requirements of the current code may be too stringent.

#### Cost Impact: Will not increase the cost of construction

This proposal will result in a less stringent code requirement, and therefore would presumably lower the cost of construction.

P 59-15 : 410.2-DIGIOVANNI4738

# P 60-15

## 410.2 (IBC 2902.6)

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## 2015 International Plumbing Code

**Revise as follows:** 

410.2 Small occupancies. Drinking fountains shall not be required for an occupant load of 1550 or fewer.

Reason: The following is provided as support that drinking fountains for smaller occupancies are just not needed as evidenced by the experience (two code cycles) in one of the hottest and driest areas of the country.

As many should know, the climate in Phoenix, Arizona is HOT and DRY. The following Wikipedia quote sums up the general facts:

Phoenix has a subtropical desert climate, typical of the Sonoran Desert in which it lies. Phoenix has extremely hot summers and warm winters. The average summer high temperatures are some of the hottest of any major city in the United States, and approach those of cities such as Riyadh and Baghdad.<sup>[60]</sup> On average (1981–2010), there are 107 days annually with a high of at least 100 °F (38 °C),<sup>[61]</sup> including most days from late May through early October. Highs top 110 °F (43 °C) an average of 18 days during the year<sup>[62]</sup> Every day from June 10 through August 24, 1993, the temperature in Phoenix reached 100 °F or more, the longest continuous number of days (76) in the city's history. Officially, the number of days with a high of at least 100 °F has historically ranged from 48 in 1913 to 143 in 1989. For comparison, since 1870, New York City has seen a temperature of 100 degrees or more a total of only 59 days.<sup>[63]</sup> On June 26, 1990, the temperature reached an all-time recorded high of 122 °F (50 °C).<sup>[64]</sup>

60. "Collier Center". Collier Center of Phoenix. RetrievedSeptember 12, 2012.

61. "NowData - NOAA Online Weather Data". National Oceanic and Atmospheric Administration.

Retrieved 2011-12-18.

62. "Climatology of heat in the southwest". National Weather Service. Retrieved January 6, 2009.

63. NWS Upton, NY. Retrieved 2014-05-24

64. Dorish, Joe. "10 All-Time Hottest Weather Temperature Days in Phoenix". Knoji. Retrieved February 5, 2014.

Another source indicates the average relative humidity is second to the lowest in the nation with Las Vegas having the lowest. Here's a typical year for Morning (M) and Afternoon (A) Relative Humidities in Phoenix:

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

67 33 60 27 57 24 43 16 35 13 31 12 44 20 51 23 49 23 50 22 57 27 67 34

Our mouths are parched just thinking about those afternoon conditions!

The City of Phoenix has always believed that the threshold of 15 occupants for not requiring drinking fountains was far too low such that it created a significant waste of building space for smaller buildings and tenant spaces. Phoenix made the decision two code cycles ago to raise the threshold to 50. In the 8 plus years of this new threshold in place for new and renovated buildings in Phoenix, there have not been any complaints about not having drinking fountains in smaller establishments. Not one.

It is believed that the low threshold is unwarranted for the remainder of the United States as those areas are not nearly as hot or dry as Phoenix.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This PMGCAC Item 97.

Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 60-15 : 410.2-SNYDER3947

# P 61-15

# 411.3 (New), Chapter 14

Proponent: Julius Ballanco, JB Engineering and Code Consulting, P.C., representing Self (JBENGINEER@aol.com)

## 2015 International Plumbing Code

#### Add new text as follows:

411.3 Water supply The temperature of the water supply to an emergency shower or eyewash station shall be controlled only by a temperature actuated mixing valve complying with ASSE 1071.

#### Add new standard(s) as follows:

ASSE 1071-2012 Performance Requirements for Temperature Actuated Mixing Valves for Plumbed Emergency Equipment

Reason: The temperature of the water to emergency fixtures is regulated by ASSE 1071 devices. These devices raise the temperature of the cold water by the introduction of hot water. The cold water flows freely through the device. This feature is imperative to prevent the water supply to an emergency fixture from shutting off. The most important requirement of an emergency fixture is the constant flow of high volumes of water.

Without this code requirement, the water supply could be regulated with an ASSE 1070 device. This would be dangerous in that such a device could shut off the flow of water if there is a loss of either hot or cold water. By listing that the "only" means of protection is an ASSE 1071 device, no other mixing valve can be used.

The use of these devices is also consistent with the OSHA requirements for emergency fixtures.

**Cost Impact:** Will increase the cost of construction There is a cost for an ASSE 1071 mixing valve.

Analysis: A review of the standard proposed for inclusion in the code, ASSE 1071-2012, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 61-15 : 411.3 (New)-BALLANCO3810

# P 62-15

## 411.3 (New), Chapter 14

Proponent: Ronald George, representing Self (Ron@Plumb-TechLLC.com)

## 2015 International Plumbing Code

### Add new text as follows:

411.3 Delivery of tepid water for emergency fixtures. Water for emergency shower and eyewash flushing water shall be delivered through a properly sized, cold water by-pass equipped mixing valve conforming to ASSE 1071 Flushing fluid temperatures for eyewashes shall not exceed 100°F (37.8°C) Final adjustment of emergency shower and eyewash flushing water temperatures shall be determined by safety personnel at the site to assure a temperature that is adequate to encourage a full 15 minute flush of hazardous chemicals.

#### Add new standard(s) as follows:

ASSE 1071-2012 Temperature Actuated Mixing Valves for Plumbed Emergency Equipment

Reason: There was currently no requirement for emergency fixtures to use mixing valves that are listed to ASSE 1071. The aSSE 1071 standard has tight temperature control tolerences to address low flows associated with emergency eyewashes and hoigh flows associated with emergency showers. This industry standard was not referenced in the code.

Bibliography: www.ASSE-Plumbing.org www.Plumb-Tech Design & Consulting Services LLC

www.ScaldPrevention.org

Cost Impact: Will not increase the cost of construction

Currently mixing valves were required in orger to meet the tepid water temperature range identified in the ANSI/ISEA Z358.1 standard. Installations havve been using products listed to this standard without reference in the codes.

This is simply catching up with waht is happening in the industry.

Analysis: A review of the standard proposed for inclusion in the code, ASSE 1071, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 62-15 : 411.3 (New)-GEORGE5591

# P 63-15

# 411.3 (New), Chapter 14

**Proponent:** Billy Smith, American Society of Plumbing Engineers Legislative Committee, representing American Society of Plumbing Engineers Legislative Committee (bsmith@aspe.org)

## 2015 International Plumbing Code

Add new text as follows:

411.3 Water supply. The temperature of the water supply to an emergency shower or eyewash station shall only be controlled by a temperature actuated mixing valve complying with ASSE 1071.

### Add new standard(s) as follows:

ASSE 1071 - 2012 Performance Requirements for Temperature Actuated Mixing Valves for Plumbed Emergency Equipment

Reason: The temperature of the water to emergency fixtures is regulated by ASSE 1071 devices. These devices raise the temperature of the cold water by the introduction of hot water. The cold water flows freely through the device. This feature is imperative to prevent the water supply to an emergency fixture from shutting off. The most important requirement of an emergency fixture is the constant flow of high volumes of water.

Without this code requirement, the water supply could be regulated with an ASSE 1070 device. This would be dangerous in that such a device could shut off the flow of water if there is a loss of either hot or cold water. By listing that the "only" means of protection is an ASSE 1071 device, no other mixing valve can be used.

The use of these devices is also consistent with the OSHA requirements for emergency fixtures.

**Cost Impact:** Will not increase the cost of construction This merely adds the proper reference to the thermostatic mixing valve required for an emergency shower. This is already a requirement of OSHA.

Analysis: A review of the standard proposed for inclusion in the code, ASSE 1071, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 63-15 : 411.3 (New)-SMITH5398

# P 64-15

## 416.5, 416.6 (New)

**Proponent:** Ronald George, Self, Plumb-Tech Design & Consulting Services LLC; www.Plumb-TechLLC.com; www.ScaldPrevention.org, representing Self; Plumb-Tech Design & Consulting Services LLC (Ron@Plumb-TechLLC.com)

## 2015 International Plumbing Code

#### **Revise as follows:**

**416.5 Tempered water for public hand-washing facilities.** *Tempered water* shall be delivered from lavatories and group wash fixtures located in public toilet facilities provided for customers, patrons and visitors. *Tempered water* shall be delivered through an *approved* water-temperature limiting device that conforms to ASSE 1070 or CSA B125.3, or through a faucet having an integral limit stop that is field-adjusted and set.\_\_\_\_\_\_

#### Add new text as follows:

416.6 Hot or tempered water delivery from private lavatories *Hot water* or t*empered water* shall be delivered from lavatories and group wash fixtures located in private toilet facilities through an *approved* water-temperature limiting device conforming to ASSE 1070 or CSA B125.3, or through a faucet having an integral limit-stop that can be field-adjusted and set. Limiting devices and limit-stops shall be adjustable from 85°F (29.4°C) to 120°F (48.8°C). The setting of the device or limit-stop shall not allow a discharge water temperature exceeding 120°F (48.8°C).

Reason: This code change is intended to provide controls at a lavatory (either a limit stop on the lavatory handle or a point-of use temperature limiting valve under the sink to allow users to limit the maximum temperature flowing from a faucet to prevent scald injuries to children, elderly or handicapped persons when they are present in a facility.

Bibliography: www.ScaldPrevention.org

American Society of Sanitary Engineers standard: ASSE1070-2004 Water Temperature Limiting Devices

#### Cost Impact: Will increase the cost of construction

The cost for a faucet with a limit stop is minimal for the ability to limit the hot water in a home, apartment or hotel room where children, the elderly or handicapped persons may be injured using the fixture. This code change gives an option of a limit stop on the faucet or a temperature limiting valve conforming to ASSE 1070.

P 64-15 : 416.5-GEORGE5422

# P 65-15

## 417.3.1 (New), 424.3.1 (New), 305.4

Proponent: James Richardson, Jr, City of Columbus Ohio, representing City of Columbus Ohio (jarichardson@columbus.gov)

## 2015 International Plumbing Code

#### Add new text as follows:

**417.3.1 Rinsing showers on pool decks.** Rinsing showers provided for outdoor swimming pools shall be located on the pool deck. The drains for the showers shall be directly connected to the building storm drain, the building storm sewer or, where a storm sewer does not exist, in accordance with storm water runoff requirements of the jurisdiction.

Rinsing showers provided for indoor swimming pools shall be located on the pool deck. The drains for such indoor showers shall be connected to a pool deck drain system that is installed in accordance with Section 802.1.4.

424.3.1 Pool deck rinsing shower controls. Shower heads for rinsing showers on outdoor swimming pool decks shall be supplied with water through an automatic temperature control mixing valve complying with ASSE 1069 or CSA B125.3. The valve shall be set to limit the water temperature to not greater than 120°F (48.9°C). Each valve shall be rated for the total flow of all shower heads served by the valve. Valves shall be located in a space that is maintained at a temperature of not less than 40°F (4.4°C).

Shower heads for rinsing showers on indoor swimming pool decks shall be contolled by valves in accordance with Section 425.3.

#### Revise as follows:

**305.4 Freezing.** Water, soil and waste pipes shall not be installed outside of a building, in attics or crawl spaces, concealed in outside walls, or in any other place subjected to freezing temperatures unless adequate provision is made to protect such pipes from freezing by insulation or heat or both. Exterior water supply system piping shall be installed not less than 6 inches (152 mm) below the frost line and not less than 12 inches (305 mm) below grade.\_

**Exception:** Water, soil and waste piping in seasonal-use buildings and structures, or for outdoor seasonal-use plumbing fixtures such as pool deck rinsing showers, shall not be required to be protected as indicated this section provided that the water in the piping is evacuated by draining, by blowing out with air or by vacuuming. Evacuated traps shall be plugged or shall be refilled with a piping-compatible, environmentally-safe liquid that is freeze-resistant at the lowest expected outdoor temperature.

Reason: Rinsing showers are often provided for public pools with no real direction in the plumbing code as to how to address water and waste connections Changing the wording for freeze protections would allow for owners who have seasonal out buildings or fixtures to winterize rather than providing "heat, insulation or both" when in many cases the only way to prevent freezing is actually evacuating water from the water lines.

### $\label{eq:cost_cost_cost_cost} \textbf{Cost Impact:} \ \textbf{Will not increase the cost of construction}$

Rinsing showers are already provided with some form of temperature limiting valve, but in most cases are unable to be protected from freezing.

P 65-15 : 417.3.1 (New)-RICHARDSON5734

# P 66-15

## 202 (New), 418.4 (New)

**Proponent:** Ronald George, Self; Plumb-Tech Design & Consulting Services LLC; www.Plumb-TechLLC.com; www.ScaldPrevention.org, representing Self; Plumb-Tech Design & Consulting Services LLC (Ron@Plumb-TechLLC.com)

## 2015 International Plumbing Code

Add new definition as follows:

### SECTION 202 DEFINITIONS

SCALD HAZARD A condition where the discharge of high temperature hot water from a plumbing fixture can cause serious burn injuries.

#### Add new text as follows:

418.4 Hot water temperature limits at sinks. To provide for the reduction of scald hazards for people, including the elderly, persons with physical disabilities and children, using public or private sinks where *hot water* is supplied to sink faucets, the water discharged to the sink shall flow through one or more of the following:

- 1. A device conforming to ASSE 1017.
- 2. A device conforming to ASSE 1070.

3. A device conforming to ASSE 1062.

4. A faucet having an integral, field-adjustable limit-stop that can be adjusted from 110°F (43.3°C) to 135°F (57.2°C).

Adjustable devices and limit-stop-equipped faucets shall be set at a faucet discharge water temperature, as determined by the building owner, that protects the intended users provided that the setting does not result in a water temperature exceeding 135°F (57.2°C). Non-adjustable devices complying with ASSE 1062 shall significantly reduce flow from the faucet when discharge water temperatures exceed 115°F (46.1°C).

Reason: This code change is intended to provide scald protection at sinks and it offers several options for controls. The code change is intended to allow limitation and adjustment of the hot water temperature to prevent scald injuries to children, elderly or handicapped persons when they are present in a facility.



A Seminar and Technical Paper for the 25-28 Oct. 98 Annual ASPE Meeting at the Indianapolis Convention Center in Indianapolis, Indiana. Reprinted by Watts Regulator Company with permission of Dr. D. Symum Jr. Figure 1 – Hot Water Scald Burns – Time vs Temperature Relationship for Second and Third Degree Burns for Adults and Children. (Notes By; Ron George, CPD, See: www.ScaldPrevention.org)

Bibliography: www.ScaldPrevention.org

#### Cost Impact: Will increase the cost of construction

The cost for a faucet with a limit stop or an ASSE 1062 device (TAFR) is minimal for the ability to limit the hot water in a home, apartment or hotel room where children, the elderly or handicapped persons may be injured using the fixture. This code change gives several options to comply without spending too much for safety.

P 66-15 : 418.4 (New)-GEORGE5436

# P 67-15

# [BG] 419.3

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

### 2015 International Plumbing Code

Delete without substitution:

[BG] 419.3 Surrounding material. Wall and floor space to a point 2 feet (610 mm) in front of a urinal lip and 4 feet (1219 mm) above the floor and at least 2 feet (610 mm) to each side of the urinal shall be waterproofed with a smooth, readily cleanable, nonabsorbent material.

Reason: IBC Section 1210 already covers wall and floor materials in toilet facilities. There is no longer a need for this information to be in the IPC as the IPC does not have control of the section (as indicated by the [B] prior to the section number). Many code editions ago, this section was only in the IPC. However, it was later placed in the IBC as the IBC is concerned with the construction of interior spaces, toilet facilities being an interior space.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 134.

#### Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 67-15 : [BG] 419.3-SNYDER3948

# P 68-15

# 420.2, Table 604.4

Proponent: Julius Ballanco, JB Engineering and Code Consulting, P.C., representing Self (JBENGINEER@aol.com)

## 2015 International Plumbing Code

#### Revise as follows:

**420.2 Water closets for public or employee toilet facilities.** Water closet bowls for *public* or employee toilet facilities shall be of the elongated type. <u>The full</u> flush cycle water consumption of water closets for public use shall not exceed that indicated in Table 604.4 for public use water closets.

IADLE 004.4	ТΑ	BL	.E	60	4.4
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#### MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING FIXTURES AND FIXTURE FITTINGS

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY <sup>b</sup>	
Water closet <u>, private use</u>	1.6 gallons per flushing cycle	
Water closet, public use	1.28 gallons per full flush   cycle or, where equipped   with a dual flushing device,   1.6 gallons per full flush   cycle	

(Portions of table not shown remain unchanged)

For SI: 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

- a. A hand-held shower spray is a shower head.
- b. Consumption tolerances shall be determined from referenced standards.

Reason: This will increase the water conservation requirements for public use water closets. Every manufacturer of water closets has a 1.28 gallon per flush public water closet. Similarly, every manufacturer of water closets has a bowl for public use that can be equipped with a dual flush device. If you consider a standard commercial building with 100 water closets. The water savings amounts to more than 33,000 gallons per year. This savings is accomplished without any loss in performance of the plumbing system.

Cost Impact: Will increase the cost of construction

If a dual flush water closet is installed, the cost for the water closet is higher than a 1.6 gpf water closet. The added cost is for the fixture. The labor remains the same.

P 68-15 : 420.2-BALLANCO3815

# P 69-15

422.1, 609.1, 713.1

Proponent: John Williams, CBO, Chair, representing Adhoc Health Care Committee (AHC@iccsafe.org)

## 2015 International Plumbing Code

#### Revise as follows:

**422.1 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 homesGroup I-1, homes for the agedGroup I-2, orphanages, infirmaries, first aid stations, psychiatricGroup B ambulatory care facilities, clinics, professionalmedical offices of dentists and doctors, mortuaries, educational facilities, surgery, dentistry, research and testing laboratories, establishmentsand Group F facilities manufacturing pharmaceutical drugs and medicines-and other structures with similar apparatus and equipment classified as plumbing.

**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 homesGroup I-1, homes for the agedGroup I-2, orphanages, infirmaries, first aid stations, psychiatricGroup B ambulatory care facilities, clinics, professionalmedical offices of dentists and doctors, mortuaries, educational facilities, surgery, dentistry, research and testing laboratories, establishmentsand Group F facilities manufacturing pharmaceutical drugs and medicines-and other structures with similar apparatus and equipment classified as plumbing.

**713.1 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 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; homes for the aged; orphanages; infirmaries; first aid stations; psychiatricGroup I-1, Group I-2, 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.

Reason: This proposal replaces a laundry list of healthcare related facilities with the corresponding occupancy groups. These occupancy groups are the ones most likely to have healthcare related activity that might have an impact on the supply and waste systems.

The ICC Ad Hoc Committee on Healthcare (AHC) has just completed its 4th year. The AHC was established by the ICC Board to evaluate and assess contemporary code issues relating to hospitals and ambulatory healthcare facilities. This is a joint effort between ICC and the American Society for Healthcare Engineering (ASHE), a subsidiary of the American Hospital Association, to eliminate duplication and conflicts in healthcare regulation. Information on the AHC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the AHC effort can be downloaded from the AHC website at: <a href="http://www.iccsafe.org/cs/AHC/Pages/default.aspx">http://www.iccsafe.org/cs/AHC/Pages/default.aspx</a>.

Cost Impact: Will not increase the cost of construction This proposal is clarification only, therefore, the cost of construction will not change.

P 69-15 : 422.1-WILLIAMS4246

422.10

Proponent: John Williams, CBO, Chair, representing Adhoc Health Care Committee (AHC@iccsafe.org)

## 2015 International Plumbing Code

#### Delete without substitution:

422.10 Special elevations. Control valves, vacuum outlets and devices protruding from a wall of an operating, emergency, recovery, examining or delivery room, or in a corridor or other location where patients are transported on a wheeled stretcher, shall be located at an elevation that prevents bumping the patient or stretcher against the device.

Reason: Clinical needs must determine the location of control valves, vacuum outlets and other plumbing control devices. The chance that a patient or stretcher could accidentally bump them is too broad for consistent interpretation. Given the need for ready access to some of these devices this could cause conflicts with other codes and standards, such as NFPA 99. In addition, the language cannot be consistently interpreted and enforced.

The ICC Ad Hoc Committee on Healthcare (AHC) has just completed its 4th year. The AHC was established by the ICC Board to evaluate and assess contemporary code issues relating to hospitals and ambulatory healthcare facilities. This is a joint effort between ICC and the American Society for Healthcare Engineering (ASHE), a subsidiary of the American Hospital Association, to eliminate duplication and conflicts in healthcare regulation. Information on the AHC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the AHC effort can be downloaded from the AHC website at: <a href="http://www.iccsafe.org/cs/AHC/Pages/default.aspx">http://www.iccsafe.org/cs/AHC/Pages/default.aspx</a>.

Cost Impact: Will not increase the cost of construction This proposal removes a potentially hazardous requirement. There are many more options available, therefore, the cost of construction will not change.

P 70-15 : 422.10-WILLIAMS4252

# P 71-15

422.3

Proponent: John Williams, CBO, Chair, representing Adhoc Health Care Committee (AHC@iccsafe.org)

## 2015 International Plumbing Code

#### Delete without substitution:

422.3 Protection. All 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 either the water supply or drainage system, shall be provided with protection against backflow, flooding, fouling, contamination of the water supply system and stoppage of the drain.

Reason: This section is duplicative and therefore not needed. The issue of backflow protection is handled broadly in section 608. The items on this list are repeated almost verbatim in Section 608.3. We recommend the committee delete this section and let Section 608 serve the purpose of backflow/ back siphonage protection.

The ICC Ad Hoc Committee on Healthcare (AHC) has just completed its 4th year. The AHC was established by the ICC Board to evaluate and assess contemporary code issues relating to hospitals and ambulatory healthcare facilities. This is a joint effort between ICC and the American Society for Healthcare Engineering (ASHE), a subsidiary of the American Hospital Association, to eliminate duplication and conflicts in healthcare regulation. Information on the AHC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the AHC effort can be downloaded from the AHC website at: <a href="http://www.iccsafe.org/cs/AHC/Pages/default.aspx">http://www.iccsafe.org/cs/AHC/Pages/default.aspx</a>.

**Cost Impact:** Will not increase the cost of construction This section is a duplication, therefore, there is no change in construction costs.

P 71-15 : 422.3-WILLIAMS4247

# P 72-15

422.4

Proponent: John Williams, CBO, Chair, representing Adhoc Health Care Committee (AHC@iccsafe.org)

## 2015 International Plumbing Code

#### Revise as follows:

422.4 Materials. Fixtures designed for therapy, special cleansing or disposal of waste materials, combinations of such purposes, or any other special purpose, shall be of smooth, impervious, corrosion-resistant materials-and, where subjected to temperatures in excess of 180°F (82°C), shall be capable of withstanding, without damage, higher temperatures.

Reason: The phrase "combination of such purposes" is already addressed in the list and not needed. The phrase "or any other special purpose" is too broad. There are hundreds of specialty sinks throughout health care facilities. The phrase "and, where subjected to temperatures in excess of 180°F (82°C), shall be capable of withstanding, without damage, higher temperatures" is also proposed to be deleted. It does not provide any limits on how high of a temperature the fixture has to be designed for. In addition, water in excess of 180 degrees would not be found in a fixture as described in the list of what this section is applicable to. Temperatures in excess of 180 degrees would burn skin, so this is only within sealed systems.

The ICC Ad Hoc Committee on Healthcare (AHC) has just completed its 4th year. The AHC was established by the ICC Board to evaluate and assess contemporary code issues relating to hospitals and ambulatory healthcare facilities. This is a joint effort between ICC and the American Society for Healthcare Engineering (ASHE), a subsidiary of the American Hospital Association, to eliminate duplication and conflicts in healthcare regulation. Information on the AHC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the AHC effort can be downloaded from the AHC website at: <a href="http://www.iccsafe.org/cs/AHC/Pages/default.aspx">http://www.iccsafe.org/cs/AHC/Pages/default.aspx</a>.

Cost Impact: Will not increase the cost of construction This proposal is clarification only, therefore, the cost of construction will not change.

P 72-15 : 422.4-WILLIAMS4248

# P 73-15

422.5, 422.9.1

Proponent: John Williams, CBO, Chair, representing Adhoc Health Care Committee (AHC@iccsafe.org)

## 2015 International Plumbing Code

Delete without substitution:

422:5 Access: Access shall be provided to concealed piping in connection with special fixtures where such piping contains steam traps, valves, relief valves, check valves, vacuum breakers or other similar items that require periodic inspection, servicing, maintenance or repair. Access shall be provided to concealed piping that requires periodic inspection, maintenance or repair.

422:9.1 Sterilizer piping. Access for the purposes of inspection and maintenance shall be provided to all sterilizer piping and devices necessary for the operation of sterilizers.

Reason: This proposal deletes language that is too broad to be practically enforceable. All plumbing is required to have access for inspections, maintenance and repairs, therefore, it does not need to be repeated here. The term "all sterilizer piping" could be construed to mean all supply and waste piping. Current language could be read to require the entire length of the supply and waste pipes to be exposed.

The ICC Ad Hoc Committee on Healthcare (AHC) has just completed its 4th year. The AHC was established by the ICC Board to evaluate and assess contemporary code issues relating to hospitals and ambulatory healthcare facilities. This is a joint effort between ICC and the American Society for Healthcare Engineering (ASHE), a subsidiary of the American Hospital Association, to eliminate duplication and conflicts in healthcare regulation. Information on the AHC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the AHC effort can be downloaded from the AHC website at: <a href="http://www.iccsafe.org/cs/AHC/Pages/default.aspx">http://www.iccsafe.org/cs/AHC/Pages/default.aspx</a>.

#### Cost Impact: Will not increase the cost of construction

This proposal is clarification, therefore, the cost of construction will not change.

P 73-15 : 422.5-WILLIAMS4249

# P 74-15

## 422.6, 422.7, 713.2

Proponent: John Williams, CBO, Chair, representing Adhoc Health Care Committee (AHC@iccsafe.org)

## 2015 International Plumbing Code

#### **Revise as follows:**

**422.6** Clinical Flushing rim sink. A clinical flushing rim sink shall have an integral trap in which the upper portion of a visible trap seal provides a water surface. The fixture shall be designed so as to permit complete removal of the contents by siphonic or blowout action and to reseal the trap. A flushing rim shall provide water to cleanse the interior surface. The fixture shall have the flushing and cleansing characteristics of a water closet.

422.7 Prohibited usage of clinicalflushing rim sinks and service sinks. A clinicalflushing rim sink serving a soiled utility room shall not be considered as a substitute for, or be utilized as, a service sink. A service sink shall not be utilized for the disposal of urine, fecal matter or other human waste.

### 713.2 Bedpan washers and clinical Flushing rim sinks. Bedpan washers and clinical

Flusing rim sinks shall connect to the drainage and vent system in accordance with the requirements for a water closet. Bedpan washers shall also connect to a local vent.

**Reason:** This proposal attempts to clarify terms to ones that are more commonly accepted by the healthcare industry. Clinical sink or bed pan washer is too broad a term. The last sentence in 713.2 is not needed. It is covered by the 1st sentence. Section 713.2 appears to indicate that a bedpan washer and a clinical sink are different items, but Sections 422.6 and 422.7 is just clinical sinks but has requirements for bed pan washers. The hospital industry uses the term flushing rim sink for sinks used to clean bedpans. This proposals assumes that a "service sink" is some type of utility sink, quite often a mop sink.

The ICC Ad Hoc Committee on Healthcare (AHC) has just completed its 4th year. The AHC was established by the ICC Board to evaluate and assess contemporary code issues relating to hospitals and ambulatory healthcare facilities. This is a joint effort between ICC and the American Society for Healthcare Engineering (ASHE), a subsidiary of the American Hospital Association, to eliminate duplication and conflicts in healthcare regulation. Information on the AHC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the AHC effort can be downloaded from the AHC website at: <a href="http://www.iccsafe.org/cs/AHC/Pages/default.aspx">http://www.iccsafe.org/cs/AHC/Pages/default.aspx</a>.

#### Cost Impact: Will not increase the cost of construction

This proposal is clarification only, therefore, the cost of construction will not change.

P 74-15 : 422.6-WILLIAMS4250

Proponent: John Williams, CBO, Chair, representing Adhoc Health Care Committee (AHC@iccsafe.org)

## 2015 International Plumbing Code

Revise as follows:

422.8 Ice prohibited in soiled utility room. Machines for manufacturingproducing ice, or any device for the handling or storage of ice, shall not be located in a soiled utility room.

Reason: Manufacturing is too large of a scale for anything provided in a health care environment. "Handling" should be deleted because this could be read to not allow pitchers that hold ice to be brought to the soiled linen room to clean.

The ICC Ad Hoc Committee on Healthcare (AHC) has just completed its 4th year. The AHC was established by the ICC Board to evaluate and assess contemporary code issues relating to hospitals and ambulatory healthcare facilities. This is a joint effort between ICC and the American Society for Healthcare Engineering (ASHE), a subsidiary of the American Hospital Association, to eliminate duplication and conflicts in healthcare regulation. Information on the AHC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the AHC effort can be downloaded from the AHC website at: <a href="http://www.iccsafe.org/cs/AHC/Pages/default.aspx">http://www.iccsafe.org/cs/AHC/Pages/default.aspx</a>.

Cost Impact: Will not increase the cost of construction

This proposal is clarification only, therefore, the cost of construction will not change.

P 75-15 : 422.8-WILLIAMS4251

# P 76-15

## 423.3, 424.10 (New)

Proponent: Ronald George, Self; www.ScaldPrevention.org, representing Self (Ron@Plumb-TechLLC.com)

## 2015 International Plumbing Code

#### Revise as follows:

**423.3 Footbaths**, and pedicure baths and head shampoo sinks. The water supplied to specialty plumbing fixtures, such as pedicure chairs having an integral foot bathtub, footbaths, and head shampoo sinks, footbaths shall be limited to a maximum temperature of 120°F (49°C) by a water temperature limiting device that conforms to ASSE 1070 or CSA B125.3.

#### Add new text as follows:

424.10 Head shampoo sink faucets Head shampoo sink faucets shall be supplied with hot water that is limited to a maximum temperature of 120°F (49°C) by a water temperature limiting device that conforms to ASSE 1070 or CSA B125.3. Each faucet shall have integral check valves to prevent crossover flow between the hot and cold water supply connections.

Reason: The hot water temperature limit requirement for head shampoo sinks was approved for the 2015 IPC and inserted, along with footbaths and pedicure chairs, in Section 423.3. As the faucet is normally mounted on a plumbing fixture, a (shampoo) sink, the requirement for temperature limiting is better located with all of the other faucets and fixture fittings in Section 424 so the requirement doesn't go unnoticed.

This proposal leaves the footbath and pedicure bath water temperature limitation requirements in Section 423.3 (as those "baths" are not usually considered as "plumbing fixtures" but *specialty* fixtures.) This proposal moves the shampoo sink faucets requirement part of 423.3 to a new Section 424.10.

A new requirement was added for integral check valves in shampoo sink faucets to reduce the potential for thermal shock to the user. The scald hazard is abated by the tempering valve but there still could be the "thermal shock" issue (rapid change in temperature, usually going to cold). Where multiple shampoo sinks are installed but only served by one master ASSE 1070 (or CSA B125.3) tempering valve, there can be cross flow between the sink faucets such that the user-set water temperature can vary considerably, very quickly. The person getting their head shampooe is in a mostly prone position and reactively moves their head to the side (rather than up and out of the way), hitting their head hard on the side of the shampoo sink basin. In elderly persons, a bruise can easily happen, sometimes leading to a break in the skin. This is just an uncessary injury.

Most quality shampoo faucets are already equipped with integral check valves so for the most part, this proposal doesn't change anything that is commonly being installed today. The proposal simply protects the user (the person getting their head shampooed) from thermal shock should a type of faucet without integral check valves is being considered for installation at a shampoo sink.

Cost Impact: Will not increase the cost of construction

Quality shampoo sink faucets that are most commonly installed already include intergal check valves so there won't be any increase in the cost of construction. The new requirement just prevents designers and installers from choosing an inappropriate faucet type.

P 76-15 : 424.10 (New)-GEORGE5596

424.3

Proponent: Julius Ballanco, representing Self (JBENGINEER@aol.com)

## 2015 International Plumbing Code

#### Revise as follows:

**424.3 Individual shower valves.** Individual shower and <u>tubshowertub-shower</u> combination valves shall be balanced-pressure, thermostatic or combination balanced-pressure/thermostatic valves that conform to the requirements of ASSE 1016/ ASME A112.1016/CSA B125.16 or ASME A112.18.1/CSA B125.1 and shall be installed at the point of use. Shower andThe maximum temperature of water discharging from an individual shower or tub-shower combination <del>valves</del> required by this sectionvalve shall be equipped with a means to limit the maximum setting of the valve to 120°F (49°C)<del>, which. The maximum discharge water temperature</del> shall be field adjusted in accordance withlimited by a temperature-actuated mixing valve conforming to ASSE 1017. ASSE 1070, or CSA B125.3, by a temperature-actuated, flow reduction device conforming to ASSE 1062 that is installed at every discharge outlet, or by the manufacturer's instructions. In-line thermostatic valves shall not be utilized for compliance with this section.field adjustment and setting of the hot water temperature limit stop within the individual shower or tub-shower combination valve.

Reason: The plumbing engineering community has found it to be safer for large installations, such as hotels and motels, to limit the temperature of the hot water to shower valves and tub-shower combination valves. This avoids the need to adjust every shower valve.

The maximum temperature requirement is based on someone inadvertently turning the water to full hot. This was typically assumed to be a child. Hence, this limitation is not related to thermal shock. As such a thermostatic mixing valve can be used to accomplish this level of protection, including an ASSE 1017, ASSE 1070, or CSA B125.3 valve.

This change still permits the handle limit stop on the individual valve to be used to limit the temperature of the hot water.

The last sentence regarding in-line thermostatic mixing valves predates the change to ASME A112.18.1/CSA B125.1. It no longer has any meaning. Furthermore, with the allowance of a central thermostatic mixing valve to limit the temperature of the hot water, this sentence would only add confusion to the requirements.

Temperature actuated flow reduction devices are extremely effective in protecting users from high temperatures in a shower. The devices reduce the flow of water to a trickle, thus preventing water in excess of 120°F from hitting the bather. These devices meet the intent of the code requirement for limiting the maximum temperature of hot water.

Cost Impact: Will not increase the cost of construction The change allows an option. Hence, there is no cost impact for options.

P 77-15 : 424.3-BALLANCO3386

## 424.3

Proponent: John Koeller, representing Maximum Performance (MaP) Testing (jkoeller@map-testing.com)

## 2015 International Plumbing Code

#### Revise as follows:

**424.3 Individual shower valves.** Individual shower and tubshower combination valves shall be balanced-pressure, thermostatic or combination balanced-pressure/thermostatic valves that conform to the requirements of ASSE 1016/ ASME A112.1016/CSA B125.16 or ASME A112.18.1/CSA B125.1 and shall be installed at the point of use. Shower and tub-shower combination valves required by this section shall be equipped with a means to limit the maximum setting of the valve to 120°F (49°C), which shall be field adjusted in accordance with the manufacturer's instructions. In-line thermostatic valves shall not be utilized for compliance with this section. Shower and tub-shower combination valves shall bear the manufacturer's tag. label, or mark stating the minimum rated flow of the valve and such tag, label, or mark shall be visible by the code official and the shower end-user after installation of the valve.

**Reason:** The marking of in-line plumbing products for the purpose of informing inspectors and others is not without precedent. IPC section 501.7 requires a visible mark of "maximum working pressure" on storage tanks as follows: "Such markings shall be in an accessible position outside of the tank so as to make inspection or reinspection readily possible." A similar situation exists with shower valves, because those valves are usually not readily visible to the inspector (nor, if they were visible, are they required to have a product marking of the minimum rated flow). Therefore, the proposed language provides for a visible indication of that rating for the inspector, similar to the provision for storage tanks cited above.

Installation of a shower valve meeting the referenced ASSE/ASME/CSA standard is not necessarily fully sufficient to ensure shower safety. The thermal protection afforded by shower valves can be compromised if the flow rate of the showerhead is less than the flow rate for which the protective components of the valve have been designed. The referenced ASME/ASSE/CSA standards for shower valves allow for acceptance and certification at a rated flow of up to 2.5 gpm. However, showerheads with maximum flow rates significantly below 2.5 gpm are widely available on the market today. For example, the current EPA WaterSense specification for showerheads sets a maximum flow rate of 2.0 gpm, and many showerheads are already available with flow rates between 2.0 and 1.5 gpm. After-market showerheads are available at flow rates as low at 1.0 gpm.

As manufacturers continue to innovate with more water- and energy-efficient showerheads, it is important to ensure that both new and retrofit installations of showerheads be accompanied by the shower valve information needed to safely protect the user.

Two significant reasons exist for adopting the proposed code change:

(1) Facilitate inspection and compliance: provides a readily visible statement of the minimum flow rate at which the shower valve is certified, such that it can be easily compared with, and its compatibility confirmed with the flow rate of the installed showerhead.

(2) Inform the homeowner/occupant: When a homeowner determines to replace an existing aging showerhead, it is important that he/she understands the limitations of the thermal protection afforded by the in-wall shower valve. As such, the homeowner must have access to the minimum flow rate at which such protection is provided by the installed valve. Without such information, safety would be compromised if the flow rate of the showerhead is less than the flow rate for which the protective components of the valve have been designed. By requiring a permanent mark, removable tag, or removable label on or attached to the faceplate or escutcheon, the homeowner/occupant is informed.

The permanent mark may be applied by the manufacturer of the valve or, in the event they are different, the manufacturer of the escutcheon or face plate, . A removable tag or label (provided by the manufacturer) must be either affixed to the valve, to the escutcheon, or to the face plate by the manufacturer of the valve.

#### Cost Impact: Will increase the cost of construction

Every model of shower valve meeting the referenced standard has been tested for thermal protection at at a flow rate of 2.5 gpm or a lesser flow rate designated by the manufacturer. This proposal will require manufacturers to convey the information <u>they already have</u> about the rated flow of each model of valve to the installer and the end user via a tag, removable label, or mark. There is <u>no additional testing required</u> nor is there special handling or distribution required. The cost of the proposal is de minimis, associated with affixing a tag, label or mark. If a permanent mark on the shower valve is the manufacturer's choice, the cost to the manufacturer is unknown, but certainly nominal. If a paper tag or removable adhesive label is chosen as the compliance path, the cost is similarly nominal, estimated to be less than one dollar (\$1.00). In some cases, a valve body common to several models may be designed to accommodate different cartridges containing thermal protection components with differing performance characteristics. This may require additional inventory control by the manufacturer to ensure that outwardly similar valves with different cartridges (and different rated flows) are properly marked or labeled before entering the supply chain.

P 78-15 : 424.3-KOELLER5488

# P 79-15

## 424.3, 424.4

Proponent: Ed Osann, representing Natural Resources Defense Council (eosann@nrdc.org)

## 2015 International Plumbing Code

#### Revise as follows:

**424.3 Individual shower valves.** Individual shower and tubshower combination valves shall be balanced-pressure, thermostatic or combination balanced-pressure/thermostatic valves that conform to the requirements of ASSE 1016/ ASME A112.1016/CSA B125.16 or ASME A112.18.1/CSA B125.1 and shall be installed at the point of use. Shower control valves shall provide thermal shock protection for the rated flow rate of the installed showerhead. Shower and tubshower combination valves required by this section shall be equipped with a means to limit the maximum setting of the valve to 120°F (49°C), which shall be field adjusted in accordance with the manufacturer's instructions. In-line thermostatic valves shall not be utilized for compliance with this section.

**424.4 Multiple (gang) showers.** Multiple (gang) showers supplied with a single-tempered water supply pipe shall have the water supply for such showers controlled by an *approved* automatic temperature control mixing valve that conforms to ASSE 1069 or CSA B125.3, or each shower head shall be individually controlled by a balanced-pressure, thermostatic or combination balanced-pressure/thermostatic valve that conforms to ASSE 1016/ASME A112.1016/CSA B125.16 or ASME A112.18.1/CSA B125.1 and is installed at the point of use. Where showerheads are individually controlled, shower control valves shall provide thermal shock protection for the rated flow rate of the installed showerhead. Such valves shall be equipped with a means to limit the maximum setting of the valve to 120°F (49°C), which shall be field adjusted in accordance with the manufacturers' instructions.

**Reason:** Installation of a shower valve meeting the referenced ASSE/ASME/CSA standard is not sufficient to ensure shower safety. The thermal protection afforded by shower valves can be compromised if the flow rate of the showerhead is less than the flow rate for which the protective components of the valve have been designed. The referenced standard for shower valves allows for acceptance at a rated flow of up to 2.5 gpm. However, 2.5 gpm at 80 psi is the current federal *maximum* flowrate for showerheads, and showerheads with maximum flow rates well below 2.5 gpm are widely available. The current EPA *WaterSense* specification for showerheads has a maximum flow rate of 2.0 gpm, and over 3,000 qualifying models are on the market today. Many showerheads are available with flow rates between 2.0 and 1.5 gpm. As manufacturers continue to innovate with more water- and energy-efficient showerheads, the code change proposed here is needed to ensure that new buildings built to this code will safely accommodate the showerhead selected by the designer or builder.

Note that this language does not require that the showerhead itself have a flow rate of less than 2.5 gpm, but simply that the shower valve provide the thermal protection called for under the recognized standard when tested at a flow rate that matches the flow rate of the showerhead.

The 2012 Uniform Plumbing Code, Section 408.3, contains a similar requirement for 'matching' the valve and showerhead flow rates as follows:

"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 of the installed showerhead."

The IRC should be no less protective of health and safety than the UPC.

#### Additional Technical Background

As noted above, the thermal protection afforded by shower valves can be compromised if the flow rate of the showerhead is less than the flow rate for which the protective components of the valve have been designed. As noted by Martin and Johnson (2008) (as cited in Codes and Standards Enhancement Initiative (CASE), "Multi-Head Showers and Lower-Flow Shower Heads," 2013 California Building Energy Efficiency Standards, California Utilities Statewide Codes and Standards Team, September 2011), combinations of valves and shower heads were tested to determine whether pressure-compensating valves and thermostatic valves with rated flows of 2.5 gpm would perform adequately at lower flow rates. The tests included 22 shower valves from six manufacturers, and the valves were assessed on their ability to maintain water temperature within certain bounds for a given time after a change in pressure event, as described by the ASSE 1016-2005 standard for shower valves. The results indicated that a significant share of shower valves rated for 2.5 gpm failed to provide the thermal protection specified by ASSE 1016 when tested at lower flow rates. As summarized in the CASE report (p. 15): "These results indicate that shower valve temperature maintenance is strongly affected by flow rate, and that new showers with lower-flow shower heads would have to be installed with valves that are designed for 2.0 and lower flow rates."

#### Cost Impact: Will not increase the cost of construction

Adoption of this proposal will have no effect on the cost of construction, since it calls for the installation of showerheads and shower mixing valves that are compatible, rather than calling for the installation of a particular showerhead or mixing valve that might carry a cost premium. Care in specification and installation is required, not a special product or special installation technique. As noted above, the proposal does not require that the showerhead itself have a flow rate of less than 2.5 gpm, and compliance can be achieved with minimally compliant valves and showerheads. If an architect or builder chooses to install a more efficient showerhead with a lower flow rate, there are valves available at moderate price points that can accomodate the builder's deision. For example, in January 2015, Moen was offering numerous models of showerhead, valve, and trim featuring a pressure-balance type valve retail priced at \$102.90 that is fully compatible with showerheads rated at 1.75 gpm maximum or higher. Valves of the temperature-balancing type are more expensive, but are not required by this proposal.

P 79-15 : 424.3-OSANN5195

## 424.3

**Proponent:** Billy Smith, American Society of Plumbing Engineering Legislative Committee, representing American Society of Plumbing Engineers Legislative Committee (bsmith@aspe.org)

## 2015 International Plumbing Code

#### Revise as follows:

424.3 Individual shower valves. IndividualPoint-of-use-controlled shower and tubshowertub-shower combination valves shall be balanced-pressure, thermostatic or combination balanced-pressure/thermostatic valves that conform to the requirements of ASSE 1016/ASME A112.1016/CSA B125.16 or ASME A112.18.1/CSA B125.1-and. The temperature of water discharging from such valves shall be installed at the point of use. Shower and tub-shower combination valves required by this section shall be equipped with a means to limit the maximum setting of the valve tonot exceed 120°F (49°C), which. The temperature shall be field adjusted in accordance withlimited either by a temperature-actuated master mixing valve conforming to ASSE 1017. ASSE 1070, or CSA B125.3, or by the manufacturer's instructions/limit stop integral to each point-of-use-controlled shower or tub-shower combination valve. In-line thermostaticMaster mixing valves or integral limit stops, whichever serves as the temperature limiting means, shall-not be utilized for compliance with this section.field-adjusted and set after the hot water distribution system is operational.

Reason: This change will recognize a common means of limiting the maximum temperature from a shower valve, which is a central thermostatic mixing valve. Plumbing engineers have used this method of design in many large installations, including high rise residential buildings, hotels, and motels. It is an effective means of preventing the temperature from rising above of 120°F. This also removes the possible problem with improperly adjusted individual shower valves.

Since the maximum temperature requirement is not a means of protecting against thermal shock, any thermostatic mixing valve can be used. There is no need for end point protection of shutting off the flow of water. This is still accomplished by the shower valve. Therefore, a thermostatic mixing valve can conform to ASSE 1017, ASSE 1070, or CSA B125.3 valve.

The individual valve handle limit stop can still be used to limit the maximum temperature of hot water. This is the common means of providing this level of protection in individual dwelling units. The existing last sentence has been deleted since it adds confusion regarding the use of central thermostatic mixing valves for limiting the temperature of the hot water. The code requirements

are complete without having this confusing last sentence.

#### Cost Impact: Will not increase the cost of construction

This does not increase the cost since the change merely provides options for the installer or designer.

P 80-15 : 424.3-SMITH5386

424.5

Proponent: James Richardson, Jr (jarichardson@columbus.gov)

## 2015 International Plumbing Code

Delete without substitution:

424.5 Bathtub and whirlpool bathtub valves. The *hot water* supplied to bathtubs and whirlpool bathtubs shall be limited to a maximum temperature of 120°F (49°C) by a water-temperature limiting device that conforms to ASSE 1070 or CSA B125.3, except where such protection is otherwise provided by a combination tub/shower valve in accordance with Section 424.3.

**Reason:** Bathtub and whirlpool bathtub valves - Generally, individuals using these type of fixtures will check the temperature of the water prior to entering into the fixture. These fixtures are also typically hold large volumes and limiting the temperature to 120 gegrees Fahrenheit will cause long fill times and most like cause the user to end up with an other than desired entry temperature due to the excessive fill times. These are not cases where someone has been incapacitated and is unable to remove themselves from harms way.

#### Cost Impact: Will not increase the cost of construction

This proposal will result in less material and labor costs as temperature limiting devices don't have to be installed.

P 81-15 : 424.5-RICHARDSON6020

# P 82-15

Part I: 424.5 Part II: P2713.3

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

# Part I

## 2015 International Plumbing Code

### Revise as follows:

**424.5 Bathtub and whirlpool bathtub valves.** The *hot water* supplied to bathtubs and whirlpool bathtubs shall be limited to a maximum temperature of 120°F (49°C) by a water-temperature limiting device that conforms to ASSE 1070 or CSA B125.3, except where such protection is otherwise provided by a combination tub/shower valve in accordance with Section 424.3. Access shall be provided to the ASSE 1070 or CSA B125.3 devices. Such access shall be large enough to enable removal of the device for replacement and for temperature adjustments.

# Part II

## 2015 International Residential Code

### Revise as follows:

**P2713.3 Bathtub and whirlpool bathtub valves.** Hot water supplied to bathtubs and whirlpool bathtubs shall be limited to a temperature of not greater than 120°F (49°C) by a water-temperature limiting device that conforms to ASSE 1070 or CSA B125.3, except where such protection is otherwise provided by a combination tub/shower valve in accordance with Section P2708.4. <u>These ASSE 1070 or CSA B125.3 devices shall be accessible. Such access shall be large enough to enable removal of the device for replacement and for temperature adjustments.</u>

Reason: Designers and installers don't think about these devices needing periodic adjustment, cleaning or replacement. Although it should be obvious that these devices should not be covered up without any way to get to them, this happens frequently, because, "the code doesn't make me do otherwise". This is loophole that needs to be eliminated so that these safety devices can be accessed.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 51.

#### Cost Impact:

#### Part I: Will increase the cost of construction

This proposal will increase the cost of construction because additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code. Specifically, these valves might have to be located elsewhere where access can be made to the valve. This might involve a little more piping and labor. Or, at a minimum, an access panel might have to be installed in a wall or ceiling. As access wasn't required before, this extra work to provide access might increase the cost of construction in some situations.

#### Part II: Will increase the cost of construction

This proposal will increase the cost of construction because additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code. Specifically, these valves might have to be located elsewhere where access can be made to the valve. This might involve a little more piping and labor. Or, at a minimum, an access panel might have to be installed in a wall or ceiling. As access wasn't required before, this extra work to provide access might increase the cost of construction in some situations.

P 82-15 : 424.5-SNYDER3949

424.7

Proponent: Julius Ballanco, JB Engineering and Code Consulting, P.C., representing Self (JBENGINEER@aol.com)

## 2015 International Plumbing Code

Revise as follows:

**424.7 Temperature-actuated, flow reduction <u>valvesdevices</u> for individual fixture fittings.** Temperature-actuated, flow reduction devices, where installed for individual fixture fittings, shall conform to ASSE 1062. <u>A temperature-actuated, flow reduction device shall be an *approved* method for limiting the water temperature to not greater than 120° F (49° C) at the outlet of a faucet or fixture fitting. Such <u>valvesdevices</u> shall not be used alone as a substitute for the balanced-pressure, thermostatic or combination shower valves required in Section 424.3 or as a substitute for bathtub or whirlpool tub water-temperature limiting valves required in Section 424.5.</u>

**Reason:** Temperature actuated flow reduction (TAFR) devices are extremely effective in protecting users from high temperatures, especially in a shower. The devices reduce the flow of water to a trickle, thus preventing water in excess of 120°F from hitting the user. When the code limits the maximum temperature of hot water, TAFR devices can provide this level of protection. The reason for not permitting these devices on a bathtub or whirlpool tub are because of the operation of the TAFR device. When the maximum temperature is met, these devices reduce the flow to a trickle. In a bathtub, this would still allow scalding water to accumulate in the bathtub. If a small child is placed in the bathtub, or falls into the bathtub, TAFR devices do not provide any protection from scalding.

**Cost Impact:** Will not increase the cost of construction Options do not increase the cost of construction.

P 83-15 : 424.7-BALLANCO3387

# P 84-15

## 202, 425.3.4, 501.7, 712.3.2, 1103.4, 1113.1.2, 1302.5, 1302.8.1, 1302.9, 1303.8, 1303.12, 604.11

Proponent: Janine Snyder (PMGCAC@iccsafe.org)

## 2015 International Plumbing Code

Add new definition as follows:

#### SECTION 202 DEFINITIONS

ACCESSIBLE. Describes a site, building, facility of portion thereof that complies with Chapter 11 of the International Building Code.

**Revise as follows:** 

#### SECTION 202 DEFINITIONS

Supply fitting. A fitting that controls the volume, direction of flow or both, of water and is either attached to or accessible is accessed from a fixture, or is used with an open or atmospheric discharge.

425.3.4 Access required. All parts in a flush tank shall be accessible provided with access for repair and replacement.

**501.7 Pressure marking of storage tanks.** Storage tanks and water heaters installed for domestic hot water shall have the maximum allowable working pressure clearly and indelibly stamped in the metal or marked on a plate welded thereto or otherwise permanently attached. Such markings shall be in <u>an accessiblea</u> position <u>with access on the</u> outside of the tank so as to make inspection or reinspection readily possible.

**712.3.2 Sump pit.** The sump pit shall be not less than 18 inches (457 mm) in diameter and not less than 24 inches (610 mm) in depth, unless otherwise *approved*. The pit shall be <u>accessibleprovided with access</u> and <u>shall be</u> located such that all drainage flows into the pit by gravity. The sump pit shall be constructed of tile, concrete, steel, plastic or other *approved* materials. The pit bottom shall be solid and provide permanent support for the pump. The sump pit shall be fitted with a gastight removable cover that is installed flush with grade or floor level, or above grade or floor level. The cover shall be adequate to support anticipated loads in the area of use. The sump pit shall be vented in accordance with Chapter 9.

1103.4 Cleanout. An accessible A cleanout shall be installed on the building side of the trap and shall be provided with access.

**1113.1.2 Sump pit.** The sump pit shall be not less than 18 inches (457 mm) in diameter and not less than 24 inches (610 mm) in depth, unless otherwise *approved*. The pit shall be accessible provided with access and shall be located such that all drainage flows into the pit by gravity. The sump pit shall be constructed of tile, steel, plastic, cast iron, concrete or other *approved* material, with a removable cover adequate to support anticipated loads in the area of use. The pit floor shall be solid and provide permanent support for the pump.

**1302.5 Filtration.** Untreated water collected for reuse shall be filtered as required for the intended end use. Filters shall be accessible provided with access for inspection and maintenance. Filters shall utilize a pressure gauge or other *approved* method to provide indication when a filter requires servicing or replacement. Filters shall be installed with shutoff valves immediately upstream and downstream to allow for isolation during maintenance.

**1302.8.1 Bypass valve.** One three-way diverter valve listed and labeled to NSF 50 or other approved device shall be installed on collection piping upstream of each storage tank, or drainfield, as applicable, to divert untreated on-site reuse sources to the sanitary *sewer* to allow servicing and inspection of the system. Bypass valves shall be installed downstream of fixture traps and vent connections. Bypass valves shall be marked to indicate the direction of flow, connection and storage tank or drainfield connection. Bypass valves shall be installed in <u>accessible locationslocations that are provided with access</u>. Two shutoff valves shall not be installed to serve as a bypass valve.

**1302.9 Pumping and control system.** Mechanical equipment including pumps, valves and filters shall be easily accessible and removable provided with access that allows for removal in order to perform repair, maintenance and cleaning. The minimum flow rate and flow pressure delivered by the pumping system shall be appropriate for the application and in accordance with Section 604.

**1303.8 Filtration.** Collected rainwater shall be filtered as required for the intended end use. Filters shall be accessible provided with access for inspection and maintenance. Filters shall utilize a pressure gauge or other *approved* method to provide indication when a filter requires servicing or replacement. Filters shall be installed with shutoff valves installed immediately upstream and downstream to allow for isolation during maintenance.

**1303.12 Pumping and control system.** Mechanical equipment including pumps, valves and filters shall be <u>easily accessible and removableprovided with access</u> <u>that allows for removal</u> in order to perform repair, maintenance and cleaning. The minimum flow rate and flow pressure delivered by the pumping system shall be appropriate for the application and in accordance with Section 604.

604.11 Individual pressure balancing in-line valves for individual fixture fittings. Where individual pressure balancing in-line valves for individual fixture fittings are installed, such valves shall comply with ASSE 1066. Such valves shall be installed in an accessible location location with access and shall not be utilized alone as a substitute for the balanced pressure, thermostatic or combination shower valves required in Section 424.3.

#### Reason: The purpose of this proposal is consistency between terminologies in the codes.

The term 'accessible' is defined in the IBC. This same definition should appear in the IPC. It is used as defined in Sections 110.2, 403.3.1, 403.4, 403.5, 404.1, 404.2, 404.3, 417.4.2 and 1002.4. This proposal had revised language for other locations.

#### The term 'Access (to)' is already defined in the IPC as follows:

[M] ACCESS (TO). That which enables a fixture, appliance or equipment to be reached by ready access or by a means that first requires the removal or movement of a panel, door or similar obstruction (see "Ready access").

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is CTC/PMG Proposal Item 2.

In July/2014 the ICC Board decided to sunset the activities of the Code Technology Committee (CTC). This is being accomplished by re-assigning many of the CTC Areas of Study to the applicable Code Action Committee (CAC). This proposal falls under the CTC Area of Study entitled Accessibily. Information on the CTC, including: the sunset plan; meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the CTC effort can be downloaded from the CTC website.

#### Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 84-15 : 425.3.4-SNYDER5912

# P 86-15

# 202 (New), Section 428 (New), 428.1 (New)

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

# 2015 International Plumbing Code

Add new text as follows:

#### SECTION 428 SERVICE SINKS

**428.1 General.** A service sink shall be a wall-mounted or floor-mounted mop sink. The sink drain shall have an outlet that is not less than 3-inches (76 mm) in diameter. Laundry trays and laundry sinks shall be prohibited to serve as a service sink. Where a service sink is required by Table 403.1, there shall be one service sink available for each tenant space or where public and employee toilet facilities are located in a central core of a building. there shall be one service sink on each floor of a building. Service sinks shall not be located within a toilet facility except where such sinks are located in a locked janitor closet of the toilet facility.

**Exception:** Where tenant spaces will not have access to a centrally-located service sink and the tenant spaces have limited areas of hard-surface floors, a service sink shall not be required provided that not less than one toilet facility in the tenant space is equipped with a floor drain, hose bibbs for hot and cold water are provided in that toilet facility and such sink omission is approved.

### SECTION 202 DEFINITIONS

SERVICE SINK. A general purpose utility sink intended to be used for facilitating the cleaning of a building or tenant space.

**Reason:** The code has always lacked information on service sinks, other than to require them in certain building uses. This section provides the necessary information. It is a plumbing fixture and deserve to be included in Chapter 4. Similar requirements have been added (to the model code) at code adoption for some State codes such as New York. This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC 172.

#### Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code. This proposal does not require any more service sinks than required by the 2015 IPC. In fact, the proposed language offers a reasonable exception to not have a service sink. Therefore, as service sinks were always required for specific applications, the cost impact of this proposal should be negligible, in the big picture.

P 86-15 : 428.1 (New)-SNYDER3951

# P 87-15

## 501.4

Proponent: Ronald George, Self; Plumb-Tech Design & Consulting Services LLC; www.Plumb-TechLLC.com; www.ScaldPrevention.org, , representing Self; Plumb-Tech Design & Consulting Services LLC (Ron@Plumb-TechLLC.com)

## 2015 International Plumbing Code

#### Revise as follows:

**501.4 Location.** Water heaters and storage tanks shall be located in close proximity to the pressure zone of the distribution system served so that the water pressure at the water heater is not greater than 35 psi (241.3 kPa) less than the water heater pressure relief valve setting. Water heaters and storage tanks shall be located and connected so as to provide\_access for observation, maintenance, servicing and replacement.

Reason: Over the years I have investigated may plumbing system failures where improper designs located all of the water heaters in the basement of a high rise building. In many of these cases the system pressure exceeded the pressure relief valve discharge pressure or came close enough to where intermitteent pressure spikes from water hammer or pressure chanfges in the system caused intermittent discharges of the relief valve. I have seen system designs using plate and frame heat exchangers on high rise buildings that did not have relief valves, integrated temperature controls or thermal expansion tanks on extremely tall buildings. Because of this design, the system pressure exceeded the relief valve pressure and thermal expansion tank working pressure rating. The relief valved were completely removed creating a bomb. In other installations, the relief valves were hanged out to much higher relief valve pressure settings, well above the pressure rating of the equipment. These fabricated and unlabeled (built on site) Hot water generator systems were bombs waiting for the right moment to go off. There is no third party listing for the fabricated system and they are controled by piping system applied controls that are not listed for use with the heat exchanger. Adding the language to locate the water heaters within the pressure zone prevents this from occuring. Improper location of the water heater is has been occuring because there is no limitation on where the water is located with respect to elevation or pressure zone limitations and often owners/engineers/contractors may unknowingly force the issue of placing the water heater in a basement and creating pressure problems and not providing mechanical rooms up in or near the pressure zones in the buildings. This code change will help to address these issues. This is a health and safety issue in high rise buildings.

#### Cost Impact: Will increase the cost of construction

This is a health and safety issue that will require additional material and some additonal labor costs to locate water heaters in the appropriate locations to be within the pressure zones of the water distribution system.

P 87-15 : 501.4-GEORGE5835

# P 88-15

## 501.8, 501.9 (New)

**Proponent:** Ronald George, Plumb-Tech Design & Consulting Services LLC; www.ScaldPrevention.org; www.LegionellaPrevention.org, representing Self; Plumb-Tech Design & Consulting Services LLC (Ron@Plumb-TechLLC.com)

## 2015 International Plumbing Code

#### Revise as follows:

**501.8** TemperatureWater heater temperature controls. Hot water supply systemsWater heaters shall be equipped with automatic temperature controls capable of adjustments from the lowest to the highest acceptable temperature settings for the intended temperature operating range.

501.9 Hot water distribution system temperature controls. The temperature of the hot water discharging from all water heaters shall be controlled by a tempering valve conforming to ASSE 1017. The minimum hot water temperature in the hot water distribution system shall be 124 degrees F to prevent Legionella bacteria growth. This provision shall not supersede the requirements for temperature limiting devices for scald protection at fixtures.

Reason: The existing language was always confusing as it was not clear if the temperature controls were for the water heater or the plumbing system. This code change clears up this language.

#### Water Heater Thermostats Do Not Control the Water Heater Outlet Temperatures

If you adjust the water heater thermostat for the burner or heating element on a water heater down to 120 degrees, it will not prevent scalding. Water heater thermostats cannot be relied upon to control the hot water temperature leaving a water heater. Water heater manufacturers recommend that installers set thermostats at 120 - 125 F, and most of them ship the water heaters at an even lower temperature setting. It is not possible to set a water heater thermostat at a given temperature and get a relatively constant temperature of hot water from a water heater. The thermostat can not accurately control the water heater outlet temperature with a water heater thermostat.

My experience has been that not many people know that water heater thermostats cannot control the outlet temperature of a water heater. This warrants an explanation of how a water heater thermostat works so everyone understands the dial on the water heater does not have the accuracy to control the outlet temperature of storage type heater.

Water heater thermostats do not provide precise temperature controls for hot water systems. For example: the thermostat dial calibration test of ANSI Z21.10.1-1998, which is the applicable standard for gas-fired water heaters, allows the temperature to vary 10 degrees above or below the thermostat setting. I have talked to water heater manufacturers that have indicated that the controls can vary as much as 15 to 18 degrees Fahrenheit above or below the set point of the thermostat. From my experience, I have recorded the temperature leaving the top portion of a water heater over a long period of time during intermittent uses and saw temperature swings over 40 degrees Fahrenheit leaving the water heater. The shower valve standards do not have this kind of temperature fluctuation included their testing for all types of shower valves. The significant temperature swings are because the thermostat is inserted into the lower portion of a water tank and turns the fuel supply to the heater on and off. Most new water heater thermostat dials have no way to know what the temperature in the tank is. There is rarely a fixed temperature indicated on the dial, however some manufacturers publish temperatures associated with various marks on the thermostat dial or in their literature even though the dial cannot not control the outlet temperature of the water heater, it only controls when the energy to the heater is turned "on" and "off" by sensing the cold water coming into the bottom of the heater.

Generally, if the water heater thermostat dial is set at 120 degrees Fahrenheit, the burner would come on when the temperature at the thermostat reaches about 105 degrees Fahrenheit. The burner stays on until the water around the thermostat which is near the bottom of the heater reaches about 135 degrees Fahrenheit. (The "burner off" temperature is about 30 degrees higher than when the burner came "on" and generally about 15 degrees above the theoretical set point of the thermostat).

Most people don't realize that the maximum temperature limit test of the ANSI Z21.10.1 Gas Water Heater Standard allows the outlet water temperature of the water heater to rise significantly above the thermostat setting. This provision in the standard accounts for the phenomenon known as "stacking" or "thermal layering". The hot water is less dense and rises to the top of the hot water tank. Just like hot air rises and lifts a hot air balloon, hot water rises to the top of the tank and the cooler water drops to the bottom of the tank. Stacking or thermal layering occurs when the hot water rises to the top of the heater due to recurring short duration heating cycles caused by a frequent number of small quantity hot water uses. Frequent short draws cause cold water to enter the bottom of the water heater where the thermostatic element senses the cold water from the turbulent flow stirring in the bottom of the heater. The cold water causes the water heater to cycle on. This phenomenon a cocur in any type of storage water heater and generally is more significant in vertical heaters.

I have recorded temperatures as high as 150 to 166 degrees Fahrenheit at the top of water heaters that had the thermostats set between 120 to 125 degrees Fahrenheit. Temperatures over 151 degrees Fahrenheit are extremely high temperatures and can cause serious scald burns in only a two seconds of contact with the skin. (See Table 1 - Water Temperature Effects on Adult Skin) It should be noted that the time temperature relationships in Table 1 are based upon the thickness of the skin for adult males. Children and the elderly typically have a thinner layer of the skin or epidermis and the exposure times can be shorter or the same burns can occurs in a given time at slightly lower temperatures.

#### Cost Impact: Will increase the cost of construction

This code change will require a tempering valve on the outlet of all water heaters. This is because the controls on water heaters are not acurate and when controls are set to lower temperatures, it promotes Legionella bacteria growth. This code change will require temperatures that do not promote Legionell bacteria growth and it will provide for scald protection.

P 88-15 : 501.8-GEORGE5840
## P 89-15

### 502.1, Chapter 14

Proponent: Rex Gillespie (rex.gillespie@caleffi.com)

### 2015 International Plumbing Code

### Revise as follows:

**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 conform to the requirements of this code and provisions of NFPA 70. Gas-fired water heaters shall conform to the requirements of the *International Mechanical Code* and SRCC 300.

### Add new standard(s) as follows:

SRCC Standard 300, Minimum Standard for Solar Thermal Water Heating Systems, January 3, 2013, Solar Rating and Certification Corporation.

Reason: This section of the IPC establishes the appropriate reference for the requierments for various types of water heaters, but omits solar thermal water heaters. These water heaters are covered in both the IRC and the IMC in Chapter 23 and Chapter 14, respectively. Additionally, the 2015 IRC references the SRCC 300 standard for these systems. This new language directs the user to the appropriate code and reference standard for this increasingly common type of water heater.

#### Bibliography:

SRCC Standard 300, Minimum Standard for Solar Thermal Water Heating Systems, January 3, 2013.

#### Cost Impact: Will not increase the cost of construction

The proposed changes are not anticipated to raise the cost of construction. Most solar thermal systems and collectors are already certified to this standard in order to meet state requirements, those of the Internal Revenue Service for federal rebates, or to comply with the requiements of the 2015 IRC. Therefore, no additional product certifications are required.

Analysis: A review of the standard proposed for inclusion in the code, SRCC Standard 300, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 89-15 : 502.1-GILLESPIE4821

## P 90-15

## 202 (New), 502.6 (New), 502.6.1 (New), 502.6.2 (New)

**Proponent:** Ronald George, Self; Plumb-Tech Design & Consulting Services LLC; www.Plumb-TechLLC.com; www.ScaldPrevention.org, representing Self; Plumb-Tech Design & Consulting Services LLC; www.Plumb-TechLLC.com (Ron@Plumb-TechLLC.com)

### 2015 International Plumbing Code

Add new definition as follows:

### SECTION 202 DEFINITIONS

SCALD HAZARD A condition where high temperature hot water discharged from a plumbing fixture can cause serious burn injuries to the user.

#### Add new text as follows:

502.6 Water heater replacement and scald protection Where the water temperature in a hot water distribution system changes as the result of a water heater replacement, repair or an alteration of the hot water distribution system such as a water heater thermostat adjustment or master mixing valve adjustment or replacement, each shower or combination tub-shower supplied by the system shall be inspected for the presence of a means for reducing scald hazards to the users.

Where the means for limiting the hot water temperature is a master mixing valve complying with ASSE 1017. a mixing valve complying with ASSE 1070 or an integral limit stop on the shower or combination tub-shower valve, adjustments shall be made in accordance with Section 609.4.1. Where the means for limiting the hot water temperature discharged at the fixture is a device complying with ASSE 1062, then the operation of the device shall be verified that it significantly reduces flow when the discharge temperature approaches 120°F (48.8°C).

Where a shower or tub-shower combination does not have a means for scald protection for a user, a means shall be installed in accordance with Section 609.4.2.

502.6.1 Adjustment procedure Temperature limit adjustments for shall be made and set to limit the temperature of the hot water discharged to any user to not greater than 120°F (48.8°C). These adjustments and settings shall only be performed after both of the following are satisfied:

1. The water heater has reached the water heater temperature control setting as recommended by the water heater manufacturer and has shut off its burner or electric elements.

2. Hot water has sufficiently reached the valve such that the temperature of the discharging at the fixture does not continue to rise.

A water heater thermostat shall be prohibited as a means for limiting hot water temperature for the purposes of required scald protection for a user of hot water.

#### 502.6.2 Showers and combination tub-showers without means of protection against scalding. Where a shower or tub-shower combination valve does not have a means for scald protection for a user, one or more of the following shall be performed:

1. The shower or combination tub/shower valve shall be replaced with a valve complying with ASSE 1016/ASME A112.1016/CSA B125.16. After replacement, the temperature limit stop shall be adjusted in accordance with Section 502.6.1

2. A master temperature actuated mixing valve complying with ASSE 1017 or ASSE 1070 shall be installed in the hot water outlet piping at the water heater. After installation, the temperature setting of the valve shall be adjusted in accordance with Section 502.6.1.

3. A point-of-use water temperature limiting valve complying with ASSE 1070 shall be installed at or near each shower or tub-shower combination valve After installation, the the temperature setting of the ASSE 1070 valve shall be adjusted in accordance with Section 502.6.1. ASSE 1070 valves shall be provided with access.

4. A temperature-actuated, flow reduction valve complying with ASSE 1062 shall be installed on the shower arm prior to connection of shower head and, for tub-shower combinations, on both the tub spout and the shower arm. ASSE 1062 devices shall be capable of significantly limiting the flow of water discharged as the water temperature rises towards 120°F (48.8°C).

**Reason:** There are currently no provisions in the code to require protection for unsafe existing plumbing installations where scalding is a hazard. Hundreds of people are scalded each year where non-code compliant (Two-handle) shower valves are installed and a wateer heater is replaced causing a hotter temperature than was present prior to the water heater replacement. This code change is intended to address this and other hot water scald hazards in existing installations.

#### What are safe hot water temperatures?

By Ron George

President, Ron George Design & Consulting Services Plumbing Engineer Magazine Aug 2009

I am often asked, "What is a safe hot water temperature for domestic hot water?" If you read the model codes, it states the maximum hot water temperature for a shower or bathtub is 120 degrees Fahrenheit. If you read the warning labels on the side of most water heaters the maximum hot water temperature is 120 degrees Fahrenheit on some labels and 125 degrees Fahrenheit on other labels. The 125 degree limit probably allows for some temperature loss before the hot water gets to the fixtures. Most water heater literature and warning labels mention the availability of thermostatic mixing valves or automatic temperature compensating valves and they recommend their use. If you look at many of the industry standards for shower mixing valves, they state the valves must have limit stops that are adjustable to limit the maximum hot water temperature to 120 degrees Fahrenheit. The testing in the standards gives test criteria for testing the shower valves to these limits.

I have served on the working groups for several plumbing industry standards committees for temperature actuated mixing valves and shower valves and it is generally agreed that 120 degrees is the maximum, safe hot water temperature. I also have served on hot water system design standards committees where the participants had agreed that maximum domestic hot water temperature from plumbing fixtures used for bathing and washing purposes should be 120 degrees Fahrenheit. There were a few exceptions for bidets, sitz baths and whilepol tubs that had temperatures lower than 120 degrees Fahrenheit for the recommended maximum temperatures to prevent scalding. It also should be noted that some other uses like commercial dishwashers and laundries may need temperatures higher than 120 degrees Fahrenheit. There were two temperatures discussed for each fixture during the design standard meetings. One was the "use temperature" and the other was "the maximum temperature" to prevent scalding.

It's generally agreed that 120 degrees Fahrenheit is the maximum safe hot water temperature that should be delivered from a fixture. Therefore hot water above 120 degrees Fahrenheit can be considered hazardous. Model codes address this in various plumbing code sections...

...The codes generally agree if there is a hazardous condition or a condition that is unsafe or a nuisance to life, health and property it should be corrected but in the existing building code and property maintenance code there is little guidance. It is also generally agreed that water above 120 degrees Fahrenheit at fixtures for bathing and washing with a few exceptions for lower temperatures can be considered dangerous and proper precautions should be taken to prevent the hot water from being a scalding hazard by using the proper safety devices. When I hear about people setting their water heater to 120 degrees Fahrenheit to prevent scalding, I know they have good intentions, but most people do not know you cannot accurately control the hot water temperature leaving a water heater with the thermostat dial.

Maximum Hot Water Temperature to Prevent Scalding

I have served on many industry committees dealing with hot water system code requirements, hot water system design standards and product standards related to domestic hot water systems devices for temperature control and scald prevention. There has been consensus in all of these committees that the maximum safe hot water delivery temperature for a shower or bathtub is 120

degrees Fahrenheit to prevent scalding with a few exceptions for lower temperatures for bidets and emergency eye wash fixtures. (See the attached Figure 1 - Hot Water Scald Burns – Time vs Temperature Relationship for Second and Third Degree Burns for Adults and Children)

There were discussions in a plumbing code ad-hoc committee on temperature limits for the hot water system where everyone agreed the maximum safe temperature was 120 F. The ASPE Hot water committee dealing with a proposed standard for temperature limits in hot water systems also agreed the maximum safe hot water temperature to prevent scalding is 120 Fahrenheit. Several ASSE working groups that I have served on dealing with hot water temperature controls have all have discussed the reaction time of bathers and they have taken into consideration that children, the elderly and people with disabilities usually take longer to get out of harm's way if the water suddenly gets hot and they agreed 120 Fahrenheit is the maximum safe hot water temperature that a valve should deliver. At 120 F it takes about 80 seconds to develop a second degree burn in a child and it takes about 8 minutes to develop a second degree burn in an adult. (See Figure 1) The 120 Degree F temperature limit gives bathers or users an adequate amount of time to get out of harm's way before an irreversible scald burn injury can occur. Each of these committees looked back to the data that was the result of burn studies done by Dr. Moritz and Dr. Henrique's at Harvard Medical College in the 1940s. The burn studies were done using baby pigs that had skin thicknesses similar to that of adult males. The studies exposed the pig's skin to various temperatures of hot water for various periods of time and the severity of the burns were studied and recorded. These were the studies used to develop the time and temperature exposure charts. There have been numerous white papers, seminars, and reports since then discussing the fact that burns can occur quicker than those recorded in the Moritz & Henrique's studies for adult males. The skin is thinner for children and the getery and the water of the skin thickness to come up with burn studies and the use a ratio of the white papers use the Moritz and Dr. Henrique's original burn studies and the use of the skin thic

#### The PIEV Theory for Reaction Time

There is a PIEV theory relates to reaction time. The PIEV theory is most commonly used to address braking distance in automobile accidents. It addresses the amount of time it takes a driver to sense a problem and decide to react, then the reaction time is added to the braking time for the total distance that a car travels before stopping. The PIEV theory can also apply to reaction times for a bather with respect to hot water scalds.

PIEV relates to the amount of time it takes a person to react to a hazard. PIEV means - Perception, Intellection, Emotion and Volition. It is usually referred to as the PIEV theory. Before we recognize and react to a hazard, four specific areas of activity need to be processed by the brain for the muscles to react. Those processes are:

Perception - We need to perceive or gain a Perception of a hazard. There can be delays in the perception with limitation in sight, sound, feeling, or any other of our senses.
 Intellection - We go through a period called, Intellection or the act or process of using the intellect by thinking or reasoning. The bather must determine if the hazard is legitimate and deciding either move out of the way of the hazard or eliminate the hazard by adjusting the controls or in some cases where the bather may be sitting out of the reach of the controls the bather may choose to pull the shower curtain in front of them. If the adjustment of the controls is the choice one must decide which control to turn and try to remember which way to turn each control to adjust the temperature or turn the water off in order to eliminate the hazard. If a wrong choice is made during this process it could compound the situation by making the water even hotter. I travel a lot and I often find that shower controls can be very confusing with respect to how to adjust the controls. I still find two handle shower controls that do not meet code requirements. This is critically important when there is no temperature limit on the shower controls. For example if the shower has a two-handle shower valve and 160 degree hot water is supplied to the system, then turning of the cold water first could lead to instant scalding injuries. Turning down the hot water to 120 F or below creates a system where it could incubate Legionella Bacteria to very high levels.
 Emotion - There is an Emotion or evaluation factor which is defined as a conscious mental reaction (as anger or fear) subjectively experienced as strong feeling usually directed toward a specific object and typically accompanied by physiological and behavioral changes in the body with respect to deciding or assessing how we want to react. A person with reduced mental capacity or someone that is just very old will take longer to process this information and ultimate

4. Volition - There is the physical Volition or deciding/choosing to act and acting. In the case of braking distance it is when the choice is made to move the foot from the gas pedal to the brake pedal and pressing on the brake pedal. This can be related to the time the bather chooses to adjust the control, and they move their hand to the shower control valve, plus the time to rotate or readjust the shower valve plus the time from the adjustment until the water temperature changes coming out of the shower head. Often it can take as much as 3-5 seconds to re-adjust the shower head and another few seconds until the water temperature changes coming out of the shower head. For ultra-low-flow (ULF) showers the delay from the time of the adjustment of the shower over until the water temperature changes coming out of the shower nead. This is one more area where water conservations measures can unintentionally make plumbing systems less safe.

As the temperature of the water increases this PIEV reaction time becomes more important. Using a bathtub/shower controller with a single handle and a rotational limit-stop adjustment allow for adjustment to a safe temperature and it would reduce the mental processing time and reduce the possibility of making an error when turning off the water. As Figure 1 shows the higher the temperatures get, the quicker the burns can occur. within seconds or less and the degree and severity of the burn can be affected by this reaction time.

As you can see by the chart in Figure 1, if the water is at 140 F it will take about 0.8 seconds for a child to receive a 2nd degree irreversible burn injury and it will take about 5.6 seconds for an adult male to receive an irreversible burn injury at 140 degrees F. Everyone else will fall somewhere in between. An adult will often find it very difficult to react to a sudden change in temperature within five (5) seconds. If the shower head is an Ultra-Low-Flow (ULF) shower head the delay can be several seconds longer before the water temperature is reduced because the mixed water temperature must evacuate or flush out the hot water in the pipe riser from the shower valve to the shower head. There is basically very little or no time to react at higher temperatures. For a typical adult that is alert and aware the PIEV theory shows it can take well over five (5) seconds to react to a sudden burst of hot water in a shower. For an elderly person or a small child that is confused it could take several minutes or more before they are able to react and adjust the controls or get out of harm's way. There has been a lot of information that suggests reducing the domestic hot water temperature to 120 F or less as it flows from the fixtures will minimize scalding and allow most people to react or get out of harm's way before a scald injury occurs. Reducing the water temperature flowing from the fixture can be done in several ways by:

1. Reducing the hot water temperature at the fixture by adjusting the maximum temperature limit-stop on the shower valve. (The best way)

2. Using local mixing valves conforming to ASSE 1070 to reduce the hot water temperature flowing from a faucet.

3. Reducing the temperature at the source (Water Heater) with the use of a master mixing valve or temperature actuated mixing valve conforming to ASSE 1017.

4. For existing non code compliant shower or tub/shower installations, Two handle tub/shower valves without a maximum temperature limit adjustment) an ASSE 1062 valve could be used. An ASSE 1062 valve is a Temperature Actuated Flow Reduction (TAFR) valve. It looks like a chrome pipe coupling and it screws on between the shower head and the shower arm. Other models screw into a tub spout or onto a sink faucet in place of the aerator. If the water flowing from fixture exceeds about 117-120 degrees Fahrenheit the TAFR valve will shut the flow of water down to just a trickle so that scalding hot water does not spray onto the bather. It can be reset by adjusting the fixture control valve to a cold water setting and when the cold water reaches the valve it will reset and begin flowing again. This can be a bit of a nuisance in buildings where the hot water temperature is erratic, but it is an inexpensive way to provide protection against scald injuries in older buildings without code compliant shower valves.

Water Heater Thermostats Do Not Control the Water Heater Outlet Temperatures

If you adjust the water heater thermostat for the burner or heating element on a water heater down to 120 degrees, it will not prevent scalding. Water heater thermostats cannot be relied upon to control the hot water temperature leaving a water heater. Water heater manufacturers recommend that installers set thermostats at 120 - 125 F, and most of them ship the water heaters at an even lower temperature setting. It is not possible to set a water heater thermostat at a given temperature and get a relatively constant temperature of hot water from a water heater. The thermostat can not accurately control the water heater outlet temperature with a water heater thermostat.

My experience has been that not many people know that water heater thermostats cannot control the outlet temperature of a water heater. This warrants an explanation of how a water heater thermostat works so everyone understands the dial on the water heater does not have the accuracy to control the outlet temperature of storage type heater.

Water heater thermostats do not provide precise temperature controls for hot water systems. For example: the thermostat dial calibration test of ANSI Z21.10.1-1998, which is the applicable standard for gas-fired water heaters, allows the temperature to vary 10 degrees above or below the thermostat setting. I have talked to water heater manufacturers that have indicated that the controls can vary as much as 15 to 18 degrees Fahrenheit above or below the set point of the thermostat. From my experience, I have recorded the temperature leaving the top portion of a water heater over a long period of time during intermittent uses and saw temperature swings over 40 degrees Fahrenheit leaving the water heater. The shower valve standards do not have this kind of temperature fluctuation included their testing for all types of shower valves. The significant temperature swings are because the thermostat is inserted into the lower portion of a water heater tank and turns the fuel supply to the heater on and off. Most new water heater thermostat dials have no way to know what the temperature in the tank is. There is rarely a fixed temperature indicated on the dial, however some manufacturers publish temperatures associated with various marks on the thermostat dial or in their ilterature even though the dial cannot not control the outlet temperature of the water heater, it only controls when the energy to the heater is turned "on" and "off" by sensing the cold water coming into the bottom of the heater.

Generally, if the water heater thermostat dial is set at 120 degrees Fahrenheit, the burner would come on when the temperature at the thermostat reaches about 105 degrees Fahrenheit. The burner stays on until the water around the thermostat which is near the bottom of the heater reaches about 135 degrees Fahrenheit. (The "burner off" temperature is about 30 degrees higher than when the burner came "on" and generally about 15 degrees above the theoretical set point of the thermostat).

Most people don't realize that the maximum temperature limit test of the ANSI Z21.10.1 Gas Water Heater Standard allows the outlet water temperature of the water heater to rise significantly above the thermostat setting. This provision in the standard accounts for the phenomenon known as "stacking" or "thermal layering". The hot water is less dense and rises to the top of the hot water tank. Just like hot air rises and lifts a hot air balloon, hot water rises to the top of the tank and the cooler water drops to the bottom of the tank. Stacking or thermal layering occurs when the hot water rises to the top of the heater due to recurring short duration heating cycles caused by a frequent number of small quantity hot water uses. Frequent short draws cause cold water to enter the bottom of the water heater where the thermostatic element senses the cold water from the turbulent flow stirring in the bottom of the heater. The cold water causes the water heater to cycle on. This phenomenon ac occur in any type of storage water heater and generally is more significant in vertical heaters.

I have recorded temperatures as high as 150 to 166 degrees Fahrenheit at the top of water heaters that had the thermostats set between 120 to 125 degrees Fahrenheit. Temperatures over 151 degrees Fahrenheit are extremely high temperatures and can cause serious scald burns in only a two seconds of contact with the skin. (See Table 1 - Water Temperature Effects on Adult Skin) It should be noted that the time temperature relationships in Table 1 are based upon the thickness of the skin for adult males. Children and the elderly typically have a thinner layer of the skin or epidermis and the exposure times can be shorter or the same burns can occurs in a given time at slightly lower temperatures. Source: http://www.plumbingengineer.com/aug\_09





Bibliography: www.ScaldPrevention.org www.Plumb-TechLLC.com www.LegionellaPrevention.org

ASSE 1016-2011/ASME A112.1016-2011/CSA B125.16-11 Automatic Compensating Valves for Individual Shower & Tub/Shower Combinations ASSE 1017-2009: Temperature Actuated Mixing Valves for Hot Water Distribution Systems ASSE 1070-2004: Water Temperature Limiting Devices

ASSE 1062-2006: Temperature Actuated, Flow Reduction (TAFR) Valves for Individual Supply Fittings

Cost Impact: Will increase the cost of construction

The cost impact is minimal. TAFR devices sell for less than \$10. Other options cost more and provide a better level of safety. The health and safety impact of this code change is very significant when dealing with older non-code compliant showers and bathtubs. This code change will save countless lives and prevent countless life altering, very painful scald injuries.

P 90-15 : 502.6 (New)-GEORGE5558

## P 91-15

504.6

Proponent: William Chapin, representing Professional Code Consulting, LLC (bill@profcc.us)

### 2015 International Plumbing Code

Revise as follows:

504.6 Requirements for discharge piping. The discharge piping serving a pressure relief valve, temperature relief valve or combination thereof shall:

- 1. Not be directly connected to the drainage system.
- 2. Discharge through an *air gap* located in the same room as the water heater.
- 3. Not be smaller than the diameter of the outlet of the valve served and shall discharge full size to the air gap.
- 4. Serve a single relief device and shall not connect to piping serving any other relief device or equipment.
- 5. Discharge to the floor, to the pan serving the water heater or storage tank, to a waste receptor or to the outdoors.
- 6. Discharge in a manner that does not cause personal injury or structural damage.
- 7. Discharge to a termination point that is readily observable by the building occupants.
- 8. Not be trapped.
- 9. Be installed so as to flow by gravity.
- 10. Terminate not more than 6 inches (152 mm) above and not less than two times the discharge pipe diameter above the floor or flood level rim of the waste receptor.
- 11. Not have a threaded connection at the end of such piping.
- 12. Not have valves or tee fittings.
- 13. Be constructed of those materials listed in Section 605.4 or materials tested, rated and approved for such use in accordance with ASME A112.4.1.

Reason: A water heater pan does not have sufficient volume or drain size to adequately drain the volume of water that is delivered when the relief valve opens due to an over temperature event.

### Cost Impact: Will not increase the cost of construction

This will not increase the cost of construction as there is already a drain in place if there is a water heater pan.

P 91-15 : 504.6-CHAPIN5707

504.6

Proponent: James Richardson, Jr (jarichardson@columbus.gov)

### 2015 International Plumbing Code

#### Revise as follows:

504.6 Requirements for discharge piping. The discharge piping serving a pressure relief valve, temperature relief valve or combination thereof shall:

- 1. Not be directly connected to the drainage system.
- 2. Discharge through an air gap located in the same room as the water heater.
- 3. Not be smaller than the diameter of the outlet of the valve served and shall discharge full size to the air gap.
- 4. Serve a single relief device and shall not connect to piping serving any other relief device or equipment.
- 5. Discharge to the floor, to the pan serving the water heater or storage tank, to a waste receptor or to the outdoors.
- 6. Discharge in a manner that does not cause personal injury or structural damage.
- 7. Discharge to a termination point that is readily observable by the building occupants.
- 8. Not be trapped.
- 9. Be installed so as to flow by gravity.
- 10. Terminate not more than 6 inches (152 mm) above and not less than two times the discharge pipe diameter above the floor or flood level rim of the waste receptor.
- 11. Not have a threaded connection at the end of such piping.
- 12. Not have valves or tee fittings.
- 13. Be constructed of those materials listed in Section 605.4 or materials tested, rated and approved for such use in accordance with ASME A112.4.1.

**Reason:** It is easy to forget that some water heaters are not installed on a floor. Some are installed above ceilings, on walls well above the floor or at the edge of a storeroom mezzanine above a lower floor. Having a rare "full trip" discharge of a relief valve into a water heater pan located on a floor simply makes a mess because the pan is not shaped to contain the blast of water nor is it (and its drain) sized to handle the flow rate. But where these water heaters in pans are suspended above a ceiling or well above the floor, a splash-out or overflow of hot water from the pan will cascade down onto people who might be below. This is a recipe for scald burns. It just isn't smart design or a safe construction practice.

#### Cost Impact: Will not increase the cost of construction

The water heater drip pan drain has to be run to a point of disposal so running the T&P valve discharge pipe to the same point of disposal isn't a big deal especially where plastic piping is used. An installer is not going to charge the builder any more for doing it this way.

P 92-15 : 504.6-RICHARDSON6026

### P 93-15

Part I: 504.6 Part II: P2804.6.1

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## Part I

### 2015 International Plumbing Code

### Revise as follows:

504.6 Requirements for discharge piping. The discharge piping serving a pressure relief valve, temperature relief valve or combination thereof shall:

- 1. Not be directly connected to the drainage system.
- 2. Discharge through an air gap located in the same room as the water heater.
- 3. Not be smaller than the diameter of the outlet of the valve served and shall discharge full size to the air gap.
- 4. Serve a single relief device and shall not connect to piping serving any other relief device or equipment.
- 5. Discharge to the floor, to the pan serving the water heater or storage tank, to a waste receptor or to the outdoors.
- 6. Discharge in a manner that does not cause personal injury or structural damage.
- 7. Discharge to a termination point that is readily observable by the building occupants.
- 8. Not be trapped.
- 9. Be installed so as to flow by gravity.
- 10. Terminate not more than 6 inches (152 mm) above and not less than two times the discharge pipe diameter above the floor or *flood level rim* of the waste receptor.
- 11. Not have a threaded connection at the end of such piping.
- 12. Not have valves or tee fittings.
- 13. Be constructed of those materials listed in Section 605.4 or materials tested, rated and approved for such use in accordance with ASME A112.4.1.
- 14. Be one nominal size larger than the size of the relief valve outlet, where the relief valve discharge piping is constructed of PEX or PE-RT tubing installed with insert fittings. The outlet end of such tubing shall be fastened in place.

## Part II

### 2015 International Residential Code

### Revise as follows:

P2804.6.1 Requirements for discharge pipe. The discharge piping serving a pressure-relief valve, temperature-relief valve or combination valve shall:

- 1. Not be directly connected to the drainage system.
- 2. Discharge through an air gap located in the same room as the water heater.
- 3. Not be smaller than the diameter of the outlet of the valve served and shall discharge full size to the air gap.
- 4. Serve a single relief device and shall not connect to piping serving any other relief device or equipment.
- 5. Discharge to the floor, to the pan serving the water heater or storage tank, to a waste receptor or to the outdoors.
- 6. Discharge in a manner that does not cause personal injury or structural damage.
- 7. Discharge to a termination point that is readily observable by the building occupants.
- 8. Not be trapped.
- 9. Be installed to flow by gravity.
- 10. Terminate not more than 6 inches (152 mm) and not less than two times the discharge pipe diameter above the floor or waste receptor flood level rim.
- 11. Not have a threaded connection at the end of the piping.
- 12. Not have valves or tee fittings.
- 13. Be constructed of those materials indicated in Section P2906.5 or materials tested, rated and *approved* for such use in accordance with ASME A112.4.1.
- 14. Be one nominal size larger than the size of the relief-valve outlet, where the relief-valve discharge piping is constructed of PEX or PE-RT tubing installed with insert fittings. The outlet end of such tubing shall be fastened in place.

Reason: PART I: This revision was accepted to the IRC in the last cycle. The issue is simply this: In some cases (perhaps the majority of cases), PEX and PE-RT tubing is connected using insert fittings. Where an insert fitting is used to connect to a relief valve, the ID of the insert fitting is significantly smaller than the ID of PEX or PE-RT tubing of the same nominal size of the relief valve outlet. This smaller opening might create excessive restriction where the relief valve had a full trip event. Therefore, increasing the size of the tubing increases the size of the insert fitting to allow for less restriction.

Fastening the end of the tubing is a safety measure to keep the discharge of water at the intended location. PEX and PE-RT tubing can be "springy" and could easy dislodge from the intended discharge point.

PART II: Item 14 was added to this section in the last cycle. The issue is simply this: In some cases (perhaps the majority of cases), PEX and PE-RT tubing is connected using insert fittings. Where an insert fitting is used to connect to a relief valve, the ID of the insert fitting is significantly smaller than the ID of PEX or PE-RT tubing of the same nominal size of the relief valve outlet. This smaller opening might create excessive restriction where the relief valve had a full trip event. Therefore, increasing the size of the tubing increases the size of the insert fitting to allow for less restriction. What was forgotten is that there are fittings that fit on the outside diameter of this type of tubing such that the inside area would not be restricted. This added phrase allows for same size (as the relief valve outlet) tubing to be used where these "outside connect fittings" are used.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC 147.

#### Cost Impact:

Part I: Will not increase the cost of construction

This proposal will increase the cost of construction because additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

Part II: Will not increase the cost of construction This proposal will increase the cost of construction because additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 93-15 : 504.6-SNYDER3952

## P 94-15

## 504.6.1 (New)

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

### 2015 International Plumbing Code

### Add new text as follows:

504.6.1 Relief valve indirect waste piping. Indirect waste piping that receives the discharge from not more than two  $\frac{3}{4}$  inch (19 mm) relief valves shall be not less than  $\frac{3}{4}$  inch (19 mm)nominal pipe size. Where indirect waste piping receives the discharge from more than two  $\frac{3}{4}$  inch (19 mm) relief valves, the piping shall be not less than 1  $\frac{1}{2}$  inch (38.1 mm) nominal pipe size. Indirect waste piping receiving only the discharge from relief valves shall not require liquid-seal traps.

Reason: Multi-story buildings having water heaters on each floor (water heaters "stacked") sometimes have an indirect waste pipe "stack" to catch each of the T&P discharge pipes. There is currently no sizing criteria in the code. The proposed language is what the State of New York has used successfully for many years. The 3+ relief valve indirect waste pipe size doesn't have to be any bigger for more water heaters as all of the T&P valves would never be leaking all at once. The 1 ½ inch pipe size is easy to work with in walls, is resistant to accidental damage during rough-in and is economical.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 29.

### Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 94-15 : 504.6.1 (New)-SNYDER3955

Proponent: Ronald George, Self, representing Self

### 2015 International Plumbing Code

#### **Revise as follows:**

**504.7 Required pan.** Where a storage tank type tank type water heater or, a hot water storage tank, or a tankless water heater is installed in a location where water leakage from the tank <u>or heater</u> will cause damage, the <u>water heater and</u> tank shall be installed in a galvanized steel pan having a material thickness of not less than 0.0236 inch (0.6010 mm) (No. 24 gage), or other pans *approved* for such use.

Reason: During the last code cycle, there was a push to remove requirements for drain pans for tankless water heaters. There have been many failures of tankless heaters that have led to serious water damage to buildings. Tankless heaters fail too and the comment made about there was only a few ounces of water in them is incorrect and misleading. Tankless water heaters are connected to the water distribution piping and can leak hundreds of thousands of gallons of water. Drain pans should be required for tankless heaters too.

### Cost Impact: Will increase the cost of construction

Cost appears to be the primary reason the pans weere removed during the last code cycle at the expensee of the homeowner and common sense. The cost for a home builder is a few bucks, the cost for the home owners when there is a leak with no pan can be hundreds of thousands of dollars. This will actually save money for the homeowner.

P 95-15 : 504.7-GEORGE5604

504.7

Proponent: James Richardson, Jr (jarichardson@columbus.gov); Dynice Broadnax (dbroadnax@iccsafe.org)

### 2015 International Plumbing Code

**Revise as follows:** 

**504.7** Required pan.Water Heater Pan. Where a storage tank-type water heater or a hot water storage tank is installed in <u>aan elevated</u> location <u>whereabove the</u> <u>finished floor of a space. a water heater pan shall be provided to collect</u> leakage from the tank <u>will cause damage; and</u> the tank <u>connections. A pan required by</u> <u>this section or required by the design professional</u> shall be <u>installed in</u> a galvanized steel pan having a material thickness of not less than 0.0236 inch (0.6010 mm) (No. 24 gage), or other pans *approved* for such use. <u>Water heater pans shall be optional for all other installations.</u>

Reason: There is not one documented case of a leaking water heater causing a structure to fail. There are places where they should be installed, such as elevated locations where leakage could cause injury to someone who may not know the water heater is above them in a ceiling, or where they are elevated above a fixture and the leakage or blow-off from the T&P valve could injure a person using the fixture.

#### Cost Impact: Will not increase the cost of construction

Not putting in pans in locations where there are not needed will save significant labor and material costs in the long run.

P 96-15 : 504.7-RICHARDSON6027

## P 97-15

### 504.7

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

### 2015 International Plumbing Code

### Revise as follows:

**504.7 Required pan.** Where a storage tank-type water heater or a hot water storage tank is installed in a location where water leakage from the tank will cause damage, the tank shall be installed in a galvanizedpan constructed of one of the following:

- 1. Galvanized steel pan having a material thicknessor aluminum of not less than 0.0236 inch (0.6010 mm) in thickness.
- 2. Plastic not less than 0.036 inch (0.9 mm) in thickness.
- 3. Other approved materials.

#### A plastic pan shall not be installed beneath a gas-fired water heater. (No. 24 gage), or other pans approved for such use.

Reason: It would be very rare for a large commercial water heater installation to be requiring a pan. Those installations are well thought out and provisions are made for floor drains in the area of the water heater or the location of such large units are in areas where leakage will not cause damage. Thus, the existing section never comes into play for those installations. Where this section is primarily used is in multi-family residential construction where each unit has its own water heater. Because the proposed language was approved for the 2015 IRC, there should be any reason to allow this revision for the IPC. Factory-made pans are widely available and have been used for decades. Use of such pans keeps the installed costs low as compared to what a sheet metal shop would charge to make custom, galvanized sheet steel pan. It is just not necessary.

As stated in the IRC proposal, another reason for allowing these factory-made aluminum and plastic pans is that they have smooth edges. In a residential environment, some water heaters are in a laundry room where people, including children, move about. A slip or fall against the top edge or corner of a galvanized steel pan would be unpleasant. Galvanized steel can also begin to look unsightly after many years.

This proposal is needed for consistency with the IRC

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 146.

Cost Impact: Will not increase the cost of construction This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 97-15 : 504.7-SNYDER3956

## P 98-15

Part I: 602.3.1, Chapter 14 Part II: P2602.1, Chapter 44

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Janine Snyder, Chair, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## Part I

### 2015 International Plumbing Code

**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. <u>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.</u>

#### Add new standard(s) as follows:

ANSI/NGWA-01-14 Water Well Construction Standard

## Part II

### 2015 International Residential Code

### Revise as follows:

P2602.1 General. The water-distribution and drainage system of any building or premises where plumbing fixtures are installed shall be connected to a public water supply or sewer system, respectively, if available. Where either a public water-supply or sewer system, or both, are not available, or connection to them is not feasible, an individual water supply or individual (private) sewage-disposal system, or both, shall be provided. <u>Individual water supplies shall be constructed</u> 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.

### Add new standard(s) as follows:

ANSI/NGWA-01-14 Water Well Construction Standard

Reason: Many locations where wells will be constructed are covered by state and local laws for well construction. However, some areas in a jurisdiction might not be covered by those laws (or possibly, state or local laws don't exist). Adding this standard to the code is an important backstop to make sure that wells in those areas are safely constructed to be able to provide a reliable water supply for the building(s).

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 29.

#### Cost Impact:

#### Part I: Will increase the cost of construction

This proposal will increase the cost of construction because additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code. Specifically, in situations where state or local laws don't exist for the construction of wells, these requirements could add additional costs over those cost for a well that would be constructed to a quality level less than what this standard requires. Where a standard for construction does not exist, there could be ways to "cut corners" to lessen costs of construction such as not installing a well casing, not performing tests and generally, expending less labor to construct a well that might not be safe or provide a reliable supply of water.

#### Part II: Will increase the cost of construction

This proposal will increase the cost of construction because additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code. Specifically, in situations where state or local laws don't exist for the construction of wells, these requirements could add additional costs over those cost for a well that would be constructed to a quality level less than what this standard requires. Where a standard for construction does not exist, there could be ways to "cut corners" to lessen costs of construction such as not installing a well casing, not performing tests and generally, expending less labor to construct a well that might not be safe or provide a reliable supply of water.

#### Analysis:

Part I: A review of the standard proposed for inclusion in the code, ANSI/NGWA-01, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

Part II: A review of the standard proposed for inclusion in the code, ANSI/NGWA-01, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 98-15 : 602.3.1-SNYDER3957

## P 99-15

Part I: 602.3.1, Chapter 14 Part II: P2602.1, Chapter 44

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Donald Surrena, National Association of Home Builders, representing National Association of Home Builders (dsurrena@nahb.org)

## Part I

### 2015 International Plumbing Code

### Revise as follows:

**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 in accordance with the applicable state and local laws. Where the construction of individual water supplies is not regulated by state or local laws, such individual water supplies shall be constructed in accordance with <u>ANSI/NGWA-01</u>.

### Add new standard(s) as follows:

ANSI/NGWA-01-14 Water Well Construction Standard

## Part II

#### 2015 International Residential Code

#### Revise as follows:

P2602.1 General. The water-distribution and drainage system of any building or premises where plumbing fixtures are installed shall be connected to a public water supply or sewer system, respectively, if available. Where either a public water-supply or sewer system, or both, are not available, or connection to them is not feasible, an individual water supply or individual (private) sewage-disposal system, or both, shall be provided. <u>Individual water supplies shall be constructed in accordance with the applicable state and local laws</u>. Where the construction of individual water supplies is not regulated by state of local laws, such individual water supplies shall be constructed in accordance with ANSI/NGWA-01.

### Add new standard(s) as follows:

ANSI/NGWA-01-14 Water Well Construction Standard

Reason: The IRC currently refers the user to the IPC for requirements regarding well construction, as it does for all plumbing not addressed in the IRC (P2601.1). Often locations where wells will be constructed are covered by state and local laws for well construction. The provisions for wells in the IPC are also incomplete and spreadout through several sections of the code, making tracking difficult. This proposal is a simple change that clarifies where to go for well construction requirements—either state/local regulations or an ANSI standard. This proposal is the same as what passed in the 2013 Group B hearing for the IRC. The change, however, was not included in the 2015 IRC because the referenced standard was not published by the ICC deadline. The standard was published in 2014.

#### Cost Impact:

#### Part I: Will increase the cost of construction

This proposal will increase the cost of construction because additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code. Specifically, in situations where state or local laws don't exist for the construction of wells, these requirements will add additional costs over those costs for a well that would be constructed to a quality level less than what this standard requires. Where a standard for construction does not exist, there could be ways to "cut corners" to lessen costs of construction such as not installing a well casing, not performing tests and generally, expending less labor to construct a well that may adversely affect the safety or reliability of the supply of water. Where local/state regulations are already in place, there may be no cost impact depending on the level of local/state regulation in place.

#### Part II: Will increase the cost of construction

This proposal will increase the cost of construction because additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code. Specifically, in situations where state or local laws don't exist for the construction of wells, these requirements will add additional costs over those costs for a well that would be constructed to a quality level less than what this standard requires. Where a standard for construction does not exist, there could be ways to "cut corners" to lessen costs of construction such as not installing a well casing, not performing tests and generally, expending less labor to construct a well that may adversely affect the safety or reliability of the supply of water. Where local/state regulations are already in place, there may be no cost impact depending on the level of local/state regulation in place.

#### Analysis:

Part II: A review of the standard proposed for inclusion in the code, ANSI/NGWA-01-14, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 99-15 : 602.3.1-SURRENA5013

## P 100-15

### 603.1 (New), 608.16.1 (New), 608.16.2 (New)

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

### 2015 International Plumbing Code

### Add new text as follows:

603.1 Protection for public water main. Public water mains shall be protected from backflow from connected water service lines in accordance with Section 608.16.1 and 608.16.2.

608.16.1 Backflow preventer required for water service lines. A backflow prevention assembly in accordance with Section 608.13.2 shall be installed in the water service lines serving the following:

- Hospitals 1
- Surgical clinics 2.
- 3 Laboratories
- 4. Morgues
- 5. Mortuaries
- 6. Veterinary hospitals
- 7. Industrial occupancies
- 8 Packing plants
- 9.
- Slaughter houses 10. Chemical plants
- 11. Municipal waste treatment facilities
- 12. Construction sites

The location of the required backflow prevention assembly shall be on the building site. The backflow prevention assembly shall be installed in the water service line at a point that is upstream of any site connections to the water service line.

608.16.2 Protection of site water service loop system. Where a building site such as a campus has a water service loop system that serves two or more water service connections to buildings on the building site, a backflow prevention assembly in accordance with Section 608.13.2 or 608.13.7 shall be installed in the water service line for each building connecting to the loop.

#### Reason: New Section 608.16.1:

The code is lacking requirements for backflow protection of public water supplies that connect to buildings or building sites known to have High Risk, High Hazard activities occurring. The building and site applications identified in this new Section 608.16.1 are according to the University of Southern California's Cross Connection Control Manual. The USC Cross Connection Control Manual is a highly regarded publication produced and periodically updated by the Foundation for Cross-Connection Control and Hydraulic Research at USC. The Foundation has been involved in backflow issues for over 100 years. Many jurisdictions and water utilities operate cross-connection control programs using this Manual and their tenants concerning backflow protection.

Section 101.3 states that the intent of the International Plumbing Code is "...to establish minimum standards to provide a reasonable level of safety, health, protection of property and public welfare ..... "Section 101.2 states that scope of the code applies to "....plumbing systems within the jurisdiction."

The plumbing code assumes that the code-required backflow protection at each of the potable water outlets in a building (or on a building site) protects the water distribution system of the building (or site). And that this "primary protection" is adequate protection for the public water supply that the water service line serving those buildings (and sites) connects to. The problem with this assumption for the indicated buildings and building sites is that building owners and system operators have difficulty controlling every possible situation that might lead to a backflow event. Many of these operations are large complexes with miles and miles of potable water piping with thousands of potable water outlets. Some of these complexes undergo constant construction for upgrades and repair of industrial systems where potable water piping may or may not be involved. There is great potential for a cross-connection to be made

Adding to this great potential for a cross-connection is the nature of the substances involved with these operations. The code doesn't distinguish between various hazard levels of contaminates but in practice, there is obviously a significantly higher risk for a contaminate that can make thousands of people very ill with only a small amount of material introduced into the public water supply. The organizations and companies who have administered backflow protection programs for large public water supplies have realized this for decades. The USEPA has also realized this for a long time. For public water suppliers who do have a backflow protection program, the suppliers will not allow these buildings and building sites to connect to the public water main without a Reduced Pressure Zone backflow protection assembly (reference Section 608.13.2) in the water service line.

The following question might be asked: "Why not continue to let the public water suppliers deal with this issue?" There are several issues surrounding this question:

- 1. Where the public water supplier does require this RPZ, it is installed on the building owner's property and in the water service line that is regulated by the IPC. Should not the plumbing code have this requirement in the code as this involves piping that the code regulates?
- 2. The IPC has the regulations for backflow preventers such as the appropriate standards and details about their installation. The building owner is buying this equipment (through the plumbing contractor) so the code provides the requisite information. There has been many situations where the plumbing contractor has said, "Why do I have to provide this equipment? I have complied with the IPC. Show me the IPC code section that it where it requires that I am responsible to provide this.
- 3. What about jurisdictions where there is not a backflow protection program in place for the public water supply? Should the public connected to that water system be any less protected than anyone else? Keep in mind what Section 101.3 says. With everyone in the backflow protection field knowing that these buildings and building sites have significant contamination risks involved, should not the IPC be a leader in protecting the public water supply for all those connected to that supply for these High Risk, High Hazard situations?

#### New Section 608.16.2:

This new section has nothing to do with the necessity for new Section 608.16.1. There can be building sites having multiple buildings that are served by a "loop" water service line arrangement. In other words, there is one "tap" on the public water main but once the water service line on the building site, it splits to run in different directions to service multiple buildings on the site. The two different "split" water service lines eventually meet up and connect to each other somewhere on the building site. The reasons for this "loop" design are germane to this proposal.

The problem is that this "loop" water service line design can create conditions for a backflow event to occur between buildings connected to the loop. For example, consider a campus with several high rise buildings and several low rise buildings. Where the water demand in a low rise building becomes significant, the pressure decreases in the high rise building and because the elevation of the water is so much higher than it the low rise building, the water in the high rise building moves into the "loop" towards the low rise building. Remember that a backflow event occurs because of a change in pressurebetween two points. Now imagine many buildings on a campus with water moving back and forth in the "loop" many times a day. It only takes one failed "primary" backflow preventer in one building on the campus to end up contaminating the water supply for all the buildings connected to the loop.

A double check valve backflow protection assembly for each building is sufficient to protect against this situation. It is field testable to be able to verify its proper operation. An RPZ backflow protection assembly can also provide the same protection, however, because of the higher cost, such a device would only need to be used for applications where higher hazards (such as those in new Section 608.16.1) might exist on a campus loop system.

The PMGCAC urges approval of this important proposal

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 165.

Cost Impact: Will increase the cost of construction

This proposal will increase the cost of construction because additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code

Specifically, the code doesn't require these backflow protection assemblies so yes, because the code will require them, the change in the code *appears* to make the cost of construction higher. However, knowing that many public water suppliers already mandate these backflow protection assemblies (and the building and site owners already are having to install them), there won't be an increase in construction cost. And, many owners of these buildings or sites are already smart enough to know that they don't want to be responsible for a public water supply contamination event because they failed to correctly do something correctly somewhere in the depths of their operations. They already had voluntarily complied. Where the cost impact will show up is where the building or site owner doesn't care to incur the cost, there is no backflow protection program in place in the jurisdiction, the code official recognizes the issue but can't require the RPZ because it is not in the code. In those situations there will be the added cost of RPZ backflow protection assembly, the labor to install it and, where located inside of a building, the labor and material for a drain to capture a backflow event from the RPZ.

## P 101-15

Part I: 603.1 Part II:

## P2903.7

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Julius Ballanco, representing Self (JBENGINEER@aol.com)

## Part I

### 2015 International Plumbing Code

### **Revise as follows:**

603.1 Size of water service pipe. The water service pipe shall be sized to supply water to the structure in the quantities and at the pressures required in this code. The water service pipe shall be not less than  $\frac{3}{41}$  inch ( $\frac{19.125.4}{100}$  mm) in diameter.

## Part II

### 2015 International Residential Code

### **Revise as follows:**

P2903.7 Size of water-service mains, branch mains and risers. The size of the water service pipe shall be not less than<sup>3</sup>/<sub>4</sub>\_1 inch (19 mm) diameter. The size

of water service mains, branch mains and risers shall be determined from the water supply demand [gpm (L/m)], available water pressure [psi (kPa)] and friction loss caused by the water meter and developed length of pipe [feet (m)], including equivalent length of fittings. The size of each water distribution system shall be determined according to design methods conforming to acceptable engineering practice, such as those methods in Appendix P and shall be approved by the code official.

Reason: The minimum pipe size of ¾ inch dates back to the Hoover Code days, whereby it was understood that the minimum pipe size for a single family dwelling could be ½ inch galvanized steel pipe. This sizing was based on one bathroom and a kitchen sink. That was the original indoor plumbing required for a single family dwelling. The code predated the use of copper tube or plastic pipe. However, in case additional fixtures were added to the home, it was mandated that the water service be a minimum of 34 inch. Most water services during this period of time were lead pipe. The inside diameter of 3/4 inch lead pipe was 3/4 inch.

Today's modern home has minimum plumbing requirements that dictate a pipe size of at least 34 inch. Following the concept of the earlier codes, this would result in upsizing the water service to a minimum of 1 inch pipe. Additionally, both the International Building Code and International Plumbing Code require residential sprinklers for all single family dwellings. With a typical demand of two residential sprinklers, the minimum flow rate for the system becomes 16 gpm. The residential sprinkler flow rate can be as high as 40 gpm or more. This would result in the need for a 1 inch water service.

The most popular pipe used today for residential water service is polyethylene. It has been estimated that 90 percent of the water services for single family dwellings in the United States is polvethylene

A 3/4 inch polyethylene tube has an inside diameter that range from 0.625 inches to 0.715 inches depending on the SDR. A 1 inch polyethylene tube would be more in line with the older 3/4 inch lead water service regarding size. Furthermore, the inside diameter of 1 inch polyethylene is very similar to 3/4 inch galvanized steel pipe. The inside diameter of 3/4 inch galvanized steel pipe is 0.824 inches. The inside diameter of 1 inch polyethylene pipe, SDR 9 is 0.875 inches.

Based on the additional fixtures required for a single family dwelling and the requirement for residential sprinklers, the minimum water service must be increased to 1 inch.

### Cost Impact:

Part I: Will increase the cost of construction The increase in cost is minimal based on the cost of the piping material. The labor and installation costs remain the same.

Part II: Will increase the cost of construction The cost of the piping material will be higher.

P 101-15 : 603.1-BALLANCO3697

## P 102-15

### 604.2

**Proponent:** Ronald George, Self; Plumb-Tech Design & Consulting Services LLC, representing Self; Plumb-Tech Design & Consulting Services LLC (Ron@Plumb-TechLLC.com)

### 2015 International Plumbing Code

### Revise as follows:

**604.2 System interconnection.** At the points of interconnection between the hot and cold water supply piping systems and the individual fixtures, appliances or devices, provisions shall be made to prevent flow between such piping systems. <u>Hot water circulation systems shall not utilize cold water distribution piping for the return of water to the water heater.</u>

Reason: This is a health hazard routing hot water return through the cold water distribution system. Routing hot water return through the cold water supply pipes creates a condition where it will not be possible to get cold water in some cases. It also creates a condition where LEgionell bacteria can grow.

### Cost Impact: Will not increase the cost of construction

Cross connections are already prohibited. Returning hot water through the cold water pipe is a cross-connection where hot water can be routed to other fixtures.

P 102-15 : 604.2-GEORGE5205

## P 103-15

### Table 604.3

Proponent: Michael Anthony, University of Michigan, representing University of Michigan (maanthon@umich.edu)

### 2015 International Plumbing Code

Revise as follows:

TABLE 604.3
WATER DISTRIBUTION SYSTEM DESIGN CRITERIA REQUIRED CAPACITY AT FIXTURE SUPPLY PIPE OUTLETS

FIXTURE SUPPLY OUTLET SERVING	FLOW RATE <sup>a</sup> (gpm)	FLOW PRESSURE (psi)
Bathtub, balanced-pressure, thermostatic or combination balanced- pressure/thermostatic mixing valve	4	20
Bidet, thermostatic mixing valve	2	20
Combination fixture	4	8
Dishwasher, residential	2.75	8
Drinking fountain	0.75	8
Laundry tray	4	8
Lavatory, private	0.8	8
Lavatory, private, mixing valve	0.8	8
Lavatory, public	0.4	8
Shower	2.5	8
Shower, balanced-pressure, thermostatic or combination balanced- pressure/thermostatic mixing valve	2.5 <sup>b</sup>	20
Shower room, athletic center or student housing	<u>2.0</u>	<u>8</u>
Sillcock, hose bibb	5	8
Sink, residential	1.75	8
Sink, service	3	8
Urinal, valve	12	25
Water closet, blow out, flushometer valve	25	45
Water closet, flushometer tank	1.6	20
Water closet, siphonic, flushometer valve	25	35
Water closet, tank, close coupled	3	20
Water closet, tank, one piece	6	20

For SI: 1 pound per square inch = 6.895 kPa, 1 gallon per minute = 3.785 L/m.

a. For additional requirements for flow rates and quantities, see Section 604.4.

b. Where the shower mixing valve manufacturer indicates a lower flow rating for the mixing valve, the lower value shall be applied.

Reason: Multiple showers in the same room are common in athletic and recreation facilities and student housing (residences, living centers). Diversity of use permits lower flow rates.

#### Bibliography:

We have provided background information at this web site:

https://sites.google.com/a/umich.edu/14-39-international-plumbing-code-2018-revision/home

P 103-15 : T604.3-ANTHONY5299

## P 104-15

### 603.1 (New)

Proponent: Michael Anthony, University of Michigan, representing University of Michigan (maanthon@umich.edu)

### 2015 International Plumbing Code

### Add new text as follows:

603.1 Water service meter sizing Water service meters shall be sized based upon 1-year historical demand measurements of identical occupancy or use classes.

**Reason:** Water service meters are generally too large; and they are getting more oversized as water consumption is reduced. To use historical demand patterns for the specification of the water meter borrows from a concept that has worked in the National Electrical Code for many years. It permits a designer to size a power system capacity if he has the data to substantiate it. For the committee's information, that passage is reproduced in part below:

220.87 Determining Existing Loads. The calculation of a feeder or service load for existing installations shall be permitted to use actual maximum demand to determine the existing load under all of the following conditions:

(1) The maximum demand data is available for a 1-year period.

Exception: If the maximum demand data for a 1-year period is not available, the calculated load shall be permitted to be based on the maximum demand (measure of average power demand over a 15-minute period) continuously recorded over a minimum 30-day period using a recording ammeter or power meter connected to the highest loaded phase of the feeder or service, based on the initial loading at the start of the recording. The recording shall reflect the maximum demand of the feeder or service by being taken when the building or space is occupied and shall include by measurement or calculation the larger of the heating or cooling equipment load, and other loads that may be periodic in nature due to seasonal or similar conditions.

(2) The maximum demand at 125 percent plus the new load does not exceed the ampacity of the feeder or rating of the service.

(3) The feeder has overcurrent protection in accordance with 240.4, and the service has overload protection in accordance with 230.90.

While the system is an electrical system, much of it -- conceptually -- can be brought to bear upon the specification of the water meter -- i.e. data driven.

#### Bibliography:

Background and reference information about this proposal will be available at this web site:

https://sites.google.com/a/umich.edu/14-39-international-plumbing-code-2018-revision/

Cost Impact: Will not increase the cost of construction

Smaller meters generally should cost less; though local jurisdictions may change their connection fees to secure lost revenue.

P 104-15 : 604.4 (New)-ANTHONY5509

## P 105-15

## Table 604.4

**Proponent:** John Addario, New York State Department of State - Building Standards and Codes, representing New York State Department of State - Building Standards and Codes (john.addario@dos.state.ny.us)

### 2015 International Plumbing Code

### Revise as follows:

#### TABLE 604.4 MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING FIXTURES AND FIXTURE FITTINGS

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY <sup>b</sup>
Water closet <u>- public and</u> private	<del>1.6<u>1.28</u> gallons per flushing cycle<sup>c</sup></del>
<u>Water closet—public and</u> <u>remote<sup>d</sup></u>	<u>1.6 gpf</u>

(Portions of table not shown remain unchanged)

For SI: 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a. A hand-held shower spray is a shower head.

b. Consumption tolerances shall be determined from referenced standard.

c. The effective flush volume for dual-flush water closet is defined as the composite, average flush volume of two reduced flushes and one full flush. In public settings, the maximum water use of a dual flush water closet is based solely on its full flush operation; not an average of full and reduced volume flushes.

d. A water closet is remote where its discharge is combined with less than 1.5 DFU discharge from other fixtures and such discharge must flow horizontally for 30 feet or more.

Reason: This proposal reflects the current requirements in the IGCC for high efficiency water closets. The last cycle the committee was concerned that there was a need for further study in the use of high efficiency water closets. The proposed change addresses these concerns by exempting them in a public setting when they are installed in a remote location. This proposal is in line with the IGCC and addresses the concerns from the committee from the last cycle.

#### Cost Impact: Will not increase the cost of construction

The price of plumbing fixtures and fittings vary due to style, trim, and material. The attached documents demonstrate that essentially there will be no cost impact in response to adopting these requirements. The attached only reflects the bare cost comparison of the fixtures and does not include the cost saving realized from water conservation.

P 105-15 : T604.4 -ADDARIO4773

## P 106-15

## Table 604.4

**Proponent:** John Addario, New York State Department of State - Building Standards and Codes, representing New York State Department of State Building Standards and Codes (john.addario@dos.state.ny.us)

### 2015 International Plumbing Code

### Revise as follows:

#### TABLE 604.4 MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING FIXTURES AND FIXTURE FITTINGS

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY <sup>b</sup>
Lavatory, private	<del>2.2<u>1.5</u> gpm at 60 psi</del>
Lavatory, public (metering)	0.25 gallon per metering cycle
Lavatory, public (other than metering)	0.5 gpm at 60 psi
Shower head <sup>a</sup>	<del>2.5</del> 2.0 gpm at 80 psi
Sink faucet	2.2 gpm at 60 psi
Urinal	1.00.5 gallon per flushing cycle
Water closet	1.6 gallons per flushing cycle

For SI: 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

- a. A hand-held shower spray is a shower head.
- b. Consumption tolerances shall be determined from referenced standards.

Reason: This proposal reflects the current WaterSense rates for lavatories, shower heads and urinals. WaterSense fixtures have been available and in use since 2006. These products are now widely available, accepted and proven to perform as well as less water effecient products. Additionally they are now available at the same price point as less efficient fixtures.

#### Cost Impact: Will not increase the cost of construction

The price of plumbing fixtures and fittings vary due to style, trim, and material. The attached documents demonstrate that essentially there will be cost impact in response to adopting these requirements. The attached only reflects the bare cost comparision of the fixtures and does not include the cost saving realized from water conservation. Seven (7) PDF used to verify costs attached:

P 106-15 : T604.4-ADDARIO4727

## P 107-15

### Part I: Table 604.4 Part II: Table P2903.2

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Anthony Floyd, City of Scottsdale, representing City of Scottsdale (afloyd@scottsdaleaz.gov)

## Part I

### 2015 International Plumbing Code

Revise as follows:

TABLE 604.4
MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING FIXTURES AND FIXTURE FITTINGS

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY <sup>b</sup>
Lavatory, private	<del>2.2</del> <u>1.5</u> gpm at 60 psi
Lavatory, public (metering)	0.25 gallon per metering cycle
Lavatory, public (other than metering)	0.5 gpm at 60 psi
Shower head <u>(s)</u> <u>discharge<sup>a</sup>.c</u>	2.5 gpm at 80 psi
Sink faucet	2.2 gpm at 60 psi
Urinal	1.0 gallon per flushing cycle
Water closet <u>- remote<sup>d</sup></u>	1.6 gallons per flushing cycle
Water closet - nonremoted	<u>1.28 gallons per flushing</u> cycle average <sup>e,f</sup>

For SI: 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a. A hand-held shower spray is a shower head.

b. Consumption tolerances shall be determined from referenced standards.

c. The combined flow rate from shower heads that are capable of operating simultaneoulsy including rain systems, waterfalls, body sprays and jets shall not exceed 2.5 gpm for every 2600 square inches or portion thereof. In shower compartments required to comply with the requirements of Chapter 11 of the International Bulding Code, the combined flow rate shall not exceed 4.0 gpm for every 2600 square inches or portion thereof.

d. A water closet is remote where its discharge is combined with less than 1.5 DFU discharge from other fixtures and such discharge flows horizontally for 30 feet or more. e. The effective flush volume for a dual-flush water closet is defined as the composite, average flush volume of two reduced flushes and one full flush.

f. In public settings, the maximum water use of a dual flush water closet is based solely on its full flush operation; not an average of full and reduced volume flushes.

## Part II

### 2015 International Residential Code

Revise as follows:

#### **TABLE P2903.2**

### MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING FIXTURES AND FIXTURE FITTINGS $^{\mathrm{b}}$

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY <sup>b</sup>
Lavatory faucet	<del>2.2</del> <u>1.5</u> gpm at 60 psi
Shower head <u>(s) dischargeac</u>	2.5 gpm at 80 psi
Sink faucet	2.2 gpm at 60 psi
Water closet	<del>1.6</del> <u>1.28</u> gallons per flushing cycle

For SI: 1 gallon per minute = 3.785 L/m,

1 pound per square inch = 6.895 kPa.

a. A handheld shower spray shall be considered a shower head.

b. Consumption tolerances shall be determined from referenced standards.

c. The combined flow rate from shower heads that are capable of operating simultaneously including rainfall shower systems, waterfalls, body sprays and jets shall not exceed 2.5 gpm for every 2600 square inches or portion thereof of shower compartment floor area.

Reason: Recent advancements have allowed water closets to use 1.28 gallons per flush (gpf) or less while still providing equal or superior performance. This is 20 percent less water than the current federal standard of 1.6 gpf. Toilets are by far the main source of water use in the home, accounting for nearly 30 percent of an average home's indoor water consumption. Water-efficient toilets significantly reduce water use and help preserve the nation's water resources. Unlike some first-generation, "low-flow" toilets, high-efficiency toilets combine efficiency with high performance. Design advances enable high-efficiency toilets to save water with no trade-off in flushing power. In fact, many perform better than standard toilets in consumer testing. Faucets account for more than 15 percent of indoor household water use - more than 1 trillion gallons of water cors the United States each year. High efficiency lavatory faucets that use a maximum of 1.5 gallons per minute (gpm) can reduce a sink's water flow by 30 percent or more from the current standard flow of 2.2 gpm without sacrificing performance.

The maximum flush volumes in the current IRC are based upon a nationwide standard enacted 20 years ago. In December 2010, the US Department of Energy determined that states were no longer preempted from adopting more stringent efficiency standards for water closets, among other products. Federal Regisister, Vol. 75, No. 245, December 22, 2010, p. 80289. This document may be assess here: http://www.regulations.gov/#ldocumentDetail;D=EERE-2010-BT-WAV-0045-0001

Water closets operating at 1.28 gpf or better are commonly available and perform as well as those with higher flush volumes. Since 2006, the establishment of the WaterSense labeling program for water efficient products and services by the Environmental Protection Agency has provided a framework for the recognition of products that are substantially more efficient than minimum federal requirements while maintaining functionality and customer satisfaction. WaterSense criteria for tank-type water closets were established in 2007. Manufacturers have responded by bringing large numbers of models to market that meet or exceed WaterSense specifications. Based on the most recent reports by WaterSense partners, more than 1,621 models of tank-type toilets from nearly 100 brands currently meet WaterSense specifications, showing the widespread availability and commercial viability of these more efficienct plumbing fixtures. With the pace of introduction of new models that meet WaterSense specifications, it is reasonable to expect that these figures will be substantially larger by 2015.

### Bibliography:

Part I: Alliance for Water Efficiency, National Water Efficiency Standards and Specifications - http://www.allianceforwaterefficiency.org/WorkArea/DownloadAsset.aspx?id=8796 ICC-ES Water Efficienct Plumbing Fixtures - http://www.icc-es.org/News/Articles/High-EfficiencyPlumbingFixtures.pdf

Natural Resource Defense Council, Appliance Efficiency Comments - http://listserver.energy.ca.gov/appliances/2014-AAER-01/prerulemaking/comments/14-AAER-

01\_NRDC\_T\_Quinn\_Comments\_on\_Appliance\_Efficiency\_Pre\_Rulemaking\_2014-06-16\_TN-73213.pdf

Safe Plumbing, Water Efficiency Overview - www.safeplumbing.org/water-efficiency

Safe Plumbing, Water Efficiency Position Paper - www.safeplumbing.org/pmi/position-papers/water-efficiency

US EPA WaterSense - www.epa.gov/watersense

Part II: Alliance for Water Efficiency, National Water Efficiency Standards and Specifications - http://www.allianceforwaterefficiency.org/WorkArea/DownloadAsset.aspx?id=8796 ICC-ES Water Efficienct Plumbing Fixtures - http://www.icc-es.org/News/Articles/High-EfficiencyPlumbingFixtures.pdf

Natural Resource Defense Council, Appliance Efficiency Comments - http://listserver.energy.ca.gov/appliances/2014-AAER-01/prerulemaking/comments/14-AAER-

01\_NRDC\_T\_Quinn\_Comments\_on\_Appliance\_Efficiency\_Pre\_Rulemaking\_2014-06-16\_TN-73213.pdf

Safe Plumbing, Water Efficiency Overview - www.safeplumbing.org/water-efficiency

Safe Plumbing, Water Efficiency Position Paper - www.safeplumbing.org/pmi/position-papers/water-efficiency

US EPA WaterSense - www.epa.gov/watersense

#### Cost Impact:

#### Part I: Will not increase the cost of construction

Based on manufacturer's mass production and market-wide availability, high-efficiency water closets and lavatory faucets dominate the market and are cost neutral with the current standard lowflow fixtures. The National Resources Defense Council (NRDC) estimates that if the flush volumes specified in this proposal were applied to new construction nationwide effective 2016, the following savings would be realized in the residential sector alone: 41.6 million gallons of water per day by 2030 with a cumulative savings for consumers of more that \$138 million through 2030.

#### Part II: Will not increase the cost of construction

Based on manufacturer's mass production and market-wide availability, high-efficiency water closets and lavatory faucets dominate the market and are cost neutral with the current standard lowflow fixtures. The National Resources Defense Council (NRDC) estimates that if the flush volumes specified in this proposal were applied to new construction nationwide effective 2016, the following savings would be realized in the residential sector alone: 41.6 million gallons of water per day by 2030 with a cumulative savings for consumers of more that \$138 million through 2030.

#### Analysis:

Part II: The heading of the second column of Table P2903.2 was published incorrectly for 2015 as PLUMBING FIXTURE OR FIXTURE FITTING. This has been identified as errata. The header has been corrected in this proposal to read MAXIMUM FLOW RATE OR QUANTITY <sup>b</sup>. This will be corrected for publication of the 2018 IRC.

P 107-15 : T604.4-FLOYD3394

## P 108-15

### Table 604.4

**Proponent:** Karen Hobbs, Natural Resources Defense Council, representing Natural Resources Defense Council (khobbs@nrdc.org); Ed Osann (eosann@nrdc.org)

### 2015 International Plumbing Code

### **Revise as follows:**

### **TABLE 604.4**

### MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING FIXTURES AND FIXTURE FITTINGS

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY <sup>b</sup>
Urinal	<del>1.0</del> 0.5 gallon per flushing cycle
Water closet <sup>c,d,e</sup>	<del>1.6</del> <u>1.28</u> gallons per flushing cycle

(Portions of table not shown remain unchanged)

For SI: 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a. A hand-held shower spray is a shower head.

b. Consumption tolerances shall be determined from referenced standards.

c. 1.6 gallons per flushing cycle for a water closet connected to the sanitary drainage system of an existing building.

d. The effective flush volume for a dual-flush water closet is defined as the composite. average flush volume of two reduced flushes and one full flush.

e. In public settings, the maximum water use of a dual flush water closet is based solely on its full flush operation; not the average of full and reduced volume flushes.

Reason: Recent advancements have allowed toilets to use 1.28 gallons per flush or less while providing equal or superior performance. This is 20 percent less water than the current federal standard of 1.6 gallons per flush. Toilets are by far the main source of water use in the home, accounting for nearly 30 percent of an average home's indoor water consumption. Water-efficient toilets can reduce water use in the home and help preserve the nation's water resources. Unlike some first-generation, "low-flow" toilets, high-efficiency toilets combine efficiency with high performance. Design advances enable high-efficiency toilets to save water with no trade-off in flushing performance or drainline function. In fact, many perform better than standard toilets in consumer testing (Source: EPA *WaterSense*:http://www.epa.gov/WaterSense/products/toilets.html).

WaterSense criteria for tank-type water closets were established in 2007. Based on the most recent reports by WaterSense partners, more than 2,305 models of tank-type toilets from more than 115 brands currently meet the WaterSense specification, showing the widespread availability and commercial viability of these more efficient water closets.

Like toilets, urinals operating at 0.5 gpf or better are commonly availabile today and perform as well as those with higher flush volume. WaterSense criteria for flushing urinals were established in 2009. Manufacturers have reponded by bringing large numbers of models to market that meet or exceed WaterSense specifications. Based on the most recent reports by WaterSense partners, 151 models of urinal fixtures from 15 brands and 91 models of urinal valves from 7 brands currently meet the WaterSense specification of 0.5 gpf, demonstrating the widespread availability and commercial viability of more efficient urinals. With the pace of introduction of new models that meet WaterSense specifications, it is reasonable to expect that these figures will be even larger by 2018.

The Natural Resources Defense Council (NRDC) estimates that significant water savings could be realized if these standards were applied nationwide effective in 2018:

- For toilets, approximately 36 million gallons of water per day could be saved in the residential sector by 2030 (this value represents savings from residential toilets; it does not exclude flushometer valve toilets in the residential sector and tank-type toilets in the Commercial and Industrial sectors). NRDC estimates savings in the commercial sector of 8 million gallons of water per day by 2030.
- For urinals, water savings would reach 2 million gallons per day by 2030.

Reducing water use is an integral part of the stated purpose of the International Plumbing Code. As noted in Chapter 1 of the 2015 edition: "**101.3 Intent**. The purpose of the code is to establish minimum standards to provide a reasonable level of safety, health, property protection and public welfare by regulating the controlling the design, construction, installation, quality of materials, location, operation and maintenance or use of plumbing equipment and systems."

Nothing is more fundamental to public "health, safety, property protection and public welfare" than the maintenance of adequate water supplies. Water-saving technologies, such as high-efficiency toilets and urinals, reduce water use, helping to ensure that water supplies are maintained at safe and reliable levels, maintaining human health and firefighting capability, as well as environmental resources.

Maxim	um Perform	ance (MaP) of	Toilet Fixtures									December	3, 2014
	The following list of 1 WaterSense complian inch flush valve, and for the models were	toilet fixtures was screene nt, single-flush, 1.28 gallo a MaP score of 1,000 grai obtained where possible fi	d from the current MaP database of 3,084 tan ns per flush maximum, gravity-fed, elongated ms. Except for the 3 models highlighted belov rom retailer websites.	ik-type r I ADA he w, all fea	nodels eight b ature a	All owl, a trap	mode floor-r way ii	lls on th nounte 1 exces	is list d, 12- s of 2	inclu inche inche	de thes ough-ii is. Cur	e characteristics: n, minimum 3- rent retail prices	
MaP Report No.	Brand Name	Model Name	Model Number	MaP Flush Performance Score (grams of waste removed in a single flush)	T- or 2-piece Flush Valve-Flapper size	(In.) Round (R) or Elongated (E) howl	lwo8 Jhpi9H ADA	Pressure- or power-assist (P), gravity-fed (G), OR gravity-fed with a vacuum assist (V)	T3H daula-signi2	Floor- (F) OR Wall- Mounted (W)	Trapway diameter	Pricing, A Com	lvailability, ments
17-078RN33	American Standard	C3 Concealed Trap EL ADA	2621.101: 3075.001 bowl, 4000.101 tank	1,000	0 N	ш	ADA	U	HET	u.	2.1250	Model no. no longer offered by Am Std	Identical to Am Std 2989.101
17-078RN33	American Standard	C3 Concealed Trap EL ADA	2989.101: 3075.001 bowl, 4000.101 tank	1,000	m N	ш	ADA	σ	HET	ũ,	2.1250	Amer Std List of \$516; \$328 @ Amazon; \$341 @ efaucets.com	
29-024	American Standard	Champion 4 HET EL ADA	2793.128: 3195A.101R bowl, 4149A.101R tank	1,000	2 4	ш	ADA	σ	HET	u.	2.1250	\$239 @ Lowe's	
24-105	American Standard	Champion 4 Max EL ADA	231AA. 104: 3395A.001 bowl, 4215A.104 tank	1,000	2	ш	ADA	σ	HET	ũ.	2.1875	\$279 @ Home Depot	
24-105	American Standard	Champion 4 Max EL ADA	2586.128ST: 3195A.001R bowl, 4215A.101 tank	1,000	2	ш	ADA	U	HET	u.	2.1875	\$219 @ Home Depot	
24-114	American Standard	Champion PRO HET EL ADA	211AA.104: 3195A.101 bowl, 4225A.104 tank	1,000	© ⊘	ш	ADA	υ	HET	u.	2.1875	\$256 @ Ferguson	
17-078RN33	American Standard	Clean EL ADA	2514.101: 3075.100 bowl, 4000.107 tank	1,000	2 3	Ш	ADA	U	HET	н	2.1250	\$219 @ Lowe's	Identical to Am Std 2989.101
17-078RN33	American Standard	Clean EL ADA	2523.101: 3075.200 bowl, 4000.107 tank	1,000	о С	ш	ADA	σ	HET	ü.	2.1250	Discontinued by Am Std	Identical to Am Std 2989.101
30-079	American Standard	New Cadet 3.1 EL ADA	270FA.101: 3717F.001 bowl, 4019.101N tank	1,000	2	ш	ADA	U	HET	ц.	2.0625	\$231 @ Home Depot	
24-114	American Standard	Portsmouth Champion PRO HET EL ADA	2134A. 104: 3195A.101 bowl, 4327A. 104 tank	1,000	e N	ш	ADA	σ	HET	u.	2.1875	\$303 @ faucetdirect.com, faucet.com, and build.com; \$312 @ Home Depot	
17-078RN33	American Standard	Ravenna 3 EL (concealed trap)	2629.101: 3075.000 bowl, 4000.101 tank	1,000	2	ш	ADA	ŋ	HET	u.	2.1250	Discontinued by Am Std	Identical to Am Std 2989.101
24-114	American Standard	Retrospect Champion PRO HET EL ADA	212AA, 104: 3195A, 101 bowl, 4326A, 104 tank	1,000	0 N	ш	ADA	U	HET	Ľ.	2.1875	\$338 @ Ferguson	
27-074	Axent	None EL ADA	LW0207	1,000	S S	ш	ADA	U	HET	u.	2.1300	\$164@Lowe's	
14-020RN29	Chelini	Cabot EL ADA (lined tank)	B1516E bowl, T10348 tank (lined tank)	1,000	0 N	Ш	ADA	Ø	HET	ũ.,	2.2500	Unavailable here; http://www.chelinicollectic wad&adid=32	on.com∕showad.php?view=sho
18-011RN34	Dolphin Plumbing Industrial	Chicago EL ADA	Z59E16 bowd, S19348 tank	1,000	2	ш	ADA	U	HET	u.	2.0500	Unavailable here	http://www.dolphinhomeware. com/product1841416.html
23-036	Dolphin Plumbing Industrial	Hilton EL ADA	Z40E16 bowl, S40348 tank	1,000	м С	ш	ADA	U	HET	ũ.,	2.0500	Unavailable here	
34-007	Foremost	Dietrich EL ADA (lined tank)	TL-7227-*L: LL-7227 bowl, T-7227-*L tank	1,000	° ∩	ш	ADA	σ	HET	u.	2.0870	Only available in Canada	
28-024	Foremost	HET EL ADA	TL-8832-* : T-8832 unlined tank, LL-8832 bowl	1,000	е N	ш	ADA	σ	НЕТ	u.	2.0500	Available as Mirabelle thru Ferguson (see below)	
27-068	Gerber	Allerton EL ADA	HE-20-008; HE-21-577 bowl, HE-28-585 tank	1,000	ю С	ш	ADA	U	Ę	IL.	2.0500	\$445 list by Gerber; \$260 @ chicagofaucetshoppe	http://www.chicagofaucetshop pe.com/Gerber_20_008_Allert on_Elongated_Tollet_p/ger- 20008.htm
27-069	Gerber	Allerton EL ADA	HE-20-007: HE-21-577 bowl, HE-28-580 tank	1,000	n N	ш	ADA	σ	HET	L.	2.0500	\$385 list by Gerber; \$369 @ Home Depot	

December 3, 2014

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www.map-testing.com

Reduce of picture   Model Number     SkU 666-926:   331-725 book     SkU 666-926:   331-725 book     SkU 866-926:   331-725 book     Sku 31-725   33     Sku 31-700   3
Jacuzzi SKU EZ36559 (Also sold as Lowe's SKU 48624) Sold as complete toilet set (includes bowl, tank, seat, 1,000 2 3 E ADA c and installation accessories).
An instantion accession correspondence in this fixture is K-3009 6004, 4421 tank - NOTE: this fixture is K-3009 6004, 4421 tank - NOTE: this fixture is a field of the S010 field as part of the "COMPLETE 1,000 2 3 E ADA S0LUTION" package
SOLUTION" package K-6418: 4309 bowl, 5632 tank. NOTE: this fixture is also sold as K-9924 when included as part of the lowPETE SOLUTION" package.
SULTION package K-6418: 4309 600, 5802 bank. NOTE: this fixture is also sold as K-99249 when included as part of the "COMPLETE SOLUTION" package.
Model Number       Model Number         SkU 666-826: 331-7258 bowi, N2-25F tank (bv Nagara)       SkU 866-826: 331-725F tank (bv Nagara)         SkU 331-725: 331-725F bowi, N2-25F tank (bv Nagara)       SkU 331-725: 331-725F tank (bv Nagara)         SkU 331-725: 331-725F tank (bv Nagara)       SkU 331-725: 331-725F tank (bv Nagara)         SkU 331-725: 331-725F tank (bv Nagara)       SkU 331-725: 331-725F tank (bv Nagara)         SkU 331-725: 331-725F tank (bv Nagara)       SkU 3455 (br Nagara)         Sku 332 option accessories), Non package with UPC       Jauazz Sku 1250569 (Also sold as All-Lin-One package with UPC         Jauazz Sku 125056 (Also sold as All-Lin-One package with UPC       Jauazz Sku 125054 (Also sold as All-Lin-One package with UPC         Jauazz Sku 125056 (Also sold as All-Lin-One package with UPC       Jauazz Sku 125054 (Also sold as Sku 4862)         Jauazz Sku 125056 (Also sold as All-Lin-One package with UPC       Jauazz Sku 1466         Jauazz Sku 125056 (Also sold as Sku 4862)       All-Lin-Sku 4866         Skula as complete tolict set (Induce bowi, tank, seat, and installation accessories), which also sold as K-99240 when included as part of the "COMPLETE SOLUTION" package.         Skula as sowich as Part of the "COMPLETE SOLUTION" package.       COMPLETE SOLUTION" package.
Brand Name Home Depot Home Depot Jacuzzi Jacuzzi Kohler Kohler Kohler

Bibliography: Koeller, John, "Single-flush toilet matrix-2014-12-03.pdf"; December, 2014.

Cost Impact: Will not increase the cost of construction Adoption of this code change proposal will not increase the cost of construction. As noted above, more than 2,305 models of tank-type toilets from more than 115 brands currently meet the 1.28 gpf standard in this proposal; for urinals, 151 models of urinal fixtures from 15 brands and 91 models of urinal valves from 7 brands currently meet the *WaterSense* specification of 0.5 gpf

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December 3, 2014

(Source: MaP Testing: http://www.map-testing.com/high-efficiency-toilets.html). Consumer Reports identifies top-performing toilets at 1.28 gpf, ranging in cost from \$100 to \$380 (Source: Consumer Reports, "Water-saving toilets from Consumer Reports' tests: Stop flushing water and money down the drain," July 14, 2014:

http://www.consumerreports.org/cro/news/2014/07/water-saving-toilets-from-consumer-reports-tests/index.htm.

In addition, attached is a list of toilet fixtures that was screened from the current MaP database; all models on the list are 1.28 gpf. Current retail prices for the models were obtained where possible from retailer websites (file name: "Single-flush toilet matrix-2014-12-03.pdf."

According to EPA's *WaterSense*, "Our product research has found that high-efficiency urinal fixtures and flushing devices are no more expensive than their standard (1.0 gpf) counterparts. The average price of a new high-efficiency or standard urinal fixture is about \$350 and the average cost for a high-efficiency or standard pressurized flushing device (flushometer valve) is approximately \$200. Because there is very little to no cost difference between high-efficiency flushing urinals and standard flushing urinals, installing high-efficiency models in new construction or as part of the natural replacement process is cost-effective with immediate payback in water cost savings" (Source: EPA *WaterSense*: http://www.epa.gov/WaterSense/pubS/taq\_[fu.htm]).

The City of Tucson has found that "Prices [for urinals] are comparable to those for regular urinals and toilets" (Source: City of Tucson, "Commercial-Industrial High Efficiency Urinal Rebate Program," http://water.tucsonaz.gov/files/water/docs/Urinal\_Brochure\_2-13.pdf).

P 108-15 : T604.4-HOBBS5110

## P 109-15

### Part I: Table 604.4 Part II: Table P2903.2

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Karen Hobbs, Natural Resources Defense Council, representing Natural Resources Defense Council (khobbs@nrdc.org)

## Part I

### 2015 International Plumbing Code

### **Revise as follows:**

#### TABLE 604.4 MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING FIXTURES AND FIXTURE FITTINGS

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY <sup>b</sup>
Lavatory, private	<del>2.2<u>1.5</u> gpm at 60 psi</del>
Shower head <sup>a</sup>	<del>2.5<u>2.0</u> gpm at 80 psi</del>

(Portions of table not shown remain unchanged)

For SI: 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a. A hand-held shower spray is a shower head.

b. Consumption tolerances shall be determined from referenced standards.

## Part II

### 2015 International Residential Code

**Revise as follows:** 

#### TABLE P2903.2 MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING FIXTURES AND FIXTURE FITTINGS

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY <sup>D</sup>
Lavatory faucet	<del>2.2<u>1.5</u> g</del> pm at 60 psi
Water closet <sup>c</sup>	<del>1.6<u>1.28</u> gallons per flushing cycle</del>

(Portions of table not shown remain unchanged)

For SI: 1 gallon per minute = 3.785 L/m,

1 pound per square inch = 6.895 kPa.

- a. A handheld shower spray shall be considered a shower head.
- b. Consumption tolerances shall be determined from referenced standards.
- c. 1.6 gallons per flushing cycle for a water closet connected to the sanitary drainage system of an existing building.

Reason: Showerheads operating at 2.0 gpm at 80 psi are commonly available and perform as well as showerheads operating at 2.5 gpm. The *WaterSense* specification for showerheads was adopted in 2010, including a maximum flow rate of 2.0 gpm at 80 psi. Based on the most recent reports by *WaterSense* partners, more than 800 models from 45 brands currently meet the proposed standard, demonstrating the widespread availability and commercial viability of these types of showerheads (Source: MaP Testing: http://www.map-testing.com/). Residential lavatory faucets rated at 1.5 gpm or less are also commonly available and perform as well as those with higher flow rates. WaterSense established criteria for residential lavatory faucets and faucet accessories such as aerators in 2007. Based on the most recent reports by WaterSense partners, over 5,200 models from 134 brands currently meet the WaterSense specification, showing the widespread availability and commercial viability of more efficient lavatory faucets (Source: MaP Testing: http://www.map-testing.com/).

The Natural Resources Defense Council (NRDC) estimates that significant water and energy savings could accrue nationwide if these revised flow rates for showerheads and faucets became effective in 2018 (savings estimates apply only to the residential sector):

- Water and energy savings potential for showerheads:
- 86 million gallons of water per day by 2030;
- 1,553 MWh (Megawatt hours) of electricity per year by 2030; and;
- 112 million therms of natural gas per year by 2030.
- Water and energy savings potential for faucets:
- 122 million gallons of water per day by 2030;
- 2,199 MWh (Megawatt hours) of electricity per year by 2030; and

• 158 million therms of natural gas per year by 2030.

Reducing water use is an integral part of the stated purpose of the International Plumbing Code. As noted in Chapter 1 of the 2015 edition: "**101.3 Intent.** The purpose of the code is to establish minimum standards to provide a reasonable level of safety, health, property protection and public welfare by regulating the controlling the design, construction, installation, quality of materials, location, operation and maintenance or use of plumbing equipment and systems."

Nothing is more fundamental to public "health, safety, property protection and public welfare" than the maintenance of adequate water supplies. Water-saving technologies, such as high-efficiency faucets and showerheads, reduce water use, helping to ensure that water supplies are maintained at safe and reliable levels, protecting human health and firefighting capability, as well as environmental resources.

#### Bibliography:

Part II: Koeller, John, "Single-flush toilet matrix-2014-12-03.pdf"; December, 2014.

#### Cost Impact:

#### Part I: Will not increase the cost of construction

As noted above, both showerheads and faucets operating at the flow rates proposed are commonly available and perform as well as less efficient fixtures. For showerheads, more than 800 models from 45 brands currently meet the proposed standard; for faucets, over 5,200 models from 134 brands currently meet the proposed standard (Source: MaP Testing; http://www.map-testing.com/). According to EPA WaterSense, "Showerheads are available at a variety of price points and ranges in cost may be due to a number of factors including style or functional design" (Source: EPA WaterSense: http://www.epa.gov/WaterSense/pubs/faq\_showerheads.html).

Consumer Reports found that, "If you think you have to spend top dollar to get a strong performer, think again. Our top-rated multisetting showerhead costs a quarter of the price of the model that finished second" (Source: Consumer Reports: http://www.consumerreports.org/cro/showerheads/buying-guide.htm).

Regarding faucets, EPA WaterSense also found that, "Most high-efficiency faucet accessories that restrict flow are no more expensive that their conventional counterparts. However, pressure compensating faucet accessories that are designed to provide and maintain a constant flow rate despite fluctuations in water pressure typically cost a few dollars more." http://www.epa.gov/WaterSense/faucets.html. Lowe's Home Improvement Store features more than 1,759 residential bathroom faucets that meet the proposed standard of 1.5 gpm from 19 brands, ranging in cost from \$15 to \$2000 (Source: Lowe's Home Improvement Store website: http://www.lowes.com/Bathroom/Bathroom-Faucets/Bathroom-Sink-Faucets/\_N-120w20VZ12024i4/pl#!). For showerheads, Lowe's lists 185 products from 15 brands, ranging in cost from \$5 to \$400 (Source: Lowe's Home Improvement Store website: http://www.lowes.com/Bathroom/Showers-Shower-Accessories/Showerheads/\_\_N-120w20VZ12024j4/pl#!).

#### Part II: Will not increase the cost of construction

Adoption of this code change proposal will not increase the cost of construction. As noted above, more than 2,305 models of tank-type toilets from more than 115 brands currently meet the 1.28 gpf standard in this proposal. (Source: MaP Testing; http://www.map-testing.com/). Consumer Reports identifies top-performing high-efficiency toilets at 1.28 gpf, ranging in cost from \$100 to \$380. (Source: Consumer Reports, "Water-saving toilets from Consumer Reports' tests: Stop flushing water and money down the drain," July 14, 2014:

http://www.consumerreports.org/cro/news/2014/07/water-saving-toilets-from-consumer-reports-tests/index.htm).

In addition, attached is a list of toilet fixtures screened from the current MaP database; all models on the list are 1.28 gpf. Current retail prices for the models were obtained where possible from retailer websites (file name: "Single-flush toilet matrix-2014-12-03.pdf").

Consumer Reports tested 16 brands of faucets ranging in price from \$80 to \$600 and found little difference in performance or durability (Source: "Water Conservation with Shower and Faucet Tips", http://www.scgh.com/go-green/water-fixtures-and-plumbing/water-wise-showers-and-faucets/).

Regarding faucets, EPA WaterSense also found that, "Most high-efficiency faucet accessories that restrict flow are no more expensive that their conventional counterparts. However, pressure compensating faucet accessories that are designed to provide and maintain a constant flow rate despite fluctuations in water pressure typically cost a few dollars more" (Source: EPA WaterSense: http://www.epa.gov/WaterSense/faucets.html). Lowe's Home Improvement Store features more than 1,759 residential bathroom faucets that meet the proposed standard of 1.5 gpm from 19 brands, ranging in cost from \$15 to \$2000 (Source: Lowe's Home Improvement Store website: http://www.lowes.com/Bathroom/Bathroom-Faucets/Bathroom-Sink-Faucets/\_/N-1z0wz0vZ1z0z4i4/pl#l).

P 109-15 : T604.4-HOBBS5292

## P 110-15

### Table 604.4

**Proponent:** Billy Smith, American Society of Plumbing Engineers Legislative Committee, representing American Society of Plumbing Engineers Legislative Committee (bsmith@aspe.org)

## 2015 International Plumbing Code

### Revise as follows:

#### TABLE 604.4 MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING FIXTURES AND FIXTURE FITTINGS

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY <sup>b</sup>
Water closet <u>, private use</u> application	1.6 gallons per flushing cycle
Water closet, public use application	<u>1.28 gallons per full flushing</u> cycle or, where equipped with dual flush device, 1.6 gallons per full flush cycle

For SI: 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a. A hand-held shower spray is a shower head

b. Consumption tolerances shall be determined from referenced standards.

Reason: This will increase the water conservation requirements for public use water closets. Every manufacturer of water closets has a 1.28 gallon per flush public water closet. Similarly, every manufacturer of water closets has a bowl for public use that can be equipped with a dual flush device.

If you consider a standard commercial building with 100 water closets. The water savings amounts to more than 33,000 gallons per year. This savings is accomplished without any loss in performance of the plumbing system.

Cost Impact: Will increase the cost of construction

This may increase the cost depending on which fixture is selected to install. The cost of the fixture may be higher. The installation is the same cost.

P 110-15 : T604.4-SMITH5395

## P 111-15

### 604.4 (New)

**Proponent:** Ronald George, Self; Plumb-Tech Design & Consulting Services LLC; www.LegionellaPrevention.org, representing Self; Plumb-Tech Design & Consulting Services LLC (Ron@Plumb-TechLLC.com)

### 2015 International Plumbing Code

#### Add new text as follows:

604.4 Maximum length of dead leg piping The length of dead legs in the hot or cold water distribution piping systems shall not exceed four branch pipe diameters.

**Reason:** The length of the dead leg was determined from examining several glass piping installations with colored water in order to illustrate how stagnant water reacts in piping branches<sup>1</sup>. In the testing that I witnessed, the clear water flowing past a branch illustrated that the colored water remained beyond 4 to 5 pipe diameters from the tee. Based on this observation, water treatment chemicals would be able to reach about 4 pipe diameters into a branch pipe to control Legionella bacteria but not beyond about 4 pipe diameters. For this reason, 4 pipe diameters is an appropriate maximum distance for dead legs. Longer dead legs would be possible with some form of paralel piping flow or circulation to maintain water treatment chemical levels in branches. Dead legs are a significant source of Legionella bacteria and other pathogen growth in biofilms in the plumbing system. Dead legs are sections of pipe where water does not normally flow. Stagnant water in dead legs allows the water treatment chemicals to dissipate, rendering them ineffective for controling Legionella.

1. Video of colored water flowing by a tee: http://mechanical-hub.com/minimizing-legionella-bacteria-in-building-water-systems

### Bibliography: www.LegionellaPrevention.org

ASHRAE - Guideline 12-2000 - Minimizing the Risk of Legionellosis Associated with Building Water Systems

http://mechanical-hub.com/minimizing-legionella-bacteria-in-building-water-systems www.Plumb-TechLLC.com

ASHRAE Standard 188 - Legionellosis: Risk Management for Building Water Systems (not finalized as of this submission)

#### Cost Impact: Will increase the cost of construction

The cost increase will be minimal. In some installations, there may be the addition of one pipe fitting. In more elaborate installations, the cost could be as much as 10-15 percent more for the water distribution pipe and fittings.

P 111-15 : 604.12 (New)-GEORGE5462

## P 112-15

### Table 605.3, Table 605.4

Proponent: Larry Gill, representing IPEX USA LLC (larry.gill@ipexna.com)

### 2015 International Plumbing Code

### **Revise as follows:**

#### TABLE 605.3 WATER SERVICE PIPE

MATERIAL	STANDARD
Polyethylene of raised temperature (PE-RT) plastic tubing	ASTM F 2769; <u>CSA B137.18</u>

(Portions of table not shown remain unchanged)

### TABLE 605.4 WATER DISTRIBUTION PIPE

MATERIAL	STANDARD
Polyethylene of raised temperature (PE-RT) plastic tubing	ASTM F 2769 <u>: CSA B137.18</u>

(Portions of table not shown remain unchanged)

### Add new standard(s) as follows:

CSA B137.18-13 Polyethylene of raised temperature resistance (PE-RT) tubing systems for pressure applications.

**Reason:** CSA B137.18 - Polyethylene of raised temperature resistance (PE-RT) tubing systems for pressure applications is a new consensus system standard (tubing and fittings). The scope includes the following: potable water distribution systems or other applications including, municipal water service lines, reclaimed water distribution, radiant panel heating and cooling systems, hydronic baseboard heating systems, snow and ice melting heating systems, building services piping, compressed air distribution, and ground source geothermal systems.

#### Cost Impact: Will not increase the cost of construction

Adding an alternate standard for a piping material will not affect the cost of an installation.

Analysis: A review of the standard proposed for inclusion in the code, CSA B137.18-13, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 112-15 : 605.3-GILL4429

## P 113-15

Part I: Table 605.3, Table 605.4 Part II: Table P2906.4, Table P2906.5

# THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Mike Cudahy, representing Plastic Pipe and Fittings Association (mikec@cmservnet.com)

## Part I

### 2015 International Plumbing Code

### **Revise as follows:**

#### TABLE 605.3 WATER SERVICE PIPE

MATERIAL	STANDARD
Cross-linked polyethylene (PEX) plastic pipe and tubing	ASTM F 876; <del>ASTM F 877;</del> AWWA C904; CSA B137.5

(Portions of table not shown remain unchanged)

#### TABLE 605.4 WATER DISTRIBUTION PIPE

MATERIAL	STANDARD
Cross-linked polyethylene (PEX) plastic tubing	ASTM F 876; <del>ASTM F 877;</del> CSA B137.5

(Portions of table not shown remain unchanged)

## Part II

### 2015 International Residential Code

Revise as follows:

#### TABLE P2906.4 WATER SERVICE PIPE

MATERIAL	STANDARD
Cross-linked polyethylene (PEX) plastic tubing	ASTM F 876; <del>ASTM F 877;</del> CSA B137.5

(Portions of table not shown remain unchanged)

#### TABLE P2906.5 WATER DISTRIBUTION PIPE

MATERIAL	STANDARD
Cross-linked polyethylene (PEX) plastic tubing	ASTM F 876; <del>ASTM F 877;</del> CSA B137.5

(Portions of table not shown remain unchanged)

Reason: ASTM F877 has been revised a few years ago to remove redundant pipe/tubing dimensional and performance specifications which are otherwise specified in ASTM F876. F877 remains a PEX fitting and PEX system materials and performance standard exclusive for use with ASTM F876 piping/tubing. ASTM F877 is already in the code.

### Cost Impact:

Part I: Will not increase the cost of construction

This proposal simply deletes a standard that is no longer pipe or tubing related from the code. The piping material is now covered by a different standard, and as such, the option is not deleting or adding a material. Thus the code with this proposal added will not cause the cost of construction to increase.

Part II: Will not increase the cost of construction

This proposal simply deletes a standard that is no longer pipe or tubing related from the code. The piping material is now covered by a different standard, and as such, the option is not deleting or adding a material. Thus the code with this proposal added will not cause the cost of construction to increase.
# P 114-15

## Table 605.3

Proponent: Pennie L Feehan, Copper Development Association, representing Copper Development Association (penniefeehan@me.com)

## 2015 International Plumbing Code

Revise as follows:

#### TABLE 605.3 WATER SERVICE PIPE

MATERIAL	STANDARD
Brass pipe	ASTM B 43

(Portions of table not shown remain unchanged)

Reason: The proposal removes brass because brass is a copper-alloy and copper-alloy is the term used to identify materials manufactured where copper is the base metal and includes brass and bronze.

Cost Impact: Will not increase the cost of construction

This proposal will not impact the cost of construction as this is only a clarification of a product name.

P 114-15 : T605.3-FEEHAN3791

## P 115-15

Part I: 605.4 Part II: P2906.5

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Gary Morgan, Viega LLC, representing Viega LLC (gary.morgan@viega.us)

# Part I

## 2015 International Plumbing Code

### Revise as follows:

**605.4 Water distribution pipe.** Water distribution pipe shall conform to NSF 61 and shall conform to one of the standards listed in Table 605.4. Hot and cold water distribution pipe and tubing shall have a pressure rating of not less than 100 psi (690 kPa) at 180°F (82°C).

## Part II

### 2015 International Residential Code

### Revise as follows:

**P2906.5** Water-distribution pipe. Water-distribution piping within *dwelling units* shall conform to NSF 61 and shall conform to one of the standards indicated in Table P2906.5. Hot-water-distribution<u>Hot and cold water-distribution</u> pipe and tubing shall have a pressure rating of not less than 100 psi at 180°F (689 kPa at 82°C).

**Reason:** This code proposal is really only an attempt to address a subtle technicality that has existed for a very long time. The addition of "and cold" to this sentence makes it 100% clear that even cold water distribution piping needs to be temperature/pressure rated at 180F. Another possible way to address the issue is to simply remove "hot" from the same sentence. All of the piping standards listed in Table 605.4 for water distribution piping already meet this mandatory elevated temperature/pressure rating. The existing code language stating specifically "hot water distribution pipe and tubing" implies that pipes used for cold water distribution piping may not need to carry elevated temperature/pressure rating. Your support of this proposal would be most appreciated!

#### Cost Impact:

Part I: Will not increase the cost of construction

This proposal has absolutely no impact on the cost of construction and only attempts to address a technicality which has existed for many years.

Part II: Will not increase the cost of construction

This proposal has absolutely no impact on the cost of construction and only attempts to address a technicality which has existed for many years.

P 115-15 : 605.4-MORGAN5099

# P 117-15

## Part I: 605.17, 605.17.3 (New), 605.17.3.1 (New) Part II:

### P2906.9.1.5, P2906.9.1.5.3 (New), P2906.9.1.5.3.1 (New)

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Gary Morgan, Viega LLC, representing Viega LLC (gary.morgan@viega.us)

# Part I

## 2015 International Plumbing Code

#### Revise as follows:

605.17 PEX plastic. Joints between cross-linked polyethylene plastic tubing and fittings shall comply with Sections 605.17.1 and 605.17.2. <u>PEX tubing shall</u> comply with Section 605.17.3.

#### Add new text as follows:

605.17.3 PEX tubing. The manufacturer of PEX tubing shall have marked the outside of the tubing with the thermoplastic material designation code in accordance with ASTM F876. The designation code shall consist of the abbreviation "PEX" followed by four digits. The first digit shall represent a chlorine resistance rating as established by testing in accordance with ASTM F876.

605.17.3.1 Chlorine resistance rating digits. The first digit of the designation code shall have the following meanings: 1. Digit "0" indicates that the tubing has not been tested for chlorine resistance or that tubing does not comply with the minimum requirements for chlorine resistance.

2. Digit "1" indicates that the tubing complies with the minimum requirements for chlorine resistance for the conditions of 25% of the time at 140°F (60°C) and 75% of the time at 73°F (23°C).

3. Digit "3" indicates that the tubing complies with the minimum requirements for chlorine resistance for the conditions of 50% of the time at 140°F (60°C) and 50% of the time at 73°F (23°C).

4. Digit "5" indicates that the tubing complies with the minimum requirements for chlorine resistance for the conditions of 100% of the time at 140°F (60°C).

# Part II

### 2015 International Residential Code

#### Revise as follows:

P2906.9.1.5 Cross-linked polyethylene plastic (PEX). Joints between cross-linked polyethylene plastic tubing or fittings shall comply with Section P2906.9.1.5.1 or Section P2906.9.1.5.2. <u>PEX tubing shall comply with Section P2906.9.1.5.3.</u>

#### Add new text as follows:

P2906.9.1.5.3 PEX tubing. The manufacturer of PEX tubing shall have marked the outside of the tubing with the thermoplastic material designation code in accordance with ASTM F876. The designation code shall consist of the abbreviation "PEX" followed by four digits. The first digit shall represent a chlorine resistance rating as established by testing in accordance with ASTM F876.

P2906.9.1.5.3.1 Chlorine resistance rating digits. The first digit of the designation code shall have the following meanings:

1. Digit "0" indicates that the tubing has not been tested for chlorine resistance or that tubing does not comply with the minimum requirements for chlorine resistance.

2. Digit "1" indicates that the tubing complies with the minimum requirements for chlorine resistance for the conditions of 25% of the time at 140°F (60°C) and 75% of the time at 73°F (23°C).

3. Digit "3" indicates that the tubing complies with the minimum requirements for chlorine resistance for the conditions of 50% of the time at 140°F (60°C) and 50% of the time at 73°F (23°C).

4. Digit "5" indicates that the tubing complies with the minimum requirements for chlorine resistance for the conditions of 100% of the time at 140°F (60°C).

**Reason:** Disinfection of potable water using free chlorine as a disinfectant is the most common practice used today and has been over the last many decades. Not all plastic pipes have equal long-term performance when operating in a hot-chlorinated water enviroment therefore it is important for the user of this code to understand how plastic pipes are rated so pipes can be properly specified for their expected end use operating conditions.

The PEX standard ASTM F876 includes mandatory chlorine resistance designation code information needed by field personnel so that the PEX selected meets the expected end use conditions of the installation. This information is normally included on the print line of the tubing in accordance with the listing of that specific tubing. Building inspectors not having ready access to the ASTM standard need code guidance so they will know if the tubing is correctly applied for the end use and environmental conditions of the installation. If the tubing will be used for a hot water recirculation system, the inspector needs to know how to determine if properly rated PEX has been used. Also, if the tubing will be installed in an environment that normally exceeds 73° F (23° C) (such as an attic in very warm climates), the inspector needs to know what designation code is required.

This proposal would require that all PEX tubing be marked with its material designation code according to ASTM F876. Currently the other PEX standard listed in the table of water distribution pipe, CSA B137.5, does not currently mandate a PEX material designation code marking requirement therefore it would be impossible for the specifier, installer, or code inspector to know if the tubing is suitable for the expected end use conditions.

Chlorine testing of all ASTM F876 and CSA B137.5 PEX tubing materials are required today for certification and listing which attempts to replicate the end-use conditions (time at elevated temperature) under which the tubing can operate and still reach an extrapolated test lifetime of 50 years.

#### Cost Impact:

Part I: Will not increase the cost of construction

This proposal has absolutely no impact on the cost of construction and only seeks to clarify requirements within the code.

Part II: Will not increase the cost of construction

This proposal has absolutely no impact on the cost of construction and only seeks to clarify requirements within the code.

P 117-15 : 605.4-MORGAN6013

# P 118-15

## Table 605.4

Proponent: Pennie L Feehan, Copper Development Association, representing Copper Development Association (penniefeehan@me.com)

## 2015 International Plumbing Code

Revise as follows:

#### TABLE 605.4 WATER DISTRIBUTION PIPE

MATERIAL	STANDARD
Brass pipe	ASTM B-43
Copper or copper-alloy pipe	ASTM B 42; <u>ASTM B 43;</u> ASTM B 302

(Portions of table not shown remain unchanged)

Reason: There are many different copper and copper-alloy compositions. Copper alloy is the term used to identify materials manufactured where copper is the base metal and it includes brass and bronze.

#### Cost Impact: Will not increase the cost of construction

This proposal will not increast the cost of construction as this change is only to update the name of a material that is already in the code.

P 118-15 : T605.4-FEEHAN3792

# P 119-15

## Table 605.5, Chapter 14

Proponent: William Chapin, representing Professional Code Consulting, LLC (bill@profcc.us)

## 2015 International Plumbing Code

Revise table as follows:

#### TABLE 605.5 PIPE FITTINGS

MATERIAL	STANDARD
Fittings for polyethylene of raised temperature (PE-RT) plastic tubing	ASSE 1061; ASTM F 1807; ASTM F 2098; ASTM F 2159; ASTM F 2735; ASTM F 2769

(Portions of table not shown remain unchanged)

#### Add new standard(s) as follows:

ASSE 1061-2011 Peformance Requirements for Push-Fit Fittings (UPDATE of edition level only)

Reason: ASSE 1061-2011 added PE-RT to the list of tubings in this edition of the standard so that those fittings can be used for PE-RT tubing.

Cost Impact: Will not increase the cost of construction

This will not increase the cost of construction as it only adds another option for the installer.

Analysis: Successful action on this proposal will result in the update of Reference Standard ASSE 1061 to the 2011 edition level for only the change indicated in the table. A coordinating proposal for updating the standard for the entire code will be submitted to Group B for inclusion in the Reference Standards administrative update proposal.

P 119-15 : T605.5-CHAPIN5712

# P 120-15

## Table 605.5

Proponent: Larry Gill, representing IPEX USA LLC (larry.gill@ipexna.com)

## 2015 International Plumbing Code

Revise as follows:

#### TABLE 605.5 PIPE FITTINGS

MATERIAL	STANDARD
Fittings for polyethylene of raised temperature (PE-RT) plastic tubing	ASTM F 1807; ASTM F 2098; ASTM F 2159; ASTM F 2735; ASTM F 2769; <u>ASTM D3261; CSA</u> <u>B137.18</u>

(Portions of table not shown remain unchanged)

#### Add new standard(s) as follows:

### CSA B137.18-13 Polyethylene of raised temperature resistance (PE-RT) tubing systems

Reason: CSA B137.18 - Polyethylene of raised temperature resistance (PE-RT) tubing systems for pressure applications is a new consensus system standard for tubing and fittings. ASTM D3261 is a consensus standard for PE fusion and is also applicable for PE-RT.

Cost Impact: Will not increase the cost of construction

Adding another pipe material standard as an option does not impact the cost of construction.

Analysis: A review of the standard proposed for inclusion in the code, CSA B137.18-13, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 120-15 : T605.5-GILL4432

# P 121-15

## 605.5.1.1 (New)

Proponent: Donald Jones, Self, representing Self (donaldmjones@att.net)

### 2015 International Plumbing Code

#### Add new text as follows:

**605.5.1.1 Pre-heat treatment.** The area of a copper tube to be utilized for forming a tee outlet shall be annealed prior to forming the outlet where the run of the tee is greater than 2 inches (50.8 mm), the run and branch of the tee are the same size or required by the manufacturer of the tee outlet-forming equipment.

**Reason:** Full size outlets and large bore tubing must be annealed before they undergo extrusion. Annealing copper tubing prior to forming a tee outlet is standard procedure in the field, but like any good practice and requirement of the manufacturer, it is not always followed. Annealing the area of the tubing increases its ductility and formability. The process of annealing allows the tube to undergo deformation without fracture. The result is a sound joint.

Bibliography: http://www.copper.org/applications/plumbing/cth/extruded-outlets/cth 14mech install.html

http://www.copper.org/publications/pub\_list/pdf/copper\_tube\_handbook.pdf

See page 61

Cost Impact: Will not increase the cost of construction

Since annealing is already a manufacturer's requirement, it will not impact cost. By adding the language to the code, it will, however, help to ensure that the joints are properly made. Short cuts will be avoided.

P 121-15 : 605.5.1-JONES3390

# P 122-15

## 605.6, 605.9

Proponent: Ronald George, self, representing self (Ron@Plumb-TechLLC.com)

## 2015 International Plumbing Code

#### Revise as follows:

**605.6 Flexible water connectors.** Flexible water connectors exposed to continuous pressure shall conform to ASME A112.18.6/CSA B125.6. Access shall be provided to all flexible water connectors. <u>Compression couplings shall not be used for flexible water connector joints.</u>

605.9 Prohibited joints and connections. The following types of joints and connections shall be prohibited:

- 1. Cement or concrete joints.
- 2. Joints made with fittings not approved for the specific installation.
- 3. Solvent-cement joints between different types of plastic pipe.
- 4. Saddle-type fittings.
- 5. <u>Compression joints on plastic water distribution piping or flexible connectors.</u>

Reason: Plastic piping with compression couplings have failed on many occasions when there is a seasonal change in the water temperature or domestic hot water application that allows the plastic pipe to soften. During water hammer events from booster pumps cycling on, valves closing or well pumps cycling, the plastic piping can work loose and cause a flood. Plastic pipe and compressin couplings do not make a safe pipe joint.

#### Cost Impact: Will not increase the cost of construction

This is not a cost issue it is a material issue. Flexible water connectors and plastic piping should not be joined with compression couplings. I have served as an expert witness recently for a significant number of compression joint failures especially on hot water piping systems.

P 122-15 : 605.6-GEORGE5606

# P 123-15

# Table 605.7, Chapter 14

Proponent: Julius Ballanco, representing Self (JBENGINEER@aol.com)

## 2015 International Plumbing Code

Revise as follows:

#### TABLE 605.7 VALVES

MATERIAL	STANDARD
Chlorinated polyvinyl chloride (CPVC) plastic	ASME A112.4.14; ASME A112.18.1/CSA B125.1; ASTM F 1970; CSA B125.3 <u>, IAPMO Z1157</u>
Copper or copper alloy	ASME A112.4.14; ASME A112.18.1/CSA B125.1; ASME B16.34; CSA B125.3; MSS SP-67; MSS SP-80; MSS SP-110 <u>, IAPMO Z1157</u>
Cross-linked polyethylene (PEX) plastic	ASME A112.4.14; ASME A112.18.1/CSA B125.1; CSA B125.3; NSF 359 <u>, IAPMO Z1157</u>
Gray iron and ductile iron	AWWA C500; AWWA C504; AWWA C507; MSS SP-67; MSS SP-70; MSS SP-71; MSS SP-72; MSS SP-78 <u>, IAPMO Z1157</u>
Polypropylene (PP) plastic	ASME A112.4.14; ASTM F 2389 <u>, IAPMO Z1157</u>
Polyvinyl chloride (PVC) plastic	ASME A112.4.14; ASTM F 1970 <u>, IAPMO Z1157</u>

Add new standard(s) as follows: IAPMO/ANSI Z1157-2014 Ball Valves

Reason: This change will add the new national concensus standard for ball valves. The standard covers ball valves 1/8 through 4 NPS in size. It regulates both full port and reduced port ball valves.

This Standard was developed by the IAPMO Z1157 Technical Subcommittee and approved by the IAPMO Plumbing Standards Committee in accordance with the ANSI Essential Requirements: Due process requirements for American National Standards and the IAPMO Policies and Procedures for Consensus Development of American National Standards. This Standard was approved as an American National Standard on November 24, 2014.

Cost Impact: Will not increase the cost of construction There is no cost impact since the use of ball valves meeting this standard is optional.

Analysis: A review of the standard proposed for inclusion in the code, IAPMO/ANSI Z1157-2014, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 123-15 : T605.7-BALLANCO3656

# P 124-15

Part I: 605.7, Chapter 14 Part II: Table P2903.9.4, Chapter 44

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Jeremy Brown, NSF International, representing NSF International

# Part I

## 2015 International Plumbing Code

Revise as follows:

TABLE 605.7 VALVES

MATERIAL	STANDARD
Chlorinated polyvinyl chloride (CPVC) plastic	ASME A112.4.14; ASME A112.18.1/CSA B125.1; ASTM F 1970; CSA B125.3; <u>MSS SP-122</u>
Copper or copper alloy	ASME A112.4.14; ASME A112.18.1/CSA B125.1; ASME B16.34; CSA B125.3; MSS SP-67; MSS SP-80; MSS SP-110; <u>MSS SP-139</u>
Cross-linked polyethylene (PEX) plastic	ASME A112.4.14; ASME A112.18.1/CSA B125.1; CSA B125.3; NSF 359
Gray iron and ductile iron	AWWA C500; AWWA C504; AWWA C507; MSS SP-67; MSS SP-70; MSS SP-71; MSS SP-72; MSS SP-78
Polypropylene (PP) plastic	ASME A112.4.14; ASTM F 2389
Polyvinyl chloride (PVC) plastic	ASME A112.4.14; ASTM F 1970; <u>MSS SP-122</u>

Add new standard(s) as follows:

MSS SP-122-2012 Plastic Industrial Ball Valves

MSS SP-139-2014 Copper Alloy Gate, Globe, Angle, and Check Valves for Low Pressure/Low Temperature Plumbing Applications

# Part II

## 2015 International Residential Code

Revise as follows:

TABLE P2903.9.4 VALVES

MATERIAL	STANDARD
Chlorinated polyvinyl chloride (CPVC) plastic	ASME A112.4.14, ASME A112.18.1/CSA B125.1,ASTM F 1970, CSA B125.3 <u>: MSS SP-122</u>
Copper or copper alloy	ASME A112.4.14, ASME A112.18.1/CSA B125.1,ASME B16.34, CSA B125.3, MSS SP-67, MSS SP-80, MSS SP-110 <u>;</u> <u>MSS SP-139</u>
Gray and ductile iron	ASTM A126, AWWA C500, AWWA C504, AWWA C507, MSS SP-42, MSS SP-67, MSS SP-70, MSS SP-71, MSS SP-72, MSS SP-78
Cross-linked polyethylene (PEX) plastic	ASME A112.4.14, ASME A112.18.1/CSA B125.1, CSA B125.3,NSF 359
Polypropylene (PP) plastic	ASME A112.4.14, ASTM F 2389
Polyvinyl chloride (PVC) plastic	ASME A112.4.14, ASTM F 1970 <u>: MSS SP-122</u>

Add new standard(s) as follows:

MSS SP-122 - 2012 Plastic Industrial Ball Valves

MSS SP-139 - 2014 Copper Alloy Gate, Globe, Angle, and Check Valves for Low Pressure/Low Temperature Plumbing Applications

Cost Impact:

Part I: Will not increase the cost of construction Adding additional options will not increase the cost of construction

Part II: Will not increase the cost of construction Adding additional options will not increase the cost of construction

#### Analysis:

Part I: A review of the standard proposed for inclusion in the code, MSS SP-122 & MSS SP-139, with regard to the ICC criteria for referencedstandards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

Part II: A review of the standard proposed for inclusion in the code, MSS SP-122 - 2012 and MSS SP-139 - 2014, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 124-15 : T605.7-BROWN5426

# P 125-15

## Table 605.7, Chapter 14

Proponent: Jeremy Brown, NSF International, representing NSF International

## 2015 International Plumbing Code

Revise as follows:

#### TABLE 605.7 VALVES

MATERIAL	STANDARD
Chlorinated polyvinyl chloride (CPVC) plastic	ASME A112.4.14; ASME A112.18.1/CSA B125.1; ASTM F 1970; CSA B125.3; <u>MSS SP-122</u>
Copper or copper alloy	ASME A112.4.14; ASME A112.18.1/CSA B125.1; ASME B16.34; CSA B125.3; MSS SP-67; MSS SP-80; MSS SP-110 <u>;MSS SP-139</u>
Cross-linked polyethylene (PEX) plastic	ASME A112.4.14; ASME A112.18.1/CSA B125.1; CSA B125.3; NSF 359
Gray iron and ductile iron	AWWA C500; AWWA C504; AWWA C507; MSS SP-67; MSS SP-70; MSS SP-71; MSS SP-72; MSS SP-78
Polypropylene (PP) plastic	ASME A112.4.14; ASTM F 2389
Polyvinyl chloride (PVC) plastic	ASME A112.4.14; ASTM F 1970;MSS SP-122

Add new standard(s) as follows:

MSS SP-122-2012 Plastic Industrial Ball Valves

MSS SP-139-2014 Copper Alloy Gate, Globe, Angle, and Check Valves for Low Pressure/Low Temperature Plumbing Applications

Reason: These are additional standards for valves that should be considered in the valve table.

Cost Impact: Will not increase the cost of construction

Adding additional options will not increase the cost of construction

Analysis: A review of the standard proposed for inclusion in the code, MSS SP-122 & MSS SP-139, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 125-15 : T605.7-BROWN5547

# P 126-15

## Table 605.8

Proponent: Pennie L Feehan, Copper Development Association, representing Copper Development Association (penniefeehan@me.com)

## 2015 International Plumbing Code

Revise as follows:

#### TABLE 605.8 MANUFACTURED PIPE NIPPLES

MATERIAL	STANDARD	
Brass , Copper or <u>copper</u> alloy, and chromium-plated	ASTM B 687	
Steel	ASTM A 733	

Reason: This standard establishes the requirements for copper and copper alloy pipe nipples within a specified size range. Chromium-plated pipe are copper and copper alloys nipples used in decorative applications.

### Cost Impact: Will not increase the cost of construction

This proposal will not increast the cost of construction as this change is only to update the name of a material that is already in the code.

P 126-15 : T605.8-FEEHAN3793

# P 127-15

## Table 608.1

Proponent: Michael Moss, representing American Backflow Prevention Association (msmoss@utah.gov)

## 2015 International Plumbing Code

#### Revise as follows:

#### TABLE 608.1 APPLICATION OF BACKFLOW PREVENTERS

DEVICE	DEGREE OF HAZARD <sup>a</sup>	APPLICATION <sup>b</sup>	APPLICABLE STANDARDS
Backflow prevention assemblies:			
Spill-resistant vacuum breaker assembly	High or low hazard	Backsiphonage only Sizes <sup>1</sup> / <sub>4</sub> "-2"	ASSE 1056 <u>, CSA B64.1.3</u>

(Portions of table not shown remain unchanged)

For SI: 1 inch = 25.4 mm

a. Low hazard—See Pollution (Section 202).

High hazard—See Contamination (Section 202).

b. See Backpressure, low head (Section 202).

See Backsiphonage (Section 202).

Reason: The table did not contain the CSA standard reference for Spill-resistant vacuum breaker. The standard reference is already in Section 608.13.8. It simply needs to be added to the table for clarity and consistency.

Cost Impact: Will not increase the cost of construction

There is no cost impact with the existing cross reference standard between the section and the table.

P 127-15 : T608.1-MOSS5773

# P 128-15

605.10.2, 605.10.3, 605.19.1, 605.22.4, 608.13.2, 608.13.3, 608.16.3, 608.16.4.1, 703.3, 705.2.2, 705.2.3, 705.4.1, 705.8.1, 705.11.2, 705.11.3, 907.3

## Part II:

Part I:

## P3003.3.2, P3003.3.3, P3003.4.1, P3003.9.3

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

# Part I

### 2015 International Plumbing Code

### Revise as follows:

**605.10.2 Solvent cementing.** Joint surfaces to be solvent cemented shall be clean and free from moisture. Solvent cement that conforms to ASTM D 2235 shall be applied to all joint surfaces. The joint shall be made while the cement is wet. Joints shall be made in accordance with ASTM D 2235. Solvent-cementSolvent-cemented joints shall <u>not</u> be permitted limited to only above or below ground applications.

605.10.3 Threaded joints. Threaded connections shall conform to ASME B1.20.1.be made using Schedule 80 or heaviergreater wall thickness pipe. Pipe threads shall be permitted to be threadedcut with dies specifically designed for plastic pipe. Approved thread lubricant or tapeThreads shall conform to ASME B1.20.1. Threaded connections shall be applied on the assembled by first applying to male threads only, a thread lubricant that is chemically compatible with the pipe and fitting, or thread sealing tape.

605.19.1 Flared joints. Flared The use of flared joints connections and the type of flared joint fittings shall be permitted where so indicated as specified by the pipe manufacturer. Flared joints shall be made by a tool designed for that operation.

**605.22.4 Threaded joints.** Threads The usable perssure rating of threeaded pipe shall conform to ASME B1.20.1.be 50 percent of the manufacturer's pressure rating for unthreaded pipe. Threaded connections shall be made using Schedule 80 or heaviergreater wall thickness pipe. Pipe threads shall be permitted to be threadedcut with dies specifically designed for plastic pipe, but the pressure rating. The use of the pipe shall be reduced by 50 percent. Thread by socket thread-by-socket molded fittings shall be permitted prohibited. Approved A thread lubricant or tape shall be applied on that is chemically compatible with the male threads only-pipe and fitting, or thread sealing tape.

**608.13.2 Reduced pressure principle backflow prevention assemblies.** Reduced pressure principle backflow prevention assemblies shall conform to ASSE 1013, AWWA C511, CSA B64.4 or CSA B64.4.1. Reduced pressure detector assembly backflow preventers shall conform to ASSE 1047. These devices shall be permitted<u>considered</u> to be <u>installed where subject tocapable of functioning under any downstream pressure condition whether</u> continuous <u>pressure conditionsor</u> intermittent. The relief opening shall discharge by *air gap* and shall be prevented from being submerged.

**608.13.3 Backflow preventer with intermediate atmospheric vent.** Backflow preventers with intermediate atmospheric vents shall conform to ASSE 1012 or CSA B64.3. These devices shall be <u>permittedconsidered</u> to be <u>installed where subject tocapable of functioning under any downstream pressure condition whether</u> continuous <u>pressure conditionsor intermittent</u>. The relief opening shall discharge by *air gap* and shall be prevented from being submerged.

608.16.3 Heat exchangers. Heat exchangers utilizing an essentially toxic transfer fluid shall be separated from the potable water by double-wall construction. An *air gap* open to the atmosphere shall be provided between the two walls. Heat exchangers utilizing an essentially nontoxic transfer fluid shall be <del>permitted to be</del> of single-wall <u>or double wall</u> construction.

**608.16.4.1 Additives or nonpotable source.** Where systems under continuous pressure contain chemical additives or antifreeze, or where systems are connected to a nonpotable secondary water supply, the potable water supply shall be protected against backflow by a reduced pressure principle backflow prevention assembly. Where chemical additives or antifreeze are added to only a portion of an automatic fire sprinkler system or standpipe system will contain chemical additives or antifreeze, only that portion of the system shall be required to be served through a reduced pressure principle backflow prevention assembly or thea reduced pressure principle backflow prevention assembly as a prevention of the system. Where these systems are not under continuous pres

703.3 Sanitary drain piping and storm sewersdrain piping in the same trench. Where separate systems of sanitary drainageSanitary drain piping and storm drainage are installed in the same property, the sanitary and storm building sewers or drainsdrain piping shall be permitted tonot be laidprohibited from being installed side by side, without earth separation, in onethe the same trench.

**705.2.2 Solvent cementing.** Joint surfaces shall be clean and free from moisture. Solvent cement that conforms to ASTM D 2235 or CSA B181.1 shall be applied to all joint surfaces. The joint shall be made while the cement is wet. Joints shall be made in accordance with ASTM D 2235, ASTM D 2661, ASTM F 628 or CSA B181.1. SolventcementSolvent cemented joints shall not be permitted limited to only above or below ground ground applications.

**705.2.3 Threaded joints.** Threaded connections shall conform to ASME B1.20.1.be made using Schedule 80 or heaviergreater wall thickness pipe. Pipe thread shall be permitted to be threadedcut with dies specifically designed for plastic pipe. *Approved* thread lubricant or tape. Threades shall conform to ASME B1.20.1. Threaded connections shall be applied on the assembled by first applying to male threads only. A thread lubricant chemically compatible with the pipe and fitting, or thread sealing tape.

**705.4.1 Caulked joints.** Joints for hub and spigot pipe shall be firmly packed with oakum, hemp or hempacid-resistant rope. Molten lead shall be poured into the joint in one operation and to a depth of not less than 1 inch (25 mm). The lead shall not recede more than <sup>1</sup>/<sub>8</sub> inch (3.2 mm) below the rim of the hub and shall be caulked tight. PaintThe application of paint, varnish or other coatings shall not be permitted on the jointing material shall be prohibited until after the joint has been tested and approved. Lead

**Exception:** The use of lead shall be run in one pouring and shallhot be caulked tight. Acid-resistant rope and acidproofrequired where the use of acid-proof cement shall be permitted is required by the piping manufacturer.

**705.8.1 Caulked joints.** Lead-caulked joints\_Joints for hub and spigot soil pipe shall be firmly packed with oakum, hemp or hempacid-resistant rope. Molten lead shall be poued into the joint in one operation and filled with molten lead to a depth of not less than 1 inch (25 mm) in depth and. The lead shall not to recede more than <sup>1</sup>/<sub>8</sub> inch (3.2 mm) below the rim of the hub and shall be caulked tight. PaintThe application of paint, varnish or other coatings shall not be permitted on the jointing material shall be prohibited until after the joint has been tested and approved. Lead

Exception: The use of lead shall be run in one pouring and shallnot be caulked tight. Acid-resistant rope and acidproofrequired where the use of acid-proof cement shall be permitted is required by the piping manufacturer.

**705.11.2 Solvent cementing.** Joint surfaces shall be clean and free from moisture. A purple primer that conforms to ASTM F 656 shall be applied. Solvent cement not purple in color and conforming to ASTM D 2564, CSA B137.3, CSA B181.2 or CSA B182.1 shall be applied to all joint surfaces. The joint shall be made while the cement is wet and shall be in accordance with ASTM D 2855. SolventcementSolvent cemented joints shall not be permitted limited to only above or below ground-ground applications.

Exception: A primer isshall not be required where both of the following conditions apply:

- 1. The solvent cement used is third-party certified as conforming to ASTM D 2564.
- 2. The solvent cement is used only for joining PVC drain, waste and vent pipe and fittings in nonpressure applications in sizes up to and including 4 inches (102 mm) in diameter.

**705.11.3 Threaded joints.** Threaded connections shall conform to ASME B1.20.1be made using. Schedule 80 or heaviergreater wall thickness pipe. Pipe threads shall be permitted to be threadedcut with dies specifically designed for plastic pipe. *Approved* thread lubricant or tapeThreads shall conform to ASME B1.20.1. Threaded connections shall be applied on the assembled by first applying to male threads only. A thread lubricant chemically compatible with the pipe and fitting, or thread sealing tape.

907.3 Lower section. The lower section of the drainage *stack* shall be vented by a yoke vent <u>connecting</u>. The yoke vent connection shall be between the offset and the next lower horizontal *branch*. The or the yoke vent connection shall be permitted to be a vertical extension of the lower section of drainage *stack*. The size of the yoke vent and connection shall be <u>a minimum of not less than</u> the size required for the vent *stack* of the drainage *stack*.

## Part II

### 2015 International Residential Code

#### Revise as follows:

**P3003.3.2 Solvent cementing.** Joint surfaces to be solvent cemented shall be clean and free from moisture. Solvent cement that conforms to ASTM D 2235 or CSA B181.1 shall be applied to <u>all</u> joint surfaces. The joint shall be made while the cement is wet. Joints shall be made in accordance with ASTM D 2235, ASTM D 2661, ASTM F 628 or CSA B181.1. Solvent-cementSolvent-cemented joints shall <u>not</u> be <u>permitted limited to only</u> above <del>or below ground ground applications.</del>

P3003.3.3 Threaded joints. Threaded connections shall conform to ASME B1.20.1be made using. Schedule 80 or heaviergreater wall thickness pipe. Pipe threads shall be permitted to be threadedcut with dies specifically designed for plastic pipe. Approved thread lubricant or tapeThreads shall conform to ASME B1.20.1. Threaded connections shall be applied on theassembled by first applying to male threads only, a thread lubricant that is chemically compatible with the pipe and fitting, or thread sealing tape.

**P3003.4.1 Caulked joints.** Joints for hub and spigot pipe shall be firmly packed with oakum or hemp. Molten lead shall be poured <u>into the joint in one operation</u> and to a depth of not less than 1 inch (25 mm). The lead shall not recede more than 1/8 inch (33.2 mm) below the rim of the hub and shall be caulked tight.

Paint<u>The application of paint</u>, varnish or other coatings shall not be permitted on the jointing material shall not be prohibited until after the joint has been tested and approved.-Lead shall be run in one pouring and shall be caulked tight.

P3003.9.3 Threaded joints. Threaded connections shall conform to ASME B1.20.1 be made using. Schedule 80 or heaviergreater wall thickness pipe. Pipe threads shall be permitted to be threadedcut with dies specifically designed for plastic pipepipe. Threads shall conform to ASME B1.20.1. Approved thread tubricant or tapeThreaded connections shall be applied on the assembled by first applying to male threads only, a thread lubricant that is chemically compatible with the pipe and fitting, or thread sealing tape.

Reason: The primary purpose of this proposal is to resolve a multitude of language issues that have gone unchecked over many code cycles. Although the ICC Secretariats and ICC Publication editors can solve minor editorial language issues prior to the publication of the codes, more extensive language rework needs to be placed in front of the ICC membership for their approval. The PMGCAC is pleased to take on this task as this is a simple thing to do to improve the codes for everyone's benefit. And that is part of the reason for the formation of the CAC's: to improve the codes.

#### Eliminating the phrase "shall be permitted" (and "is permitted") , wherever possible:

The phrase "shall be permitted" is often incorrectly applied in code language. The incorrect phrase application is believed to come from the belief that one always has to ask for permission to do anything. Certainly, where the code does regulate something by indicating, such as, what materials to use or what dimension to not exceed, permission does need to be granted to use a different material or to exceed the dimension. However, where the code does not speak of anything regarding the materials to be used or the dimensions not to be exceeded, then the code is silent. Permission does not have to be granted for something that the code does not regulate.

For example, consider an appliance such as an icemaker. The code does not regulate the location of icemakers. Therefore, to put a statement in the code that says, "Icemakers shall be permitted to be 18 inches away from any wall." is an assumption that permission had to be granted for the location of the icemaker. But the code does not regulate icemaker location nor does it specify a dimension in the first place in order for that permission to be granted. Essentially, the "shall be permitted" statement is nonsensical because by the code's silence, icemakers can be located anywhere.

What the proponent meant to say is "Icemakers shall be located not closer than 18 inches to a wall." Now the code is making a mandatory statement about what is required. Any dimension 18 inches and greater is acceptable. No permission is necessary for 18 inches or greater. "Permission" (in accordance with Section 105.2) would have to be requested for less than 18 inches.

The use of "shall be permitted" is an unfortunate habit that tends to spiral out of control in code language because somehow, proponents think that the use of "shall be permitted" is always mandatory language. Perhaps it is the "legalese sound" of such a phrase that makes people think that a requirement is being stated. However, the words do not state a requirement, but in the example given, only a permission for something that was not regulated at all.

There is a certain type of situation where the use of "shall be permitted" is not as problematic. For example, consider the code requirement for a water closet to be set not closer than 15 inches from its center to an obstruction at the side of the water closet. A proponent wants to allow that dimension to be 12 inches under certain conditions. Essentially, the proponent is wanting to write an exception to the code limitation of 15 inches. His exception states:

Exception: A water closet shall be permitted closer than 12 inches from its center to an obstruction at its side provided that the obstruction is a bathtub having an apron height of not greater than 15 inches above the finished floor and the bathtub is not equipped with a shower door system.

Now the use of "shall be permitted" is tolerable, although still unnecessary, because the code already stated a requirement in the main section and an exception (a grant of permission) is provided where certain conditions exist. "Where certain conditions exist" is a key element in the proper use of "shall be permitted". Typically, the conditions follow the phrase "provided that". Where the code had regulations about something, then permission needs to be granted to do something different than what the code required. And that permission needs to spell out the conditions for the code official (and the user) in order to be in compliance with the code. The following is better in that it avoids the use of "shall be permitted".

Exception: A water closet shall be not closer than 12 inches from its center to an obstruction at its side provided that the obstruction is a bathtub having an apron height of not greater than 15 inches above the finished floor and the bathtub is not equipped with a shower door system.

An obscure interpretation twist in the use of "shall be permitted" is where the code official believes that whatever follows the phrase is within his or her authority to grant or reject. Using the previous example: "Icemakers shall be permitted to be 18 inches away from any wall." Mr. Code Official says on one project, "No, I am not going to give you permission to do that." But on another project, he grants the permission. The conditions for granting permission are missing, well at least they are missing in the code language.

Some uses of "shall be permitted" might seem harmless. And some uses of "shall be permitted" are appropriate where conditions are provided for an exception to what the code already regulates. It is best to not use the phrase at all but sometimes it is very difficult where statements have been put in the code that essentially say "It's OK to do this or use that." Some of these "regulations" came to be because a contractor was not allowed to do something because of a judgment call a code official had to make because the code was not clear or the manufacturer's instructions deferred to the code official. A proposal was made to the code to add text to "allow something". This type of language is very difficult to accommodate within a code that is written in a format of "do this" and "don't do that". In reviewing the proposing changes, the reader will see how some of these more difficult situations are handled so that the code language maintains a

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#### mandatory format.

Most of the sections in this proposal involve the elimination of "shall be permitted" and "permitted". It should be readily obvious which ones those are.

These sections are not the only locations in the code where "shall be permitted" and "permitted" are used "inappropriately" in the code. These are only the easy ones to correct without involving potentially significant technical changes.

#### Eliminating the use of the word "approved", where appropriate:

Certainly there are situations where approval by the code official is needed. The I-codes are loaded with "and approved". However, some uses of "approved" were inadvertently placed in code language or place the code official in an unnecessary (and perhaps difficult) position for making approvals.

In the proposed revised code sections, a statement similar to "An approved thread lubricant shall be used." In this case, it could be that a pipe and fitting manufacturer unknowing used the term "approved" to mean "make sure you use something that the manufacturer approves". Or, it could really mean that the code official has to approve the thread lubricant. It is uncertain, but because the term "approved" is ubiquitous in the codes, the default interpretation is always approved by the code official. If the code official is supposed to approve the thread lubricant, then on what basis does he or she grant the approval? The code provides nothing to go on.

In the revised code sections, approved was removed for the thread lubricant and a requirement for "chemical compatibility" inserted. It is believed that the code official does not want to be involved with approval of thread lubricants. The installer is already required to comply with the (pipe and fitting) manufacturers' instructions (see Section 303.2). It doesn't hurt to put the requirement for chemical compatibility in this section to remind the installer to pay attention to this. And, if the code official spots an obvious mistake in thread lubricant use (typically, a petroleum-based metal piping thread lubricant being used on plastic piping is a common violation), he or she has code language to fall back to and doesn't have to dig deeper into the pipe and fitting manufacturer's instructions.

In the same light is a statement similar to "An approved.... tape shall be used." It is uncertain whether the modifier "approved" in the sections to be revised is actually meant to apply to the term "tape". What kind of tape? Most everybody in the plumbing trade knows that the intended tape is thread sealing tape. Is it necessary to be that explicit? Probably not but someone could apply electrical tape on the threads and be in compliance. Therefore, maybe "approved" was intended to modify "tape". Again, it is believed that the code official does not want to be involved with approval of thread sealing tape. This material has such widespread availability and use that it would be difficult to misunderstand what was intended which is the thin PTFE tape provided in rolls labeled "thread seal(ing) tape". The code has not seen a need to specify a minimum thickness, a reference standard or color types so why would a code official need to approve this material? It is not necessary.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 195.

#### Cost Impact:

#### Part I: Will increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

#### Part II: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 128-15 : 605.10.2-SNYDER3965

# P 129-15

### 605.11, 605.11.1, 605.11.2, 605.11.3, 605.11.4

Proponent: Pennie L Feehan, Copper Development Association, representing Copper Development Association (penniefeehan@me.com)

### 2015 International Plumbing Code

Delete without substitution:

605.11 Brass. Joints between brass pipe and fittings shall comply with Sections 605.11.1 through 605.11.4.

605.11.1 Brazed joints. All joint surfaces shall be cleaned. An approved flux shall be applied where required. The joint shall be brazed with a filler metal conforming to AWS A5.8.

605.11.2 Mechanical joints. Mechanical joints shall be installed in accordance with the manufacturer's instructions.

605.11.3 Threaded joints. Threads shall conform to ASME B1.20.1. Pipe-joint compound or tape shall be applied on the male threads only.

605.11.4 Welded joints. All joint surfaces shall be cleaned. The joint shall be welded with an approved filler metal.

Reason: The proposal removes brass because brass is a copper alloy and is covered in Section 605.13.

Cost Impact: Will not increase the cost of construction

This proposal will not increast the cost of construction as this change is only to update the name of a material that is already in the code.

P 129-15 : 605.11-FEEHAN3794

# P 130-15

## 605.14.3, 605.18.3, 605.22.2, 605.23.3

Proponent: John Stempo, Victaulic Company, representing Victaulic Company

### 2015 International Plumbing Code

#### Add new text as follows:

**605.14.3 Grooved and shouldered mechanical joints.** Grooved and shouldered mechanical joints shall comply with ASTM F 1476, shall be made with an *approved* elastomeric seal and <u>other internal components</u>, if <u>applicable</u>, and shall be installed in accordance with the manufacturer's instructions. Such joints shall be exposed or concealed.

**605.18.3 Grooved and shouldered mechanical joints.** Grooved and shouldered mechanical joints shall comply with ASTM F 1476, shall be made with an *approved* elastomeric seal and <u>other internal components</u>. if <u>applicable</u>, and shall be installed in accordance with the manufacturer's instructions. Such joints shall be exposed or concealed.

**605.22.2 Grooved and shouldered mechanical joints.** Grooved and shouldered mechanical joints shall comply with ASTM F 1476, shall be made with an *approved* elastomeric seal and <u>other internal components</u>, if <u>applicable</u>, and <u>shall</u> be installed in accordance with the manufacturer's instructions. Such joints shall be exposed or concealed.

605.23.3 Grooved and shouldered mechanical joints. Grooved and shouldered mechanical joints shall comply with ASTM F 1476, shall be made with an *approved* elastomeric seal and <u>other internal components</u>, if <u>applicable</u>, and <u>shall</u> be installed in accordance with the manufacturer's instructions. Such joints shall be exposed or concealed.

Reason: There are some types of grooved mechanical joints that utilize internal components other than elastomeric seals. These proposed changes are intended to clarify language in the code to specifically address the use and acceptance of these additional components within a grooved mechanical joint design, if they are *approved*.

Cost Impact: Will not increase the cost of construction

A clarification of what components could be used for sealing in this type of joint will not increase the cost of construction.

P 130-15 : 605.14.3-STEMPO3966

## P 131-15

Part I: 605.14.6 Part II: P2906.14

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Tim Earl, GBH International, representing The Oatey Company (tearl@gbhinternational.com)

# Part I

### 2015 International Plumbing Code

### Revise as follows:

**605.14.6 Solder joints.** Solder joints shall be made in accordance with the methods of ASTM B 828. All cut tube ends shall be reamed to the full inside diameter of the tube end. All joint surfaces shall be cleaned. A flux conforming to ASTM B 813 shall be applied. The <u>base material for tinning fluxes</u>, excluding the tinning powder, shall meet the criteria of ASTM B813. The joint shall be soldered with a solder conforming to ASTM B 32. The joining of water supply piping shall be made with *lead-free solders and fluxes*. "Lead free" shall mean a chemical composition equal to or less than 0.2-percent lead.

## Part II

## 2015 International Residential Code

### Revise as follows:

P2906.14 Soldered and brazed joints. Soldered joints in copper and copper alloy tubing shall be made with fittings approved for water piping and shall conform to ASTM B 828. Surfaces to be soldered shall be cleaned bright. Fluxes for soldering shall be in accordance with ASTM B813. The base material for tinning fluxes, excluding the tinning powder, shall meet the criteria of ASTM B813. Brazing fluxes shall be in accordance with AWS A5.31M/A5.31. Solders and fluxes used in potable water-supply systems shall have a lead content of not greater than 0.2 percent.

Reason: Tinning fluxes have been shown in several studies to create a stronger and more consistently water-tight connection when using low-lead fittings. This means less rework on the job site and less likelihood of joint failure. With the federal mandate of low-lead in 2014, this has become a significant issue and the codes need to reflect this need. We are pursuing changes to the referenced ASTM standard as well, however these will not be completed in time for this code cycle and we feel that it is important to make this change as it has the potential to save money related to rework and repair. Once the standard is altered, we would support removing the language being proposed.

#### Cost Impact:

Part I: Will not increase the cost of construction This proposal will not affect cost as it simply adds another solder flux option.

Part II: Will not increase the cost of construction This proposal will not affect cost as it simply adds another solder flux option.

P 131-15 : 605.14.6-EARL4594

# P 132-15

## Part I: 605.14.7 (New), 605.15.4 (New), 605.17.3 (New) Part II: P2906.20 (New)

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

# Part I

### 2015 International Plumbing Code

Add new text as follows:

605.14.7 Push-fit joints Push-fit joints shall conform to ASSE 1061 and shall be installed in accordance with the manufacturer's instructions.

605.15.4 Push-fit joints. Push-fit joints shall conform to ASSE 1061 and shall be installed in accordance with the manufacturer's instructions.

605.17.3 Push-fit joints. Push-fit joints shall conform to ASSE 1061 and shall be installed in accordance with the manufacturer's instructions.

## Part II

### 2015 International Residential Code

#### Add new text as follows:

P2906.20 Push-fit joints. Push-fit joints shall be used only on copper-tube-size outside diameter dimensioned CPVC, PEX and copper tubing. Push-fit joints shall conform to ASSE 1061 and shall be installed in accordance with the manufacturer's instructions.

Reason: Push-fit fittings utilize a *type* of joining method (a connection) that is different than solvent cemented, soldered, brazed connections. And technically, this type of fitting doesn't strictly fit the Chapter 2 definition of a MECHANICAL JOINT. The use of these fittings has become very popular in recent years. These fittings are marketed with names that include such terms as "bite" or "grip" or "speed".

The standard for push-fit fittings is ASSE 1061. This standard was approved for the IPC several cycles ago for inclusion into the water pipe fitting table of the code. However, most readers of the code do not realize what this standard covers and where it is referenced in the code. Because these joints are a different connection method, they need to be indicated in the appropriate sections of the MATERIALS JOINTS AND CONNECTIONS section of the code.

This proposal is not adding this standard to the code but is only adding sections that should have been added several cycles ago when ASSE 1061 was added.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 32.

#### Cost Impact:

Part I: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

#### Part II: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 132-15 : 605.14.7 (New)-SNYDER3961

## P 133-15

Part I: 605.16.2 Part II:

## P2906.9.1.3

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Tim Earl, GBH International, representing The Oatey Company (tearl@gbhinternational.com)

# Part I

## 2015 International Plumbing Code

#### Revise as follows:

**605.16.2 Solvent cementing.** Joint surfaces shall be clean and free from moisture, and an approved primer shall be applied. Solvent cement, orange in color and conforming to ASTM F 493, shall be applied to joint surfaces. The joint shall be made while the cement is wet, and in accordance with ASTM D 2846 or ASTM F 493. Solvent cement joints shall be permitted above or below ground.

### ExceptionExceptions:

1. A primer is not required where all of the following conditions apply:

- 1.1 The solvent cement used is third-party certified as conforming to ASTM F 493.
  - 1.2 The solvent cement used is yellow in color.
- 1.3 The solvent cement is used only for joining 1/2 inch (12.7 mm) through 2-inch-diameter (51 mm) CPVC/AL/CPVC pipe and CPVC fittings.
- 1.4 The CPVC fittings are manufactured in accordance with ASTM D 2846.
- 2. A primer is not required where the manufacturer's instructions for the solvent cement do not require the application of a primer.

## Part II

### 2015 International Residential Code

#### Revise as follows:

P2906.9.1.3 CPVC/AL/CPVC pipe. Joint surfaces shall be clean and free from moisture, and an approved primer shall be applied. Solvent cement, orange in color and conforming to ASTM F493, shall be applied to all joint surfaces. The joint shall be made while the cement is wet, and in accordance with ASTM D2846 or ASTM F493. Solvent-cement joints shall be installed above or below ground.

#### ExceptionExceptions:

1. A primer is not required where all of the following conditions apply:

1.1 The solvent cement used is third-party certified as conforming to ASTM F 493.

- 1.2 The solvent cement used is yellow in color.
- 1.3 The solvent cement is used only for joining 1/2 inch (12.7 mm) through 2-inch-diameter (51 mm) CPVC/AL/CPVC pipe and CPVC fittings.
- 1.4 The CPVC fittings are manufactured in accordance with ASTM D 2846.
- 2. A primer is not required where the manufacturer's instructions for the solvent cement do not require the application of a primer.

**Reason:** The market place has already begun using these fast setting orange CPVC cements as a one-step application where local inspectors allow. This simply meets a market condition and gives broader authority for these applications to occur. A work item is being created in ASTM to create a standard practice for this, but is at least this code cycle away from being completed. Once that is complete we would support removing this from the code should it be allowed. However, in the interim we again ask that the practice be allowed to help meet market demand. This would also be consistent with language in the IRC (P2906.9.1.2) and a similar proposal as this in the IMC.

#### Cost Impact:

Part I: Will not increase the cost of construction Cost will not increase as this proposal would simply allow for another option for CPVC cement.

Part II: Will not increase the cost of construction Cost will not increase as this proposal would simply allow for another option for CPVC cement.

P 133-15 : 605.16.2-EARL4555

# P 134-15

## 605.24.1

Proponent: Pennie L Feehan, Copper Development Association, representing Copper Development Association (penniefeehan@me.com)

### 2015 International Plumbing Code

Revise as follows:

**605.24.1 Copper** <u>pipe</u> or <u>copper-alloy</u> tubing to galvanized steel pipe. Joints between copper <u>pipe</u> or <u>copper-alloy</u> tubing and galvanized steel pipe shall be made with a <u>brass fittingcopper-alloy</u> or dielectric fitting or a dielectric union conforming to ASSE 1079. The copper tubing shall be soldered to the fitting in an *approved* manner, and the fitting shall be screwed to the threaded pipe.

Reason: Because brass is a copper-alloy the sentence does not make sense. It's telling you to use a brass nipple when you are already using a brass nipple.

#### Cost Impact: Will not increase the cost of construction

This proposal will not increast the cost of construction as this change is only to update the name of a material that is already in the code.

P 134-15 : 605.24.1-FEEHAN3795

# P 135-15

Part I: 605.24.3 (New), 605.9 Part II:

### P2906.17.2 (New)

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Mike Cudahy, representing Plastic Pipe and Fittings Association (mikec@cmservnet.com)

# Part I

## 2015 International Plumbing Code

#### Add new text as follows:

605.24.3 Joint between PVC water service and CPVC water distribution. Where a PVC water service pipe connects to a CPVC pipe at the beginning of a water distribution system, the transition shall be by a mechanical fitting, an approved adapter fitting, a transition fitting or by a single solvent-cemented transition joint. A single, solvent cement transition joint shall be in compliance with ASTM F493 and the pipe, fitting, and solvent cement manufacturers' instructions. Solvent cement joint surfaces shall be clean, free from moisture and prepared with an approved primer. Solvent cement conforming to ASTM F493 shall be applied to the joint surfaces and the joint assembled while the cement is wet.

#### Revise as follows:

605.9 Prohibited joints and connections. The following types of joints and connections shall be prohibited:

- 1. Cement or concrete joints.
- 2. Joints made with fittings not approved for the specific installation.
- 3. Solvent-cement joints between different types of plastic pipe\_except as provided for in Section 605.24.3.
- 4. Saddle-type fittings.

## Part II

### 2015 International Residential Code

#### Add new text as follows:

P2906.17.2 Joint between PVC water service and CPVC water distribution Where a PVC water service pipe connects to a CPVC pipe at the beginning of a water distribution system, the transition shall be by a mechanical fitting, an *approved* adapter fitting, a transition fitting or by a single solvent-cemented transition joint. A single, solvent cement transition joint shall be in compliance with ASTM F493 and the pipe, fitting, and solvent cement manufacturers' instructions. Solvent cement joint surfaces shall be clean, free from moisture and prepared with an approved primer. Solvent cement conforming to ASTM F493 shall be applied to the joint surfaces and the joint assembled while the cement is wet.

Reason: Transitions being made from PVC service to CPVC water distribution systems is common, and solvent cementing for this single transition application should be an option.

#### Cost Impact:

Part I: Will not increase the cost of construction None.

Part II: Will not increase the cost of construction

This proposal allows for an optional method of joining not in this code. The option is not requiring that this method be chosen. Thus the code with this proposal added will not cause the cost of construction to increase.

P 135-15 : 605.24.3 (New)-CUDAHY4669

# P 136-15

## 604.1, Chapter 14

**Proponent:** Ronald George, Self; Plumb-Tech Design & Consulting Service LLC; www.Plumb-TechLLC.com; www.LegionellaPrevention.org, representing Self; Plumb-Tech Design & consulting Services LLC (Ron@Plumb-TechLLC.com)

### 2015 International Plumbing Code

#### Revise as follows:

**604.1 General.** The design of the water distribution system <u>shall be in accordance with ASHRAE 188 and</u> shall conform to *accepted engineering practice*. Methods utilized to determine pipe sizes shall be *approved*.

### Add new standard(s) as follows:

ASHRAE 188 - DRAFT\_4th Public Review 09262014 Legionellosis: Risk Management for Building Water Systems

Reason: There are many design considerations in the ASHRAE standard that will help minimize Legionella bacteria growth in building water systems which can lead to Legionnaires Disease when water droplets are aerosolized from shower heads, and other building water systems and fixtures that aerosolize water droplets. Following the ASHRAE Standard will minimize the risk og a Person contracting Legionnaires' disease.

Bibliography: www.LegionellaPrevention.org www.Plumb-TechLLC.com

Cost Impact: Will increase the cost of construction

The cost of construction of the plumbing system to eliminate dead legs and provide other design concepts to address temperature and stagnation is estimated to be about 10 - 15 percent more to comply with this standard, however it will provide for hygienic system designs that will minimize legionella bacteria growth and help prevent Leginnaires Disease. See www.LegionellaPrevention.org.

Analysis: A review of the standard proposed for inclusion in the code, ASHRAE 188, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 136-15 : 606.8 (New)-GEORGE5211

# P 137-15

## 607.6 (New)

Proponent: Ronald George, Plumb-Tech Design & Consulting Services LLC, representing Self (Ron@Plumb-TechLLC.com)

### 2015 International Plumbing Code

Add new text as follows:

607.6 Separation of underground hot and cold piping. Underground hot water distribution piping required to be insulated in accordance with Section 607.5 shall be separated from underground cold water distribution piping by not less than 12 inches (304 mm).

Reason: I have investigated underground piping installations where the hot and cold water pipes were bundled together. The heat will transfer from one system to the other and cause operational problems and make it difficult to get hot or cold water. This code change is intended to address this issue.

#### Cost Impact: Will not increase the cost of construction

Currently, the piping must be installed this way in order to work properly. This language just codifies it so the inspector can assure this is done before the concrete is poured.

P 137-15 : 606.8 (New)-GEORGE5842

# P 138-15

607.2.1.1

Proponent: Ronald George, Self, representing Self (Ron@Plumb-TechLLC.com)

### 2015 International Plumbing Code

Delete without substitution:

607.2.1.1 Pump controls for hot water storage systems. The controls on pumps that circulate water between a water heater and a storage tank for heated water shall limit operation of the pump from heating cycle startup to not greater than 5 minutes after the end of the cycle.

Reason: The piping between the tank and the heater is part of the storage tank. allowing it to cycle on and offf would allow the temperature to drop to a temperature that is ideal for Legionella Bacteria growth. The pipes should be heaavily insulated, the energy savings is negligible, the wear and tear on starting and stopping a circulating pump would be significant. This code language is not needed.

### Cost Impact: Will not increase the cost of construction

This will reduce the controls required to cycle the pump on and off.

P 138-15 : 607.2.1.1-GEORGE5571

# P 139-15

## 607.2.1.2

**Proponent:** Ronald George, Self; Plumb-Tech Design & Consulting Services LLC, representing Self; Plumb-Tech Design & Consulting Services LLC. (Ron@Plumb-TechLLC.com)

### 2015 International Plumbing Code

#### Delete without substitution:

607.2.1.2 Demand recirculation controls for distribution systems. A water distribution system having one or more recirculation pumps that pump water from a heated water supply pipe back to the heated water source through a cold water supply pipe shall be a demand recirculation water system. Pumps shall have controls that comply with both of the following:

- 1. The control shall start the pump upon receiving a signal from the action of a user of a fixture or appliance, sensing the presence of a user of a fixture, or sensing the flow of hot or tempered water to a fixture fitting or appliance.
- 2. The control shall limit the temperature of the water entering the cold water piping to 104°F (40°C).

Reason: Demand recirculation systems create a cross nonnection between hot water and cold water systems.

**Cost Impact:** Will not increase the cost of construction This code change will not add cost to construction.

P 139-15 : 607.2.1.2-GEORGE5210

# P 140-15

607.2.1.2

Proponent: Ronald George, representing Self (Ron@Plumb-TechLLC.com)

## 2015 International Plumbing Code

Delete without substitution:

607.2.1.2 Demand recirculation controls for distribution systems. A water distribution system having one or more recirculation pumps that pump water from a heated water supply pipe back to the heated water source through a cold water supply pipe shall be a demand recirculation water system. Pumps shall have controls that comply with both of the following:

- 1. The control shall start the pump upon receiving a signal from the action of a user of a fixture or appliance, sensing the presence of a user of a fixture, or sensing the flow of hot or tempered water to a fixture fitting or appliance.
- 2. The control shall limit the temperature of the water entering the cold water piping to 104°F (40°C).

**Reason:** Demand Recirculation Systems work based on piping hot water thrrough the cold water piping. This is creating a cross connection. Other fixtures on the cold water branch and main piping will be fed tempered or hot water as a result of this code language. This is an intentional code violation for a lazy mans hot water recirculation system. The proper way to design and instal a hot water system is with a dedicated hot water return piping system with balancing valves and chack valves where needed. The plumbing code should not endorse a cross connection. this sytem is available for homeowner to use in after market applications. It should not be part of an original design. A dedicated hot water return line should be used in new construction.

Cost Impact: Will not increase the cost of construction

This is not a cost issue, it is a health and safety issue. There is no cost associated with this system change. Hot or tempered water should not be intentionally piped through the cold water pipes.

P 140-15 : 607.2.1.2-GEORGE5574

# P 141-15

## 607.3

**Proponent:** Gary Kozan, CPD, Ridgeway Plumbing, representing Florida Association of Plumbing Heating Cooling Contractors (garyk@ridgewayplumbing.com)

### 2015 International Plumbing Code

#### **Revise as follows:**

**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 tankcontrol 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 tankscontrol devices 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.

Reason: There are many different products on the market today that provide effective solutions to thermal expansion control, including pressure relief valves and special-purpose ballcocks. The IPC should recognize all proven technologies and should not limit designers and contractors solely to thermal expansion tanks. This change is consistent with the IRC, and with all prior editions of the IPC.

#### Bibliography:

#### 2015 International Residential Code:

P2903.4 Thermal expansion control. A means for controlling increased pressure (emphasis added) caused by thermal expansion shall be installed where required in accordance with Sections P2903.4.1 and P2903.4.2.

P2903.4.1 Pressure-reducing valve. For water services up to and including 2 inches (51 MM), a device for controlling thermal expansion (emphasis added) shall be installed where, because of thermal expansion, the pressure on the downstreram side of a pressure-reducing valve exceeds the pressure-reducing valve setting.

P2903.4.2 Backflow prevention device or check valve. Where a backflow prevention device, check valve or other device is installed on a water supply system using storage water heating equipment such that thermal expansion causes an increase in pressure, a device for controlling pressure (emphasis added) shall be installed.

 $\label{eq:cost_cost_cost} \textbf{Cost Impact:} \ \textbf{Will not increase the cost of construction}$ 

By providing additional choices, the designer can select the most appropriate, cost effective solution depending on the situation.

P 141-15 : 607.3-KOZAN3470

# P 142-15

## 607.3.1 (New)

Proponent: Robert Phillippi, Jr, City of Altamonte Springs, representing City of Altamonte Springs (rgphillippi@altamonte.org)

### 2015 International Plumbing Code

#### Add new text as follows:

607.3.1 Thermal expansion device location. Where a thermal expansion device is installed as an *approved* alternative method for a thermal expansion tank, the thermal expansion device shall be installed on the cold water inlet piping between the water heater and shut off valve for the water heater.

Reason: This additional code section provided here within is intended to clarify where the thermal expansion device shall be installed. The code currently does not specify where thermal expansion devices shall be installed within the system. This leaves room for error and cause for a possible hazardous situation. Many municipalities require check valves at the water supply source before it enters the structure creating a closed system. With a closed system, expanded water from the water heater has nowhere to go & will strain the system, thus is why we install expansion devices. Furthermore, if the shut off valve at the water heater was left in the closed position, the increased water pressure could reach dangerous levels. The expansion device will not be as effective if it has been installed anywhere besides at the water heater, specifically on the cold water supply side between the water the sturt off valve.

Bibliography: [Internet] [Watts Installation Instructions] [Watts] [2013] [Page 1] [media.wattswater.com/1910868.pdf]

Cost Impact: Will not increase the cost of construction

Thermal expansion tanks or devices are required to be installed on plumbing systems which have a water heater. The purposed code addition will not create any additional cost, but will just simply address the location of such devices.

P 142-15 : 607.3.1 (New)-PHILLIPPI3864

# P 143-15

## 607.6 (New)

**Proponent:** Ronald George, Self; Plumb-Tech Design & Consulting Services LLC; www.Plumb-TechLLC.com; www.LegionellaPrevention.org, representing Self; Plumb-Tech Design & Consulting Services LLC (Ron@Plumb-TechLLC.com)

### 2015 International Plumbing Code

#### Add new text as follows:

607.6 Minimum hot water temperature to control Legionnella bacteria growth. The water temperature throughout the hot water distribution system including hot water circulation system returns to the water heater shall be not less than 124°F (51.1 °C). The temperature shall be measured in the hot water return piping within 6 feet (1829 mm) of the connection of the hot water return piping to the water heater. To facilitate the measurement of water temperature at that location, a temperature gauge, thermometer or thermowell shall be installed in the hot water return piping.

**Reason:** Legionella Bacteria has a growth range between 68 degrees F and 122 Degrees F. Industry standards and guidelines have reccomended storing and distributing hot water at temperatures that are outside of the LEgionella growth temperature range. By storing at 124 F any Legionella bacteria that makes its way into the water distribution piping system will be kept in check and will not grow to large numbers in a stagnant water heater or low temperature hot water return piping. Scalding can be prevented by adjusting the limit stops on all code compliant shower and bathtub controls by supplying a temperature of hot water that will not promote bacteri growth and adjusting the limit-stop at each fixture to supply a safe temperature free of scalding hazards.

Legionella pneumophila bacteria are widely distributed in water systems. They tend to grow in biofilms or slime on the surfaces of lakes, rivers and streams, and they are not completely eradicated by the chlorination levels commonly used to disinfect domestic water systems especially in systems that are stagnant where Chlorine is allowed to dissipate. Low and even nondetectable levels of the organism can colonize a water source and grow to high concentrations under the right conditions.

Conditions that promote growth of the organism include heat, sediment, scale, and supporting (commensal) microflora in water. Common water organisms including algae, amoebae, and other bacteria appear to amplify Legionella growth by providing nutrients or harboring the organism. Because of its ability to remain viable in domestic water systems, it is capable of rapid multiplication under the proper conditions.

#### According to OSHA Water conditions that tend to promote the growth of Legionella include:

1. stagnation;

2. temperatures between 20° and 50°C (68° - 122°F) (The optimal growth range is 35° - 46°C [95° - 115°F]);

3. pH between 5.0 and 8.5;

- 4. sediment that tends to promote growth of commensal microflora; and
- 5. micro-organisms including algae, flavobacteria, and Pseudomonas, which supply essential nutrients for growth of Legionella or harbor the organism (amoebae, protozoa).

#### Common Sources of Contaminated Water

Water sources that frequently provide optimal conditions for growth of the organisms include:

- 1. cooling towers, evaporative condensers, and fluid coolers that use evaporation to reject heat. These include many industrial processes that use water to remove excess heat;
- 2. domestic hot-water systems with water heaters that operate below 60°C (140°F) and deliver water to taps below 50°C (122°F);
- 3. humidifiers and decorative fountains that create a water spray and use water at temperatures favorable to growth;

4. spas and whirlpools;

5. dental water lines, which are frequently maintained at temperature above 20°C (68°F) and sometimes as warm as 37°C (98.6°F) for patient comfort; and

6. other sources including stagnant water in fire sprinkler systems and warm water for eye washes and safety showers.

7. Water stored below 20°C (68°F) is generally not a source for amplified L. pneumophila levels. However, high levels of bacteria have been measured in the water supplying ice machines. The source of amplification in this case was thought to be heat from the condenser coil of the ice maker transferring heat to the cold water supply pipes behind the ice machines in poorly ventillated spaces.

Bibliography: www.LegionellaPrevention.org

ASHRAE 188 - Legionellosis: Risk Management for Building Water Systems

ASHRAE Guideline 12 - Minimizing the Risk of. Legionellosis Associated with Building Water. Systems

#### Cost Impact: Will increase the cost of construction

The additional cost will be minimal. This code change only requires one temperature gauge or thermometer for an entire building located at the coolest spot in the domestic how water system.

P 143-15 : 607.6 (New)-GEORGE5324

# P 144-15

## 607.6 (New)

Proponent: Ronald George, Self; www.ScaldPrevention.org; www.LegionellaPrevention.org, representing Self (Ron@Plumb-TechLLC.com)

## 2015 International Plumbing Code

#### Add new text as follows:

607.6 Master Temperature Actuated Mixing Valve. All commercial water heaters shall have the ability to heat water to a temperature of not less than 180°F ( 82.2°C). The water heaters shall be designed to be operated to provide for a stored water temperature of not less than 140°F (60°C) to minimize Legionella bacteria growth. A master temperature actuated mixing valve conforming to ASSE 1017 shall be installed on the hot water discharge pipe of a water heater to stabilize the hot water distribution system delivery temperature at the temperature required for hot water return temperature of not less than 124°F (51.1°C) to minimize Legionella bacteria growth.

Reason: This code change is to provide hot water system controls to minimize scalding and control Legionella bacteria growth.

## A Hot Water System Balancing Act – Scald Prevention vs Legionella Prevention

By: Ron George, CPD, President, Plumb-Tech Design & Cons. Services LLC. Web site: www.Plumb-TechLLC.com

Plumbing Engineer Magazine, Mar. 2013

Plumbing design professionals and contractors are faced with many challenges when designing, installing or maintaining domestic hot water systems. Two of the more important challenges of a domestic hot water system are providing hot water for bathing and washing that will not cause scald injuries and hot water that is at a temperature high enough to prevent Legionella bacteria growth. I call it the *hot water system balancing act*. Scalding and Legionella account for a significant percentage of the litigation cases associated with plumbing systems.

Many plumbing industry groups have addressed the scalding issue and it is documented in the plumbing codes that the maximum hot water temperature to prevent scalding is 120 degrees Fahrenheit (F). The minimum temperature to prevent Legionella bacteria growth at any point in the domestic hot water supply or return piping system should be 124 degrees F according to ASHRAE. The 124 degree temperature comes from the new ASHRAE Guideline 12 which is nearing completion for publication. (See Figure 2) These two temperatures seem conflict with each other, but they can actually work together. The plumbing system can be designed to store and distribute hot water at higher temperatures and deliver the hot water from the showers and bathtub/shower fixtures at safe temperatures of 120 F or less by simply adjusting the limit stops on the tub/shower valves to limit the hot water to 120 F or less. Many design professionals, contractors, maintenance personnel, tenants and building owners may not be aware of the temperature limit stop feature on all code compliant shower valves. The manufacturers publish information on how to set the limit stop for shower valves. If the shower valve is an older shower valve without limit stops, it should be replaced or a thermostatic mixing valve conforming to ASSE 1070 should be installed on the hot water supply branch to temper the water to a maximum of 120 F or an ASSE 1062 device could be used to prevent scalding. Code compliant shower valves conform to ASSE 1016 or CSA B125.1 which were recently harmonized with ASME in the standard titled: ASSE 1016/ASME A112.1016/CSA B125.16, Performance requirements for automatic compensating valves for individual showers and tub/shower combinations. The temperature flowing to the shower valves can be as high as 140 degrees F and the shower valves should have the maximum temperature limit stops adjusted to limit the temperature leaving the shower valve to a maximum of 120 F. In addition the valves must be seasonally adjusted to account for the changes in the incoming cold water temperature which can affect the mixed water temperature.

## Maximum Hot Water Temperature to Prevent Scalding

I have served on many industry committees dealing with hot water system code requirements, hot water system design standards and product standards related to domestic hot water systems devices for temperature control and scald prevention. There has been consensus in all of these committees that the maximum safe hot water delivery temperature for a shower or bathtub is 120 degrees Fahrenheit to prevent scalding with a few exceptions for lower temperatures for bidets and emergency eye wash fixtures. (See Figure 1 - Hot Water Scald Burns – Time vs Temperature Relationship for Second and Third Degree Burns for Adults and Children)

There were discussions in a plumbing code ad-hoc committee on temperature limits for the hot water system where everyone agreed the maximum safe temperature was 120 F. The ASPE Hot water committee dealing with a proposed standard for temperature limits in hot water systems also agreed the maximum safe hot water temperature to prevent scalding is

120 Fahrenheit. Several ASSE working groups that I have served on dealing with hot water temperature controls have all have discussed the reaction time of bathers and they have taken into consideration that children, the elderly and people with disabilities usually take longer to get out of harm's way if the water suddenly gets hot and they agreed 120 Fahrenheit is the maximum safe hot water temperature that a valve should deliver. At 120 F it takes about 80 seconds to develop a second degree burn in a child and it takes about 8 minutes to develop a second degree burn in an adult. (See Figure 1) The 120 Degree F temperature limit gives bathers or users an adequate amount of time to get out of harm's way before an irreversible scald burn injury can occur. Each of these committees looked back to the data that was the result of burn studies done by Dr. Moritz and Dr. Henrique's at Harvard Medical College in the 1940s. The burn studies were done using baby pigs that had skin thicknesses similar to that of adult males. The studies exposed the pig's skin to various temperatures of hot water for various periods of time and the severity of the burns were studied and recorded. These were the studies used to develop the time and temperature exposure charts. There have been numerous white papers, seminars, and reports since then discussing the fact that burns can occur quicker than those recorded in the Moritz & Henrique's studies for adult males. The skin is thinner for children and the elderly and the amount of time to receive an irreversible 2<sup>nd</sup> degree burn injury is less because their skin is thinner. Many of the white papers use the Moritz and Dr. Henrique's original burn studies and they use a ratio of the skin thickness to come up with burn times for thinner skin of children and the elderly. Children, the elderly and handicapped are also slower to react because it takes them more time to realize what is happening and try to react to get out of harm's way. Someone once told me an apartment complex was not intended for children or the elderly. I said everyone grows old and children often come visit so we need to consider prevention of scalds to children, the elderly and people with disabilities more so than burns to adults because burns can occur quicker for those groups.

## The PIEV Theory for Reaction Time

There is a PIEV theory relates to reaction time. The PIEV theory is most commonly used to address braking distance in automobile accidents. It addresses the amount of time it takes a driver to sense a problem and decide to react, then the reaction time is added to the braking time for the total distance that a car travels before stopping. The PIEV theory can also apply to reaction times for a bather with respect to hot water scalds. PIEV relates to the amount of time it takes a person to react to a hazard. **PIEV** means - **Perception**, **Intellection**, **Emotion** and **Volition**. It is usually referred to as the PIEV theory. Before we recognize and react to a hazard, four specific areas of activity need to be processed by the brain for the muscles to react. Those processes are:

1. **Perception** - We need to perceive or gain a *Perception* of a hazard. There can be delays in the perception with limitation in sight, sound, feeling, or any other of our senses.

2. Intellection - We go through a period called, *Intellection* or the act or process of using the intellect by thinking or reasoning. The bather must determine if the hazard is legitimate and deciding either move out of the way of the hazard or eliminate the hazard by adjusting the controls or in some cases where the bather may be sitting out of the reach of the controls the bather may choose to pull the shower curtain in front of them. If the adjustment of the controls is the choice one must decide which control to turn and try to remember which way to turn each control to adjust the temperature or turn the water off in order to eliminate the hazard. If a wrong choice is made during this process it could compound the situation by making the water even hotter. I travel a lot and I often find that shower controls can be very confusing with respect to how to adjust the controls. I still find two handle shower controls that do not meet code requirements. This is critically important when there is no temperature
limit on the shower controls. For example if the shower has a two-handle shower valve and 160 degree hot water is supplied to the system, then turning of the cold water first could lead to instant scalding injuries. Turning down the hot water to 120 F or below creates a system where it could incubate Legionella Bacteria to very high levels.

3. *Emotion* - There is an *Emotion* or evaluation factor which is defined as a conscious mental reaction (as anger or fear) subjectively experienced as strong feeling usually directed toward a specific object and typically accompanied by physiological and behavioral changes in the body with respect to deciding or assessing how we want to react. A person with reduced mental capacity or someone that is just very old will take longer to process this information and ultimately decide to react.

4. **Volition** - There is the physical *Volition* or deciding/choosing to act and acting. In the case of braking distance it is when the choice is made to move the foot from the gas pedal to the brake pedal and pressing on the brake pedal. This can be related to the time the bather chooses to adjust the control, and they move their hand to the shower control valve, plus the time to rotate or re-adjust the shower valve plus the time from the adjustment until the water temperature changes coming out of the shower head. Often it can take as much as 3-5 seconds to re-adjust the shower head and another few seconds until the water temperature changes coming out of the shower valve ultra-low-flow (ULF) showers the delay from the time of the adjustment of the shower valve until the water temperature changes coming out of the shower valve until the water temperature changes coming out of the shower valve until the water temperature changes coming out of the shower head. For ultra-low-flow (ULF) showers the delay from the time of the adjustment of the shower valve until the water temperature changes coming out of the shower valve until the water temperature changes coming out of the shower valve until the water temperature changes coming out of the shower valve until the water temperature changes coming out of the shower valve until the water temperature changes coming out of the shower valve until the water temperature changes coming out of the shower plus the shower valve until the water temperature changes coming out of the shower plus the shower valve until the water temperature changes coming out of the shower plus the shower valve until the water temperature changes coming out of the shower plus the shower valve until the water temperature changes coming out of the shower plus the shower valve until the water temperature changes coming out of the shower plus the shower valve until the water temperature changes coming out of the shower plus the shower pl

As the temperature of the water increases this PIEV reaction time becomes more important. Using a bathtub/shower controller with a single handle would reduce the mental processing time and reduce the possibility of making an error when turning off the water. As Figure 1 shows the higher the temperatures get, the quicker the burns can occur. within seconds or less and the degree and severity of the burn can be affected by this reaction time.

As you can see by the chart in Figure 1, if the water is at 140 F it will take about 0.8 seconds for a child to receive a 2<sup>nd</sup> degree irreversible burn injury and it will take about 5.6 seconds for an adult male to receive an irreversible burn injury at 140 degrees F. Everyone else will fall somewhere in between. An adult will often find it very difficult to react to a sudden change in temperature within five (5) seconds. If the shower head is an Ultra-Low-Flow (ULF) shower head the delay can be several seconds longer before the water temperature is reduced because the mixed water temperature must evacuate or flush out the hot water in the pipe riser from the shower valve to the shower head. There is basically very little or no time to react at higher temperatures. For a typical adult that is alert and aware the PIEV theory shows it can take well over five (5) seconds to react to a sudden burst of hot water in a shower. For an elderly person or a small child that is confused it could take several minutes or more before they are able to react and adjust the controls or get out of harm's way. There has been a lot of information that suggests reducing the domestic hot water temperature to 120 F or less as it flows from the fixtures will minimize scalding and allow most people to react or get out of harm's way before a scald injury occurs.

Reducing the water temperature flowing from the fixture can be done in several ways by:

1. Reducing the hot water temperature at the fixture by adjusting the maximum temperature limit-stop on the shower valve. (The best way)

- 2. Using local mixing valves conforming to ASSE 1070 to reduce the hot water temperature flowing from a faucet.
- 3. Reducing the temperature at the source (Water Heater) with the use of a master mixing valve or temperature actuated mixing valve conforming to ASSE 1017.
- 4. For existing non code compliant shower or tub/shower installations, Two handle tub/shower valves without a maximum temperature limit adjustment) an ASSE 1062 valve could be used. An ASSE 1062 valve is a Temperature Actuated Flow Reduction (TAFR) valve. It looks like a chrome pipe coupling and it screws on between the shower head and the shower arm. Other models screw into a tub spout or onto a sink faucet in place of the aerator. If the water flowing from fixture exceeds about 117-120 degrees Fahrenheit the TAFR valve will shut the flow of water down to just a trickle so that scalding hot water does not spray onto the bather. It can be reset by adjusting the fixture control valve to a cold water setting and when the cold water reaches the valve it will reset and begin flowing again. This can be a bit of a nuisance in buildings where the hot water temperature is erratic, but it is an inexpensive way to provide protection against scald injuries in older buildings without code compliant shower valves.

## Minimum Water Temperature to Prevent Legionella Bacteria Growth

Recently the members of the ASHRAE committee for ASHRAE Guideline 12 - Prevention of Legionellosis Associated with Building Water Systems recommended a change to the next edition of the guideline to require a minimum hot water temperature of 124 degrees Fahrenheit in the Hot Water Return (HWR) piping and a minimum hot water storage temperature of 130 F in circulated water heaters and a minimum of 140 F in uncirculated water heaters. This is because they have realized hot water temperatures in the ideal growth range have a lot to do with the Legionella bacteria levels on hot water systems. The new ASHRAE Guideline 12 will bring hot water system designs into alignment with what the ASPE Research Foundation's recommendations were in a white paper published in 1988. Many plumbing engineers have been following those recommendations for years. The ASPE research paper called for storing hot water at 135 to 140 degrees Fahrenheit and delivering it from the fixtures at no more than 120 degrees Fahrenheit. In the near future the ASHRAE standard titled ASHRAE 188 - Prevention of Legionellosis Associated with Building Water Systems which references the ASHRAE Guideline 12 will be published as an industry standard and it may even be adopted in the codes. In either case it set the industry standard for hot water system design and it will change how some hot water systems have been designed over the years. Hot water systems will now require storage temperatures high enough to prevent Legionella Bacteria Growth. So simply setting the thermostat to 120 F to prevent scalding will not be possible. (See: Figure 2 - Effects of Water Temperature on Legionella Bacteria and see: Legionella articles in December 2012 and Jan 2013 issues of Plumbing Engineer Magazine for more information and facts about Legionnaires Disease)

If you follow the new ASHRAE Standard 188 and the soon to be published guideline 12, you will find you should not use the thermostat on a water heater to simply adjust it to 120 degrees Fahrenheit to prevent scalding. This is already not allowed in the two model plumbing codes, however there are some local codes such as the State of North Carolina plumbing code that, as this writing, allow this dangerous practice. The minimum storage temperature required in a water heater will soon be 130 F for circulated heaters and 140 F for uncirculated heaters.

## Water Heater Thermostats

The water temperature flowing from the fixtures should not be reduced to 120 degrees Fahrenheit by adjusting the water heater thermostat for scald prevention. The water heater thermostat should never be used to try and control the hot water system delivery temperature. The thermostat is located in the bottom of the water heater and is intended to only sense the incoming cold water and anticipate the need for hot water by turning the burner "ON" and "OFF". There are too many variables that can allow the hot water to exceed the water heater thermostat setting. Intermittent, short usage of hot water can cause the water heater burner to cycle on even when the hot water at the top of the water heater is hotter than the thermostat setting. This causes the water heater to overheat the hot water at the top of the water heater. In some cases the hot water can be as much as 30 degrees or more, higher than the thermostat setting on the water heater. This is why the thermostat on the water heater should not be used as a system temperature controller for scald prevention.

## Energy Conservation and Bacteria Growth on Hot Water Systems.

There have been numerous web sites, radio spots, print materials and other well intentioned people that suggest turning the water heater down to 120 degrees Fahrenheit to save energy and they usually discuss the added side effect of minimizing scalding. These suggestions are wrong for many reasons because the thermostat on the water heater cannot accurately control the outlet temperature of the water heater, Low storage temperatures also create a shortage of hot water, low storage temperatures can allow condensing conditions in heaters that are not designed for condensing which can lead to heat exchanger corrosion and it creates storage temperatures that are ideal for legionella bacteria growth. This is another example of energy conservation practices making a hot water system less safe. Safety should trump efficiency! There are other ways to prevent scalding without turning down the water heater thermostat. I have also heard of many healthcare facilities eliminating hot water tanks and installing instantaneous water heaters in a misguided effort to minimize Legionella bacteria growth in hot water tanks. It's not the tank it's the storage temperature. This is reaction to a problem that often creates other problems. (See Figure 2)

## Master Thermostatic Mixing Valves

The ASHRAE Guideline 12 recommendations do not mandate a master thermostatic mixing valve for a hot water system. Although one could be installed to allow water temperatures to be stored at slightly higher temperatures and the hot water could be distributed at a stable temperature that assures a minimum of 124 degrees F on the hot water return prior to the hot water tank connection. These new temperature requirements will undoubtedly mean we need to have a temperature gauge on the hot water return piping, the hot water supply piping leaving the water heater and on the piping leaving a mixing valve if one is installed. By providing the temperature gauges the maintenance personnel can monitor the entire hot water distribution system so that it can be hot enough to prevent legionella bacteria growth.

It's is a balancing act to try and keep from scalding someone or giving them Legionellosis. If the hot water system temperatures are maintained at a minimum of 124 F in the hot water return, no less than 130 F in a circulated storage tank and no less than 140 F in an uncirculated storage tank Legionella growth will be minimized. If temperature limit stops are utilized to keep shower and tub/shower water from exceeding 120 F the system will not present a scald hazard. Make sure your plumbing designs include the *hot water system balancing act*.



A Seminar and Technical Paper for the 25-28 Oct. 98 Annual ASPE Meeting at the Indianapolis Convention Center in Indianapolis, Indiana. Reprinted by Watts Regulator Company with permission of Dr. D. Bynum Jr. Figure 1 – Hot Water Scald Burns – Time vs Temperature Relationship for Second and Third Degree Burns for Adults and Children. (Notes By: Ron George, CPD, See: www.ScaldPrevention.org)





Bibliography: www.ScaldPrevention.org www.LegionellaPrevention.org

Cost Impact: Will increase the cost of construction

This will slightly increase the cost of construction, but it will frovide significant health and safety benifits of controlling Legionella and minimizing scalding by stabilizing system temperatures with a mixing valve.

P 144-15 : 607.6 (New)-GEORGE5588

## P 145-15

## 607.6 (New), 607.7 (New)

Proponent: Ronald George, Self, www.scaldprevention.org; www.Plumb-TechLLC.com, representing Self (Ron@Plumb-TechLLC.com)

### 2015 International Plumbing Code

#### Add new text as follows:

607.6 Balancing of multi-branch hot water circulating systems Where there is more than one hot water return branch in a hot water circulating system having one circulating pump, the circulating pump shall be sized to deliver the required flow and head for all branches. The required flow in gallons per minute (liters per second) to maintain the desired hot water temperature for each branch shall be calculated. Each branch shall have a balancing valve that is field-adjusted and set to the required calculated flow. A check valve shall be located downstream of each balancing valve to prevent crossflow between branches.

607.7 Maximum velocities for hot water return piping The water velocity in hot water return piping sytems shall be limited to prevent water hammer and errosion of piping. Where the water temperature is 140°F (60°C) or less, the water velocity shall not exceed 5 feet per second (3 meters per second). Where the water temperature exceeds 140°F (60°C), the water velocity shall not exceed 2.5 feet per second (1.5 meters per second).

Reason: No balancing requirement is in the plumbing code. Many larger buildings are experiencing problems because balancing is not required. When balancing is not done properly the velocity in some sections of pipe can become excessive. Balancing valves have a flow adjustment that allows you to read or set the flow at each balancing valve. If the flow in GPM is known based on the balancing valve setting or the flow rate of the circulating pump can be used in smaller systems. Where the flow in GPM is known and the pipe size is known, the velocity in feet per second can easily be determined by looking at any pipe sizing chart or table.

Bibliography: http://www.copper.org/publications/pub\_list/pdf/copper\_tube\_handbook.pdf See Page 11 of the Copper Tube Handbook for velocity limitations. These velocity limitations should apply to PEX piping sytems with brass fittings also. http://www.pdionline.org/storage/publications/PDI-WH-201.pdf

See the water pipe sizing chart on page 31 of the PDI WH 201 standard that is free to download. It lists the Pipe size, flow in GPM and flow Velocity in Feet Per Second.

#### Cost Impact: Will increase the cost of construction

balancing has always been required for the system to operate properly, but it has never been required in the code. There will be a slight cost to balance the HW system, but now they will perform better because there never has been a requirement for balancing.

P 145-15 : 607.6 (New)-GEORGE5595

## P 146-15

## 607.6 (New)

Proponent: Ronald George, Self, representing Self (Ron@Plumb-TechLLC.com)

## 2015 International Plumbing Code

#### Add new text as follows:

**607.6 Flushing and de-liming tees** The connecting piping for each water heater shall have tees installed for the purposes of flushing and de-liming of the heater at manufacturer's recommended maintenance intervals. The tees shall be installed in the hot and cold water piping between the water heater and the water heater isolation valves. The tees shall have a 3/4 inch (19.1 mm) valve with a 3/4 inch (19.1 mm) hose thread for connection of flushing and de-liming equipment.

Reason: Deliming tees are needed for proper maintenace of water heaters.



#### Cost Impact: Will increase the cost of construction

The cost of the tees and hose valves is minimal and it allows the scale to be removed from the water heater with a small pump and hose connections with a mild vinegar acidic solution. Removing scale will save millions of dollars worth of fuel that is wasted fuel each year. 1/16 inch of scale on a heating surface causes us to use 12 percent more fuel to heat a given amount of water. 1/4 inch of scale will cause about 38 percent additional fuel to be consumed to heat a given amount of water. 1/2 inch of scale on the heating surface will cause us to use 60 percent more fuel to heat a given amount of water. if your monthly heating bill is \$360, then you will be spending another \$216 a month to heat the same amount for a total fuel consumption of \$576/month. A simple calculation shows over \$2,000 dollars in fuel saving per year by maintaining a clean heating surface.

P 146-15 : 607.6 (New)-GEORGE5598

## P 147-15

## 608.1.1 (New)

**Proponent:** Michael Moss, American Backflow Prevention Association, representing American Backflow Prevention Association (msmoss@utah.gov)

## 2015 International Plumbing Code

#### Add new text as follows:

**608.1.1 Equipment location and installation planning.** Backflow prevention assemblies in accordance with Sections 608.13.2, 608.13.3, 608.13.5, 608.13.7 and 608.13.8 shall be located with the center of the assembly not greater than 5 feet (1524 mm) above a floor or a permanent equipment platform. Where an assembly or portions of an assembly must be located at a greater dimension above a floor or platform, a permanent equipment platform shall be provided to access the assembly, or portion thereof, that is greater than 5 feet (1524 mm) above the floor or platform. The structural design of equipment platforms shall comply with Chapter 16 of the *International Building Code*.

Reason: To ensure safe access to backflow prevention assemblies for testing, repair and maintenance, an equipment platform is required where the assembly is located higher than 5 feet off the floor. It is very difficult to work off of a ladder when attempt to test or repair a backflow prevention assembly. Having to work off a ladder is just an another obstacle that might cause someone to not do the required testing. Where access is readily and safely provided, assemblies will be tested as they need to be.

This new section is placed at the beginning of Section 608 to alert mechanical systems designers to put some thought into where to locate these backflow prevention assemblies in the first place, rather than to have their location be an after thought such that equipment platforms are needed. No one wants to work off platform so prior planning to avoid platforms is smart design.

Cost Impact: Will not increase the cost of construction Proper planned installation will not increase costs and will enhance safety.

P 147-15 : 608.1.1 (New)-MOSS5765

## P 148-15

## 608.1.2 (New), 608.1.2.1 (New), 608.1.2.2 (New), 608.1.2.3 (New)

Proponent: Michael Moss, representing American Backflow Prevention Association (msmoss@utah.gov)

## 2015 International Plumbing Code

### Add new text as follows:

608.1.2 Specific installation criteria. Backflow prevention assemblies shall be installed in accordance with Sections 608.1.2.1 through 608.1.2.3, as applicable.

608.1.2.1 Reduced pressure principle backflow prevention assembly The reduced pressure principle backflow prevention assembly shall be installed as follows:

- 1. Assemblies shall not be installed in a pit.
- 2. The relief valve shall not be directly connected to any waste disposal line, including sanitary sewer, storm drains or vents.
- 3. Assemblies shall be in a horizontal position only unless listed or approved for vertical installation in accordance with Section 303.4.
- 4. The bottom of each assembly shall be installed not less than 12 inches above the floor or ground.
- 5. The body of each assembly shall be not less than 12 inches from any walls, ceiling, or obstacle and shall be be provided with access for testing, repair and maintenance.

#### 608.1.2.2 Double check backflow prevention assembly. Double check backflow prevention assembly shall be installed as follows:

- 1. <u>Assemblies shall be in the horizontal position except where listed or approved for vertical installation in accordance with Section 303.4.</u>
- 2. The bottom of the assembly shall be not less than 12 inches above the floor or ground.
- 3. The body of each assembly shall be not less than 12 inches from any walls, ceilings or obstacle and shall be accessible for testing, repair and maintenance.
- 4. Where installed in a pit or vault, the body shall be not less than 12 inches from all sides, including the floor, roof or ceiling and shall be provided with access for testing, repair and maintenance.

#### 608.1.2.3 Pressure and spill-resistant vacuum breaker assemblies. Pressure and spill-resistant vacuum breaker assemblies shall be installed as follows:

- 1. Not subject to a backpressure condition from downstream piping.
- 2. Not less than 12 inches above all downstream piping and outlets.
- 3. Not less than12 inches from any wall, ceiling or obstacle and shall be be provided with access for testing, repair and maintenance.
- 4. Not below ground, in a vault or pit.
- 5. In a vertical position only.

Reason: There is no adequate minimum installation criteria for the assemblies in Table 608.1 and inadequate guidance within the individual sections for the specific assemblies. For clarity and consistency this information is provided in these sections to assist in proper installation and inspection.

Cost Impact: Will not increase the cost of construction

There is no cost impact with the added criteria of proper installation.

P 148-15 : 608.1.2 (New)-MOSS5671

## P 149-15

## 608.3, 608.4 (New)

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

### 2015 International Plumbing Code

#### Revise as follows:

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.

#### Add new text as follows:

**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 in accordance with the appliance or device manufacturer's installation instructions. Where such instructions do not specify the termination arrangement, the termination shall be to an air gap.

**Reason:** One interpretation of the existing Section 608.3 is that the potable water supply line to a water softener is required to have a backflow preventer, supposedly to protect the water in the water service line from contamination. However, the phrase "water softener" is in a group along with filters, pumps, tanks and appliances that handle or treat potable water. If water softeners are required to have a backflow preventer upstream, does this mean that pumps and filters are also required to have backflow preventers upstream? Those items are in the same sentence.

This doesn't seem to make sense because a water softener provides potable water to the building's potable water distribution system. It is understood that most water softeners have a brine tank where salt is placed and periodically replenished. If the chemical (salt) is safe enough to treat the resin bed of the softener (through which the potable water to the building flows), then is there really a problem?

Millions and millions of water softeners across this country have been installed without a backflow preventer upstream of the softener. The EPA's Cross Connection Manual and the USC Manual for Cross Connection Control do not specifically mention the presence of a water softener as needing a backflow preventer. Connection diagrams for (NSF 44) water softeners do not indicate a need for backflow protection or even mention checking with the local code official to be told that backflow protection is required.

It is believed that the existing language requirement was to make sure that that these devices were not installed in pits and the overflows and relief pipes and discharge pipes from these devices passed through an air gap to the point of discharge. Nothing more. If the code intended for these devices to have a backflow preventer upstream, the device would have had language in Section 608.13. The revised code language clarifies the original intent.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 193.

Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 149-15 : 608.3-SNYDER3963

## P 150-15

Part I: 608.7 Part II:

## P2903.9.5

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## Part I

## 2015 International Plumbing Code

#### Revise as follows:

**608.7 Valves and outlets prohibited below grade.** Potable water outlets and combination stop-and-waste valves shall not be installed underground or below grade. Freezeproof <u>A freezeproof A freezeproof</u> yard <u>hydrantshydrant</u> that <u>draindrains</u> the riser into the ground <u>areshall be</u> considered <u>to beas having a</u> stop-and-waste <u>valves valve below grade</u>.

**Exception:** Freezeproof yard hydrants that drain the riser into the ground shall be permitted to be installed, provided that the potable water supply to such hydrants is protected upstream ofin accordance with Section 608.13.2 or 608.13.5 and the hydrants and the piping from the backflow preventer to the hydrant are identified in accordance with Section 608 and the hydrants are permanently identified as nonpotable outlets by *approved* signage that reads as follows: "Caution, Nonpotable Water608.8. Do Not Drink."

## Part II

## 2015 International Residential Code

#### Revise as follows:

P2903.9.5 Valves and outlets prohibited below grade. Potable water outlets and combination stop-and-waste valves shall not be installed underground or below grade. Freezeproof <u>A freezeproof A freezeproof</u> yard <u>hydrantshydrant</u> that <u>draindrains</u> the riser into the ground <u>areshall be</u> considered to be having a stop-and-waste valves below grade.

**Exception**: Installation of freezeproof Freezeproof yard hydrants that drain the riser into the ground shall be permitted if to be installed provided that the potable water supply to such hydrants is protected upstream of in accordance with Section P2902.3.5 or P2902.3.4 and the hydrants and the piping from the backflow preventer to the hydrants are identified in accordance with Section P2902 and the hydrants are permanently identified as nonpotable outlets by approved signage that reads as follows: "Caution, Nonpotable WaterP2901.2. Do Not Drink."

**Reason:** There is no way to know what type of health hazard the stop and waste opening of a yard hydrant will be exposed to. The contaminants could include lawn fertilizer, animal wastes, garden fertilizer or septic tank effluent. This application is not any different than an irrigation system having at/below grade sprinkler heads. See Section 608.16.5 (IRC Section P2902.5.3). The code requires either a pressure vacuum breaker assembly or a backflow prevention assembly for that application. (For a valve downstream of the backflow preventer, an atmospheric vacuum breaker will not work). But the code currently lacks coverage for what type of backflow protection is necessary for yard hydrant applications. For the code officials who do give this yard hydrant applications should be protected accordingly. Improper backflow device is operational. This is a high hazard application just like an irrigation system and the potable water supply of the building should be protected accordingly. Improper backflow protection for connection of these frost proof yard hydrants to the building water distribution system is an accident waiting to happen.

Keep in mind that where a yard hydrant is needed, a sanitary type yard hydrant (one that does not drain the riser into the ground) can be provided, probably at a lower cost than requiring a backflow prevention assembly for the more inexpensive, riser drain-to-the-ground type yard hydrant. Where only one yard hydrant is installed, a sanitary yard hydrant will probably be an easier selection. Where multiple yard hydrants are on a lot, a dedicated yard hydrant line for all yard hydrants with one backflow prevention assembly to serve all hydrant might be easier.

The signage and marking requirements were removed as the indicated section was updated in the last code cycle to more adequately cover the topic. There is no need to duplicate requirements in the code.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 148.

#### Cost Impact:

#### Part I: Will increase the cost of construction

This proposal will increase the cost of construction because additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code. Specifically, where code officials were not requiring the correct backflow preventer for these applications, there will be a higher cost for the correct backflow preventer plus added labor and materials for either placing the required backflow prevention assembly in a place where leakage (when failure of the device occurs) or for providing a drain for the assembly for when leakage happens (when failure of the device occurs).

#### Part II: Will increase the cost of construction

This proposal will increase the cost of construction because additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code. Specifically, where code officials were not requiring the correct backflow preventer for these applications, there will be a higher cost for the correct backflow preventer plus added labor and materials for either placing the required backflow prevention assembly in a place where leakage (when failure of the device occurs) or for providing a drain for the assembly for when leakage happens (when failure of the device occurs).

P 150-15 : 608.7-SNYDER3964

### 608.9

Proponent: Ronald George, representing Self (Ron@Plumb-TechLLC.com)

### 2015 International Plumbing Code

#### **Revise as follows:**

**608.9 Reutilization prohibited.** Water utilized for the <u>heating or cooling</u> of equipment or other processes shall not be returned to the potable water system. Such water shall be discharged into a drainage system through an *air gap* or shall be utilized for nonpotable purposes.

**Reason:** Plumbing systems should use double wall heat exchangers or other approved means to prevent contamination of the potable water supply. Potable water should not be allowed to flow through heat exchangers either hot or cold for other process systems. There have been low-budget combined heating hot water and domestic hot water systems that utilize the domestic hot water piped through heat exchanger coils, baseboard piping, suply & return pipes and control valves for space heating. These systems often have componenets, coils, piping and valves that are not of approved materials for domestic water systems. In addition, many of these systems can remain dormant and for well over six to nine months when the heating cycle is not neeeded. Upon the first call for heat, all of the stagnant and brackish bacteria laden water in the heating system. This is a serious cross-connection and contamination problem. This increases the chances of contracting Legionnaire's Disease and being exposed to a host of other Bacteria and pathogens in the domestic water system. Where the domestic water is allowed to flow through the hydronic heating cricuit, the water will sit stagnant in the heating coils, valves and piping for long periods of time allowing the chlorine to dissipate after a few days. when the chlorine or other water treatment chemical is gone, bacteria will flourish. In all cases where the water sits stagnant in the piping for more than a few days conditions will be present where bacteria and other pathogens can grow to very high levels before flow resumes through the coils . These combined heating hot water system design for combined heating not water systems where heating coils are located inside a domestic to twater tank and the fluid in the heating coils. Domestic water should not be allowed to flow through the heating coils is a closed loop. That is a preffered system design for combined heating hot water systems. Should not be allowed to flow through the heating to twater should not be allowed to flow through t

#### 22 pitfalls to avoid when designing or installing a combined heating hot water and domestic hot water system

A combined heating hot water and domestic hot water system is a hybrid system that utilizes a boiler or boilers to heat water for heating the building environment, and it uses boiler water to heat domestic hot water for bathing, washing and cleaning uses. The two systems are often combined in an effort to reduce the initial cost of installation, but there are a lot of differences between the two that, if not accounted for, could result in someone getting seriously injured.

Over the years, I have investigated numerous combined systems and found that there are a lot of mistakes or pitfalls that seem to occur. Since there are many opportunities to make mistakes with combined systems, someone very familiar with how both systems are supposed to operate should design them. Heating hot water generally needs to be at a very high temperature, while domestic hot water should be at a lower temperature. If the domestic water gets too hot there are scalding dangers, so proper controls are very important.

I have been investigating scald incidents since the mid 1990s, and I have seen a significant number of these combined systems involved in scald litigation cases because they are often not designed, operated or maintained properly. There are only two plumbing code sections that address combined systems. One section calls for the piping and components in a combined system to be approved for use in potable water systems. The other code requirement calls for a thermostatic mixing valve if the system temperature exceeds 140 F.

There are many more issues than the two mentioned above that need to be addressed. Following is a list of problems or pitfalls that I have found over the years that are related to combined heating hot water and domestic hot water systems. If you can avoid these pitfalls you will have a much safer system:

#### Pitfall number 1: Open system vs. closed system

There are two versions of a combined heating hot water and domestic hot water system. Systems with domestic hot water flowing from the city water supply through the heating hot water system components such as pumps, control valves and heating coils are often called open systems. Open systems utilize the domestic hot water flowing through the heating coils or baseboard heaters for heating the building. The same water flows to the plumbing fixtures for bathing and washing. These systems provide a significant challenge, because the fluid in the system must be potable water. It is difficult to circulate domestic hot water through many hydronic components without having scale, corrosion, buildup of air pockets and oxidation problems. These systems often sit stagnant for long periods of time during the off-season for heating allowing bacteria and other debris to build up to high levels in the water. When heat is firrst called for in the fall, it will dose the domestic water heater with a larce dose of bacteria and stagnant water.

Systems with a double wall heat exchanger to separate the fluid of the heating hot water system from the domestic hot water are referred to as closed systems. Closed systems use a heat exchanger to provide a closed loop for the heating hot water. The closed loop flows through the water heater tank in single or double wall heat exchanger coils to serve the heating hot water system or vice versa. The boiler will supply a coil in the domestic water tank. The heating coils and the heat exchanger serving the domestic hot water. Most hydronic systems have pumps, valves, coils and components that are not approved for drinking water service. Closed hydronic heating systems allow the heating hot water to be a glycol solution with corrosion inhibiters to prevent corrosion and other chemicals to prevent scale build-up on heating surfaces. The closed systems are preferred because they eliminate a lot of opportunities for systems problems.

#### Pitfall Number 2: System operating temperatures

The next challenge for combined systems is the system operating temperatures. Heating hot water systems are generally designed to operate between 180 F and 210 F. Domestic hot water systems are designed to operate between 85 F to 140 F. Heating coils sizes must be increased if the combined system temperatures are lower or scald prevention valves are needed if the system temperatures are kept higher for the heating hot water system temperatures.

Tempered water is water having a temperature range between 85 F (29 C) and 110 F (43 C). Hot water is water at a temperature greater than or equal to 110 F (43 C) Domestic hot water for bathing and showering is usually limited to a maximum of 120 F. Domestic hot water for dishwashing and laundries can be higher. Generally, domestic hot water systems operate around 140 F and heating hot water systems operate around 190 to 200 F. Scalding is often associated with combined systems when unqualified maintenace workers adjust system temperatures to address "lack of heat" calls.

#### Pitfall Number 3: Not including all of the required components in the combined systems

A combined system requires many components to operate properly. If all of the components are not installed in the proper location, the system will experience problems. These components include, but are not limited to the following: the boiler, storage tanks, expansion tank, isolation valves, unions, dielectric waterways, circulating pumps, air eliminators or air vents, control valves, relief valves, balancing valves, heating coils, fin tube radiators, thermostats, pressure gauges, temperature gauges, flushing connections, plumbing fixtures, etc. All of these components must work in concert and must be designed to work together as a system. If any one or several of the components are not installed, or if they are undersized or installed improperly, problems and safety issues can occur.

#### Pitfall Number 4: Seasonal pumping and pump sizing

During the winter heating season, all of the components in a combined system will require a simultaneous peak demand in the morning when it is showering time. The circulating pump must be sized for the simultaneous peak heating and showering loads. During this time it does not make sense to circulate a large quantity of water. I often see a smaller circulating pump that is piped around the large circulating pump so it can be used in the winter months when the large circulators are not needed for building heating.

Systems with domestic hot water flowing from the city water supply through the heating hot water system components such as pumps, control valves and heating coils are often called open systems. Systems with a double wall heat exchanger separating the fluid of the heating hot water system from the domestic hot water are often referred to as closed systems.

When a significant portion of a system is being used seasonally for heating and the remainder of the system is being used year round for domestic hot water, open systems are susceptible to bacteria growth in stagnant sections of heating coil piping. Heating coils have huge potential for bacterial amplification when hydronic systems are coupled with potable hot water systems where no physical barrier or heat exchanger exists between the two fluids.

#### Pitfall Number 5: Dead legs

During the summer months, the fan coil units and branches to baseboard heating units are shut off with a solenoid valve or the circulating pump on these branches does not run all summer long. It is not unusual for a heating system to sit idle for more than six months in southern climates. When the first call for heating is made, there is usually a slug of brackish and foul tasting water that is high in debris, metals and bacteria content. Combined systems are by design creating very large dead legs. This is a violation in many plumbing codes. Controls on combined systems need to incorporate a periodic flushing of the zones by operating the solenoid valves and circulators on each zone on at least a weekly basis if not more often.

#### Pitfall Number 6: Peak load problems

The early morning is generally the coldest time of day. It is also when guests at a hotel or residents of an apartment building or condominium take their morning showers. Equipment, piping, pumps and valves must be sized to handle this simultaneous peak load. If the equipment is not sized big enough the temperature of the space will fall and the shower water temperature will fall. Either condition is likely to result in calls and complaints.

#### Pitfall Number 7: Sizing

Sizing problems can arise when engineers, owners or contractors try to be thrifty and save a few bucks by rounding down on their peak load calculations and downsizing pumps, piping, valves or coils. This is when the phone starts ringing with complaints of spaces being too cold or there not being enough hot water for a shower. The maintenance men usually do what comes naturally when they receive calls of not enough heat: They go to the boiler and turn the temperature up. Turning up the temperature will not cause problems for the heating coils, but it does significantly increase the risk of scalding if the maximum temperature limit stops in the showers and tub/shower valves are not readjusted.

If the shower has an old two-handle or single handle non-compensating type shower valve that compensates for changes in incoming temperature or pressure the risk of scalding is even greater. The best solution is to have a thermostatic mixing valve on the hot water supply to limit the hot water to a safe temperature. If the hot water and heating water piping are still separated, and the system uses one boiler, then a temperature actuated master thermostatic mixing valve conforming to ASSE 1017 or the appropriate CSA B-125 mixing valve can be located at the water heater to lower the hot water to a safe delivery temperature. If the combined system utilizes the same piping for heating hot water and domestic hot water, a temperature limiting valve conforming to ASSE 1070 should be used in-line to mix cold water with hot water to provide a safe temperature of hot water for bathing or showering fixtures.

#### Pitfall Number 8: Maintenance

The main problem with a combined system is that the system includes components and controls for two different mechanical trade disciplines. Often, if there is a service call, the service technician may be familiar with one system or the other. If the system was designed with a specific operating temperature, it is not uncommon for a service tech familiar with only one system to set the temperature to that of the system he is accustomed to.

There are also many components in the system that one trade or the other may be unfamiliar with. For example, in one case the owner called an HVAC technician to work on his combined system. The technician was used to setting hydronic systems for building heating at 190 to 200 F. He set the temperature to 190 F, and a woman was scaled when she got into her shower. The technician did not know that he needed to reset the maximum temperature limit stop on all of the ASSE 1016 shower valves when he readjusted the boiler set point temperature.

#### Pitfall Number 9: Cast iron boiler on an open system

Cast iron boilers do not perform well with open systems because of the large quantities of water that introduces oxygen and minerals that cause rust stains, oxidation and fouling of the heating surfaces. This mistake does not take long to find because of the rust stains that appear in sinks, bathtubs and showers. Cast iron boilers can work well, but they must have a separate closed loop of boiler water that is treated with corrosion inhibitors and other boiler chemicals as needed. The boiler water can then be piped to a coil in a hot water tank or to a heat exchanger to provide domestic hot water.

#### Pitfall Number 10: No storage tank with copper fin tube boilers

I have seen installations where someone thought they could save a few bucks by eliminating the storage tank and using the heating hot water main as the storage tank. This does not work in motels, hotels, apartment buildings and condos. In facilities like these there needs to be a stored volume of water ready for use in a dump load such as a morning shower period. Copper fin tube boilers are designed to raise the temperature of the water only 20 to 40 F as the water flows through the boiler. If the water flows too slowly through the boiler, it will scale up and if it flows too fast the copper will erode away. These types of boilers need to have a storage tank for plumbing applications with a dump load. In heating applications, the Btu input is matched to the heating load calculations, and the system works fine.

#### Pitfall Number 11: No thermal expansion tank

All heating hot water system and domestic hot water systems must have a thermal expansion tank rated for use in a potable water system, not a hydronic expansion tank. The tank should be sized for a system start-up from ambient to hot. If the system has one boiler and two piping systems with a heat exchanger each piping system should have a thermal expansion tank.

#### Pitfall Number 12: Scalding injuries and deaths

Many designers, contractors and owners forget that there are lives at stake when they design and build the combined hot water systems. People have been scalded to death or seriously injured when the systems are not designed, installed or maintained properly.

#### Pitfall Number 13: Litigation

Kurt Vonnegut, Jr. an american writer once wrote "Another flaw in the human character is that everybody wants to build and nobody wants to do maintenance." If you are not willing to commit to properly maintaining the system for the life of the system, don't design it, don't install it or don't request that it be installed. Combined systems require an extensive amount of work and oversight to make sure someone does not get injured. You must document everything, because when someone is injured, everyone will be named in the lawsuit.

#### Pitfall Number 14: Code requirements for thermostatic mixing valves

The 2009 International Plumbing Code (IPC) has the following language dealing with combined systems:

501.2 Water heater as space heater. Where a combination potable water heating and space heating system requires water for space heating at temperatures higher than 140°F (60°C), a master thermostatic mixing valve complying with ASSE 1017 shall be provided to limit the water supplied to the potable hot water distribution system to a temperature of 140°F (60°C) or less. The potability of the water shall be maintained throughout the system.

The 2009 IPC also has the following language addressing maximum water temperatures for instantaneous water heaters:

501.6 Water temperature control in piping from tankless heaters. The temperature of water from tankless water heaters shall be a maximum of 140 °F (60 °C) when intended for domestic uses. This provision shall not supersede the requirement for protective shower valves in accordance with Section 424.3.

#### Pitfall Number 15: Engineered system

I have seen a value engineering option offered by a contractor to combine the domestic hot water system with the heating hot water system. This was not a value to the owner, and it was not engineered. During the evaluation process, the owner decided to allow the contractor to combine the systems without having the contractor provide engineered drawings. This decision gave the contractor the ability to use whatever he wanted to use. The owner got a system that did not work.

#### Pitfall Number 16: Pipe materials

I have seen a cost cutting option labeled as a value engineering option given by a contractor. The option was accepted, and the contractor simply eliminated the domestic hot water system and changed the hydronic system from black steel to galvanized steel piping. This was in a condominium building that had about 500 condos that sold in the neighborhood of one million dollars each. The galvanized pipe started to rust significantly within two years of service and rust stains were significant in all fixtures. The seasonal dead legs from the heating coils allowed rust barnacles to form until the first call for heat. When the flow in these dead leg branches resumed on the first call for heat in the fall rust, debris, iron oxide and stagnant water would be flushed into the strainers of the control valves and into the domestic water system.

Galvanized steel pipe should never be used on a domestic hot water system because domestic hot water is an open system connected to the city water main, which introduces a large quantity of oxygenated water into the system. Oxygenated water will cause significant corrosion in ferrous metals such as black steel and galvanized pipe. All components of a combined system should be copper or another code approved non-ferrous material for domestic hot water service if they are in contact with the city water supply. I often see iron valves installed in these combined systems. This is usually the result of a heating contractor installing or performing maintenance on the combined system and of the contractor not being familiar with the requirements in the code for all components to be approved for domestic water use.

#### Pitfall Number 17: Pumps

When sizing pumps for a combined system there should be two separate systems and one boiler. The hydronic system should be a closed loop that can use large ductile iron-bodied pumps. The problem with an open system is that, when the large pumps are shut down for six months or more, the pumps, and all hydronic circuits to heating coils and baseboard heaters, become dead legs in the piping system. This is why there should be a separate closed piping circuit for the heating system piping.

#### Pitfall Number 18: Corrosion and Errosion of the pipes

I have seen large cast iron and ductile iron hydronic pumps that were not approved for domestic water systems installed in combined systems. When such systems are first turned on in the fall, large slugs of iron oxide laden water are forced into the domestic hot water distribution system. This generally results in sinks and bathtubs filled with orange rusty looking water until the entire system gets flushed out significantly. The ferrous materials in the combined system typically lead to other problems with plugged strainers on control valves and other components. Another problem I see often with these systems is the flow in GPM is not totaled for the pack flow for both systems often resulting in undersized piping. If copper piping is used, the hot water velocity must be within the limitations provided in the Copper Development Association's "Copper Piping Handbook" Cold water can have a velocity up to 8 feet per second in copper pipes, hot water up to 140 F has a velocity limitation of 5 feet per second. Hot water over 140 F has a velocity limitation of 2 - 3 feet per second. I have seen many copper pipes springing leaks because of high velocities and high temperatures. High velocities and high temperatures can easily occur in combined systems.

### Pitfall Number 19: Corrosion inhibitors and other boiler water

#### treatment chemicals

I visited one building on the East Coast where the combined system consisted of eight- inch galvanized water pipes. The galvanized pipes were corroding to the point where the hot water was very cloudy and orange. The building maintenance personnel chose to add an injection pump to inject chemicals into the domestic water main entering the building to raise the PH of the water and to intentionally build up a layer of scale inside the galvanized piping to minimize the amount of corrosion. The problem was that the scale also formed on the heating surfaces and in the control valves, causing them to fail. Upon inspecting the building the correct the situation immediately. This was another case of a heating contractor working on a plumbing system and not being familiar with plumbing code requirements. The solution he came up with would be a possible option for a hydronic system, but in a domestic water system that was a code violation.

Pitfall Number 20: Loss of both systems when there is a problem

When there is a problem with a combined system that causes the system to shut down, both the domestic hot water system and the heating hot water system are out of service. If it is a boiler problem or another major problem, the entire building could be without both systems for a long period of time.

#### Pitfall Number 21: Legionellae bacteria

A research report in 1988 authored by Al Steele, who was the president of the ASPE Research foundation at the time, recommended storing domestic hot water between 135 F and 140 F and utilizing a thermostatic mixing valve to mix the hot water down to a safe delivery temperature below 120 F. With a storage temperature of 140 F, Legionellae bacteria will die within 32 minutes.

The Legionellae bacteria cannot survive water temperatures above 131 F (55 C) for more than five or six hours. The bacteria die instantly at temperatures above 158 F (70 C). General protection against the bacteria can be achieved by designing an operating water temperature of at least 140 F (60 C) or higher. As temperatures increase, so does the risk of scalding. For system water temperatures below 140 F (60 C) special provisions are necessary to allow for cleaning and chemical treatment procedures for addressing the Legionellae bacteria in the domestic hot water system.

A storage temperature of 140 F should be high enough to protect the water heater from the bacteria, but in open systems with Legionellae bacteria in the municipal water supply, the potable hot water system would continually be reseeded with high dosages of water that is potentially infested with Legionellae bacteria. This is another reason why combined systems should have a closed loop for the heating hot water system.

#### Pitfall Number 22: Leakage of boiler water

When boiler water at a higher temperature than 140 F, (180 to 210 degrees F) leaks through a faulty zone valve or solenoid valve or is allowed to flow by gravity circulation through a circulating pump that is de-energized, there is the potential for overheating the domestic hot water. A thermostat that controls a solenoid valve or circulating pumps on the water heater should never be used to control the temperature in a domestic hot water system. Thermostats allow too great a temperature variation and there is potential for leakage and temperature creep. The best way to address this is to provide a thermostatic mixing valve that conforms to ASSE 1017 on the domestic hot water line coming from the hot water tank to provide a safe hot water distribution temperature.

If you are considering a combined system, avoiding these pitfalls should help keep your building warm and provide the occupants a safe temperature of hot water. If you don't avoid these pitfalls you could find yourself in hot water.

Another option would be to keep life simple and keep the systems separate. Then you will not have to worry about someone coming along later and messing up your system design with system modifications or poor maintenance that can create scalding issues. Steer clear of combined heating hot water and domestic hot water systems and you will also steer clear of potential litigation.

Ron George is president of Ron George Design & Consulting Services. He has served as Chairman of the International Residential Plumbing & Mechanical Code Committee. He has also served on the IPC Code committee. He is active in plumbing code and plumbing product standard development committees with ICC, IAPMO, ASSE, ASME, ISEA, ASHRAE, NFPA and ASTM. His company specializes in plumbing, piping, fire protection and HVAC system design and consulting services. He also provides plumbing and mechanical code consulting services and he provides investigations of mechanical system failures and litigation support. To contact Ron, email: Ron@Plumb-TechLLC.com.

Bibliography: Title of Magazine: Plumbing Engineer Magazine, 22 pitfalls to avoid when designing or installing a combined heating hot water and domestic hot water system, August, 2010 Part 1 & September 2010 Part 2, By Ron George, CIPE, CPD, President, Ron George Design & Consulting Services - Part 1 Website: http://plumbingengineer.com/aug\_10/code.php; Part 2 Website: http://plumbingengineer.com/sept\_10/code.php

Copper Development Association's Copper Tube Handbook. website: http://www.copper.org/applications/plumbing/cth/

#### Cost Impact: Will not increase the cost of construction

There is no cost increase with this code change. This is simply a clarification. Combined system with open piping has not been allowed in the current code because of cross connections. This code change is just clarifying the language because the language is not clear it has allowed an unsafe condition to occur where it has been misinterpreted. Combined heating hot water and domestic hot water systems can still be used, There just needs to be a closed loops for the heating hot water to prevent contamination, stagnant water, corrosion and scald injuries.

P 151-15 : 608.9-GEORGE4656

## P 152-15

608.11

Proponent: Jeremy Brown, NSF International, representing NSF International

### 2015 International Plumbing Code

**Revise as follows:** 

**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.

**Reason:** NSF/ANSI Standard 61 Drinking Water System Components-Health Effects addresses critical aspects of drinking water system components: whether contaminants that leach or migrate from the product/material into the drinking water are above acceptable levels in finished waters. Requiring NSF 61 will help protect the drinking water supply from the leaching of contaminants. The IPC and IRC already requires conformance to NSF 61 for pipes, fittings, faucets and valves intended to supply drinking water. (Sections 424.1, 605.3, 605.4, 605.5, 605.7 of IPC). It is logical that tanks should have to meet this same requirement to protect the drinking water. This requirement is also referenced in the Uniform Plumbing Code, and the water works regulations of 46 states.

There are adequate products on the market to fulfill this requirement as there are hundreds of products listed by NSF and other third party certifiers.

#### Cost Impact: Will not increase the cost of construction

Because there are many certified tanks, tank liners, and coatings on the market, this is not expected to increase the cost of construction.

P 152-15 : 608.11-BROWN5244

## P 153-15

## 608.13.1

**Proponent:** Michael Moss, American Backflow Prevention Association, representing American Backflow Prevention Association (msmoss@utah.gov)

### 2015 International Plumbing Code

#### Revise as follows:

**608.13.1 Air gap.** The minimum required *air gap* shall be measured vertically from the lowest end of a potable water outlet to the *flood level rim* of the fixture or receptacle into which such potable water outlet discharges. *Air gaps* shall comply with ASME A112.1.2 and *air gap* fittings shall comply with ASME A112.1.3. Products that are *listed* and *labeled* to ASME A112.1.2 or ASME A112.1.3 shall be considered to be in compliance with this section.

Reason: Section 608.13.9 is incorrectly located with and greatly confused by the various types of backflow preventers within Section 608.13. This is specific to the types of backflow preventers, their standards and suitability for use in certain conditions. Table 608.1 aligns with that criteria. Chemical dispensers are already specified with the backflow requirements of Section 608.16.7.

### Cost Impact: Will not increase the cost of construction

The installation and proper use of dispenser equipment would not increase or lower costs.

P 153-15 : 608.13.1-MOSS5815

## P 154-15

## 608.13.4

**Proponent:** Michael Moss, American Backflow Prevention Association, representing American Backflow Prevention Association (msmoss@utah.gov)

### 2015 International Plumbing Code

#### Revise as follows:

**608.13.4 Barometric loop.** Barometric loops A barometric loop shall precedebe designed and installed to rise vertically at an angle of 90 degrees from the point of connection and shall extend verticallyhorizontal to a heightdistance of 35 feet (10 668 mm) above the loop inlet and return vertically downwards through a 180 degree change in direction to the same elevation as the loop inlet. A barometric loop shall onlybe considered to be utilized as an atmospheric-type capable of preventing backsiphonage only where the pressure in the downstream piping is less than or pressure-type vacuum breaker equal to the pressure upstream of the loop, whether the flow in the loop is continuous or not.

Reason: The wording of the existing section poorly conveys the required design and installation of protection using a barometric loop. The downstream operating conditions are critical for proper use and installation

### Cost Impact: Will not increase the cost of construction

This is a clarification of language for installation and inspection and no additional cost is involved.

P 154-15 : 608.13.4-MOSS5776

## P 155-15

## 608.13.5, 608.13.8

**Proponent:** Michael Moss, American Backflow Prevention Association, representing American Backflow Prevention Association (msmoss@utah.gov)

### 2015 International Plumbing Code

#### Revise as follows:

608.13.5 Pressure vacuum breaker assemblies. Pressure vacuum breaker assemblies shall conform to comply with ASSE 1020 or CSA B64.1.2. Spill-resistant vacuum breaker assemblies shall comply with ASSE 1056 or CSA B64.1.3. These assemblies are designed for installation under continuous pressure conditions where shall be installed with the critical level is installed atof the required height assembly located not less than 12 inches (304.8 mm) above all downstream piping and outlets. Pressure vacuum breaker assemblies shall not be installed in locations where spillage could cause damage to the structure.

### Delete without substitution:

608.13.8 Spill-resistant pressure vacuum breaker assemblies. Spill-resistant pressure vacuum breaker assemblies shall conform to ASSE 1056 or CSA B64.1.3. These assemblies are designed for installation under continuous-pressure conditions where the critical level is installed at the required height.

Reason: The existing section included spill-resistant vacuum breaker assemblies. Section 608.13.8 duplicated the requirements. The conditions for use of both types of backflow assemblies are the same. The deletion of the confusing language and the added language clarifies the installation requirements and inspection criteria for for applicable installations.

**Cost Impact:** Will not increase the cost of construction There is no cost increase with proper planning and installation.

P 155-15 : 608.13.5-MOSS5777

## P 156-15

## 608.13.6, 608.13.6.1 (New), 608.13.6.2 (New), 608.13.6.3 (New)

**Proponent:** Michael Moss, American Backflow Prevention Association, representing American Backflow Prevention Association (msmoss@utah.gov)

### 2015 International Plumbing Code

#### Revise as follows:

608.13.6 Atmospheric-type vacuum breakers. Pipeapplied atmospheric type vacuumVacuum breakers shall conform to ASSE 1001 or CSA B64.1.1<u>be in accordance with Sections 608.13.6.1 and 608.13.6.2</u>. Hose connection vacuum breakersLaboratory faucet backflow preventers shall conform to ASME A112.21.3, ASSE 1011, ASSE 1019, ASSE 1035, ASSE 1052, CSA B64.2, CSA B64.2.1, CSA B64.2.1.1, CSA B64.2.2 or CSA B64.7. These devices shall operate under normal atmospheric pressure when the critical level is installed at the required height.<u>be</u> in accordance with Section 608.13.6.3.

#### Add new text as follows:

608.13.6.1 Pipe-applied vacuum breakers Pipe-applied atmospheric-type vacuum breakers shall conform to ASSE 1001 or CSA B64.1.1. These vaccum breakers shall be considered capable of functioning only where the downstream piping is open to the atmosphere and is located not less than 6 inches above all downstream piping and outlets.

**608.13.6.2** Hose-connection vacuum breakers. Hose connection vacuum breakers shall conform to ASME A112.21.3, ASSE 1011, ASSE 1019, ASSE 1035, ASSE 1052, CSA B64.2, CSA B64.2.1, CSA B64.2.2 or CSA B64.7. These vacuum breakers shall be considered capable of functioning only where the downstream hose is open to the atmosphere and the open end of the hose is not greater than 10 feet (3048 mm) above the elevation of the vacuum breaker.

608.13.6.3 Laboratory faucet backflow preventers Laboratory faucet backflow preventers shall conform to ASSE 1035 or CSA B64.7. These backflow preventers shall be considered capable of functioning only where the downstream hose is open to the atmosphere and the open end of the hose is not greater than 10 feet (3048 mm) above the elevation of the backflow preventer.

Reason: Existing Section 608.13.6 has requirements for three (3) different vacuum breakers with multiple standards. The statement "These devices shall operate under normal atmospheric pressure when the critical level is installed at the required height." does not provide adequate and necessary guidance for installation and inspection. The section was divided to ensure proper and clear installation and inspection conditions for each device.

**Cost Impact:** Will not increase the cost of construction Proper installation and identification will not increase cost.

P 156-15 : 608.13.6-MOSS5778

## P 157-15

## 608.13.7, 608.13.10

**Proponent:** Michael Moss, American Backflow Prevention Association, representing American Backflow Prevention Association (msmoss@utah.gov)

### 2015 International Plumbing Code

Revise as follows:

**608.13.7 Double check backflow prevention assemblies.** Double check backflow prevention assemblies shall conform to ASSE 1015, CSA B64.5, CSA B64.5.1 or AWWA C510. Double check detector fire protection backflow prevention assemblies shall conform to ASSE 1048. These assemblies shall be considered to be capable of operatingfunctioning under continuous any downstream pressure conditionscondition whether continuous or intermittent.

**608.13.10 Dual check** <u>valve type</u> backflow preventer. Dual check<u>valve-type</u> backflow preventers shall conform to ASSE 1024 or CSA B64.6. These backflow preventers shall be considered to be capable of functioning under any downstream pressure condition whether continuous or intermittent.

**Reason:** In Section 608.13.7 the deleted language is more of a device design statement than a required condition of service for proper operation of the device. The added language conveys permissable downstream operating conditions. This is much clearer language for installation and inspection. Section 608.13.10 has been modified to properly identify this device in accordance with the ASSE naming convention and Table 608.1. The added language conveys the permissable downstream operating conditions. his is much clearer language for installation and inspection.

Cost Impact: Will not increase the cost of construction There is not any cost involved with the clarification of this section.

P 157-15 : 608.13.7-MOSS5774

## P 158-15

## 608.13.9, 608.16.7

**Proponent:** Michael Moss, American Backflow Prevention Association, representing American Backflow Prevention Association (msmoss@utah.gov)

### 2015 International Plumbing Code

Delete without substitution:

608.13.9 Chemical dispenser backflow devices. Backflow devices for chemical dispensers shall comply with ASSE 1055 or shall be equipped with an air gap fitting.

Revise as follows:

**608.16.7 Chemical dispensers.** Where chemical dispensers connect to the potable water distribution system, the water supply system shall be protected against backflow in accordance with Section 608.13.1, 608.13.2, 608.13.5, 608.13.6, <del>608.13.0</del> or <del>608.13.9</del><u>608.13.8</u>. The chemical dispenser unit shall connect to a dedicated water supply connection separate from any sink faucet outlet.

Exception: For chemical dispenser units *listed* to act as an air gap fitting because backflow protection is installed within the unit. an external means of protection shall not be required.

**Reason:** Section 608.13.9 is incorrectly located and confused with the various types of backflow preventers of Section 608.13 which is specific to the types of backflow preventers, their standards and suitability to certain conditions. Table 608.1 aligns with those. Chemical dispensers already specify the backflow requirements in Section 608.16.7

**Cost Impact:** Will not increase the cost of construction There is no addition cost for the proper use and installation

P 158-15 : 608.13.9-MOSS5775

## P 159-15

## 608.16.1 (New), 608.16.1, 608.16.1.2 (New)

Proponent: Roger Harper, representing Virginia Plumbing and Mechanical Inspectors Association (skip.harper@dhcd.virginia.gov)

### 2015 International Plumbing Code

### Add new text as follows:

608.16.1 Beverage dispensers. The water supply connection to beverage dispensers shall be protected against backflow in accordance with Sections 608.16.1.1 and 608.16.1.2.

#### Revise as follows:

#### 608.16.1608.16.1.1 BeverageCarbonated beverage dispensers.

The water supply connection to <u>carbonated</u> beverage dispensers 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 <u>of the device</u> and the piping downstream therefrom shall not be affected by carbon dioxide gas.

#### Add new text as follows:

608.16.1.2 Coffee machines and non carbonated drink dispensers. The water supply connection to coffee machines and noncarbonated beverage dispensers shall be protected against backflow by a backflow preventer conforming to ASSE 1022. ASSE 1024 or by an air gap.

Reason: This section needs to be sub-divided into two catagories one for carbonated beverage dispensers and one for non carbonated dispensers.

#### Cost Impact: Will not increase the cost of construction

There is no cost increase but actually less cost in many cases because of the price difference between the backflow devices.

P 159-15 : 608.16.1-HARPER3516

## P 160-15 608.16.1, 608.16.9, 608.16.10

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## 2015 International Plumbing Code

#### Revise as follows:

**608.16.1 Beverage dispensers.** The water supply connection to <u>each</u> beverage <u>dispensers dispenser</u> 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 and the piping downstream therefrom shall not be affected by carbon dioxide gas.

608.16.9 Dental pumppumping equipment. Where The water supply connection to each dental pumping equipment-connects to the water distribution system, the water supply system shall be protected against backflow in accordance with Section 608.13.1, 608.13.2, 608.13.5, 608.13.6 or 608.13.8.

**608.16.10 Coffee machines and noncarbonated beverage dispensers.** The water supply connection to <u>each coffee machines</u> <u>machines</u> and <u>each</u> noncarbonated beverage <u>dispensers dispensers shall</u> be protected against backflow by a backflow preventer conforming to ASSE 1022 or by an *air gap*.

Reason: The reason for these revisions should be obvious. Each "unit" needs to be protected from backflow from the other "unit". For example, installing one backflow preventer device to serve multiple "units" leaves open the possibility that contamination in one "unit" could contaminate an adjacent "unit". In other words, cross contamination could occur. Although the backflow protection section of the code is primarily concerned with protecting the potable water supply from the "units", the code needs to also be specific about protection between units. These changes make this clear. Hopefully, many jurisdictions have already been aware of this potential problem and have already required separate backflow prevention devices for these units.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 128.

#### Cost Impact: Will increase the cost of construction

This proposal will increase the cost of construction because additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code. For those jurisdictions that were not enforcing the code in this manner, yes, there might need to be extra backflow prevention devices installed. In those situations there will be an increased cost of material and labor.

P 160-15 : 608.16.1-SNYDER4014

## P 161-15

## 608.16.1, 608.16.1.1 (New), 608.16.1.2 (New), 608.16.10

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

### 2015 International Plumbing Code

#### Revise as follows:

**608.16.1 Beverage dispensers.** The water supply connection to beverage dispensers 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 valvein accordance with Section 608.16.1.1 and the piping downstream therefrom shall not be affected by carbon dioxide gas608.16.1.2.

#### Add new text as follows:

**608.16.1.1** Carbonated beverage dispensers. The water supply connection to carbonated beverage dispensers shall be protected against backflow by a backflow prevention device 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 therefrom shall not be affected by carbon dioxide gas.

608.16.1.2 Coffee machines and noncarbonated beverage dispensers. The water supply connection to coffee machines and noncarbonated beverage dispensers shall be protected against backflow by a backflow prevention device conforming to ASSE 1024 or by an air gap.

#### Delete without substitution:

608.16.10 Coffee machines and noncarbonated beverage dispensers. The water supply connection to coffee machines and noncarbonated beverage dispensers shall be protected against backflow by a backflow preventer conforming to ASSE 1022 or by an *air gap*.

Reason: There is not a need to protect the potable water supply to coffee machines and noncarbonated beverage dispensers with a backflow prevention device that is suitable for a potable water supply connection to a carbonated beverage dispenser. The ASSE 1022 device is constructed especially for exposure to carbon dioxide gas and carbonated water. An ASSE 1024 device is a dual check valve device just like the ASSE 1022 device but it does not have an intermediate atmospheric vent and thus, does not require a drain. There isn't any justification for needing to use the ASSE 1022 device (and having to provide a drain for the vent) where there will not be exposure to carbon dioxide gas or carbonated water. What comes from a coffee machine or a non-carbonated beverage dispenser is supposedly safe enough to ingest so why have so great of concern that the potable water supply might become "polluted" with something that will not make people sick if an ASSE 1024 device fails. (See the definition of POLLUTED in Chapter 2).

Also consider that, in general, ASSE 1022 devices apparently don't have a long life according to many field reports. On the other hand, ASSE 1024 devices are frequently used with great success in many other similar low hazard applications.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 95.

Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 161-15 : 608.16.1-SNYDER4015

## P 162-15

## Part I: 608.16.11 (New), 801.1, 801.2, 802.1 Part II:

### P2725 (New), P2726.1 (New), P2902.6 (New)

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## Part I

## 2015 International Plumbing Code

### Add new text as follows:

608.16.11 Humidifiers. The water supply connection to humidifiers shall be protected against backflow by a backflow preventer conforming to ASSE 1012 or by an *air gap*.

#### Revise as follows:

**801.1 Scope.** This chapter shall govern matters concerning indirect waste piping and special wastes. This chapter shall further control matters concerning food-handling establishments, sterilizers, <u>humidifiers</u>, clear-water waste, swimming pools, methods of providing *air breaks* or *air gaps*, and neutralizing devices for corrosive wastes.

**801.2 Protection.** Devices, appurtenances, appliances and apparatus intended to serve some special function, such as sterilization, <u>humidification</u>, distillation, processing, cooling, or storage of ice or foods, and that discharge to the drainage system, shall be provided with protection against backflow, flooding, fouling, contamination and stoppage of the drain.

**802.1 Where required.** Food-handling equipment, in other than dwelling units, clear-water waste, <u>humidifiers</u>, dishwashing machines and utensils, pots, pans and dishwashing sinks shall discharge through an indirect waste pipe as specified in Sections 802.1.1 through 802.1.8. Health-care related fixtures, devices and equipment shall discharge to the drainage system through an indirect waste pipe by means of an *air gap* in accordance with this chapter and Section 713.3. Fixtures not required by this section to be indirectly connected shall be directly connected to the plumbing system in accordance with Chapter 7.

## Part II

### 2015 International Residential Code

Add new text as follows:

#### SECTION P2725 HUMIDIFIER DISCHARGE

P2726.1 Overflow pipe from humidifier. The overflow pipe from a humidifier shall terminate at an air gap before discharging water to the point of disposal.

# P2902.6 Humidifiers. The water supply connection to humidifiers shall be protected against backflow by a backflow preventer conforming to ASSE 1012 or by an air gap.

Reason: Most humidifier manufacturer installation instructions only say to make potable water connections in accordance with local codes. The codes are silent on the protection of the water supply connection to humidifiers. Humidifiers, if not regularly serviced, can be a source of contamination to the connected water supply. The inspector has no way of knowing whether such pieces of equipment have internal backflow protection. This simple addition to the codes will clarify the humidifiers need to have a backflow device just like other similar pieces of equipment in the list of items.

Humidifiers have overflows that drain excess water. Improper (direct) connection of the overflow tube could cause a contamination to occur inside of the humidifier which could result in contamination being carried into the airstream of the equipment that the humidifier is attached to. The requirement for an air gap connection at the termination of this discharge tube will prevent this possible contamination from occurring.

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#### Cost Impact:

Part I: Will increase the cost of construction

This proposal will increase the cost of construction because additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code. Specifically, there will be the added cost of a backflow preventer and the installation labor.

#### Part II: Will increase the cost of construction

This proposal will increase the cost of construction because additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code. Specifically, there will be the added cost of a backflow preventer and the installation labor.

> P 162-15 : 608.16.11 (New)-SNYDER3958

# P 163-15

## 610.1

Proponent: Ronald George, Self; www.LegionellaPrevention.org, representing Self (Ron@Plumb-TechLLC.com)

## 2015 International Plumbing Code

#### Revise as follows:

**610.1 General.** New potable water systems shall be purged of deleterious matter and disinfected <u>within two weeks</u> prior to utilization<u>and occupancy of the building</u>. The method to be followed shall be that prescribed by the health authority or water purveyor having jurisdiction or, in the absence of a prescribed method, the procedure described in either AWWA C651 or AWWA C652, or as described in this section. This requirement shall apply to "on-site" or "inplant" fabrication of a system or to a modular portion of a system.

- 1. The pipe system shall be flushed with clean, potable water until dirty water does not appear at the points of outlet.
- The system or part thereof shall be filled with a water/chlorine solution containing not less than 50 parts per million (50 mg/L) of chlorine, and the system or part thereof shall be valved off and allowed to stand for 24 hours; or the system or part thereof shall be filled with a water/chlorine solution containing not less than 200 parts per million (200 mg/L) of chlorine and allowed to stand for 3 hours.
- 3. Following the required standing time, the system shall be flushed with clean potable water until the chlorine is purged from the system.
- 4. The procedure shall be repeated where shown by a bacteriological examination that contamination remains present in the system.

**Reason:** Chlorine dissipates over time when it is introduced into the piping system and losses its ability to disinfect agains bacteria and other organic pathogens in the water piping. Upon initially filling the piping system, flushing can be done at that time, but final disinfection of the piping system should be completed within two weeks of occupancy the building. During the construction of a recnt project that filled severia city plocks, the plumbing system was flushed and filled with water. The piping was allowed to sit in temperatures over 100 degrees for almost twwo years before the building was completed and occupied. Immediate after occupancy there was an outbreak of Legionnaires disease from people showering in the stagnant water that had been in the pipes for a very long time. This code change is simply requiring the flushing to be performed at initial fill and construction and disinfection to occur within two weeks prior to occupancy so that the hazard of bacteria and Legionnella can be eliminated prior to occupancy.

#### Cost Impact: Will not increase the cost of construction

This code change is just changing the time of the disinfection to protect occupants in a new building. There is no additional cost.

P 163-15 : 610.1-GEORGE5587

## P 164-15

## 611.2

Proponent: Jeremy Brown, NSF International, representing NSF International

## 2015 International Plumbing Code

#### Revise as follows:

**611.2 Reverse osmosis systems.** Point-of-use reverse osmosis drinking water treatement units shall comply with NSF58 or CSA B483.1. The discharge from a reverse osmosis drinking water treatment unit shall enter the drainage system through an *air gap* or an *air gap* device that meets the requirements of NSF 58 or CSA B483.1.

Reason: Point-of-use reverse osmosis(RO) drinking water treatment units are commonly used in kitchens, day care centers, breakrooms, etc. These standards are a necessary reference to ensure the protection of public health from these units from a performance, material safety and contaminant reduction aspect. These standards are already referenced in the P2909.2 of the IRC and the reference here contains similar language.

Cost Impact: Will not increase the cost of construction

Because a majority of point of use products sold in the US already meet the requirements of NSF/ANSI 58, this code change is not expected to increase the cost of construction.

P 164-15 : 611.2-BROWN5076

## P 165-15

## 614 (New), 614.1 (New), 614.2 (New),

Proponent: Ronald George, Self; Plumb-Tech Design & Consulting Services, representing Self (Ron@Plumb-TechLLC.com)

### 2015 International Plumbing Code

Add new text as follows:

#### SECTION 614 PRESSURE GAUGES

614.1 Where required. Pressure gauges shall be installed in the following locations:

- 1. On the suction and discharge piping of water pressure booster pumps or booster pump package systems.
- 2. In buildings over 3 stories, at the top of each water riser.
- 3. In buildings over 3 stories, at the top of each pressure zone in a high rise building.
- 4. In buildings over 3 stories, at the bottom of each riser or pressure zone.
- 5. In buildings over 3 stories, at the bottom of each pressure zone.
- 6. In buildings over 3 stories, at the building water service entrance downstream of the meter and backflow preventer.

614.2 Gauge connection requirements Pressure gauges shall have snubbers and gauge cocks that can be normally closed except for when taking pressure readings to prevent physical damage to the gauge from water hammer and pump pulsations.

614.2 Gauge range selection. The range chosen for pressure gauges selection shall provide for the normal system operating pressure reading to be within the middle third of the range.

Reason: There should be requirements for pressure gauges to allow for diagnosis of sytem problems.

Cost Impact: Will increase the cost of construction

There is a slight cost associated with providing pressure gauges.

P 165-15 : 614 (New)-GEORGE5605

## P 166-15

Part I: 701.2 Part II: P2602.1

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## Part I

### 2015 International Plumbing Code

#### Revise as follows:

**701.2** Sewer<u>Connection to sewer</u> required. Buildings in which<u>Sanitary drainage piping from</u> plumbing fixtures are installed<u>in buildings</u> and premises havingsanitary drainage piping systems from premises shall be connected to a public sewer, where <u>where</u>. Where a public sewer is not available, or an approved the sanitary drainage piping and systems shall be connected to a private sewage disposal system in <u>compliance with state or local requirements</u>. Where state or local requirements do not exist for private sewage disposal systems, the sanitary drainage piping and systems shall be connected to an approved private sewage disposal system that is in accordance with the International Private Sewage Disposal Code.

**Exception:** Sanitary drainage piping and systems that convey only the discharge from bathtubs, showers, lavatories, clothes washers and laundry trays shall not be required to connect to a public sewer or to a private sewage disposal system provided that the piping or systems are connected to a system in accordance with Chapter 13 or 14.

## Part II

### 2015 International Residential Code

#### Revise as follows:

**P2602.1 General.** The water-distribution-and drainage system of any building or premises where plumbing fixtures are installed shall be connected to a public water supply-or sewer system, respectively, if available. Where either a public water-supply or sewer system, or both, aresystem is not available, or connection to them<u>the supply</u> is not feasible, an individual water supply or individual (private) sewage disposal system, or both, shall be provided. Sanitary drainage piping from plumbing fixtures in buildings and sanitary drainage piping systems from premises shall be connected to a public sewer. Where a public sewer is not available, the sanitary drainage piping and systems shall be connected to a private sewage disposal system in compliance with state or local requirements. Where state or local requirements do not exist for private sewage disposal systems, the sanitary drainage piping and systems shall be connected to an approved private sewage disposal system that is in accordance with the International Private Sewage Disposal Code.

**Exception:** Sanitary drainage piping and systems that convey only the discharge from bathtubs, showers, lavatories, clothes washers and laundry trays shall not be required to connect to a public sewer or to a private sewage disposal system provided that the piping or systems are connected to a system in accordance with Sections P2911 or P2910.

Reason: PART I: The section is being re-written because many jurisdictions have state and local laws regulating private sewage disposal systems and do not and cannot use the IPSDC. However, there are some jurisdictions that do not have state and local laws for private sewage disposal, therefore in those cases, the IPSDC provide regulations for waste disposal.

The section language (existing or revised) presents a roadblock for utilizing gray water systems. The exception was added to allow for gray water to be diverted from the sewer or private sewage disposal system so that it can be processes by systems in accordance with Chapters 13 or 14.

PART II: Some jurisdictions do not have state and local laws for private sewage disposal systems. Therefore in those cases, the IPSDC provides regulations for waste disposal. The section language (existing or revised) presents a roadblock for utilizing gray water systems. The exception was added to allow for gray water to be diverted from the sewer or private sewage disposal system so that it can be processed by systems in accordance with Chapters P2910 or P2911.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 199.

#### Cost Impact:

Part I: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

#### Part II: Will not increase the cost of construction

This proposal will increase the cost of construction because additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code. Specifically, where private sewage disposal is not regulated by state and local laws, builders could do anything with sewage. They might not provide a large enough private sewage disposal system or one made of materials having long life. In those situations, there will be the extra cost for properly sized systems and better materials. Possibly there would be some additional labor for a larger installation.

P 166-15 : 701.2-SNYDER4017

## P 167-15

#### 701.8

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

### 2015 International Plumbing Code

#### Delete without substitution:

# 701.8 Drainage piping in food service areas. Exposed soil or waste piping shall not be installed above any working, storage or eating surfaces in food service establishments.

**Reason:** Questions about this section have been coming up more frequently concerning the necessity of this requirement and the intent of the section. Does this section mean that soil and waste piping cannot be above the indicated areas regardless of whether a "ceiling" is between the piping and those areas? Or is this section requiring that a ceiling be installed and if so, what type of ceiling (lay-panel/grid work or gypsum board on framing)? Or is this section requiring custom-made "drip pans" under all soil and waste piping (whether there is a ceiling between the piping and the surfaces below or not)?

This section is vague and should be removed from the code. Here's why:

There seems to be the implication that soil and waste piping joints will always leak even though the piping is installed in accordance with the code and is pressure tested in the presence of a code official. If there really is a significant problem with joints failing, then that is an issue to be solved elsewhere. What about ductwork, sprinkler piping and even penetrations through a floor above that can leak "contaminated water" that can drop down to the surfaces below? What about condensation on the outside of cool surfaces that carry years of dirt off of surfaces. Why is there not a similar restriction against the installation of ductwork, sprinkler piping and penetrations above these areas?

If the assumption is made that a ceiling below the piping is what is required, why does a ceiling make the situation any more acceptable? Lay-in panel/grid ceiling systems can "leak" water without ever showing any damage to ceiling panels (think of the lighting troffers). Would we not be just as concerned about leakage in a space above a ceiling that served as an air plenum for a HVAC system?

A recent popular building design practice for restaurants is to not have a "ceiling" over the eating surfaces such as tables or bars. The "ceiling" in these areas is the bottom of the roof deck or the floor above. All the support structure, ductwork, sprinkler piping, other piping and associated hardware is exposed; typically all painted a uniform dark color.

Where the floor above the eating surfaces has plumbing fixtures, there will necessarily be soil and waste piping below the floor and in the open ceiling area just described. If the code intends for "drip pans" to be installed under the piping, then what should the drip pans be made of? Should those pans slope to a drain point? If so, where should the discharge of the drip pans be routed to? Is it acceptable to have the drip pans catching leaks for years and, unbeknownst to the owner, allowing a build-up of a festering mess of bacteria that is open to the moving ventilation air in the space?

A reading of the latest Food Code by the FDA, did not reveal any prohibitions for soil and waste piping above the surfaces indicated in this section. However, the Food Code does make a big deal about the "clean ability" of surfaces above food prep areas (but not above eating surfaces). Obviously, pipes and pipe hangers as well as most structural and ductwork surfaces would be difficult to clean. The local health departments enforcing their version of the Food Code will most likely demand ceilings in the food prep area even though the code (the IBC) does not have such a requirement.

Perhaps what needs to happen is that a proposal to the IBC be made to indicate that ceilings (and what type) are required above food preparation areas with the justification that the Food Code has concerns about "clean ability" of items that would be exposed if the ceiling was not there. That seems more logical than possibly what IPC Section 701.8 is trying to imply.

The PMGCAC did not feel that it was within their scope to make or suggest an IBC proposal for ceilings in restaurants. However, if such a proposal was made and was successful, it would be appropriate to make a proposal to the IPC that would prohibit the installation of any type of piping below a ceiling required by IBC Section 123.4 (whatever the IBC section number would end up being). Until then, this IPC Section 701.8 should simply be removed.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 137.

#### Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 167-15 : 701.8-SNYDER4019

## P 168-15

## Table 702.1

Proponent: Pennie L Feehan, Copper Development Association, representing Copper Development Association (penniefeehan@me.com)

## 2015 International Plumbing Code

Revise as follows:

#### TABLE 702.1 ABOVE-GROUND DRAINAGE AND VENT PIPE

MATERIAL	STANDARD
Brass pipe	ASTM B-43
Copper or copper-alloy pipe	ASTM B 42; <u>ASTM B 43;</u> B 302

(Portions of table not shown remain unchanged)

Reason: Brass is a copper alloy and I relocated the standard to the Copper and Copper Alloy Pipe line to cleanup the table.

Cost Impact: Will not increase the cost of construction

This proposal will not increast the cost of construction as this change is only to update the name of a material that is already in the code.

P 168-15 : T702.1-FEEHAN3796

## P 169-15

## Table 702.1, Table 702.2, Table 702.3, 705.12 (New)

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

### 2015 International Plumbing Code

### **Revise as follows:**

#### TABLE 702.1 ABOVE-GROUND DRAINAGE AND VENT PIPE

MATERIAL	STANDARD
Ductile iron	<u>AWWA C115/A21.15,</u> AWWA C151/A21.51

(Portions of table not shown remain unchanged)

#### TABLE 702.2 UNDERGROUND BUILDING DRAINAGE AND VENT PIPE

MATERIAL	STANDARD
Ductile iron	<u>AWWA C115/A21.15, AWWA</u> <u>C151/A21.51</u>

(Portions of table not shown remain unchanged)

#### TABLE 702.3 BUILDING SEWER PIPE

MATERIAL	STANDARD
Ductile iron	<u>AWWA C115/A21.15, AWWA</u> <u>C151/A21.51</u>

(Portions of table not shown remain unchanged)

Add new text as follows:

705.12 Ductile iron. Joints between ductile iron pipe sections, or between ductile iron pipe and ductile or gray iron fittings shall be mechanical joints installed in accordance with the manufacturer's instructions.

**Reason:** Tables 702.1, 702.2, 702.3 are each missing a ductile iron pipe material entry even though the pipe fitting Table 702.4 includes ductile iron fittings. That in itself is a coordination problem. Why would the pipe fittings be included in the code but not the pipe? Over the years, there have been a few designers asking about what this is because they want to use ductile iron for sanitary drainage service. Although more costly that most other drainage pipe materials, there are good reasons for that material choice for special circumstances both inside and outside of a building. This material might be used where support spacing is desired to be much wider than the code allows (Table 308.5). Or burial in expansive soils creates significant stresses for the piping that other pipe materials don't have the strength to withstand.

Ductile iron piping is frequently used by utilities for wastewater service. The standards for ductile iron piping are already in the code because the same standards apply to ductile iron water piping. However, for water service, the piping is required (by this code) to have cement mortar lining to reduce rust coloring of potable water. Ductile iron for wastewater service does not need a lining.

The new section simply covers how the joints are to be made between fittings and the piping.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 52.

Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 169-15 : T702.1-SNYDER4020

## P 170-15

Part I: Table 702.2 Part II: Table P3002.1

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Mike Cudahy, representing Plastic Pipe and Fittings Association (mikec@cmservnet.com)

## Part I

### 2015 International Plumbing Code

### **Revise as follows:**

TABLE 702.2 UNDERGROUND BUILDING DRAINAGE AND VENT PIPE

MATERIAL	STANDARD
Polyolefin pipe	ASTM F 1412; <u>ASTM F714;</u> CSA B181.3

(Portions of table not shown remain unchanged)

## Part II 2015 International Residential Code

## Revise as follows:

TABLE P3002.1 UNDERGROUND BUILDING DRAINAGE AND VENT PIPE

PIPE	STANDARD
Polyolefin pipe	ASTM F 1412; <u>ASTM F714:</u> CSA B181.3

(Portions of table not shown remain unchanged)

#### Reason:

Part I: ASTM F714 polyethylene pipe is sometimes used to rehabilitate piping sewers under buildings. Currently the code does not list the product for that use, and we were asked to submit a change to allow the use of the product.

HDPE sewer pipe made to ASTM F714, Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Outside Diameter is currently listed under TABLE 702.2, Building Sewer Pipe, allowing its installation and use outside of buildings. Section 717, which is a new section in the code, explains the use and installation of the product outside of buildings in pipe bursting methods. PPFA has had calls regarding the codes not permitting the products under buildings when repair is needed.

Part II: ASTM F714 polyethylene pipe is sometimes used to rehabilitate piping sewers under buildings. Currently the code does not list the product for that use, and we were asked to submit a change to allow the use of the product.

HDPE sewer pipe made to ASTM F714, "Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Outside Diameter", is currently listed under TABLE P3002.1, Building Sewer Pipe, allowing its installation and use outside of buildings. PPFA has had calls regarding the codes not permitting the products under buildings when repair is needed. ASTM F714, "Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Outside Diameter" is already in the code.

#### Cost Impact:

#### Part I: Will increase the cost of construction

This proposal allows for an optional pipe material to be used under buildings. The option is not requiring that this method be chosen. Thus the code with this proposal added will not cause the cost of construction to increase, and the material may even cost less than other options.

#### Part II: Will not increase the cost of construction

This proposal allows for an optional pipe material to be used under buildings. The option is not requiring that this method be chosen. Thus the code with this proposal added will not cause the cost of construction to increase, and the material may even cost less than other options.

P 170-15 : T702.2-CUDAHY4633

## P 171-15

## Table 702.3, 703.2, 705.16 (New)

**Proponent:** Shawn Coombs, Advanced Drainage Systems, Inc., representing Advanced Draiange Systems, Inc. (shawn.coombs@ads-pipe.com)

## 2015 International Plumbing Code

Revise as follows:

#### TABLE 702.3 BUILDING SEWER PIPE

MATERIAL	STANDARD
Acrylonitrile butadiene styrene (ABS) plastic pipe in IPS diameters, including Schedule 40, DR 22 (PS 200) and DR 24 (PS 140); with a solid, cellular core or composite wall	ASTM D 2661; ASTM F 628; ASTM F 1488; CSA B181.1
Acrylonitrile butadiene styrene (ABS) plastic pipe in sewer and drain diameters, including SDR 42 (PS 20), PS 35, SDR 35 (PS 45), PS 50, PS 100, PS 140, SDR 23.5 (PS 150) and PS 200; with a solid, cellular core or composite wall	ASTM F 1488; ASTM D 2751
Cast-iron pipe	ASTM A 74; ASTM A 888; CISPI 301
Concrete pipe	ASTM C 14; ASTM C 76; CSA A257.1M; CSA A257.2M
Copper or copper-alloy tubing (Type K or L)	ASTM B 75; ASTM B 88; ASTM B 251
Polyethylene (PE) plastic pipe (SDR-PR)	ASTM F 714
Polypropylene (PP) Plastic Pipe	ASTM F2736: ASTM F2764: CSA B182.13
Polyvinyl chloride (PVC) plastic pipe in IPS diameters, including Schedule 40, DR 22 (PS 200) and DR 24 (PS 140); with a solid, cellular core or composite wall	ASTM D 2665; ASTM F 891; ASTM F 1488
Polyvinyl chloride (PVC) plastic pipe in sewer and drain diameters, including PS 25, SDR 41 (PS 28), PS 35, SDR 35 (PS 46), PS 50, PS 100, SDR 26 (PS 115), PS 140 and PS 200; with a solid, cellular core or composite wall	ASTM F 891; ASTM F 1488; ASTM D 3034; CSA B182.2; CSA B182.4
Polyvinyl chloride (PVC) plastic pipe with a 3.25-inch O.D. and a solid, cellular core or composite wall	ASTM D 2949, ASTM F 1488
Polyvinylidene fluoride (PVDF) plastic pipe	ASTM F 1673; CSA B181.3

Stainless steel drainage systems, Types 304 and 316L	ASME A112.3.1
Vitrified clay pipe	ASTM C 4; ASTM C 700

For SI: 1 inch = 25.4 mm.

**703.2 Drainage pipe in filled ground.** Where a building sewer or building drain is installed on filled or unstable ground, the drainage pipe shall conform to one of the standards for ABS plastic pipe, cast-iron pipe, copper or copperalloy tubing, or\_PVC plastic pipe <u>or PP plastic pipe</u> listed in Table 702.3.

#### Add new text as follows:

705.16 Polypropylene plastic. The joint between polypropylene plastic pipe and fittings shall incorporate an elastomeric seal. The joint shall conform to ASTM D3212. Mechanical joints shall not be installed above ground.

#### Add new standard(s) as follows:

ASTM F2736-13e1 Standard Specification for 6 to 30 in (152 to 762 mm) Polypropylene (PP) Corrugated Single Wall Pipe And Double Wall Pipe

ASTM F2764/F2764M-11ae2 Standard Specification for 30 to 60 in (750 to 1500 mm) Polypropylene (PP) Triple Wall Pipe and Fittings for Non-Pressure Sanitary Sewer Applications

### CSA B181.0-11 Definitions, general requirements, and methods of testing for thermoplastic non-pressure piping

CSA B182.13-11 Profile polypropylene (PP) sewer pipe and fittings for leak-proof sewer applications

**Reason:** This code change is proposed to incorporate the current ASTM and CSA standards for Polypropylene (PP) sanitary sewer pipe into the IPC code to bring it current with accepted pipe technology. PP pipe is widely used in North America for sanitary sewer trunk lines and has been used in Europe for many years for similar applications. The incorpoation of PP into the IPC will allow sewer authorities following IPC to specify PP pipe in their systems.

#### Cost Impact: Will not increase the cost of construction

Polypropylene has proven to be a lower cost alternative to many iother sanitary sewer pipe products.

Analysis: A review of the standard proposed for inclusion in the code, ASTM F2736-13e1, ASTM F2764/F2764M-11ae2, CSA B181.0-11 & CSA B182.13-11, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 171-15 : T702.3-COOMBS4586
## P 172-15

## Part I: Table 702.4 Part II: Table P3002.3

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

# Part I

## 2015 International Plumbing Code

## **Revise as follows:**

#### TABLE 702.4 PIPE FITTINGS

MATERIAL	STANDARD	
Copper or copper alloy	ASME B 16.15; ASME B 16.18; ASME B 16.22; ASME B 16.23 <del>; ASME B 16.26;</del> ASME B 16.29	

# Part II 2015 International Residential Code

## **Revise as follows:**

#### TABLE P3002.3 PIPE FITTINGS

PIPE MATERIAL	FITTING STANDARD	
Copper or copper alloy	ASME B 16.15; ASME B 16.18; ASME B 16.22; ASME B 16.23 <del>; ASME B 16.26; ASME B 16.29</del>	

Reason: PART I: Chapter 7 is the sanitary drainage chapter of the code. ASME B 16.15 (pressure fittings), B 16.18 (pressure fittings), B 16.22 (pressure fittings) and B 16.26 (flared copper tube fittings) are not drainage pattern fittings and should be removed from this table. The remaining standards ASME B 16.23 and B 16.29 are correct for DWV piping. PART II: Chapter 30 is the sanitary drainage chapter of the code. ASME B 16.15 (pressure fittings), B 16.18 (pressure fittings), B 16.22 (pressure fittings) and B 16.26 (flared copper tube fittings) are not drainage pattern fittings and should be removed from this table. The remaining standards ASME B 16.23 and B 16.22 (pressure fittings) and B 16.26 (flared copper tube fittings) are not drainage pattern fittings and should be removed from this table. The remaining standards ASME B 16.23 and B 16.29 are correct for DWV piping.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 53.

#### Cost Impact:

Part I: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

Part II: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 172-15 : T702.4-SNYDER4058

# P 173-15

## Table 702.4

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

### 2015 International Plumbing Code

## **Revise as follows:**

#### TABLE 702.4 PIPE FITTINGS

MATERIAL	STANDARD	
Malleable iron	ASME B 16.3	

(Portions of table not shown remain unchanged)

Reason: Chapter 7 is the sanitary drainage chapter of the code. The malleable iron row should be deleted. These are not drainage pattern fittings and would not be suitable for venting systems as the condensate would not ready flow back to the drain system. Malleable iron fittings has not been in the sanitary drainage fittings table of the IRC for many editions. This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC). The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 54.

#### Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 173-15 : T702.4-SNYDER4059

## P 174-15

## Part I: Table 702.4 Part II: Table P3002.3

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## Part I

## 2015 International Plumbing Code

## **Revise as follows:**

#### TABLE 702.4 PIPE FITTINGS

MATERIAL	STANDARD	
Polyethylene	ASTM D2683	

## Part II

## 2015 International Residential Code

### **Revise as follows:**

#### TABLE P3002.3 PIPE FITTINGS

PIPE MATERIAL	FITTING STANDARD
Polyethylene	ASTM D2683

(Portions of table not shown remain unchanged)

Reason: PART I: Polyethylene pipe is already in IPC table for Building Sewer Pipe. However, a corresponding entry for pipe fittings of this material was not installed in the fittings table. This created a problem where fittings were needed for this pipe. Fittings could be required for branch piping, lateral connections and cleanouts. Section 717 for Pipe Bursting for sewer replacement was added to the code in the last cycle. That section included the fitting standard ASTM D2683. This standard just needs to be put in Table 702.4 so that fittings for polyethylene pipe included for sewer applications other than pipe bursting sewer applications.

PART II: Polyethylene pipe is already in IRC table for Building Sewer Pipe. However, a corresponding entry for pipe fittings of this material was not installed in the fittings table. This created a problem where fittings were needed for this pipe. Fittings could be required for branch piping, lateral connections and cleanouts. Section P3010 for Pipe Bursting for sewer replacement was added to the code in the last cycle. That section included the fitting standard ASTM D2683. This standard just needs to be put in Table P3002.3 so that fittings for polyethylene pipe included for sewer applications other than pipe bursting sewer applications.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 35.

#### Cost Impact:

Part I: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

Part II: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 174-15 : T702.4-SNYDER4060

# P 175-15

## 702.5

Proponent: Mike Cudahy, representing Plastic Pipe and Fittings Association (mikec@cmservnet.com)

## 2015 International Plumbing Code

#### Revise as follows:

**702.5 Temperature rating.** Where the waste water temperature will be greater than 140°F (60°C), the sanitary drainage piping material shall be rated recommended for such service by the pipe and fitting manufacturers for the highest temperature of the waste water.

Reason: Non-pressure DWV piping materials are not "rated" as pressure piping is - rating is a combination temperature and pressure issue.

#### Cost Impact: Will not increase the cost of construction

This proposal is only modifying and correcting language and does not impact costs. Thus the code with this proposal added will not cause the cost of construction to increase.

P 175-15 : 702.5-CUDAHY4926

# P 176-15

### 703.4

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## 2015 International Plumbing Code

#### Revise as follows:

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 tothat will serve the new system shall be internally examined to verify that the piping is sloping in qualitythe correct direction, is not broken, is not obstructed and is sized for the drainage load of material. The code official shall notify the ownernew plumbing drainage system to make the changes necessary to conform to this code be installed.

Reason: This same proposal was approved for the 2015 IRC. This proposal is to coordinate the IPC with the same allowance.

Consider a few situations that happen to buildings. 1) A slab-on grade building burns down or is wind damaged such that only the remaining slab foundation will be used to re-construct a new building. Re-use of the building drain would be desirable to avoid extensive slab rework. 2) A building is completely razed or the entire plumbing drainage system of a building needs replaced such that only the building sewer remains. Re-use of the building sewer would be desirable to avoid extensive costs and possible complications for replacing the sewer (such as crossing a public street to connect to the public sewer). Why tear out good, serviceable building drains and building sewers for the sake of replacing with new material? The only way to know if existing building drains and existing building sewers are serviceable is to internally examine the piping for problems.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 200.

#### Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 176-15 : 703.4-SNYDER4061

# P 177-15

## 704.1, Table 704.1

Proponent: Ronald George, Self, representing Self (Ron@Plumb-TechLLC.com)

## 2015 International Plumbing Code

#### Revise as follows:

**704.1 Slope of horizontal drainage piping.** Horizontal drainage piping shall be installed in uniform alignment at uniform slopes. The slope of a horizontal drainage pipe shall be not less than that indicated in Table 704.1 except that where the drainage piping is upstream of a grease interceptor, the slope of the piping shall be twice that indicated in Table 704.1.

TABLE 704.1 SLOPE OF HORIZONTAL DRAINAGE PIPE

SIZE (inches)	MINIMUM SLOPE (inch per foot)
$2^1 /_2$ or less	1 /4 <sup>ª</sup>
3 to 6	<sup>1</sup> /8 <sup>ª</sup>
8 or larger	<sup>1</sup> / <sub>16</sub> ª

For SI: 1 inch = 25.4 mm, 1 inch per foot = 83.33 mm/m.

Notes:

a. Slopes for piping draining to a grease interceptor shall comply with Section 704.1.

Reason: Currently there is no requirement for increased slope for grease laden waste to increase the velocity of the grease laden waste to get it to the interceptor before ot cools and coagulates in the drain line. This concept of increasing the slope of grease laden waste has been discussed in many design books and industry publications and articles for years, but it has not been a code requirement.

Cost Impact: Will not increase the cost of construction There should be no additional materials required to apply this design.

P 177-15 : 704.1-GEORGE5824

## P 178-15

Part I: 704.2 Part II:

### P3005.1.6

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

# Part I

### 2015 International Plumbing Code

#### Revise as follows:

704.2 ChangeNo 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. The following shall not be considered a reduction in size in the direction of flow:

- 1. A 4-inch by 3-inch (102 mm by 76 mm) water closet connection shallflange.
- 2. <u>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.</u> <u>but not be considered as a reduction in size-necessarily directly connected to, the water closet flange.</u>
- 3. An approved offset closet flange.

# Part II

### 2015 International Residential Code

#### Revise as follows:

P3005.1.6 ChangeNo 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. The following shall not be considered a reduction in size in the direction of flow:

- 1. A 4-inch by 3-inch (102 mm by 76 mm) water closet connection shallflange.
- 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 be considered as a reduction in size-necessarily directly connected to, the water closet flange.
- 3. An approved offset closet flange.

#### Reason:

Part I: This section begs for clarification especially since 4 x 3 closet bends (elbows) and offset closet flanges are frequently being used in current day construction. Item 1 is not any change to what was stated before.

Item 2- Four x 3 closet bends were commonly used many decades ago when these bends were made of lead. The item is carefully worded to make the intent clear that the bend is to be installed in the upright orientation (and not horizontally). Also, the wording indicates that the bend is not required to be directly connected to closet flange – there can be a vertical section of pipe between the upright bend and the closet flange.

Item 3-Offset closet flanges have been used for decades. Some jurisdictions are reluctant to allow any offset closet flanges because the code doesn't outright discuss the use offset flanges (nor does it prohibit them). Because some offset closet flanges are especially "restrictive looking", code officials didn't want to start allowing some types and not other types. This section is often cited as the basis for disapproving the use of all offset flanges. However, that doesn't seem completely appropriate as some offset closet flanges comply with the standards indicated for pipe fittings in Table 702.4. For example, the standard ASTM D2665 (for PVC fittings) references the standard ASTM D3311 for the patterns and dimensions of DWV fittings. Table 44 in ASTM D3311 shows two types of offset closet flanges. Thus, a code official denying the use of that particular offset closet flange might not be supported by what the code is allowing by Table 702.4. Therefore, Item 3 is being added to open the door for fittings that are already approved by inclusion in a referenced standard and any other offset closet flange that the code official thinks is acceptable.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 201.

Part II: This section begs for clarification especially since 4 x 3 closet bends (elbows) and offset closet flanges are frequently being used in current day construction. Item 1 is not any change to what was stated before.

Item 2- Four x 3 closet bends were commonly used many decades ago when these bends were made of lead. The item is carefully worded to make the intent clear that the bend is to be installed in the upright orientation (and not horizontally). Also, the wording indicates that the bend is not required to be directly connected to closet flange – there can be a vertical section of pipe between the upright bend and the closet flange.

Item 3-Offset closet flanges have been used for decades. Some jurisdictions are reluctant to allow any offset closet flanges because the code doesn't outright discuss the use offset flanges (nor does it prohibit them). Because some offset closet flanges are especially "restrictive looking", code officials didn't want to start allowing some types and not other types. This section is often cited as the basis for disapproving the use of all offset flanges. However, that doesn't seem completely appropriate as some offset closet flanges comply with the standards indicated for pipe fittings in Table P3002.3. For example, the standard ASTM D2665 (for PVC fittings) references the standard ASTM D3311 for the patterns and dimensions of DWV fittings. Table 44 in ASTM D3311 shows two types of offset closet flanges. Thus, a code official denying the use of that particular offset closet flange might not be supported by what the code is allowing by Table P3002.3. Therefore, Item 3 is being added to open the door for fittings that are already approved by inclusion in a referenced standard and any other offset closet flange that the code official thinks is acceptable.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 201.

#### Cost Impact:

Part I: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 178-15 : 704.2-SNYDER4063

## P 179-15

## 705.3, 705.3.1, 705.3.2, 705.3.3, 705.3.4

Proponent: Pennie L Feehan, Copper Development Association, representing Copper Development Association (penniefeehan@me.com)

### 2015 International Plumbing Code

Delete without substitution:

705.3 Brass. Joints between brass pipe or fittings shall comply with Sections 705.3.1 through 705.3.4.

705.3.1 Brazed joints. All joint surfaces shall be cleaned. An approved flux shall be applied where required. The joint shall be brazed with a filler metal conforming to AWS A5.8.

705.3.2 Mechanical joints. Mechanical joints shall be installed in accordance with the manufacturer's instructions.

705.3.3 Threaded joints. Threads shall conform to ASME B1.20.1. Pipe-joint compound or tape shall be applied on the male threads only.

705.3.4 Welded joints. All joint surfaces shall be cleaned. The joint shall be welded with an approved filler metal.

Reason: The proposal removes brass because brass is a copper alloy and is covered in Section 706.6 and Secton 705.7.

Cost Impact: Will not increase the cost of construction

This proposal will not increast the cost of construction as this change is only to update the name of a material that is already in the code.

P 179-15 : 705.3-FEEHAN3800

# P 180-15

## 705.16.1, 705.16.2, 705.16.3, 705.19

Proponent: Pennie L Feehan, representing Copper Development Association (penniefeehan@me.com)

### 2015 International Plumbing Code

#### **Revise as follows:**

**705.16.1 Copper or copper-alloy <u>pipe or</u> tubing to cast-iron hub pipe.** Joints between copper or copper-alloy <u>pipe or</u> tubing and cast-iron hub pipe shall be made with a <u>brass-copper or copper-alloy</u> ferrule or compression joint. The copper or copper-alloy <u>pipe or</u> tubing shall be soldered to the ferrule in an *approved* manner, and the ferrule shall be joined to the cast-iron hub by a caulked joint or a mechanical compression joint.

**705.16.2 Copper or copper-alloy <u>pipe or</u> tubing to galvanized steel pipe.** Joints between copper or copper-alloy <u>pipe or</u> tubing and galvanized steel pipe shall be made with a brass converter fitting <u>copper-alloy</u> or dielectric fitting. The copper tubing shall be soldered to the fitting in an *approved* manner, and the fitting shall be screwed to the threaded pipe.

705.16.3 Cast-iron pipe to galvanized steel-or brass pipe. Joints between cast-iron and galvanized steel-or brass pipe shall be made by either caulked or threaded joints or with an *approved* adapter fitting.

705.19 Soldering bushings. Soldering bushings shall be of red brass copper or copper-alloy and shall be in accordance with Table 705.19.

Reason: This proposal cleans up the section and does not change the intent. Copper-alloy is the term used to identify materials manufactured where copper is the base metal and it includes brass and bronze. The term brass convertor fitting is typical use in fuel gas piping systems.

Cost Impact: Will not increase the cost of construction

This proposal will not increast the cost of construction as this change is only to update the name of a material that is already in the code.

P 180-15 : 705.16.1-FEEHAN3968

## P 181-15

## Part I: 705.16.1 Part II: P3003.13.1, P3003.13.2, P3003.13.3

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Pennie L Feehan, representing Copper Development Association (penniefeehan@me.com)

# Part I

## 2015 International Plumbing Code

### Revise as follows:

**705.16.1 Copper** <u>pipe</u> or <u>copper-alloy</u> tubing to cast-iron hub pipe. Joints between copper <u>pipe</u> or <u>copper-alloy</u> tubing and cast-iron hub pipe shall be made with a <u>brass-copper-alloy</u> ferrule or compression joint. The copper <u>pipe</u> or <u>copper-alloy</u> tubing shall be soldered to the ferrule in an *approved* manner, and the ferrule shall be joined to the cast-iron hub by a caulked joint or a mechanical compression joint.

## Part II

## 2015 International Residential Code

### Revise as follows:

**P3003.13.1 Copper** <u>pipe\_or</u> <u>copper-alloy</u> tubing to cast-iron hub pipe. Joints between copper <u>pipe\_or-copper-alloy\_tubing</u> and cast-iron hub pipe shall be made with a copper-alloy ferrule or compression joint. The copper <u>pipe\_or-copper-alloy\_tubing</u> shall be soldered to the ferrule in an *approved* manner, and the ferrule shall be joined to the cast-iron hub by a caulked joint or a mechanical compression joint.

P3003.13.2 Copper <u>pipe\_or copper-alloy</u> tubing to galvanized steel pipe. Joints between copper <u>pipe\_or-copper-alloy\_tubing</u> and galvanized steel pipe shall be made with a copper-alloy-fitting or dielectric fitting. The copper tubing shall be soldered to the fitting in an *approved* manner, and the fitting shall be screwed to the threaded pipe.

#### P3003.13.3 Cast-iron pipe to galvanized steel or brasscopper-alloy pipe. No change to text.

Reason: This proposal cleans up the section and does not change the intent. Copper alloy is the term used to identify materials manufactured where copper is the base metal and it includes brass and bronze. The term brass convertor fitting is typical use in fuel gas piping systems.

#### Cost Impact:

Part I: Will not increase the cost of construction

This proposal will not increast the cost of construction as this change is only to update the name of a material that is already in the code.

Part II: Will not increase the cost of construction

This proposal will not increase the cost of construction as this change is only to update the name of a material that is already in the code.

P 181-15 : 705.16.1-FEEHAN3983

# P 182-15

## 705.16.2

Proponent: Pennie L Feehan, representing Copper Development Association (penniefeehan@me.com)

### 2015 International Plumbing Code

#### Revise as follows:

**705.16.2 Copper or copper-alloy tubing to galvanized steel pipe.** Joints between copper <u>pipe</u> or copper-alloy tubing and galvanized steel pipe shall be made with a brass converter fitting <u>copper-alloy</u> or dielectric fitting. The copper tubing shall be soldered to the fitting in an *approved* manner, and the fitting shall be screwed to the threaded pipe.

Reason: Because brass is a copper-alloy the sentence does not make sense. It's telling you to use a brass fitting when you are already using a brass nipple.

#### Cost Impact: Will not increase the cost of construction

This proposal will not increast the cost of construction as this change is only to update the name of a material that is already in the code.

P 182-15 : 705.16.2-FEEHAN3954

# P 183-15

## 705.16.3

Proponent: Pennie L Feehan, representing Copper Development Association (penniefeehan@me.com)

### 2015 International Plumbing Code

Revise as follows:

705.16.3 Cast-iron pipe to galvanized steel or brasscopper-alloy pipe. Joints between cast-iron and galvanized steel or brass-copper-alloy pipe shall be made by either caulked or threaded joints or with an approved adapter fitting.

Reason: Copper alloy is the term used to identify materials manufactured where copper is the base metal and it includes brass and bronze.

#### Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction as this change is only to update the name of a material that is already in the code.

P 183-15 : 705.16.3-FEEHAN3986

# P 184-15

## Part I: 705.16.4, 707.1, Chapter 14 Part II: P3003.2, P3003.13.4, Chapter 44

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Mike Cudahy, representing Plastic Pipe and Fittings Association (mikec@cmservnet.com)

# Part I

## 2015 International Plumbing Code

#### Revise as follows:

**705.16.4 Plastic pipe or tubing to other piping material.** Joints between different types of plastic pipe <u>shall be made with an approved adapter fitting or by a</u> <u>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</u> <u>pipe using a solvent cement complying with ASTM D3138. Joints</u> 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.

707.1 Prohibited joints. The following types of joints and connections shall be prohibited:

- 1. Cement or concrete joints.
- 2. Mastic or hot-pour bituminous joints.
- 3. Joints made with fittings not approved for the specific installation.
- 4. Joints between different diameter pipes made with elastomeric rolling O-rings.
- 5. Solvent-cement joints between different types of plastic pipe except where provided for in Section 705.16.4.
- 6. Saddle-type fittings.

#### Add new standard(s) as follows:

ASTM D3138-04(2011), Standard Specification for Solvent Cements for Transition Joints Between Acrylonitrile-Butadiene-Styrene (ABS) and Poly(Vinyl Chloride) (PVC) Non-Pressure Piping Component.

# Part II

## 2015 International Residential Code

#### Revise as follows:

P3003.2 Prohibited joints. Running threads and bands shall not be used in the drainage system. Drainage and vent piping shall not be drilled, tapped, burned or welded.

The following types of joints and connections shall be prohibited:

- 1. Cement or concrete.
- 2. Mastic or hot-pour bituminous joints.
- 3. Joints made with fittings not approved for the specific installation.
- 4. Joints between different diameter pipes made with elastomeric rolling O-rings.
- 5. Solvent-cement joints between different types of plastic pipe except where provided for in Section P3003.13.4.
- 6. Saddle-type fittings

**P3003.13.4 Plastic pipe or tubing to other piping material.** Joints between different types of plastic pipe <u>shall be made with approved adapter fitting or by a</u> 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.

#### Add new standard(s) as follows:

ASTM D3138-04(2011) Standard Specification for Solvent Cements for Transition Joints Between Acrylonitrile-Butadiene-Styrene (ABS) and Poly(Vinyl Chloride) (PVC) Non-Pressure Piping Components

Reason: The use of a special transition cement for this single application is widely accepted, both by local authorities having jurisdiction and other national codes when the building sewer and building drainage change from ABS to PVC. This will create a consistent practice in the industry.

#### Cost Impact:

#### Part I: Will not increase the cost of construction

This proposal allows for an optional method of joining used elsewhere, but not in this code. The option is not requiring that this method be chosen. Thus the code with this proposal added will not cause the cost of construction to increase.

#### Part II: Will not increase the cost of construction

This proposal allows for an optional method of joining used elsewhere, but not in this code. The option is not requiring that this method be chosen. Thus the code with this proposal added will not cause the cost of construction to increase.

#### Analysis:

Part I: A review of the standard proposed for inclusion in the code, ASTM D3138, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

Part II: A review of the standard proposed for inclusion in the code, ASTM D3138, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 184-15 : 705.16.4-CUDAHY4617

# P 185-15

## 705.18

Proponent: Pennie L Feehan, representing Copper Development Association (penniefeehan@me.com)

### 2015 International Plumbing Code

Revise as follows:

705.18 Caulking ferrules. Ferrules shall be of red brass-copper-alloy and shall be in accordance with Table 705.18.

Reason: Copper alloy is the term used to identify materials manufactured where copper is the base metal and it includes brass and bronze.

Cost Impact: Will not increase the cost of construction

This proposal will not increast the cost of construction as this change is only to update the name of a material that is already in the code.

P 185-15 : 705.18-FEEHAN3982

# P 186-15

## 705.18

**Proponent:** Janine Snyder, City of Thornton, Colorado, representing Colorado Association of Plumbing & Mechanical Officials (Janine.Snyder@cityofthornton.net)

## 2015 International Plumbing Code

#### Revise as follows:

705.18 Caulking ferrules. Ferrules Caulking ferrules shall be of red brass and shall be in accordance with Table 705.18.

Reason: Simply an editorial clarification within the section.

#### Cost Impact: Will not increase the cost of construction

This is merely an editorial change to clarify the type of ferrule not a new code requirement.

P 186-15 : 705.18-SNYDER5377

# P 187-15

## 705.19

Proponent: Pennie L Feehan, representing Copper Development Association (penniefeehan@me.com)

### 2015 International Plumbing Code

Revise as follows:

705.19 Soldering bushings. Soldering bushings shall be of red brass copper-alloy and shall be in accordance with Table 705.19.

Reason: Copper alloy is the term used to identify materials manufactured where copper is the base metal and it includes brass and bronze.

Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction as this change is only to update the name of a material that is already in the code.

P 187-15 : 705.19-FEEHAN3987

# P 188-15

## Table 706.3

**Proponent:** Robert Perry, representing self (BPerry@gmail.com)

## 2015 International Plumbing Code

Revise as follows:

#### TABLE 706.3 FITTINGS FOR CHANGE IN <u>DRAINAGE FLOW</u> DIRECTION

TYPE OF FITTING PATTERN	CHANGE IN <u>FLOW</u> DIRECTION <sup>®</sup>					
	Horizontal to vertical	Vertical to horizontal	Horizontal to horizontal			
BEND PATTERNS						
Sixteenth bend	<u>*Y</u>	* <u>Y</u>	* <u>Y</u>			
Eighth bend	¥Y	* <u>Y</u>	<u>×⊻</u>			
Sixth bend	<u>*Y</u>	<del>×</del> Υ	* <u>Y</u>			
Plastic Quarter bend	<u>*Y</u>					
Plastic Long sweep quarter bend	<u>*Y</u>	* <u>Y</u>	* <u>Y</u>			
Cast iron Quarter bend	Ϋ́	<u>Гр</u>	<u>г</u> р			
<u>Cast iron</u> Short sweep <u>(90 degree</u> <u>bend)</u>	<u>*Y</u>	X <sup>æ</sup> L <u>b.c</u>	Ӿ <sup>а</sup> ӏҫ			
<u>Cast iron</u> Long sweep <u>(90 degree</u> <u>bend)</u>	<u>*Y</u>	<u>*Y</u>	<del>X</del> Y			
BRANCH FITTING PATTERNS <sup>®</sup>						
Sanitary tee	¥ <u>ç</u> Γ <sub>q</sub>	NA	NA			
Wye	<u>*Y</u>	* <u>Y</u>	¥Ύ			
Combination wye and eighth bend	<u>×Y</u>	<u>*Y</u>	<u>×Y</u>			

For SI: 1 inch = 25.4 mm.1 degree = 0.17 radians.

a. The fittings shall only be permitted for a 2-inch or smaller fixture drain. Legend: Y = Acceptable use. NA = Not allowed. L = Limited use; refer to the indicated note.

b. Three inches or larger. For 2-inch (50.8 mm) or smaller sizes, acceptable for piping serving only a single fixture.

c. For a limitation on double sanitary tees, see Section 706.3. Acceptable only for 3-inch or larger size piping.

d. Double pattern is limited in accordance with Section 706.3.

e. Double and single patterns.

**706.3 Installation of fittings.** Fittings shall be installed to guide sewage and waste in the direction of flow. Change in direction shall be made by fittings installed in accordance with Table 706.3. Change in direction by combination fittings, side inlets or increasers shall be installed in accordance with Table 706.3 based on the pattern of flow created by the fitting. DoubleThe branches of double sanitary tee patterns shall not receive the discharge of any of the following:

Exception: Back-to-back water closet connections to double sanitary tees shall be permitted where the horizontal developed length between the outlet of the double sanitary tee pattern is 18 inches (457 mm) or greater.

- 1. <u>back-to-back water closetswhere either water closet is less than 18 inches horizontal developed length from the water closet outlet to the connection</u> to the sanitary tee.
- 2. and fixtures or appliances with pumping action discharge.
- 3. drainage stacks discharging to both branches of the tee where the vertical portion of either stack is within 10 pipe diameters horizontally to the sanitary tee.

**Reason:** The existing table is is primitive, at best, and it is a wonder that more installers haven't made significant mistakes. There even isn't a legend for what X means. First off, putting an "X" in a table cell where something is allowed is just backward to how the rest of the world uses "X"s. This is the reason for changing the "X"s to "Y"s. (The new legend in the note a indicates Y=Acceptable use.)

Next, putting a dash in for where something is "not allowed" doesn't make sense either. Use of "NA" makes more sense. (The new legend in the note a indicates NA=Not Allowed) Then, having a X with superscript note letters doesn't tell give a quick, clear warning that something (in the notes) needs to be considered. That is why I used "L" to indicate that the use is Limited and to see the specific notes in the table. (The new legend in the note a indicates L=Limited use: see notes) The headers for BEND PATTERNS and BRANCH FITTING PATTERNS were put in to be helpful in separating the table for better reading. Also, this alloed me to a note on BRANCH FITTING PATTERNS to indicate that this part of the table applies to both single and double patterns. This has always been a hot topic in the plumber and code official worlds as some of each think that this table only applies to single patterns for some types of fittings in some applications. There have been articles written in magazines about this. The added note "e" makes it clear that the table is for both single and double. Note that I have submitted a companion proposal for the issue about double wyes and double combos being used in horizontal drains if this particular part of the proposal causes you concern. Some don't like this practice, some seem to think it is OK to do. I believe my companion proposal will resolve all concerns.

The existing notes were reworded for clarity...no changes in requirements were done.

Changes to Section 706.3 were included with this proposal as I felt that since the table made reference to that section, it should be in this proposal.

I changed how Section 706.3 was laid out for the back-to-back issue because i wanted to include item 3. There have been situations where some plumbers wanted to connect the horizontal pipes from the bases of two stacks, into a double san tee. If those stacks were really close to each other, then the flow from one could shoot across the double san tee and into the pipe coming from the other stack. I think that it is necessary to limit how close the base of a stack can be to these double san tees to avoid presssure fluctuations in the system (and perhaps clogging). The old timers "right way" to make the connection would be to use a double combo....but there could be reasons that someone would want to use the tee (probably a double san tee is cheaper!) . If they do that, they need to be limited.

#### Cost Impact: Will not increase the cost of construction

This is just a clarification of the table. The additional Item 3 for Section 706.3 is just a limitation that would rarely, if ever apply. There wouldn't be any hardship in labor and materials. The installer would just do the work in a slightly different way, not at any greater cost.

P 188-15 : 706.3-PERRY5791

# P 189-15

## 706.4 (New)

Proponent: Robert Perry, representing Self (BPerry@gmail.com)

## 2015 International Plumbing Code

## Add new text as follows:

706.4 Double pattern fittings in horizontal piping Double wye fittings and double combination-wye-and-eighth-bend fittings shall not be installed in horizontal drain piping except where the barrell of the fitting is installed at a slope of not less than 1/2 inch per foot (4-percent).

**Reason:** This issue is the source of great aggravation for many installers. Some code officials say NO, you cannot have a double wye or a double combo wye "in the flat". Others, including some APSE engineers say that this is allowed. Mathematically, when the barrel of the fitting is set at a minimum slope, especially slopes such as 1% or less, the slope in the branches is almost nothing. This could lead to stoppages in the lines connecting to the branches. Along with the possibility that the branches might not be set perfectly level with each other, this is precisely why some people refuse to allow this type of fitting "in the flat". But what if the barrel of the fitting is installed with a greater slope such as 8% slope (about 1 inch per foot). The branches would have plenty of slope for proper flow. The issue as to whether to allow or not allow double pattern fittings in horizontal piping has to do with the slope of the barrell of the fitting. That 1/2 inch per foot slope (about 3% slope) in the branches perfectly level. I strongly request that you approve this proposal to end the years of arguments abou this issue. And it doesn't matter to me if the committee wanted to change the slope number to something larger like 3/4 inch per foot slope (about 6% slope) to be safe about what is happening in the branches. Just choose a number and let's move forward.

Cost Impact: Will not increase the cost of construction This proposal would solidify the allowance to use a single fitting in some applications so there would be a reduction in labor and material costs.

P 189-15 : 706.4 (New)-PERRY5790

# P 190-15

## Part I: 705.16.4, 707.1, Chapter 14 Part II: P3003.13.4, P3003.2, Chapter 44

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Tim Earl, GBH International, representing The Oatey Company (tearl@gbhinternational.com)

# Part I

## 2015 International Plumbing Code

#### Revise as follows:

**705.16.4 Plastic pipe or tubing to other piping material.** Joints between different types of plastic pipe or 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.

**Exception:** Where a PVC sewer pipe connects to an ABS building drainage pipe, an adapter fitting shall not be required to be used where a single, solvent cement joint will be used. The solvent cement for the single joint shall be green in color and shall conform to ASTM D3138.

707.1 Prohibited joints. The following types of joints and connections shall be prohibited:

- 1. Cement or concrete joints.
- 2. Mastic or hot-pour bituminous joints.
- 3. Joints made with fittings not approved for the specific installation.
- 4. Joints between different diameter pipes made with elastomeric rolling O-rings.
- 5. Solvent-cement joints between different types of plastic pipe except where provided for in Section 705.16.4.
- 6. Saddle-type fittings.

#### Add new standard(s) as follows:

ASTM D3138 - ??? Standard Specification for Solvent Cements for Transition Joints Between Acrylonitrile-Butadiene-Styrene (ABS) and Poly(Vinyl Chloride) (PVC) Non-Pressure Piping Components

## Part II

### 2015 International Residential Code

### Revise as follows:

P3003.13.4 Plastic pipe or tubing to other piping material. Joints between different types of plastic pipe or 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.
Exception: Where a PVC sewer pipe connects to an ABS building drainage pipe, an adapter fitting shall not be required to be used where a single, solvent cement joint will be used. The solvent cement for the single joint shall be green in color and shall conform to ASTM D3138.

P3003.2 Prohibited joints. Running threads and bands shall not be used in the drainage system. Drainage and vent piping shall not be drilled, tapped, burned or welded.

The following types of joints and connections shall be prohibited:

- 1. Cement or concrete.
- 2. Mastic or hot-pour bituminous joints.
- 3. Joints made with fittings not approved for the specific installation.
- 4. Joints between different diameter pipes made with elastomeric rolling O-rings.
- 5. Solvent-cement joints between different types of plastic pipe except as provided for in Section P3003.13.4.
- 6. Saddle-type fittings.

#### Add new standard(s) as follows:

ASTM D3138 - 04 (2011) Standard Specification for Solvent Cements for Transition Joints Between Acrylonitrile-Butadiene-Styrene (ABS) and Poly(Vinyl Chloride) (PVC) Non-Pressure Piping Components

#### Cost Impact:

Part I: Will not increase the cost of construction This may save as much as \$50 per such joint, accounting for labor reduction and no longer needing mechanical joint components.

Part II: Will not increase the cost of construction

This may save as much as \$50 per such joint, accounting for labor reduction and no longer needing mechanical joint components.

#### Analysis:

Part II: A review of the standard proposed for inclusion in the code, ASTM D3138, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 190-15 : 707.1-EARL4640

# P 191-15

Part I: 708.1.6 Part II: P3005.2.6

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Pennie L Feehan, representing Copper Development Association (penniefeehan@me.com)

# Part I

## 2015 International Plumbing Code

### Revise as follows:

**708.1.6 Cleanout plugs.** Cleanout plugs shall be of <u>brasscopper-alloy</u>, plastic or other *approved* materials. Cleanout plugs for borosilicate glass piping systems shall be of borosilicate glass. <u>BrassCopper-alloy</u> cleanout plugs shall conform to ASTM A 74 and shall be limited for use only on metallic piping systems. Plastic cleanout plugs shall conform to the referenced standards for plastic pipe fittings, as indicated in Table 702.4. Cleanout plugs shall have a raised square head, a countersunk square head or a countersunk slot head. Where a cleanout plug will have a trim cover screw installed into the plug, the plug shall be manufactured with a blind end threaded hole for such purpose.

## Part II

## 2015 International Residential Code

## Revise as follows:

**P3005.2.6 Cleanout plugs.** Cleanout plugs shall be copper alloy, plastic or other *approved* materials. Cleanout plugs for borosilicate glass piping systems shall be of borosilicate glass. Brass Copper-alloy cleanout plugs shall conform to ASTM A74 and shall be limited for use only on metallic piping systems. Plastic cleanout plugs shall conform to the referenced standards for plastic pipe fittings as indicated in Table P3002.3. Cleanout plugs shall have a raised square head, a countersunk square head or a countersunk slot head. Where a cleanout plug will have a trim cover screw installed into the plug, the plug shall be manufactured with a blind end threaded hole for such purpose.

Reason: This proposal cleans up the section and does not change the intent. There are many different copper and copper-alloy compositions. Copper alloy is the term used to identify materials manufactured where copper is the base metal and it includes brass and bronze.

#### Cost Impact:

Part I: Will not increase the cost of construction This proposal will not increast the cost of construction as this change is only to update the name of a material that is already in the code.

#### Part II: Will not increase the cost of construction

This proposal will not increase the cost of construction as this change is only to update the name of a material that is already in the code.

P 191-15 : 708.1.6-FEEHAN3973

# P 192-15

## 709.3

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## 2015 International Plumbing Code

#### Revise as follows:

709.3 Values for continuous and semicontinuousConversion of gpm flow into dfu values. Where discharges to a waste receptor or to a drainage system are only known in gallons per minute (liters per second) values, the *Drainagedrainage fixture unit* values for continuous and semicontinuous flow into a drainage system those flows shall be computed on the basis that 1 gpm (0.06 L/s) of flow is equivalent to two *drainage* fixture units.

Reason: This section is often misunderstood because of the vague and undefined terms "continuous" and "semicontinuous". Also, some have interpreted that this is a conversion factor that works in both directions. It is not and was never intended to be because of the "probability of use" of a fixture that is incorporated in all dfu values. This equivalency is provided as an easy way to convert gallons per minute flows into an approximate dfu value so that the designer of the plumbing system can move forth with the design of the drainage system according to dfu sizing tables.

This wording only clarifies the intent of the existing section and does not add any new requirements.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 34.

Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 192-15 : 709.3-SNYDER4064

# P 193-15

## 709.4

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## 2015 International Plumbing Code

#### Revise as follows:

**709.4 Values for indirect waste receptor.** The *drainage fixture unit* load of an indirect waste receptor receiving the discharge of indirectly connected fixtures shall be the sum of the *drainage fixture unit* values of the fixtures that discharge to the receptor, but not less than the *drainage fixture unit* value given for the <del>indirect waste receptor in Table 709.1 or 709.2.</del>

Reason: This is a simple cleanup of language for clarity. Although there could be an indirectly connected waste receptor, there is no such thing as an indirect waste receptor. Piping (discharging) to a waste receptor is often called indirect waste piping because the connection to the sanitary drainage system is indirect (through an air gap or air break). This section is not about the special circumstance of the outlet pipe from a waste receptor discharging to another waste receptor. For example, such as a floor drain in a refrigerated food storage room required to discharge to a waste receptor outside of the room.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 202.

Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 193-15 : 709.4-SNYDER4065

# P 194-15

Part I: 712.3.2 Part II:

# P3007.3.2

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Donald Surrena, National Association of Home Builders, representing National Association of Home Builders (dsurrena@nahb.org)

# Part I

## 2015 International Plumbing Code

### Revise as follows:

**712.3.2 Sump pit.** The sump pit shall be not less than 18 inches (457 mm) in diameter and not less than 24 inches (610 mm) in depth, unless otherwise *approved*. The pit shall be accessible and located such that all drainage flows into the pit by gravity. The sump pit shall be constructed of tile, concrete, steel, plastic or other *approved* materials. The pit bottom shall be solid and provide permanent support for the pump. The sump pit shall be fitted with a gastight removable cover that is installed flush with grade or floor level, or abovenot more than 2 inches (51 mm) below grade or floor level. The cover shall be adequate to support anticipated loads in the area of use. The sump pit shall be vented in accordance with Chapter 9.

## Part II

## 2015 International Residential Code

## Revise as follows:

**P3007.3.2 Sump pit.** The sump pit shall be not less than 18 inches (457 mm) in diameter and 24 inches (610 mm) deep, unless otherwise *approved*. The pit shall be accessible and located so that drainage flows into the pit by gravity. The sump pit shall be constructed of tile, concrete, steel, plastic or other *approved* materials. The pit bottom shall be solid and provide permanent support for the pump. The sump pit shall be fitted with a gas-tight removable cover that is installed above grade level or floor level, or not more than 2 inches (51 mm) below grade or floor level. The cover shall be adequate to support anticipated loads in the area of use. The sump pit shall be vented in accordance with Chapter 31.

Reason: The purpose of this code change is to make the IPC consistent with the IRC where the sump cover is installed not more than 2 inches below grade. Currently the cover for sump pits needs to be located at grade or higher leaving little to no flexibility for the design of the finished floor, however by allowing the cover to be not more than 2 inches below grade (as in the IRC) or higher eliminates this problem.

#### Cost Impact:

#### Part I: Will not increase the cost of construction

When unable to install cover flush with grade, or to allow for a finished surface, correcting the problem could potentially cost in excess of \$200. Therefore, this code change could decrease the cost of construction in certain circumstances.

#### Part II: Will not increase the cost of construction

There is no change to the requirements of this section. This proposal is for correlation purposes only.

P 194-15 : 712.3.2-SURRENA5014

## P 195-15

Part I: 712.3.3 Part II:

## P3007.3.3

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## Part I

### 2015 International Plumbing Code

#### Revise as follows:

**712.3.3 Discharge pipe and fittings.** Discharge pipe and fittings serving sump pumps and ejectors shall be constructed of materials in accordance with Sections 712.3.3.1 and 712.3.3.2 and shall be *approved*.

## Part II

### 2015 International Residential Code

#### Revise as follows:

P3007.3.3 Discharge pipe and fittings. Discharge pipe and fittings serving sump pumps and ejectors shall be constructed of materials in accordance with Sections P3007.3.3.1 and P3007.3.3.2-and shall be *approved*.

#### Reason:

Part I: Subsections 712.3.3.1 and 712.3.3.1 provide enough guidance to the designer and installer for proper selection of discharge piping components such that there is not a need for the code official to further approve the selections. Besides, what other criteria would a code official use to grant approval? 712.3.3.1 Materials. Pipe and fitting materials shall be constructed of brass, copper, CPVC, ductile iron, PE, or PVC.

712.3.3.2 Ratings. Pipe and fittings shall be rated for the maximum system operating pressure and temperature. Pipe fitting materials shall be compatible with the pipe material. Where pipe and fittings are buried in the earth, they shall be suitable for burial.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 50.

Part II: Subsections P3007.3.3.1 and P3007.3.3.2 provide enough guidance to the designer and installer for proper selection of discharge piping components such that there is not a need for the code official to further approve the selections. Besides, what other criteria would a code official use to grant approval?

P3007.3.3.1 Materials. Pipe and fitting materials shall be constructed of copper alloy, copper, CPVC, ductile iron, PE, or PVC.

P3007.3.3.2 Ratings. Pipe and fittings shall be rated for the maximum system operating pressure and temperature. Pipe fitting materials shall be compatible with the pipe material. Where pipe and fittings are buried in the earth, they shall be suitable for burial.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 50.

#### Cost Impact:

#### Part I: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

### Part II: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 195-15 : 712.3.3-SNYDER4066

# P 196-15

## 712.3.3.1

Proponent: Pennie L Feehan, representing Copper Development Association (penniefeehan@me.com)

### 2015 International Plumbing Code

Revise as follows:

712.3.3.1 Materials. Pipe and fitting materials shall be constructed of brasscopper, copper-alloy, CPVC, ductile iron, PE, or PVC.

Reason: This proposal cleans up the section and does not change the intent. Copper alloy is the term used to identify materials manufactured where copper is the base metal and it includes brass and bronze.

#### Cost Impact: Will not increase the cost of construction

This proposal will not increast the cost of construction as this change is only to update the name of a material that is already in the code.

P 196-15 : 712.3.3.1-FEEHAN3975

## P 197-15

Part I: 712.4.2 Part II: P3007.6

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

**Proponent:** Robert Adkins, Prince William County, representing Virginia Plumbing and Mechanical Inspectors Association (radkins@pwcgov.org)

## Part I

### 2015 International Plumbing Code

#### Revise as follows:

**712.4.2 Capacity.** A sewage pump or sewage ejector shall have the capacity and head for the application requirements. Pumps or ejectors that receive the discharge of water closets shall be capable of handling spherical solids with a diameter of up to and including 2 inches (51 mm). Other pumps or ejectors shall be capable of handling spherical solids with a diameter of up to and including 1 1/2 inch (2513 mm). The capacity of a pump or ejector based on the diameter of the discharge pipe shall be not less than that indicated in Table 712.4.2.

#### Exceptions:

- 1. Grinder pumps or grinder ejectors that receive the discharge of water closets shall have a discharge opening of not less than 1 -1/4 inches (32 mm).
- 2. Macerating toilet assemblies that serve single water closets shall have a discharge opening of not less than 3/4 inch (19 mm).

## Part II

### 2015 International Residential Code

### Revise as follows:

**P3007.6 Capacity.** Sewage pumps and sewage ejectors shall have the capacity and head for the application requirements. Pumps and ejectors that receive the discharge of water closets shall be capable of handling spherical solids with a diameter of up to and including 2 inches (51 mm). Other pumps or ejectors shall be capable of handling spherical solids with a diameter of up to and including 1 inch (25.4 mm)<sup>1/2</sup> inch (13 mm). The minimum capacity of a pump or ejector based on the diameter of the discharge pipe shall be in accordance with Table 3007.6.

#### Exceptions:

- 1. Grinder pumps or grinder ejectors that receive the discharge of water closets shall have a discharge opening of not less than 1<sup>1</sup>/<sub>4</sub> inches (32 mm).
- 2. Macerating toilet assemblies that serve single water closets shall have a discharge opening of not less than <sup>3</sup>/<sub>4</sub> inch (19 mm).

Reason: Many pumps do not comply with the 1 inch minimum requirement, especially smaller pump systems used for individual fixtures such as pantry sinks, etc. Numerous pumps for these purposes are available with this size discharge.

#### Cost Impact:

Part I: Will not increase the cost of construction Allowing a slightly smaller pump will not increase the cost of construction.

Part II: Will not increase the cost of construction Allowing a slightly smaller pump will not increase the cost of construction.

P 197-15 : 712.4.2-ADKINS3488

## P 198-15

Part I: 712.4.2 Part II: P3007.6

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## Part I

## 2015 International Plumbing Code

#### Revise as follows:

**712.4.2 Capacity.** A sewage pump or sewage ejector shall have the capacity and head for the application requirements. Pumps or ejectors that receive the discharge of water closets shall be capable of handling spherical solids with a diameter of up to and including 2 inches (51 mm). Other pumps or ejectors shall be capable of handling spherical solids with a diameter of up to and including 1/2 inch (2513 mm). The capacity of a pump or ejector based on the diameter of the discharge pipe shall be not less than that indicated in Table 712.4.2.

#### Exceptions:

- 1. Grinder pumps or grinder ejectors that receive the discharge of water closets shall have a discharge opening of not less than 1<sup>1</sup>/<sub>4</sub> inches (32 mm).
- 2. Macerating toilet assemblies that serve single water closets shall have a discharge opening of not less than <sup>3</sup>/<sub>4</sub> inch (19.1 mm).

## Part II

#### 2015 International Residential Code

### Revise as follows:

**P3007.6 Capacity.** Sewage pumps and sewage ejectors shall have the capacity and head for the application requirements. Pumps and ejectors that receive the discharge of water closets shall be capable of handling spherical solids with a diameter of up to and including 2 inches (51 mm). Other pumps or ejectors shall be capable of handling spherical solids with a diameter of up to and including <u>1/2</u> inch (<del>25.413</del> mm). The minimum capacity of a pump or ejector based on the diameter of the discharge pipe shall be in accordance with Table 3007.6.

#### Exceptions:

- 1. Grinder pumps or grinder ejectors that receive the discharge of water closets shall have a discharge opening of not less than 1<sup>1</sup>/<sub>4</sub> inches (32 mm).
- 2. Macerating toilet assemblies that serve single water closets shall have a discharge opening of not less than 3 /, inch (19 mm).

Reason: There are smaller pump systems used for individual fixtures such as pantry sinks and bar sinks that are only capable of passing ½ inch solids. These pumps have been successfully used in jurisdictions where these pumps were approved as an alternative method.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 113.

#### Cost Impact:

Part I: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

#### Part II: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 198-15 : 712.4.2-SNYDER4067

## P 199-15

## 713 (New), 713.1 (New), 713.1.1 (New), 713.1.2 (New)

Proponent: Julius Ballanco, JB Engineering and Code Consulting, P.C., representing InSinkErator (JBENGINEER@aol.com)

### 2015 International Plumbing Code

Add new text as follows:

#### SECTION 713

#### FOOD WASTE IN COMMERCIAL FOOD HANDLING ESTABLISHMENTS

713.1 Food waste. In commercial food handling establishments, the disposal of food waste shall be in accordance with Section 713.1.1 or Section 713.1.2.

713.1.1 Food waste disposer. Food waste shall discharge to the sanitary drainage system through a commercial food waste disposer.

713.1.2 Separation of food waste. Food waste shall be separated from sanitary drainage flow. Such food waste shall be put into a trash receptacle, a composting bin, a beneficial reuse bin or a pulper for disposal. Sink strainers and mechanical strainers shall be an *approved* means for separating food waste from drainage flow.

Reason: While this may appear to be an obvious requirement, there are still plumbing systems that have food waste discharged down the drain. The only time food waste should discharge down the drain in a food handling establishment is after it has been first ground up through a commercial food waste disposer.

If a commercial food waste disposer is not provided, the food waste must be disposed of in another manner. The most common method of disposing of food waste is to a trash receptacle. Other options are to compost the food waste, have it sent for beneficial reuse, or dispose of it to a pulper.

This code requirement will help prevent stoppages in the drainage system resulting for large food waste items that do not belong in the piping. Only pulverized food particle are intended to be discharged to the sanitary drainage system.

Cost Impact: Will not increase the cost of construction

The intent of the code is currently to prevent uncontrolled food waste from discharging down the drain. This section merely identifies the options for doing this.

P 199-15 : 713 (New)-BALLANCO3806

# P 200-15

713.4

Proponent: John Williams, CBO, Chair, representing Adhoc Health Care Committee (AHC@iccsafe.org)

## 2015 International Plumbing Code

#### Revise as follows:

713.4 Vacuum system station. Ready access shall be provided to vacuum system station receptacles inlets. Such receptacles shall be built into cabinets or recesses and shall be visible.

Reason: The proper term is 'inlet', not 'receptacles'. It is a conflict to both require being built into a cabinet and visible. The inlets cannot be recessed because it would be too hard to connect with patient equipment

The ICC Ad Hoc Committee on Healthcare (AHC) has just completed its 4th year. The AHC was established by the ICC Board to evaluate and assess contemporary code issues relating to hospitals and ambulatory healthcare facilities. This is a joint effort between ICC and the American Society for Healthcare Engineering (ASHE), a subsidiary of the American Hospital Association, to eliminate duplication and conflicts in healthcare regulation. Information on the AHC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the AHC effort can be downloaded from the AHC website at: <a href="http://www.iccsafe.org/cs/AHC/Pages/default.aspx">http://www.iccsafe.org/cs/AHC/Pages/default.aspx</a>.

#### Cost Impact: Will not increase the cost of construction

This proposal removes a potentially hazardous requirement. There are many more options available, therefore, the cost of construction will not change.

P 200-15 : 713.4-WILLIAMS4253

# P 201-15 713.5, 713.6, 713.7, 713.7.1, 713.7.2

Proponent: John Williams, CBO, Chair, representing Adhoc Health Care Committee (AHC@iccsafe.org)

## 2015 International Plumbing Code

#### Revise as follows:

713.5 BottleMedical vacuum system. Vacuum (fluid suction) Medical vacuum systems intended for collecting, removing and disposing of blood, pusother bodily fluids or other fluids by the bottle systemwaste anesthesia gasses shall provided comply with receptacles equipped with an overflow prevention device at each vacuum outlet station. NFPA 99.

#### Delete without substitution:

713.6 Central disposal system equipment. Central vacuum (fluid suction) systems shall provide continuous service. Systems equipped with collecting or control tanks shall provide for draining and cleaning of the tanks while the system is in operation. In hospitals, the system shall be connected to the emergency power system. The exhausts from a vacuum pump serving a vacuum (fluid suction) system shall discharge separately to open air above the roof.

713.7 Central vacuum or disposal systems. Where the waste from a central vacuum (fluid suction) system of the barometric-lag, collection-tank or bottledisposal type is connected to the drainage system, the waste shall be directly connected to the sanitary drainage system through a trapped waste.

**713.7.1 Piping.** The piping of a central vacuum (fluid suction) system shall be of corrosion-resistant material with a smooth interior surface. A *branch* shall be not less than <sup>4</sup>/<sub>2</sub>- inch (12.7 mm) nominal pipe size for one outlet and shall be sized in accordance with the number of vacuum outlets. A main shall be not less than 1-inch (25 mm) nominal pipe size. The pipe sizing shall be increased in accordance with the manufacturer's instructions as stations are increased.

713.7.2 Velocity. The velocity of airflow in a central vacuum (fluid suction) system shall be less than 5,000 feet per minute (25 m/s).

**Reason:** This proposal deletes some of the incomplete requirements in this section and references NFPA 99, which is broadly accepted as the national standard for medical gas and vacuum systems. It is much more appropriate to send the medical vacuum component of the piping system to NFPA 99 for design and installation. This system is covered more completely in 5.1.10 in that standard. As written the requirements in this section are incomplete. NFPA99 is already referenced in Section 1202.1.

The ICC Ad Hoc Committee on Healthcare (AHC) has just completed its 4th year. The AHC was established by the ICC Board to evaluate and assess contemporary code issues relating to hospitals and ambulatory healthcare facilities. This is a joint effort between ICC and the American Society for Healthcare Engineering (ASHE), a subsidiary of the American Hospital Association, to eliminate duplication and conflicts in healthcare regulation. Information on the AHC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the AHC effort can be downloaded from the AHC website at: <a href="http://www.iccsafe.org/cs/AHC/Pages/default.aspx">http://www.iccsafe.org/cs/AHC/Pages/default.aspx</a>.

Cost Impact: Will not increase the cost of construction

NFPA 99 is referenced in Section 1202.1, therefore, there would be no increase in construction cost.

P 201-15 : 713.5-WILLIAMS4254

## P 202-15

Part I: 715.1, 715.2 (New) Part II: P3008.1, P3008.2 (New)

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Julius Ballanco, JB Engineering and Code Consulting, P.C., representing Mainline Backflow Products (JBENGINEER@aol.com)

## Part I

## 2015 International Plumbing Code

#### Revise as follows:

715.1 Sewage backflow: Where required. Where plumbing fixtures are installed on a floor with a finished floor elevation below the elevation of the manhole cover of the next upstream manhole in the public sewer, such fixtures shall be protected by a backwater valve installed in the building drain, or horizontal branch serving such fixtures. Plumbing fixtures installed on a floor with a finished floor elevation above the elevation of the manhole cover of the next upstream manhole in the public sewer shall not discharge through a backwater valve.

Exception: In existing buildings, fixtures above the elevation of the manhole cover of the next upstream manhole in the public sewer shall not be prohibited from discharging through a backwater valve.

#### Add new text as follows:

715.2 Allowable installation. Where plumbing fixtures are installed on a floor with a finished floor elevation above the elevation of the manhole cover of the next upstream manhole in the public sewer, and a backwater valve is installed in the building drain or horizontal branch serving such fixtures, the backwater valve shall be of the normally-open type.

Exception: Normally-closed backwater valve installations for existing buildings shall not be prohibited.

## Part II

### 2015 International Residential Code

### Revise as follows:

P3008.1 Sewage backflow. Where required. Where the flood level rims of plumbing fixtures are below the elevation of the manhole cover of the next upstream manhole in the public sewer, the fixtures shall be protected by a backwater valve installed in the *building drain*, branch of the *building drain* or horizontal branch serving such fixtures. Plumbing fixtures having flood level rims above the elevation of the manhole cover of the next upstream manhole in the public sewer shall not discharge through a backwater valve.

Exception: In existing buildings, fixtures above the elevation of the manhole cover of the next upstream manhole in the *public sewer* shall not be prohibited from discharging through a backwater valve.

#### Add new text as follows:

P3008.2 Allowable installation. Where plumbing fixtures are installed on a floor with a finished floor elevation above the elevation of the manhole cover of the next upstream manhole in the public sewer, and a backwater valve is installed in the building drain or horizontal branch serving such fixtures, the backwater valve shall be of the normally-open type.

Exception: Normally-closed backwater valve installations for existing buildings shall not be prohibited.

#### Reason:

Part I: This section was originally developed based on the use of what is now classified as "normally closed backwater valve." ASME A112.14.1 has two categories of backwater valves, normally closed backwater valves and normally open backwater valves. A normally open backwater valve allows the free movement of air throughout the drainage system. The connection to the public sewer is based on having a free movement of air from the public sewer through the vent terminal on the roof.

When a normally closed backwater valve is installed for the entire plumbing system, this is not accomplished. However, with a normally open backwater valve, the free movement of air occurs in the sanitary drainage and vent system.

This change merely adds a distinction between the use of a normally closed backwater valve and a normally open backwater valve. The requirements for normally closed backwater valve remain the same. The only change is to revise the title of the section to read, "Where required." Since this is the section that requires backwater valves to be installed, it is most appropriate to entitle the section, "Where required."

The second half of the original section has been split into a new section entitled, "Allowable installation." This is the part of the original code section that placed limitations on using backwater valves for fixtures that are located above the elevation of the manhole cover. The change is to allow the discharge of fixtures located above the elevation of the manhole cover provided that a normally open backwater valve is installed. This is consistent with the intended use of each style of backwater valve.

The wording of the exception was been changed to reflect the revised wording to Section 915.2. However, the requirements of the exception do not change. It still will allow a normally closed backwater valve for an existing building.

Part II: This section was originally developed based on the use of what is now classified as "normally closed backwater valve." ASME A112.14.1 has two categories of backwater valves, normally closed backwater valves and normally open backwater valves. A normally open backwater valve allows the free movement of air throughout the drainage system. The connection to the public sewer is based on having a free movement of air from the public sewer through the vent terminal on the roof.

When a normally closed backwater valve is installed for the entire plumbing system, this is not accomplished. However, with a normally open backwater valve, the free movement of air occurs in the sanitary drainage and vent system.

This change merely adds a distinction between the use of a normally closed backwater valve and a normally open backwater valve. The requirements for normally closed backwater valve remain the same. The only change is to revise the title of the section to read, "Where required." Since this is the section that requires backwater valves to be installed, it is most appropriate to entitle the section, "Where required."

The second half of the original section has been split into a new section entitled, "Allowable installation." This is the part of the original code section that placed limitations on using backwater valves for fixtures that are located above the elevation of the manhole cover. The change is to allow the discharge of fixtures located above the elevation of the manhole cover provided that a normally open backwater valve is installed. This is consistent with the intended use of each style of backwater valve.

#### ICC COMMITTEE ACTION HEARINGS ::: April, 2015

The wording of the exception was been changed to reflect the revised wording of Section P3008.2. However, the requirements of the exception do not change. It still will allow a normally closed backwater valve for an existing building.

#### Cost Impact:

Part I: Will increase the cost of construction This change provides options for the code user. There is no additional language mandating the use of backwater valves.

Part II: Will not increase the cost of construction

This change provides options for the code user. There is no additional language mandating the use of backwater valves.

P 202-15 : 715.1-BALLANCO3730

# P 203-15

Part I: 715.2, 715.3, 715.4, 715.5 Part II: P3008.2, P3008.5, P3008.3, P3008.4

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Julius Ballanco, JB Engineering and Code Consulting, P.C., representing Mainline Backflow Products (JBENGINEER@aol.com)

## Part I

### 2015 International Plumbing Code

Revise as follows:

**715.2 Material.** Bearing parts of backwater valves shall be of corrosion-resistant material. Backwater valves shall comply with ASME A112.14.1, CSA B181.1 or CSA B181.2.

#### Delete without substitution:

715.3 Seal. Backwater valves shall be so constructed as to provide a mechanical seal against backflow.

715.4 Diameter. Backwater valves, when fully opened, shall have a capacity not less than that of the pipes in which they are installed.

**Revise as follows:** 

715.5715.3 Location. Backwater valves shall be installed so that access is provided to the working parts for service and repair.

## Part II

### 2015 International Residential Code

Revise as follows:

**P3008.2 Material.** Bearing parts of backwater valves shall be of corrosion-resistant material. Backwater valves shall comply with ASME A112.14.1, CSA B181.1 or CSA B181.2.

P3008.5P3008.3 Location. Backwater valves shall be installed so that access is provided to the working parts are accessible for service and repair.

Delete without substitution:

P3008.3 Seal. Backwater valves shall be constructed to provide a mechanical seal against backflow.

P3008.4 Diameter. Backwater valves, when fully opened, shall have a capacity not less than that of the pipes in which they are installed.

Reason:

Part I: This change cleans up the language in the section. Backwater valves, like all plumbing products, are required to be third party listed. The listing is to the referenced standard. The reference standard has the requirements that are proposed to be stricken in the section. Furthermore, plumbing inspectors are not checking on the dimensions or working parts of a listed backwater valve.

Paragraph 2.4 of ASME A112.14.1 goes into great detail regarding the material requirements for the backwater valve. Not only are the bearing parts corrosion resistant, the quality of the corrosion resistance is listed. Hence the first sentence in Section 712.2 is unnecessary.

Paragraph 3.2 of the ASME standard specifies water tightness requirements for the backwater valve. Hence, Section 712.3 is unnecessary.

Paragraph 2.1.1 of the ASME standard requires the backwater valve to comply with the opening dimensions of Table 1. The opening dimensions equal the pipe dimensions. Hence, Section P712.4 is unnecessary.

The last section does not require a statement that the access is for service and repair. The language is simply cleaned up to use the term defined in the code

Part II: This change cleans up the language in the section. Backwater valves, like all plumbing products, are required to be third party listed. The listing is to the referenced standard. The reference standard has the requirements that are proposed to be stricken in the section. Furthermore, plumbing inspectors are not checking on the dimensions or working parts of a listed backwater valve.

Paragraph 2.1.1 of ASME A112.14.1 requires the backwater valve to comply with the opening dimensions of Table 1. The opening dimensions equal the pipe dimensions. Hence, Section P3008.4 is unnecessary.

Paragraph 2.4 of the ASME standard goes into great detail regarding the material requirements for the backwater valve. Not only are the bearing parts corrosion resistant, the quality of the corrosion resistance is listed. Hence the first sentence in Section P3008.2 is unnecessary.

Paragraph 3.2 of the ASME standard specifies water tightness requirements for the backwater valve. Hence, Section P3008.3 is unnecessary.

The last section has been cleaned up to identify that the internal moving components are what must be accessible. The movement in the code has been to use the term, "provide access" or "access is provided," as opposed to accessible. The term "accessible" is more associated with requirements for the physically challenged. The sentence would become identical to the wording in the IPC.

#### Cost Impact:

Part I: Will not increase the cost of construction

There are no changes to the mandatory requirements. This cleans up the requirement with greater reliance on the standard and listing.

Part II: Will not increase the cost of construction

There is no change in the requirements. The proposal cleans up the langauge with reliance on the standard and the listing.

P 203-15 : 715.2-BALLANCO3731

## P 204-15

Part I: 717.4, 717.5 Part II: P3010.4, P3010.5

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Mike Cudahy, representing Plastic Pipe and Fittings Association (mikec@cmservnet.com)

## Part I

### 2015 International Plumbing Code

#### Revise as follows:

717.4 Pipe. The replacement pipingpipe shall be manufactured withmade of a high density polyethylene (HDPE) and shall have a standard dimension ratio (SDR) of 17-and. The pipe shall be in compliance with ASTM F 714.

717.5 Pipe fittings. Pipe fittings to be connected to the replacement pipingpipe shall be made of extra-high molecular weight PE3408 materialhigh-density polyethylene (HDPE) and shall be manufactured with an SDR of 17 and in compliance with ASTM D 2683.

## Part II

### 2015 International Residential Code

#### Revise as follows:

**P3010.4 Pipe.** The replacement pipe shall be made of a high-density polyethylene (HDPE) that conforms to cell classification number PE3608, PE4608 or PE4710 as indicated in ASTM F 714. The pipe fittings and shall be manufactured with an SDR of 17 and in compliance with ASTM F 714.

P3010.5 Pipe fittings. Pipe fittings to be connected to the replacement pipingpipe shall be made of high-density polyethylene (HDPE) that conforms to cell classification number PE3608, PE4608 or PE4710 as indicated in ASTM F 714. The pipe fittings and shall be manufactured with an SDR of 17 and in compliance with ASTM D 2683.

Reason: ASTM F714, Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Outside Diameter, only refers to pipe, not fittings. Fittings are not made in SDR's. And calling out resin designation codes is not necessary. This change has a companion change in the IRC to get the requirements to match this language.

#### Cost Impact:

Part I: Will not increase the cost of construction None.

#### Part II: Will not increase the cost of construction

This proposal is modifying language to coordinate with each other in multiple code sections and does not impact costs. Thus the code with this proposal added will not cause the cost of construction to increase."

P 204-15 : 717.4-CUDAHY4648
## P 205-15

Part I: 718 (New), Chapter 14 Part II:

## 3011 (New), Chapter 44

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Larry Gill, representing IPEX USA LLC (larry.gill@ipexna.com)

## Part I

## 2015 International Plumbing Code

Add new text as follows:

### SECTION 718

### REPLACEMENT OF UNDERGROUND SEWERS BY PVC FOLD AND FORM METHODS

718.1 General This section shall govern the replacement of existing building sewer piping by PVC fold and form methods.

718.2 Applicability The replacement of building sewer piping by PVC fold and form methods shall be limited to gravity drainage piping of sizes 6 inches (152mm) and smaller. The replacement piping shall be of the same nominal size as the existing piping.

718.3 Pre-installation inspection The existing piping sections to be replaced shall be inspected internally by a recorded video camera survey. The survey shall include notations of the position of cleanouts and the depth of connections to the existing piping.

718.4 Pipe The replacement piping shall be manufactured in compliance with ASTM F1871 or ASTM F1504.

718.5 Installation Pipe complying with ASTM F1504 shall be installed in accordance with ASTM F1947. Pipe complying with ASTM F1871 shall be installed in accordance with ASTM F1867.

718.6 Cleanouts Where the existing building sewer did not have cleanouts meeting the requirements of this code. cleanout fittings shall be installed as required by this code.

<u>718.7</u> Post-installation inspection The completed replacement piping shall be inspected internally by a recorded video camera survey. The video survey shall be reviewed and approved by the code official prior to pressure testing of the replacement piping system.

718.8 Pressure testing The replacement piping system and the connections to the replacement piping shall be tested in accordance with Section 312.

#### Add new standard(s) as follows:

ASTM F1871-2011 Standard Specification for Folded/Formed Poly (Vinyl Chloride) Pipe Type A for Existing Sewer and Conduit Rehabilitation

ASTM F1504-2014 Standard Specification for Folded Poly(Vinyl Chloride) (PVC) Pipe for Existing Sewer and Conduit Rehabilitation

ASTM F1947-2010 Standard Practice for Installation of Folded Poly (Vinyl Chloride) (PVC) Pipe into Existing Sewers and Conduits

ASTM F1867-2012 Standard Practice for Installation of Folded/Formed Poly (Vinyl Chloride) (PVC) Pipe Type A for Existing Sewer and Conduit Rehabilitation

## Part II

## 2015 International Residential Code

Add new text as follows:

#### SECTION 3011

## REPLACEMENT OF UNDERGROUND SEWERS BY PVC FOLD AND FORM METHODS

3011.1 General This section shall govern the replacement of existing building sewer piping by PVC Fold and Form methods.

**3011.2 Applicability** The replacement of building sewer piping by PVC Fold and Form methods shall be limited to gravity drainage piping 6 inches (152MM) and smaller. The replacement piping shall be of the same nominal size as the existing piping.

**3011.3** Pre-installation inspection The existing piping sections to be replaced shall be inspected internally by a recorded video camera survey. The survey shall include notations of the position of cleanouts and the depth of connections to the existing piping.

3011.4 Pipe The replacement piping shall be manufactured in complaince with ASTM F1871 or ASTM F1504.

3011.5 Installation Piping complying with ASTM F1504 shall be installed in accordance with ASTM F1947. Piping complying with ASTM F1871 shall be installed in accordance with ASTM F1867.

3011.6 Cleanouts Where the existing building sewer did not have cleanouts meeting the requirements of this code. cleanout fittings shall be installed as required by this code.

**3011.7** Post-installation inspection The completed replacement piping shall be inspected internally by a recorded video camera survey. The video survey shall be reviewed and approved by the code official prior to pressure testing of the replacement piping system.

3011.8 Pressure testing The replacement piping system as well as the connections to the replacement piping shall be tested in accordance with Section P2503.4.

Add new standard(s) as follows:

ASTM F1871 - 2011 Standard Specification for Folded/Formed Poly (Vinyl Chloride) Pipe Type A for Existing Sewer and Conduit Rehabilitation

ASTM F1504 - 2014 Standard Specification for Folded Poly(Vinyl Chloride) (PVC) Pipe for Existing Sewer and Conduit Rehabilitation

ASTM F1947 - 2010 Standard Practice for Installation of Folded Poly (Vinyl Chloride) (PVC) Pipe into Existing Sewers and Conduits

ASTM F1867 - 2012 Standard Practice for Installation of Folded/Formed Poly (Vinyl Chloride) (PVC) Pipe Type A for Existing Sewer and Conduit Rehabilitation

Reason: The current IPC includes provisions for replacement of underground sewers by pipe bursting or the installation of new pipe in an open cut trench. This proposal introduces a different

method for sewer rehabilitation which is similar to pipe bursting. Fold and form is a method where a PVC pipe is manufactured in a plant to either ASTM F1504 or ASTM F1871. The pipe is heated and collapsed to form a roll for transport to the worksite. Once on site the pipe is heated and pulled into an existing sewer pipe which is in need of rehabilitation. The new pipe is then expanded and installed per ASTM F1947 or ASTM F1867. This proposal also includes sections similar to Section 717 to put the sewer line back in service. This proposal will provide for an alternative to open cut and pipe bursting methods and give owners and municipalities additional means to repair a deteriorating system.

#### Cost Impact:

#### Part I: Will not increase the cost of construction

This proposal provides another option for sewer rehabilitation/replacement. It is estimated that pipe bursting and fold and form methods are approximately 60% of the cost of open cut installation. These methods offer significant savings as well as less impact on the surrounding area.

### Part II: Will not increase the cost of construction

No cost impact. It is estimated that pipe bursting and fold and form methods are approximately 60% of the cost of open cut installations. These methods offer significant savings as well as less impact on the surrounding area.

#### Analysis:

Part II: A review of the standard proposed for inclusion in the code, ASTM F1871-2011, ASTM F1504-2014, ASTM F1947-2010 and ASTM F1867-2012, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 205-15 : 718 (New)-GILL4544

# P 206-15

## 802.1

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## 2015 International Plumbing Code

#### Revise as follows:

**802.1 Where required.** Food-handling equipment, in other than dwelling units, clear-water waste, dishwashing machines and utensils, pots, pans and dishwashing sinks shall discharge through an indirect waste pipe as specified in Sections 802.1.1 through 802.1.8. Health-care related fixtures, devices and equipment shall discharge to the drainage system through an indirect waste pipe by means of an *air gap* in accordance with this chapter and Section 713.3. Fixtures not required by this section to be indirectly connected by this section and the exception of Section 301.6 shall be directly connected to the plumbing system in accordance with Chapter 7.

Reason: The revised language resolves a conflict that has existed in the code for many cycles. The existing section language seemed to require that floor drains at the base of elevator shafts had to be direct connected to the drainage system. However, the exception of Section 301.6 requires that these floor drains must be indirectly connected to the drainage system.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 17.

Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 206-15 : 802.1-SNYDER4068

## P 207-15

802.1

Proponent: John Williams, CBO, Chair, representing Adhoc Health Care Committee (AHC@iccsafe.org)

## 2015 International Plumbing Code

#### Revise as follows:

**802.1 Where required.** Food-handling equipment, in other than dwelling units, clear-water waste, dishwashing machines and utensils, pots, pans and dishwashing sinks shall discharge through an indirect waste pipe as specified in Sections 802.1.1 through 802.1.8. Health-care related fixtures, devices and equipment shall discharge to the drainage system through an indirect waste pipe by means of an *air gap* in accordance with this chapter and Section 713.3. Fixtures not required by this section to be indirectly connected shall be directly connected to the plumbing system in accordance with Chapter 7.

Reason: This proposal deletes the requirement that all healthcare related fixtures discharge through an air gap. Flushing rim sinks, which are used for the disposal of solid waste and bedpan cleaning, are healthcare related fixtures and should not have an indirect drain. The term "healthcare related" is too broad, and potentially creates infection control problems.

The ICC Ad Hoc Committee on Healthcare (AHC) has just completed its 4th year. The AHC was established by the ICC Board to evaluate and assess contemporary code issues relating to hospitals and ambulatory healthcare facilities. This is a joint effort between ICC and the American Society for Healthcare Engineering (ASHE), a subsidiary of the American Hospital Association, to eliminate duplication and conflicts in healthcare regulation. Information on the AHC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the AHC effort can be downloaded from the AHC website at: <a href="http://www.iccsafe.org/cs/AHC/Pages/default.aspx">http://www.iccsafe.org/cs/AHC/Pages/default.aspx</a>.

Cost Impact: Will not increase the cost of construction This proposal is for clarification, therefore, there will be not increase in the cost of construction.

P 207-15 : 802.1-WILLIAMS4255

## P 208-15

### 202, 422, 713, 802.1

Proponent: John Williams, CBO, Chair, representing Adhoc Health Care Committee (AHC@iccsafe.org)

## 2015 International Plumbing Code

Delete without substitution:

### SECTION 202 DEFINITIONS

#### STERILIZER.

Boiling type. A boiling type sterilizer is a fixture of a nonpressure type utilized for boiling instruments, utensils or other equipment for disinfection. These devices are portable or are connected to the plumbing system.

Instrument. A device for the sterilization of various instruments.

Pressure (autoclave). A pressure vessel fixture designed to utilize steam under pressure for sterilizing.

Pressure instrument washer sterilizer. A pressure vessel fixture designed to both wash and sterilize instruments during the operating cycle of the fixture. Utensil. A device for the sterilization of utensils as utilized in health care services.

Water. A device for sterilizing water and storing water.

#### STERILIZER VENT.

A separate pipe or stack, indirectly connected to the building drainage system at the lower terminal, that receives the vapors from nonpressure sterilizers, or the exhaust vapors from pressure sterilizers, and conducts the vapors directly to the open air. Also called vapor, steam, atmospheric or exhaust vent.

#### SECTION422 HEALTH CARE FIXTURES AND EQUIPMENT

**422.1 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, homes for the aged, orphanages, infirmaries, first aid stations, psychiatric facilities, clinics, professional offices of dentists and doctors, mortuaries, educational facilities, surgery, dentistry, research and testing laboratories, establishments manufacturing pharmaceutical drugs and medicines and other structures with similar apparatus and equipment classified as plumbing.

422.2 Approval. All special plumbing fixtures, equipment, devices and apparatus shall be of an approved type.

422.3 Protection. All 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 either the water supply or drainage system, shall be provided with protection against backflow, flooding, fouling, contamination of the water supply system and stoppage of the drain.

422.4 Materials. Fixtures designed for therapy, special cleansing or disposal of waste materials, combinations of such purposes, or any other special purpose, shall be of smooth, impervious, corrosion-resistant materials and, where subjected to temperatures in excess of 180°F (82°C), shall be capable of withstanding, without damage, higher temperatures.

422.5 Access: Access shall be provided to concealed piping in connection with special fixtures where such piping contains steam traps, valves, relief valves, check valves, vacuum breakers or other similar items that require periodic inspection, servicing, maintenance or repair. Access shall be provided to concealed piping that requires periodic inspection, maintenance or repair.

422:6 Clinical sink. A clinical sink shall have an integral trap in which the upper portion of a visible trap seal provides a water surface. The fixture shall be designed so as to permit complete removal of the contents by siphonic or blowout action and to reseal the trap. A flushing rim shall provide water to cleanse the interior surface. The fixture shall have the flushing and cleansing characteristics of a water closet.

422.7 Prohibited usage of clinical sinks and service sinks. A clinical sink serving a soiled utility room shall not be considered as a substitute for, or be utilized as, a service sink. A service sink shall not be utilized for the disposal of urine, fecal matter or other human waste.

422.8 Ice prohibited in soiled utility room. Machines for manufacturing ice, or any device for the handling or storage of ice, shall not be located in a soiled utility room.

422.9 Sterilizer equipment requirements. The approval and installation of all sterilizers shall conform to the requirements of the International Mechanical Code.

422.9.1 Sterilizer piping. Access for the purposes of inspection and maintenance shall be provided to all sterilizer piping and devices necessary for the operation of sterilizers.

422.9.2 Steam supply. Steam supplies to sterilizers, including those connected by pipes from overhead mains or branches, shall be drained to prevent any moisture from reaching the sterilizer. The condensate drainage from the steam supply shall be discharged by gravity.

422.9.3 Steam condensate return. Steam condensate returns from sterilizers shall be a gravity return system.

422.9.4 Condensers. Pressure sterilizers shall be equipped with a means of condensing and cooling the exhaust steam vapors. Nonpressure sterilizers shall be equipped with a device that will automatically control the vapor, confining the vapors within the vessel.

422.10 Special elevations. Control valves, vacuum outlets and devices protruding from a wall of an operating, emergency, recovery, examining or delivery room, or in a corridor or other location where patients are transported on a wheeled stretcher, shall be located at an elevation that prevents bumping the patient or stretcher against the device.

#### SECTION713 HEALTH CARE PLUMBING

713.1 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 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; homes for the aged; orphanages; infirmaries; first aid stations; psychiatric facilities; clinics; professional offices of dentists and doctors; mortuaries; educational facilities; surgery, dentistry, research and testing laboratories; establishments manufacturing pharmaceutical drugs and medicines; and other structures with similar apparatus and equipment classified as plumbing.

713.2 Bedpan washers and clinical sinks. Bedpan washers and clinical sinks shall connect to the drainage and vent system in accordance with the requirements for a water closet. Bedpan washers shall also connect to a local vent.

713.3 Indirect waste. Sterilizers, steamers and condensers shall discharge to the drainage through an indirect waste pipe by means of an *air gap*. Where a battery of not more than three sterilizers discharges to an individual receptor, the distance between the receptor and a sterilizer shall not exceed 8 feet (2438 mm). The indirect waste pipe on a bedpan steamer shall be trapped.

#### ICC COMMITTEE ACTION HEARINGS ::: April, 2015

713.4 Vacuum system station. Ready access shall be provided to vacuum system station receptacles. Such receptacles shall be built into cabinets or recesses and shall be visible.

713.5 Bottle system. Vacuum (fluid suction) systems intended for collecting, removing and disposing of blood, pus or other fluids by the bottle system shall be provided with receptacles equipped with an overflow prevention device at each vacuum outlet station.

713.6 Central disposal system equipment. Central vacuum (fluid suction) systems shall provide continuous service. Systems equipped with collecting or control tanks shall provide for draining and cleaning of the tanks while the system is in operation. In hospitals, the system shall be connected to the emergency power system. The exhausts from a vacuum pump serving a vacuum (fluid suction) system shall discharge separately to open air above the roof.

713.7 Central vacuum or disposal systems. Where the waste from a central vacuum (fluid suction) system of the barometric-lag, collection-tank or bottledisposal type is connected to the drainage system, the waste shall be directly connected to the sanitary drainage system through a trapped waste.

**713.7.1 Piping.** The piping of a central vacuum (fluid suction) system shall be of corrosion-resistant material with a smooth interior surface. A *branch* shall be not less than<sup>-1</sup>/<sub>2</sub>-inch (12.7 mm) nominal pipe size for one outlet and shall be sized in accordance with the number of vacuum outlets. A main shall be not less than 1-inch (25 mm) nominal pipe size. The pipe sizing shall be increased in accordance with the manufacturer's instructions as stations are increased.

713.7.2 Velocity. The velocity of airflow in a central vacuum (fluid suction) system shall be less than 5,000 feet per minute (25 m/s).

713.8 Vent connections prohibited. Connections between local vents serving bedpan washers or sterilizer vents serving sterilizing apparatus and normal sanitary plumbing systems are prohibited. Only one type of apparatus shall be served by a local vent.

713.9 Local vents and stacks for bedpan washers. Bedpan washers shall be vented to open air above the roof by means of one or more local vents. The local vent for a bedpan washer shall be not less than a 2-inch-diameter (51 mm) pipe. A local vent serving a single bedpan washer is permitted to drain to the fixture served.

713.9.1 Multiple installations. Where bedpan washers are located above each other on more than one floor, a local vent stack is permitted to be installed to receive the local vent on the various floors. Not more than three bedpan washers shall be connected to a 2-inch (51 mm) local vent stack, not more than six to a 3-inch (76 mm) local vent stack and not more than 12 to a 4-inch (102 mm) local vent stack. In multiple installations, the connections between a bedpan washer local vent and a local vent stack shall be made with tee or tee-wye sanitary pattern drainage fittings installed in an upright position.

713.9.2 Trap required. The bottom of the local vent stack, except where serving only one bedpan washer, shall be drained by means of a trapped and vented waste connection to the sanitary drainage system. The trap and waste shall be the same size as the local vent stack.

713.9.3 Trap seal maintenance. A water supply pipe not less than <sup>1</sup>/<sub>4</sub> inch (6.4 mm) in diameter shall be taken from the flush supply of each bedpan washer on the discharge or fixture side of the vacuum breaker, shall be trapped to form not less than a 3-inch (76 mm) water seal and shall be connected to the local vent stack on each floor. The water supply shall be installed so as to provide a supply of water to the local vent stack for cleansing and drain trap seal maintenance each time a bedpan washer is flushed.

713.10 Sterilizer vents and stacks. Multiple installations of pressure and nonpressure sterilizers shall have the vent connections to the sterilizer vent stack made by means of inverted wye fittings. Access shall be provided to vent connections for the purpose of inspection and maintenance.

713.10.1 Drainage. The connection between sterilizer vent or exhaust openings and the sterilizer vent *stack* shall be designed and installed to drain to the funnel or baskettype waste fitting. In multiple installations, the sterilizer vent *stack* shall be drained separately to the lowest sterilizer funnel or basket-type waste fitting or receptor.

713.11 Sterilizer vent stack sizes. Sterilizer vent stack sizes shall comply with Sections 713.11.1 through 713.11.4.

713.11.1 Bedpan steamers. The minimum size of a sterilizer vent serving a bedpan steamer shall be 1<sup>4</sup>/<sub>2</sub> inches (38 mm) in diameter. Multiple installations shall be sized in accordance with Table 713.11.1.

#### TABLE 713.11.1

#### STACK SIZES FOR BEDPAN STEAMERS AND BOILING-TYPE STERILIZERS (Number of Connections of Various Sizes Permitted to Various-sized Sterilizer Vent Stacks)

	CONNECTION SIZE				
<del>STACK SIZE</del> <del>(inches)</del>	+ <sup>+</sup> ⁄₂"	-	<del>2"</del>		
+ <sup>+</sup> -∕₂ <sup>æ</sup>	+	<del>or</del>	θ		
a <del>2</del>	2	<del>or</del>	+		
<del>b</del> <del>2</del>	+	and	+		
a a	-4	or	2		
<del>р</del> Э	2	and	2		
a 4	8	or	4		
<del>5</del> 4	-4	and	4		

For SI: 1 inch = 25.4 mm.

a. Total of each size.

b. Combination of sizes.

713.11.2 Boiling-type sterilizers. The size of a sterilizer vent stack shall be not less than 2 inches (51 mm) in diameter where serving a utensil sterilizer and not

less than 1<sup>4</sup>/<sub>2</sub> inches (38 mm) in diameter where serving an instrument sterilizer. Combinations of boiling-type sterilizer vent connections shall be sized in accordance with Table 713.11.1.

713.11.3 Pressure sterilizers. Pressure sterilizer vent stacks shall be 2<sup>1</sup>/2 inches (64 mm) minimum. Those serving combinations of pressure sterilizer exhaust connections shall be sized in accordance with Table 713.11.3.

STACK	CONNECTION SIZE					
<del>SIZE</del> <del>(inches)</del>	<sup>3</sup> / <sub>4"</sub>	<del>1"</del>	<b>∔<sup>†</sup>/<sub>4"</sub></b>	+ <del>1/2</del>		
+ <sup>+</sup> ≁2 <sup>a</sup>	<del>3 or</del>	<del>2 or</del>	+	-		
+ <sup>+</sup> ≁₂ <sup>♥</sup>	<del>2 and</del>	+	-	-		
2 <sup>æ</sup>	<del>6 or</del>	<del>3 or</del>	<del>2 or</del>	+		
2 <sup>b</sup>	<del>3 and</del>	£	-	_		
ф 2	<del>2 and</del>	<del>1 and</del>	+	_		
2 <sup>b</sup>	<del>1 and</del>	<del>1 and</del>	-	+		
ਤੇ <sup>ਕ</sup>	<del>15 or</del>	<del>7 or</del>	<del>5 or</del>	÷		
3 <sup>p</sup>	<del>1 and</del>	1 and 5 and	<del>2 and</del>	<del>21</del>		

#### TABLE 713.11.3

STACK SIZES FOR PRESSURE STERILIZERS (Number of Connections of Various Sizes Permitted To Various sized Vent Stacks)

For SI: 1 inch = 25.4 mm.

a. Total of each size.

b. Combination of sizes.

713.11.4 Pressure instrument washer sterilizer sizes. The diameter of a sterilizer vent stack serving an instrument washer sterilizer shall be not less than 2 inches (51 mm). Not more than two sterilizers shall be installed on a 2-inch (51 mm) stack, and not more than four sterilizers shall be installed on a 3-inch (76 mm)

#### **Revise as follows:**

**802.1 Where required.** Food-handling equipment, in other than dwelling units, clear-water waste, dishwashing machines and utensils, pots, pans and dishwashing sinks shall discharge through an indirect waste pipe as specified in Sections 802.1.1 through 802.1.8. Health-care related fixtures, devices and equipment shall discharge to the drainage system through an indirect waste pipe by means of an *air gap* in accordance with this chapter <del>and Section 713.3</del>. Fixtures not required by this section to be indirectly connected shall be directly connected to the plumbing system in accordance with Chapter 7.

Reason: This proposal deletes a section that provides no practical value to the text. The requirements in this section are too broad to be enforceable; too generic to provide any clear direction; or otherwise covered in the text of this code.

The ICC Ad Hoc Committee on Healthcare (AHC) has just completed its 4th year. The AHC was established by the ICC Board to evaluate and assess contemporary code issues relating to hospitals and ambulatory healthcare facilities. This is a joint effort between ICC and the American Society for Healthcare Engineering (ASHE), a subsidiary of the American Hospital Association, to eliminate duplication and conflicts in healthcare regulation. Information on the AHC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the AHC effort can be downloaded from the AHC website at: <a href="http://www.iccsafe.org/cs/AHC/Pages/default.aspx">http://www.iccsafe.org/cs/AHC/Pages/default.aspx</a>.

#### Cost Impact: Will not increase the cost of construction

These items are already addressed in the IPC, therefore, the deletion will not increase the cost of construction.

P 208-15 : 802.1-WILLIAMS4256

# P 209-15

## 802.1.2.1 (New)

Proponent: James Richardson, Jr (jarichardson@columbus.gov)

## 2015 International Plumbing Code

## Add new text as follows:

**802.1.2.1** Optional indirect connections Waste lines from dental cuspidor bowls, cuspidor fountains, drinking fountains, bar sinks, soda fountains, floor drains and shower drains shall be directly connected to the sanitary drainage system or shall discharge independently through an air break to a waste receptor, standpipe or floor drain that is directly connected to the sanitary drainage system.

Reason: Some fixtures make sense to allow for indirect drainage, especially if it eliminates the need for some type of trap primer device for the fixture receicing the discharge. Allowing these indirect connections will give business owners more flexibility in their design and help lower overall construction costs without impacting public safety.

### Cost Impact: Will not increase the cost of construction

This is an option and not a requirement. But if the option is chosen, the costs to install such drains will be reduced.

P 209-15 : 802.1.2.1 (New)-RICHARDSON6022

# P 210-15

## 802.1.2 (New), 802.1.7 (New), 802.1.8

Proponent: James Richardson, Jr (jarichardson@columbus.gov)

## 2015 International Plumbing Code

## Add new text as follows:

802.1.2 Hand sinks. Hand sinks in food service areas and in food preparation establishments shall be directly connected to the drainage system or indirectly connected through an air gap to a floor sink that is connected to the drainage system.

802.1.7 Commercial food waste disposers. Commercial food waste disposers shall not be indirectly connected to the drainage system. Such disposer connections shall be in accordance with Section 413.3.

#### Revise as follows:

**802.1.8 Food utensils, dishes, pots and pans sinks.** Sinks, in other than dwelling units, used for the washing, rinsing or sanitizing of utensils, dishes, pots, pans or service ware used in the preparation, serving or eating of food shall discharge indirectly through an *air gap or an air break* to the drainage system.

Reason: For most fixtures in a food service kitchen, it makes sense to allow for indirect connections. This allows for maximum flexibility for kitchen layouts and future changes as floor sinks can capture multiple fixtures if the floor sink sized correctly. Hand sinks are often required by local health departments to be indirect connected so this proposal will align the code with many iurisdication's needs.

Some health departments allow (or acknowledge) that 3-compartment pots-and-pans sinks are sometimes used for thawing of frozen food. These sinks should be treated no differently than any other food prep sink (that does require an air gap at the drain). This is a simple change that will do a lot towards food safety. The code already allows either an air break or an air gap for these siks. Requiring an air gap only just means that the drain pipes will need to terminate above the floor sink and not in the floor sink. A simple change that does not affect the cost of the installation but will be safer considering all the possible uses for 3-compartment sinks. This will promote better sanitary conditions in such establishments and keep in line with requirements by health departments,

The new section for commercial food waste disposer discharge connections is simply a reminder, in an appropriate place in the code, that these discharges cannot go to a floor sink or other type waste receptor. Section 413.3 already covers this, however, many people are missing the direct connection requirement. As these disposers are commonly installed just ahead of the commercial dishwasher (at a plate and-tray scraping station), this new section is located in the code just before the code requirement for connection of commercial dishwashers.

#### Cost Impact: Will not increase the cost of construction

This proposal provides for an option for hand sinks that could save on installation costs. And certainly, future remodeling costs could be lower for kitchen layout changes.

P 210-15 : 802.1.2.2 (New)-RICHARDSON6023

# P 211-15

## 202 (New), 428 (New), 428.1 (New)

Proponent: James Richardson, Jr, representing City of Columbus Ohio (jarichardson@columbus.gov)

## 2015 International Plumbing Code

Add new definition as follows:

### SECTION 202 DEFINITIONS

SERVICE SINK Any designated sink so approved for liquid discharge, surface water liquid filling, subsurface water cleaning, and similar liquid wastes, washing in a facility, and installed in a dedicated area or space.

Add new text as follows:

### SECTION 428 SERVICE SINKS

**428.1 Location.** Service sinks shall not be installed in toilet facilities. A service sink shall be located in a space dedicated for the sink such as a janitor's closet that is equipped with a door. Employees in the building or tenant space shall have access to the dedicated space.

Reason: There is no definition of a mops sink or service sink, but yet are required for occupancies for cleaning purposes. Many times designers try to locate these within toielt facilites which allows for improper usage of the fixture and also limits the availability of the fixture when the toilet facility is in use.

Cost Impact: Will not increase the cost of construction

Service sinks are already a required fixture in many occupancies. This proposal simply identifies what those sinks are and where to locate them.

P 211-15 : 802.3-RICHARDSON5695

# P 212-15

## 802.3.3.1 (New)

**Proponent:** Guy McMann, Jefferson County, Colorado, representing Colorado Association of Plumbing and Mechanical Officials (CAPMO) (gmcmann@jeffco.us)

## 2015 International Plumbing Code

#### Add new text as follows:

**802.3.1** 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.

Reason: This allowance language has been in the IRC for several code cycles and has been a frequent practice in many jurisdictions for much longer. It has been proven to work well for many years. There is no technical justification to not allow this method for IPC buildings.

Where this method will really be advantageous is in multi-family high-rise construction where the cost savings will be significant *and* the laundry tray providing a buffer against overflow of the ACW standpipe (if the standpipe drain clogs). The laundry tray will fill up with the washer discharge. This is a nice safety feature against water damage for multi-level buildings.

#### Cost Impact: Will not increase the cost of construction

This proposal will not increase costs and may actually decrease costs by permitting a practice that is recognized in the residential Code. The savings could be realized as not having to install a vent, trap and waste line for a laundry tub.

P 212-15 : 802.3.3.1 (New)-MCMANN3603

# P 213-15

## 804.1, 804

Proponent: Julius Ballanco, JB Engineering and Code Consulting, P.C., representing Self (JBENGINEER@aol.com)

### 2015 International Plumbing Code

#### **Revise as follows:**

804.1802.2 GeneralMaterial, joints, and connections. The materials, joints, connections, and methods utilized for the construction and installation of indirect waste pipes and piping systems shall comply with the applicable provisions of Chapter 7.

## Delete without substitution:

### SECTION 804 MATERIALS, JOINTS AND CONNECTIONS

Reason: Since this requirement only applies to indirect waste systems, it should appear in Section 802, not as a separate section. Section 803 applies to special waste. Nothing in Section 804 applies to special waste. Hence, the appropriate location is Section 802.

The text has been cleaned up to address joints and connections, as well as, materials. The current section does not coordinate with the title of the section.

Cost Impact: Will not increase the cost of construction

There is no increase in the cost of construction when the code is wordsmithed to make it easier to understand.

P 213-15 : 804-BALLANCO3384

# P 214-15

## 804.1, 804.2 (New)

Proponent: Brian Conner, Charlotte Pipe and Foundry, representing Charlotte Pipe and Foundry (bconner@charlottepipe.com)

## 2015 International Plumbing Code

#### Revise as follows:

**804.1 General.** The materials and \_methods utilized for the construction and installation of indirect waste pipes and systems shall comply with the applicable provisions of Chapter 7.

### Add new text as follows:

**804.2** Special waste pipe, fittings and components. Pipes \_fittings and components receiving or intended to receive the discharge of any fixture into which acid or corrosive chemicals are placed shall be constructed of CPVC, high silicon iron, PP, PVDF, chemical resistant glass, or glazed ceramic materials.

Reason: Sanitary and chemical drainage are inherently different applications. The purpose of this proposed change is to clarify the allowable materials which are specifically listed for chemical drainage applications.

#### $\label{eq:cost_cost_cost} \textbf{Cost Impact:} \ \textbf{Will not increase the cost of construction}$

This change will not increase the cost of construction as special wastes have alwaus required special piping of one of those types.

P 214-15 : 804.1-CONNER5388

# P 215-15

## Part I: 903.1, 903.1.1 (New), 903.1.2 (New), 903.1.3 (New), 903.1.4 (New), 903.6 Part II:

## P3103.1, P3103.1.1 (New), P3101.1.2 (New), P3103.1.3 (New), P3103.1.4 (New), P3103.6

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Julius Ballanco, JB Engineering and Code Consulting, P.C., representing Solar City (JBENGINEER@aol.com)

# Part I

## 2015 International Plumbing Code

## Revise as follows:

903.1 Roof extension. Vent pipes terminating outdoors. Open ventVent pipes that extend through a roofterminating outdoors shall be terminated not less than [NUMBER] inches (mm) above extended to the outdoors through the roof. Where or a roof is to be used for assembly or as a promenade, observation deck, sunbathing deck or similar purposes, open vent pipes shall terminate not less than 7 feet (2134 mm) above side wall of the roofbuilding in accordance with one of the methods identified in Sections 903.1.1 through 903.1.4.

### Add new text as follows:

903.1.1 Roof extension. Open vent pipes that extend through a roof and that do not meet the conditions of Section 902.1.2 or Section 903.1.3 shall terminate not less than [NUMBER] inches (mm) above the roof.

903.1.2 Roof used for recreational uses. Where a roof is to be used for assembly or as a promenade, observation deck, sunbathing deck or similar purposes, open vent pipes shall terminate not less than 7 feet (2134 mm) above the roof.

**903.1.3** Roof extension covered. Where an open vent pipe terminates above a sloped roof and is covered by either a roof-mounted panel such as a solar collector or photovoltaic panel mounted over the vent opening, or by a roof element such as an architectural feature or a decorative shroud, the vent pipe shall terminate not less than 2 inches (51 mm) above the roof surface. Such roof elements shall be designed to prevent the adverse effects of snow accumulation and wind on the function of the vent. The placement of a panel over a vent pipe and the design of a roof element covering the vent pipe shall provide for an open area for the vent pipe to the outdoors that is not less than the area of the pipe, as calculated from the inside diameter of the pipe. Such vent terminals shall be protected by a method that prevents birds and rodents from entering or blocking the vent pipe opening.

903.1.4 Side wall vent terminal. Vent terminals extending through the wall shall terminate not closer than 10 feet (3048 mm) from a lot line and not less than 10 feet (3048 mm) above the highest grade elevation within 10 feet (3048 mm) in any direction horizontally of the vent terminal. Vent pipes shall not terminate under the overhang of a structure where the overhang includes soffit vents. Such vent terminals shall be protected by a method that prevents birds and rodents from entering or blocking the vent pipe opening and that does not reduce the open area of the vent pipe.

### Delete without substitution:

903.6 Extension through the wall. Vent terminals extending through the wall shall terminate at a point not less than 10 feet (3048 mm) from a lot line and not less than 10 feet (3048 mm) above average ground level. Vent terminals shall not terminate under the overhang of a structure with soffit vents. Side wall vent terminals shall be protected to prevent birds or rodents from entering or blocking the vent opening.

# Part II

## 2015 International Residential Code

Revise as follows:

P3103.1 Roof extension. Vent pipes terminating outdoors. Open ventVent pipes that extend through a roofterminating outdoors shall be terminated not less than 6 inches (152 mm) above extended to the outdoors through the roof or 6 inches (152 mm) above a side wall of the anticipated snow accumulation, whichever is greater. Where a roof is to be used for assembly, as a promenade, observation deck or sunbathing deck or for similar purposes, open vent pipes shall terminate not less than 7 feet (2134 mm) above building in accordance with one of the roofmethods identified in Sections P3103.1.1 through P3103.1.4.

### Add new text as follows:

P3103.1.1 Roof extension. Open vent pipes that extend through a roof and that do not meet the conditions of Section P3101.1.2 or Section P3101.1.3 shall terminate not less than 6 inches (150 mm) above the roof or 6 inches (150 mm) above the anticipated snow accumulation, which ever is greater.

P3101.1.2 Roof used for recreational puposes. Where a roof is to be used for assembly or as a promenade, observation deck, sunbathing deck or similar purposes, open vent pipes shall terminate not less than 7 feet (2134 mm) above the roof.

P3103.1.3 Roof extension covered. Where an open vent pipe terminates above a sloped roof and is covered by either a roof-mounted panel such as a solar collector or photovoltaic panel mounted over the vent opening, or by a roof element such as an architectural feature or a decorative shroud, the vent pipe shall terminate not less than 2 inches (51 mm) above the roof surface. Such roof elements shall be designed to prevent the adverse effects of snow accumulation and wind on the function of the vent. The placement of a panel over a vent pipe and the design of a roof element covering the vent pipe shall provide for an open area for the vent pipe to the outdoors that is not less than the area of the pipe, as calculated from the inside diameter of the pipe. Such vent terminals shall be protected by a method that prevents birds and rodents from entering or blocking the vent pipe opening.

P3103.1.4 Side wall vent terminal. Vent terminals extending through the wall shall terminate not closer than 10 feet (3048 mm) from a lot line and not less than 10 feet (3048 mm) above the highest grade elevation within 10 feet (3048 mm) in any direction horizontally of the vent terminal. Vent pipes shall not terminate under the overhang of a structure where the overhang includes soffit vents. Such vent terminals shall be protected by a method that prevents birds and rodents from entering or blocking the vent pipe opening and that does not reduce the open area of the vent pipe.

### Delete without substitution:

P3103.6 Extension through the wall. Vent terminals extending through the wall shall terminate not less than 10 feet (3048 mm) from the *lot line* and 10 feet (3048 mm) above the highest adjacent *grade* within 10 feet (3048 mm) horizontally of the vent terminal. Vent terminals shall not terminate under the overhang of a structure with soffit vents. Side wall vent terminals shall be protected to prevent birds or rodents from entering or blocking the vent opening.

**Reason:** This proposed change reorganizes the section regarding the vent terminal. There are currently three options for a vent terminal, extending the vent (number) inches or more above the roof, extending the vent more than 7 feet above the roof when the roof is used for entertainment, or extending the vent through the side wall. However, the three requirements are separated between multiple sections. This makes the requirement readily identifiable in a section that presents all the options in one main section.

A fourth option for terminating the vent has been included. The fourth option would allow the vent to terminate 2 inches above a sloped roof when protected by a covering. This would allow photovoltaic solar collectors to be installed over vent terminals. It would also allow other protected vent terminals, such as architectural features that hide the vent for aesthetic purposes.

The size, length, and location of vent terminals has been a subject matter that has been greatly discussed over the last century. There are many myths, innuendoes, theories, and hypothesis regarding vent terminals. One of the most complete papers on vent terminals was published by the National Bureau of Standards (NBS) in 1954, entitled, "Frost Closure of Roof Vents in Plumbing Systems," authored by Nerbert Eaton and Robert Wyly. Most of the current code requirements originate from the recommendations of this paper.

The NBS paper investigated plumbing roof vents and their termination throughout North America. Identified as a major concern is the frost closure of the vent terminal. Other concerns included snow blockage, shearing off of the vent terminal, and rainwater entrance.

Prior to this paper, it was largely alluded that the reason for a minimum size of 1-1/4 inch and a termination above the roof surface was to prevent a bird from building a nest and laying an egg to block off the vent. To this day, birds building nests in vents is a concern. However, that concern is more related to side wall venting that provides an easy opening for a bird to build a nest.

When a vent terminates lower to the roof, measures must be taken to prevent a bird from building a nest around the vent pipe and blocking it off. Increasing the size of the vent is one means used to avoid a bird's nest. Screening and vent covers also are used to prevent birds from building a nest.

The more pressing issue is how far above the roof a vent should terminate. Two issues of importance are water tightness of the flashing and preventing rainwater entrance into the plumbing vent. Modern day flashings can make the roof penetration water tight at much lower heights, including a termination 2 inches above the roof.

The NBS report suggested a minimum of 2 inch penetration above the roof to prevent rainwater from entering the plumbing vent. It is recognized that a flat roof can have a greater accumulation of water hence the need for the vent to be at a higher elevation. Typically secondary roof drains are located between 2 and 4 inches above the roof. Thus, the vent terminal would have to be located at a higher height which is the reason for maintaining a minimum of inserting the appropriate number of inches above the roof for a flat roof.

The NBS report identified a vent terminal used in Saskatoon, Canada that terminates at the sloped roof. There was no extension above the roof. This was found to be extremely effective in preventing frost closure. As the NBS report states, the closer the vent terminates to the roof, the lower the possibility of frost closure. The report also found that by making the vent a minimum of 3 inch in diameter, frost closure that impacts the performance of the venting system was avoided.

Snow accumulation has been a subject of more recent discussions regarding vent terminals. However, snow accumulation was addressed in the NBS report. The NBS report found that while snow may completely cover the vent terminal, the snow eventually melts from the heated vapors emanating out of the vent. Prior to the snow melting, the NBS report found that the snow cover did not impact the performance of the vent. This makes sense since the purpose of the vent is to balance the pressure in the drainage system with atmospheric pressure. The snow cover is not dense enough to prevent the balancing of pressure in the piping system.

The current code requires the vent to terminate at a height specified by the jurisdiction. The Residential Code requires the termination to be 6 inches above the anticipated snow cover. The requirement add the local value remains intact. However, when the vent is covered, such as by a solar panel or architectural feature, it cannot be covered by snow such that the vent doesn't perform properly. Thus, the vent could terminate at a 2 inch height above a sloped roof.

In the mountain west, shearing of the roof vent is a problem when the snow and ice melt and slide off of sloped roofs. By extending the vent higher through the roof, there is a greater force applied on the vent that can result in the pipe being sheared off. If the vent is lowered, the force on the vent during snow and ice slides is also lowered. This may reduce the shearing incidents of vent pipes. However, that is not part of the reason for lowering the vent terminal height. The vent would be protected if installed at a lower height. Hence, the snow and ice slides would have little to no impact on the vent since it is covered.

Plumbing contractors in the mountain west with heavy snow and ice accumulations have found that the more practical solution is to extend the vent through the roof closer to the peak of the roof. Thus, the force from sliding snow and ice is lowered. This has not been addressed in this code change and is more of a regional issue addressed by knowledgeable local contractors.

The remaining issue that is not often addressed for vent terminals is the impact of wind. During windy conditions, the vent terminal can create a reduced pressure zone that siphons the trap seal. This is often called a Venturi effect. The other concern is downdrafts that can increase the pressure in the drainage system. However, downdrafts have not had a major impact on the drainage system based on the termination height above the roof. While the possibility exists that a lower vent termination height could result in higher wind downdrafts, this has not proven to be the case. However, the code requirement addresses downdrafts by requiring the covering to prevent any adverse impact from wind.

What the plumbing profession must acknowledge is that solar is a viable source of energy for a building. As such, accommodations must be made to allow for the maximum area of roof coverage with solar panels. This may require the adjustment in the height of the vent terminal.

While accommodations must be made, there cannot be a sacrifice of public health. The lowering of the vent terminal to 2 inches on a sloped roof will not impact public health. This was proven by the NBS study published in 1954. Furthermore, modern building practices will result in a water tight vent terminal that will perform as intended.

#### Bibliography:

Part I: "Frost Closure of roof Vents in Plumbing Systems," Herbert N. Eaton and Robert S. Wyly, BMS Report 142, published 1954, United States Department of Commerce, National Bureau of Standards.

National Plumbing Code Handbook, Standards and Design Information, Vincent T. Manas, P.E., copyright 1957, McGraw-Hill Book Company

Part II: "Frost Closure of roof Vents in Plumbing Systems," Herbert N. Eaton and Robert S. Wyly, BMS Report 142, published 1954, United States Department of Commerce, National Bureau of Standards. National Plumbing Code Handbook, Standards and Design Information, Vincent T. Manas, P.E., copyright 1957, McGraw-Hill Book Company

Cost Impact:

Part I: Will not increase the cost of construction This change provides options to the code user. There are no cost implications.

Part II: Will not increase the cost of construction This change provides options. As such, there is no cost implication.

P 215-15 : 903.1-BALLANCO4131

# P 216-15

## 902.3, 903.3, 305.5

Proponent: Tim Earl, GBH International, representing The Oatey Company (tearl@gbhinternational.com)

## 2015 International Plumbing Code

Delete without substitution:

902:3 Sheet lead. Sheet lead for vent pipe flashings shall weigh not less than 3 pounds per square foot (15 kg/m<sup>2</sup>) for field-constructed flashings and not less than 2 <sup>1</sup>/<sub>2</sub> pounds per square foot (12 kg/m<sup>2</sup>) for prefabricated flashings.

#### Revise as follows:

903.3 Flashings. The juncture of each vent pipe with the roof line shall be made water tight by an *approved* flashing. <u>Flashings shall contain less than 4% lead</u> by weight.

**305.5 Waterproofing of openings.** Joints at the roof and around vent pipes shall be made water tight by the use of <del>lead,</del> copper, galvanized steel, aluminum, plastic or other *approved* flashings or flashing material. Exterior wall openings shall be made water tight.

Reason: Lead is a material identified as causing birth defects and reproductive harm. It also persists in the environment and is an aquatic toxicant. Now that alternatives exist, its use should be minimized. 4% maximum lead content is logical as non-potable water alloys used in plumbing have that as a limit; meaning that such alloys are commonly available for use. This would also still allow lead coated copper, which is needed in some applications.

#### Cost Impact: Will not increase the cost of construction

Other flashing options, such as copper or lead coated copper, are no more expensive than lead.

P 216-15 : 903.3-EARL4532

# P 217-15

## Table 909.1 (New), 909.2

Proponent: Julius Ballanco, JB Engineering and Code Consulting, P.C., representing Self (JBENGINEER@aol.com)

## 2015 International Plumbing Code

Delete and substitute as follows:

#### TABLE 909.1 MAXIMUM LENGTH OF FIXTURE DRAIN FROM FIXTURE TRAP TO VENT CONNECTION<sup>a.b</sup> (FEET)

			Vent connection at a vertical drain pipe						
	Vent connection at a horizontal drain pipe		Sanitary tee fitting fixture drain connection to the vertical drain pipe		<u>Tee-wye fitting</u> <u>fixture drain connection</u> <u>to the vertical drain pipe<sup>C</sup></u>				
<u>Fixture drain pipe size</u> <u>(inches)</u>	<u>Slope of fixture drain<sup>d</sup></u> (inches per foot)		<u>Slope of fixture drain<sup>d</sup></u> (inches per foot)		<u>Slope of fixture drain<sup>d</sup></u> (inches per foot)				
	<u>1/8</u>	<u>1/4</u>	<u>1/2</u>	<u>1/8</u>	<u>1/4</u>	<u>1/2</u>	<u>1/8</u>	<u>1/4</u>	<u>1/2</u>
<u>1-1/4</u>	<u>NP</u>	<u>5</u>	<u>2.5</u>	<u>NP</u>	<u>3.5</u>	2	<u>NP</u>	<u>1.5</u>	1
<u>1-1/2</u>	<u>NP</u>	<u>6</u>	<u>3</u>	<u>NP</u>	<u>5</u>	<u>3</u>	<u>NP</u>	<u>4</u>	<u>2</u>
<u>2</u>	<u>NP</u>	<u>8</u>	<u>4</u>	<u>NP</u>	<u>6</u>	<u>4</u>	<u>NP</u>	<u>4.5</u>	<u>4</u>
<u>3</u>	24	<u>12</u>	<u>6</u>	<u>10</u>	<u>8</u>	<u>6</u>	<u>6</u>	<u>6</u>	<u>6</u>
<u>4</u>	<u>32</u>	<u>16</u>	<u>8</u>	<u>12</u>	<u>10</u>	<u>8</u>	<u>8</u>	<u>8</u>	<u>8</u>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 inch per foot = 83.3 mm/m.

a. Developed length.

<u>b. NP = Not permitted</u>

c. A tee-wye fitting is also known as a combination-wye-and-eight-bend fitting.

d. Fixture drain shall be at uniform slope.

#### Delete without substitution:

909.2 Venting of fixture drains. The total fall in a fixture drain due to pipe slope shall not exceed the diameter of the fixture drain, nor shall the vent connection to a fixture drain, except for water closets, be below the weir of the trap.

**Reason:** When table 909.1 was revised, it only incorporated some of the provision in the report on self siphonage, BMS 126, published in 1951. The report identified that fixture could connect to tee wye fittings. However, the distance from trap to vent is greatly reduced. This change includes the allowance of a connection to a vertical drain through a tee wye. The other change that is necessary is to address when a pitch greater than ¼ inch per foot is used. The greater the pitch, the shorter the length between the trap and the vent. This table has been used in the State of Wisconsin for more than 20 years. The distances are consistent with the results of the self siphonage report from the National Bureau of Standards. Section 909.2 must be deleted to be consistent with the revised table. Otherwise, the connection to a tee wye would not be permitted.

#### Cost Impact: Will not increase the cost of construction

This will reduce the cost of construction when a vent distance can be extended.

P 217-15 : T909.2-BALLANCO3385

# P 218-15

## Part I: 911.1, 911.2, 911.3, 911.3 (New) Part II:

## P3107.1, P3107.2, P3107.3, P3107.3 (New)

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## Part I

## 2015 International Plumbing Code

### Revise as follows:

911.1 Individual vent as common vent. An individual vent is shall be permitted to vent two traps or trapped two fixtures having integral traps as a common vent provided that the installation complies with Section 911.2, 911.3 or 911.4. The traps or trapped fixtures being common vented shall be located on the same floor level.

911.2 Connection at the same level. Horizontal common vent. Where the two fixture drains being common vented connect connect horizontally to a horizontal drain, their connection shall be at the same level, the through a double pattern fitting. The vent connection shall be at the interconnection of the fixture drains being common vented or downstream of the interconnection.

911.3911.4 Connection Vertical common vent with connection at different levels. No change to text.

#### Add new text as follows:

911.3 Vertical common vent with connection at the same level. Where the two *fixture drains* being common vented connect horizontally to a vertical drain at the same level, their vent connection shall be through a double pattern fitting. The vent connection shall be at the interconnection of the *fixture drains* being common vented.

## Part II

### 2015 International Residential Code

### Revise as follows:

**P3107.1 Individual vent as common vent.** An individual vent is shall be permitted to vent two traps or trapped two fixtures having integral traps as a common vent provided that the installation complies with Section P3107.2, P3107.2.3 or P3107.2.4. The traps or trapped fixtures being common vented shall be located on the same floor level.

P3107.2 Connection at the same level. Horizontal common vent. Where the two fixture drains being common vented connect horizontally to a horizontal drain. their vent connection shall be at the same level, the through a double pattern fitting. The vent connection shall be at the interconnection of the fixture drains being common vented or downstream of the interconnection.

P3107.3P3107.4 ConnectionVertical common vent with connection at different levels. Where the *fixture drains* connect at different levels, the vent shall connect as a vertical extension of the vertical drain. The vertical drain pipe connecting the two *fixture drains* shall be considered the vent for the lower *fixture drain*, and shall be sized in accordance with Table P3107.3. The upper fixture shall not be a water closet.

P3107.3 Vertical common vent with connection at the same level. Where the two fixture drains being common vented connect horizontally to a vertical drain at the same level, their vent connection shall be through a double pattern fitting. The vent connection shall be at the interconnection of the fixture drains being common vented.

Reason: This proposal does not propose any new requirements but only provides clarification for what is already in the code (but is hard to understand).

Proposed revisions new section 911.3 and revised section 911.4 are the widely used and well known, vertical common vent arrangements that has been used for decades. Section 911.3 was extracted from the existing 911.2 in order to separate out the horizontal common vent application.

The code has allowed horizontal common venting for many decades but the language was not clear enough to be widely understood. The revised language should make the requirements clear.

A minor rewriting to Section P3107.1 provide the conditions under which the individual vent can be a common vent, ties the following sections into it and clarifies what "trapped fixtures" are.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 3.

#### Cost Impact:

Part I: Will not increase the cost of construction

Part II: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 218-15 : 911.1-SNYDER4069

## P 219-15

Part I: 915.1 Part II: P3111.1

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Julius Ballanco, representing Self (JBENGINEER@aol.com)

# Part I

## 2015 International Plumbing Code

### Revise as follows:

**915.1 Type of fixtures.** A *combination waste and vent system* shall not serve fixtures other than floor drains, sinks, lavatories and drinking fountains. *Combination waste and vent systems* shall not receive the discharge from a food waste disposer or clinical sink.

## Part II

## 2015 International Residential Code

### Revise as follows:

P3111.1 Type of fixtures. A combination waste and vent system shall not serve fixtures other than floor drains, sinks and lavatories. A combination waste and vent system shall not receive the discharge of a food waste disposer.

Reason: The American Society of Plumbing Engineers Research Foundation completed a study of the impact of food waste disposer on combination waste and vent systems. The study concluded that there was no impact on the venting and that food waste disposer can readily connect to these systems. Based on the technical findings of this research, there is no technical justification for placing a limitation on the discharge of food waste disposers to combination waste and vent systems. The Research Report of the findings has been published and is available for review on the ASPE website, http://aspe.org/sites/default/files/webfm/ASPE%20RF/rf\_report\_food%20waste.pdf.

The code change that originally added the restriction for food waste disposers identified the pumping action of the reason for restricting food waste disposers. The concern was that the pumping action would result in the siphonic of other traps for fixtures connecting to the system. This was proven to not be the case during the testing.

A combination waste and vent system is a popular venting method for island fixtures. However, the current code language would prohibit a food waste disposer on these kitchen sinks. There is no reason for restricting the use of food waste disposers on these sink.

### Cost Impact:

Part I: Will not increase the cost of construction

This will lower the cost of construction by allowing a viable venting method to be used when a kitchen sink has a food waste disposer.

Part II: Will not increase the cost of construction

This will lower the cost of construction by allowing a viable venting method to be used when a kitchen sink has a food waste disposer.

P 219-15 : 915.1-BALLANCO3797

## P 220-15

Part I: 915.1 Part II: P3111.1

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

**Proponent:** Billy Smith, American Society of Plumbing Engineers Legislative Committee, representing American Society of Plumbing Engineers Legislative Committee (bsmith@aspe.org)

## Part I

## 2015 International Plumbing Code

Revise as follows:

**915.1 Type of fixtures.** A *combination waste and vent system* shall not serve fixtures other than floor drains, sinks, lavatories and drinking fountains. *Combination waste and vent systems* shall not receive the discharge from a food waste disposer or clinical sink.

# Part II

## 2015 International Residential Code

Revise as follows:

P3111.1 Type of fixtures. A combination waste and vent system shall not serve fixtures other than floor drains, sinks and lavatories. A combination waste and vent system shall not receive the discharge of a food waste disposer.\_

### Cost Impact:

Part I: Will not increase the cost of construction It's going to allow an installation that previously wasn't permitted thus lowering the cost of production.

Part II: Will not increase the cost of construction It's going to allow an installation that previously wasn't permitted thus lowering the cost of production.

P 220-15 : 915.1-SMITH4838

# P 221-15

# 915.1, 915.1.1 (New), 915.2, 915.2.1, 915.2.2, 915.2.3, 915.2.4, 915.2.5

Part II:

Part I:

## P3111.1, P3111.1.1 (New), P3111.2, P3111.2.1, P3111.2.2, P3111.2.3, P3111.2.4, P3111.3

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

# Part I

## 2015 International Plumbing Code

### Revise as follows:

915.1 Type of fixtures. A combination waste and vent system shall not only serve fixtures other than floor drains, sinks, lavatories and drinking fountains. A combination waste and vent system shall be considered to be the vent for those fixtures. The developed length of a fixture drain to the combination waste and vent system piping shall not exceed the limitations of Table 909.1. Combination waste and vent systems shall not receive the discharge from a food waste disposer or clinical sink.

915.2 Installation. The only vertical pipe of a *combination waste and vent system* shall be the connection between the<u>a</u> fixture drain and the<u>a</u> horizontal combination waste and vent pipe. The length of the vertical distancepipe shall not exceed 8 feet (2438 mm).

915.2.1 Slope. The slope of a horizontal combination waste and vent pipepiping shall not exceed one-half unit vertical in 12 units horizontal (4-percent slope) and shall not be less than that indicated in Table 704.1.

915.2.2 Size and length. The size of a combination waste and vent pipepiping shall be not less than that indicated in Table 915.2.2. The horizontal length of a combination waste and vent system shall be unlimited.

**915.2.3** ConnectionVent connection. The <u>A</u> combination waste and vent system shall be provided with a dry vent connected at any point within the system or the system shall connect to a horizontal drain <u>or building drain</u>, that serves vented fixtures located on the same floor. Combination waste and vent systems connecting to building drains receiving only the discharge from one or more stacks shall be provided with a dry vent. The <u>dry</u> vent <u>connection connected</u> to the combination waste and vent system before offsetting horizontally. horizontal offsets in the dry vent piping are allowed.

915.2.4 Vent size. The dry vent connected to the combination waste and vent system shall be sized for the total drainage fixture unit load in accordance with Section 906.2.

### Delete without substitution:

915.2.5 Fixture branch or drain. The fixture branch or fixture drain shall connect to the combination waste and vent within a distance specified in Table 909.1. The combination waste and vent pipe shall be considered the vent for the fixture.

### Add new text as follows:

915.1.1 Single fixture systems. A horizontal fixture drain shall be considered to be a combination waste and vent system provided that the fixture drain size complies with Table 915.2.2.

# Part II

## 2015 International Residential Code

### Revise as follows:

**P3111.1 Type of fixtures.** A combination waste and vent system shall not<u>only</u> serve fixtures other than floor drains, sinks, <u>lavatories</u> and <u>lavatoriesdrinking</u> fountains. A combination waste and vent system shall <u>be considered to be the vent for those fixtures</u>. The developed length of a fixture drain to the combination waste and vent system piping shall not exceed the limitations of Table P3105.1. Combination waste and vent systems shall not receive the discharge offrom a food waste disposer.

### Add new text as follows:

P3111.1.1 Single fixture systems. A horizontal fixture drain shall be considered to be a combination waste and vent system provided that the fixture drain size complies with P3105.1.

### Revise as follows:

**P3111.2 Installation.** The only vertical pipe of a combination waste and vent system shall be the connection between the fixture drain and the horizontal combination waste and vent pipe. The lenght of the vertical distancepipe shall be not greater than 8 feet (2438 mm).

**P3111.2.1 Slope.** The slope of a horizontal combination waste and vent pipepiping shall have a slope of be not greater than  $1/_2$  unit vertical in 12 units horizontal (4-percent slope). The minimum slope and shall not be less than that indicated in accordance with Section P3005.3P3005.2.

P3111.2.2 ConnectionVent connection. TheA combination waste and vent system shall be provided with a dry vent connected at any point within the system or the system shall connect to a horizontal drain or building drain, that serves vented fixtures located on the same floor. Combination waste and vent systems connecting to *building drains* receiving only the discharge from one or more stacks shall be provided with a dry vent. The <u>dry vent connectionconnected</u> to the combination waste and vent pipe shall extend vertically to a point not less than 6 inches (152 mm) above the flood level rim of the highest fixture being vented by the combination waste and vent system before offsetting horizontally.horizontal offsets in the dry vent piping are allowed.

P3111.2.3 Vent size. The dry vent connected to the combination waste and vent system shall be sized for the total drainage fixture unit load in accordance with Section P3113.1P3111.1.

### Delete without substitution:

P3111.2.4 Fixture branch or drain. The fixture branch or *fixture drain* shall connect to the combination waste and vent within a distance specified in Table P3105.1. The combination waste and vent pipe shall be considered the vent for the fixture.

Revise as follows:

P3111.3 Size and length. The size of a combination drain and vent pipepiping shall be not less than that specified in Table 3111.3. The horizontal length of a combination drain and vent system shall be unlimited.

Reason: PART I: The primary reason for this proposal is to add new Section 915.1.1 to cover the very special situation of a single fixture combination waste and vent system.

Consider a 2 inch floor drain which by definition has a 2 inch trap. Where the floor drain is an emergency floor drain, Table 709.1 indicates that the dfu value is zero. Where the floor drain is not emergency floor drain, Table 709.1 indicates that the dfu value is 2. Where the floor drain is intended to receive only clear-water waste from certain types of equipment, Section 709.4.1 (through note h of Table 709.1), the dfu value is 1/2. For this example, consider that the floor drain is a 2 dfu value. Now review Table 915.2.2 and determine that a 2 inch combination waste and vent pipe can accommodate up to 3 dfu. Therefore, the 2 inch pipe from the trap of the 2 inch floor drain can be its own combination waste and vent system.

However, this is not readily apparent from existing language especially when reading existing Section 915.2.5. That section seems to indicate that the length of a fixture drain to its vent connection is always limited by the trap-to-vent distances in Table 909.1. The piping from any fixture trap to the vent connection is limited in length so that the vent connection is not below the trap weir (see Section 909.1). Table 909.1 reflects the maximum length of the fixture drain at the indicated slopes so Section 909.1 is not violated. But where the fixture drain is "oversized" according to the requirements for a combination waste and vent system, then the limit on fixture drain length for these single fixture applications is meaningless. The fixture trap cannot siphon because the pipe is oversized for the intended dfu going into the drain.

For a better flow of requirements, Section 915.2.5 was merged into Section 915.1. This was important in order to move the requirement for meeting Table 909.1 before new Section 915.1.1 to make that new section make sense.

Several minor changes were made to other sections including changing pipe to piping. Pipe implies a section of pipe without fittings. A combination waste and vent system can have horizontal bends. Some have misinterpreted that "pipe" meant that a CWV system only was allowed as a "straight run" system.

Another small but important change is in 915.2. Here, pipe really does mean pipe as in a straight run of pipe in vertical direction. Adding words to the last sentence will hopefully reinforce that it is not just the distance of 8 feet but a vertical pipe not longer than 8 feet. Note the definition for VERTICAL PIPE in chapter 2. A vertical pipe could have vertical offsets and still be considered vertical.

PART II: The primary reason for this proposal is to add new Section 915.1.1 to cover the very special situation of a single fixture combination waste and vent system.

Consider a 2 inch floor drain which by definition has a 2 inch trap. Where the floor drain is an emergency floor drain, Table P3004.1 indicates that the dfu value is zero. Where the floor drain is not emergency floor drain, note b indicates the dfu unit value is the summation of dfu discharging to the floor drain. For this example, consider that the floor drain is a 2 dfu value. Now review Table P3111.3 and determine that a 2 inch combination waste and vent pipe can accommodate up to 3 dfu. Therefore, the 2 inch pipe from the trap of the 2 inch floor drain can be its own combination waste and vent system.

However, this is not readily apparent from existing language especially when reading existing Section P3111.2.4. That section seems to indicate that the length of a fixture drain to its vent connection is always limited by the trap-to-vent distances in Table P3105.1. The piping from any fixture trap to the vent connection is limited in length so that the vent connection is not below the trap weir (see Section P3105.2). Table P3105.1reflects the maximum length of the fixture drain at the indicated slopes so Section P3105.2 is not violated. But where the fixture drain is "oversized" according to the requirements for a combination waste and vent system, then the limit on fixture drain length for these single fixture applications is meaningless. The fixture trap cannot siphon because the pipe is oversized for the intended dfu going into the drain.

For a better flow of requirements, Section P3111.2.4 was merged into Section P3111.1. This was important in order to move the requirement for meeting Table P3105.1 before new Section P3111.1 to make that new section make sense.

Several minor changes were made to other sections including changing pipe to piping. Pipe implies a section of pipe without fittings. A combination waste and vent system can have horizontal bends. Some have misinterpreted that "pipe" meant that a CWV system only was allowed as a "straight run" system.

Another small but important change is in P3111.2. Here, pipe really does mean pipe as in a straight run of pipe in vertical direction. Adding words to the last sentence will hopefully reinforce that it is not just the distance of 8 feet but a vertical pipe not longer than 8 feet. Note the definition for VERTICAL PIPE in chapter 2. A vertical pipe could have vertical offsets and still be considered vertical.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 18.

#### Cost Impact:

#### Part I: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

Part II: Will not increase the cost of construction

This proposal will not increase the cost of construction because no additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 221-15 : 915.1-SNYDER4071

# P 222-15

## 915.2.3

Proponent: James Richardson, Jr, representing City of Columbus Ohio (jarichardson@columbus.gov)

## 2015 International Plumbing Code

#### **Revise as follows:**

**915.2.3 Connection.** The *combination waste and vent system* shall be provided with a dry vent connected at any point within the system or the system shall connect to a horizontal drain that serves vented fixtures located on the same floor. *Combination waste and vent systems* connecting to building drains <u>and</u> <u>branches of building drains</u> receiving <del>only</del> the discharge from one or more stacks shall be provided with a dry vent. The vent connection to the combination waste and vent pipe shall extend vertically to a point not less than 6 inches (152 mm) above the flood level rim of the highest fixture being vented before offsetting horizontally.

**Reason:** Discharge from stacks causes the biggest pressure fluxuation in a plumbing system, especially for combination drain and vent systems which have no method for relieving positive pressures. In larger municipalities, many sewer systems maintain positive pressure which further compounds issues for combination drain and vent systems. Additionally, a combination drain and vent system connected to building drain (not a branch drain) currently requires no dry vent connection to the "system", in the event of a blockage in the building drain, upon the release of the blockage the traps attached to the CD&V system will lose their trap seal due to the subsequent negative pressure since there is no dry vent connection to balance the pressure within the system.

#### Cost Impact: Will not increase the cost of construction

This doesn't change the design of these systems but just clarifies where the systems can be installed.

P 222-15 : 915.2.3-RICHARDSON5325

# P 223-15

915.2.3

Proponent: James Richardson, Jr (jarichardson@columbus.gov)

## 2015 International Plumbing Code

### **Revise as follows:**

915.2.3 Connection. The combination waste and vent system shall be provided with a dry vent connected at any point within the system or the system shall connect to a horizontal drain that serves vented fixtures located on the same floor. Combination waste and vent systems connecting to building drains receiving only the discharge from one or more stacks shall be provided with a dry vent. The vent connection to the combination waste and vent pipe shall extend vertically to a point not less than 6 inches (152 mm) above the flood level rim of the highest fixture being vented before offsetting horizontally.

Reason: Building drains receive higher flows than other horizontal drains in a building. Depending on a single vented fixture far away from the building drain to provide venting air for a CWV system connected to a building drain that has stacks (possibly many stacks) discharging to the building drain just isn't a safe thing to do. There could be a CWV system for floor drains in a rarely occupied basement of a commercial building where numerous stacks come down into the building drain. A vent on a service sink somewhere in the corner of a large basement area is simply going to be too far away to provide sufficient venting air, through a nearly flooded building drain (at times), for connected CWV systems. These CWV systems need dedicated vents to prevent blowback of waste out of the connected floor drains. As you might imagine, blowback out of the floor drains could leave the trap seals open to allow sewer gases into the unhabited basement. These gases could be picked up air handlers or worse, become concentrated enough to explode with a spark from nearby switchgear.

The concept currently allowed by this code section might be workable for a home plumbing system but for a commerical building system, it just isn't smart design.

Cost Impact: Will not increase the cost of construction This doesn't change the design of these systems but just clarifies where the systems can be installed.

P 223-15 : 915.2.3-RICHARDSON6025

## P 224-15

Part I: 918.1 Part II:

## P3114.1

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Tim Earl, GBH International, representing The Oatey Company (tearl@gbhinternational.com)

## Part I

## 2015 International Plumbing Code

### Revise as follows:

**918.1 General.** Vent systems utilizing air admittance valves shall comply with this section. Stack-type air admittance valves shall conform to ASSE 1050. Individual and branchtype air admittance valves shall conform to ASSE 1051. <u>Both types of air admittance valves shall have a membrane constructed of silicone rubber.</u>

## Part II

## 2015 International Residential Code

## Revise as follows:

**P3114.1 General.** Vent systems using *air admittance valves* shall comply with this section. Individual and branch-type air admittance valves shall conform to ASSE 1051. Stack-type air admittance valves shall conform to ASSE 1050. <u>Both types of air admittance valves shall have a membrane constructed of silicone rubber.</u>

**Reason:** Silicone rubber is much more resistant to deformation and degradation from temperature change and humidity than other commonly used rubber diaphragm materials, as shown through accelerated aging and TGA analysis. This provides a higher degree of longevity and more importantly, a higher factor of safety to building occupants, as AAV diaphragm failure is less likely to occur with silicone. Diaphragm failure can lead to gas intrusion into the structure. Note that we are pursuing changes to the referenced ASSE standards as well, however these are not complete in time for this code cycle and we feel that waiting three more years is counter to ensuring a higher degree of confidence in the performance of these products. Once the standard is altered, we would support removing the code language being proposed. This is also consistent with a proposed change to the IRC.

The attached data from moisture exposure test shows that silicone demonstrates less swelling than other commonly used rubber diaphragm materials.

#### Moisture exposure data

The photo shows a deformed EPDM diaphragm after long-term exposure to humidity, heat, and sewer gas.

EPDM diaphragm after long-term exposure to humidity, heat, and sewer gas



#### Cost Impact:

Part I: Will not increase the cost of construction

This will have no impact on cost, as silicone is no more expensive than other commonly used rubber diaphragm materials.

Part II: Will not increase the cost of construction

This will have no impact on cost, as silicone is no more expensive than other commonly used rubber diaphragm materials.

P 224-15 : 918.1-EARL4546

# P 225-15

## 918.3.1

Proponent: James Richardson, Jr, representing City of Columbus Ohio (jarichardson@columbus.gov)

## 2015 International Plumbing Code

#### Revise as follows:

**918.3.1 Horizontal branches.** Individual and branch-type air admittance valves shall vent only fixtures that are on the same floor level and connect to a *horizontal branch drain*. Where the horizontal *branch* is located more than four branch intervals from the top of the stack, <u>or where the AAV is connected to a single fixture drain</u>, the horizontal *branch or horizontal fixture drain* shall be provided with a relief vent that shall connect to a vent stack or stack vent, or extend outdoors to the open air. The relief vent shall connect to the *horizontal branch drain* between the stack and the most downstream *fixture drain* connected to the *horizontal branch drain*. The relief vent shall be sized in accordance with Section 906.2 and installed in accordance with Section 905. The relief vent shall be permitted to serve as the vent for other fixtures.

Reason: 918.3.1 references individual and branch type AAVs connecting to a horizontal branch drain. The definition of a horizontal branch drain is: A drainage branch pipe extending laterally from a soil or waste stack or the building drain, with or without verticle sections or branches, that receives the discharge from two or more fixture drains or branches and conducts the discharge to the soil or waste stack or to the building drain. Based off of the definitions and the previous wording in the code section, it would appear the intent is for there to be some way to relieve positive pressures since the AAV can only relieve negative pressures. Without taking into consideration positive pressure, a contractor could connect two sinks off of a building drain on the same drainage lateral, creating a horizontal branch drain, and vent the fixtures with only an AAV. In doing so, positive pressures created by stack discharge could affect the operation of the fixtures and AAVs, or positive pressures in the sewer system could affect the AAVs.

#### Cost Impact: Will increase the cost of construction

There will be minimal additional cost to provide the relief vent for a single fixture or a pair of fixtures.

P 225-15 : 918.3.1-RICHARDSON5685

# P 226-15

Part I: 918.8 Part II:

P3114.8

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Guy McMann, representing Colorado Association of Plumbing and Mechanical Officials (CAPMO) (gmcmann@jeffco.us)

# Part I

## 2015 International Plumbing Code

## **Revise as follows:**

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 to vent sumps or tanks of any type. 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.

## Part II

## 2015 International Residential Code

### Revise as follows:

P3114.8 Prohibited installations. Air admittance valves shall not be used to vent sumps or tanks 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 or mechanical air intakes.

#### Reason:

Part 1: This type of installation is not consistent with the intent of use of AAVs. These are still mechanical devices with a shelf life and are subject to failure even if the correct AAV for outdoor use is installed. Failures will result in sewer gas making its way into building openings. The correct remedy is to move or raise the vent.

Part II: This type of installation is not consistent with the intended use of AAVs. These are still mechanical devices with a shelf life and are subject to failure even if the correct AAV for outdoor use is installed. Failures will result in sewer gas making its way into building openings. The correct remedy is to move or raise the vent.

#### Cost Impact:

#### Part I: Will not increase the cost of construction

There is no additional cost that would normally occur to correct a non-code compliant installation. This proposal attempts to circumvent the installation of a product against its' intended use as air admittance valves are a mechanical devices that will eventually fail.

#### Part II: Will not increase the cost of construction

There is no additional cost that would normally occur to correct a non-code compliant installation. This proposal attempts to circumvent the installation of a product against its' intended use as air admittance valves are a mechanical devices that will eventually fail.

P 226-15 : 918.8-MCMANN3592

# P 227-15

## 918.8

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## 2015 International Plumbing Code

#### Revise as follows:

**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 <del>without an engineered design shall</del> not be <del>utilized<u>used</u> to vent sumps or tanks <del>of any type.except where the vent system for the sump or tank has been designed by an engineer.</del></del>

Reason: The IRC already has this correction/clarification made in the last cycle and this proposal is for coordination with that IRC change.

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 150.

Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 227-15 : 918.8-SNYDER4076

## P 228-15

Part I: 918.8 Part II: P3114.8

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-PLUMBING COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## Part I

## 2015 International Plumbing Code

## Revise as follows:

**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 to vent sumps or tanks of any type. <u>Air admittance valves shall not be connected to waste piping where a slip joint connection is downstream of the air admittance valve connection.</u>

## Part II

## 2015 International Residential Code

### Revise as follows:

P3114.8 Prohibited installations. Air admittance valves shall not be used to vent sumps or tanks except where the vent system for the sump or tank has been designed by an engineer. Air admittance valves shall not be connected to waste piping where a slip joint connection is downstream of the air admittance valve connection.

**Reason:** This proposal is not an attempt to limit the use of Air Admittance Valves (AAVs) in any way. AAVs have been in the code for many code cycles and are understood to be a viable venting method where used in accordance with the provisions of the code. This proposal is attempting to prevent an "unintended consequence" of a specific arrangement of AAV installation. Consider the following (extremely common) application for an AAV: A lavatory in a toilet facility or bathroom. A quite common venting method used is the horizontal wet venting method where the vent for the lavatory serves as the venting for the water closets and bathub/shower in the toilet facility or bathroom. An AAV can be used for the lavatory vent. There is not a problem with use of an AAV in this situation. However, where the AAV is part of a tubular waste assembly (with the AAV downstream of the rap and a slip joint downstream of the AAV connection), there is a possibility that the trap will be replaced with a non-AAV trap and no one will be the wiser. Unfortunately, this will leave the bathroom group without a vent.

It is just too easy for this type of AAV arrangement to be replaced. In a public toilet facility, vandalism can occur where trim and fixtures must be replaced. This type of AAV trap can "disappear" in the process as they are somewhat of a specialty item and certainly have a higher cost than a standard trap. Allowing AAV's into the code came with the code requirements intent that the presence of these devices would be apparent (review Sections 918.4 through 918.8). For example, where located in an attic, an AAV has to be above the insulation. Where stack type AAV's are used they have to be located 6 inches above the flood level rim of the served fixtures. Although AAV's can be concealed, the must be provided with access. In other words, you have to be able to see that there is a location for installation of the AAV. Removal of an AAV trap with a slip joint connection downstream doesn't leave any evidence that an AAV was there or was supposed to be there.

Again, this is not to say that a AAV cannot be used for venting a lavatory. To comply with the proposed limitation, the installer simply has to "hard pipe" for the AAV. In that manner, there is a fixed connection for the AAV that is not easily removable in the future

This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 2.

#### Cost Impact:

#### Part I: Will increase the cost of construction

This proposal will increase the cost of construction because additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code. Specifically, there will be a few more pipe fittings and a slightly more labor required at set out (fixture installation) to facilitate the "hard piped" AAV connection. Because the AAV was already going to be used, there is no extra cost for an AAV.

#### Part II: Will increase the cost of construction

This proposal will increase the cost of construction because additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code. Specifically, there will be a few more pipe fittings and a slightly more labor required at set out (fixture installation) to facilitate the "hard piped" AAV connection. Because the AAV was already going to be used, there is no extra cost for an AAV.

P 228-15 : 918.8-SNYDER4077

# P 229-15

## 1002.3 (New), 405.8, 706.2, 708.1.5, 901.2.1, 904.1, 1002.1, 1002.3, Chapter 14

Proponent: Angel Guzman Rodriguez, representing American Society of Mechanical Engineers

## 2015 International Plumbing Code

### Add new text as follows:

**1002.3** Inline sanitary waste valves Inline sanitary waste valves shall comply with ASME A112.18.8. The valves shall be installed only on fixture outlets having 1-1/4 inch (31.8mm) or 1-1/2 inch (38.1 mm) outside diameter tubular waste piping. Valves conveying the waste from a food waste disposer shall be installed only in a vertical orientation. The valves shall not be installed on the outlet of a urinal. The valves shall be installed in a vertical orientation or a horizontal orientation. Where installed in a horizontal orientation, the valve body shall be oriented with the ribs on the exterior of the valve body located on the bottom of the valve. The valves shall be provided with access.

#### **Revise as follows:**

**405.8 Slip joint connections.** Slip joints shall be made with an *approved* elastomeric gasket and shall only be installed on the trap outlet, a trap inlet-and, within the trap seal, and on the inlet and outlet of an inline sanitary waste valve. Fixtures with concealed slip-joint connections shall be provided with an *access* panel or utility space not less than 12 inches (305 mm) in its smallest dimension or other *approved* arrangement so as to provide *access* to the slip joint connections for inspection and repair.

**706.2 Obstructions.** The fittings shall not have ledges, shoulders or reductions capable of retarding or obstructing flow in the piping. Threaded drainage pipe fittings shall be of the recessed drainage type. This section shall not be applicable to tubular waste fittings used to convey vertical flow upstream of the trap seal liquid level of a fixture trap or upstream of an inline sanitary waste valve complying with Section 1002.3.

708.1.5 Cleanout size. Cleanouts shall be the same size as the piping served by the cleanout, except that cleanouts for piping larger than 4 inches (102 mm) need not be larger than 4 inches (102 mm).

#### Exceptions:

- 1. A removable P-trap with slip or ground joint connections can serve as a cleanout for drain piping that is one size larger than the P-trap size.
- 2. Where serving as a cleanout, a removable inline sanitary waste valve shall comply with Section 1002.3 and the drain piping served shall be not greater than one size larger than the size of such valve.
- 3. Cleanouts located on *stacks* can be one size smaller than the *stack* size.
- 4. The size of cleanouts for cast-iron piping can be in accordance with the referenced standards for cast-iron fittings as indicated in Table 702.4.

901.2.1 Venting required. Traps and trapped fixtures shall be vented in accordance with one of the venting methods specified in this chapter. <u>Inline sanitary</u> waste valves in accordance with Section 1002.3 shall not be required to be vented.

**904.1 Required vent extension.** The vent system serving each *building drain* shall have not less than one vent pipe that extends to the outdoors. <u>Sanitary</u> drainage systems that do not have traps and have only inline sanitary waste valves in accordance with Section 1002.3 shall be provided with at least one vent.

**1002.1** Fixture traps.Trap or inline sanitary waste valve required for each fixture. Each plumbing fixture shall be separately trapped by independently discharge to a liquid seal trap, trap or an inline sanitary waste valve in accordance with Section 1002.3 except as otherwise permitted by this code. The vertical distance from the fixture outlet to the trap weir shall not exceed 24 inches (610 mm), and the horizontal distance shall not exceed 30 inches (610 mm) measured from the centerline of the fixture outlet to the centerline of the inlet of the trap. The height of a clothes washer standpipe above a trap shall conform to Section 802.4. A fixture shall not be double trapped.

#### Exceptions:

- 1. This section shall not apply to fixtures with integral traps.
- 2. A combination plumbing fixture is permitted to be installed on one trap, provided that one compartment is not more than 6 inches (152 mm) deeper than the other compartment and the waste outlets are not more than 30 inches (762 mm) apart.
- 3. A grease interceptor intended to serve as a fixture trap in accordance with the manufacturer's installation instructions shall be permitted to serve as the trap for a single fixture or a combination sink of not more than three compartments where the vertical distance from the fixture outlet to the inlet of the interceptor does not exceed 30 inches (762 mm) and the *developed length* of the waste pipe from the most upstream fixture outlet to the inlet of the interceptor does not exceed 60 inches (1524 mm).
- 4. Floor drains in multilevel parking structures that discharge to a building storm *sewer* shall not be required to be individually trapped. Where floor drains in multilevel parking structures are required to discharge to a combined *building sewer* system, the floor drains shall not be required to be individually trapped provided that they are connected to a main trap in accordance with Section 1103.1.

#### 1002.3 Prohibited traps. The following types of traps are prohibited:

- 1. Traps that depend on moving parts to maintain the seal.
- 2. Bell traps.
- 3. Crown-vented traps.
- 4. Traps not integral with a fixture and that depend on interior partitions for the seal, except those traps constructed of an *approved* material that is resistant to corrosion and degradation.
- 5. "S" traps.
- 6. Drum traps

Exception: Drum traps used as solids interceptors and drum traps serving chemical waste systems shall not be prohibited.\_

For the purposes of this section, inline sanitary waste valves complying with ASME A112.18.8 shall not considered as a prohibited trap.

### Add new standard(s) as follows:

ASME A112.18.8–2009 (R2014) In-Line Sanitary Waste Valves for Plumbing Drainage

**Reason:** Inline sanitary waste valves serve the same function as a liquid seal traps. The valve design has been tested and proven to maintain a gas tight seal when used in the application where a trap would be used. These valves have been mainly used in manufactured homes where the valve location is in areas that are small and there is limited space. The performance requirements for these valves are mentioned within the ASME A112.18.8 standard which includes a gas-tight seal test. This is an ANSI approved standard.

Section 1002.3 is the main section of interest of this proposal and provides the requirements and limitations for installation of the valves. All other sections of the code have been carefully revised to accomodate this type of device within the structure of the code.

A similar proposal was submitted by abother proponent to the IRC-P&M Committee in 2013 (Group B of 2012/2013/2014 code development cycle) and was approved by the Committee. However,

#### <u>RP149-13</u>

Committee Action: Approved as Submitted

Committee Reason: This proposal provides another option for a p-trap where conditions are not favorable for installation of a p-trap.

Assembly Action: None

#### Cost Impact: Will not increase the cost of construction

The use of in-line sanitary waste valves will not affect cost of construction. These waste valves are already being used and this code change will only require that the valves comply with the standard.

Analysis: A review of the standard proposed for inclusion in the code, ASME A112.18.8–2009 (R2014), with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 229-15 : 1002.3-GUZMAN RODRIGUEZ4977

# P 230-15

## 1003.3

Proponent: Ken Loucks, representing Schier Products Company (ken.loucks@schierproducts.com)

## 2015 International Plumbing Code

#### **Revise as follows:**

1003.3 Grease interceptors. Grease interceptors shall comply with the requirements of Sections 1003.3.1 through 1003.3.5/1003.3.7.

Reason: The 2015 language failed to include all of the relevent sections for grease interceptors in the requirements for grease interceptors under 1003.3 since it currently only requires interceptors to meet sections up to 1003.3.5 (leaving out 1003.3.6 and 1003.3.7). This has the effect of exempting gravity grease interceptors from requirements that should pertain to all grease interceptors without exception. Also, 1003.3.7 specifically requires grease interceptors to be directly connected to the sanitary drainage system, however this is confusing since this section is not mandated for compliance in 1003.3.

### Cost Impact: Will not increase the cost of construction

There is no cost impact, since this only clarifies requirements already in the code but which are confusing as is.

P 230-15 : 1003.3-LOUCKS3822

# P 231-15

## 413.1, 413.3, 1003.3.1

Proponent: Julius Ballanco, JB Engineering and Code Consulting, P.C., representing InSinkErator (JBENGINEER@aol.com)

## 2015 International Plumbing Code

#### Revise as follows:

**413.1 Approval.** Domestic food waste disposers shall conform to ASSE 1008. <u>Domestic</u> and <u>commercial food waste disposers</u> shall be listed and labeled in accordance with UL 430. Food waste disposers shall not increase the *drainage fixture unit* load on the sanitary drainage system.

**413.3 Commercial food waste disposer waste outlets.** Commercial food waste disposers shall be connected to a drain not less than 1<sup>1</sup>/<sub>2</sub> inches (38 mm) in diameter. Commercial food waste disposers shall be <u>directly</u> connected and trapped separately from any other fixtures or sink compartments.

**1003.3.1 Grease interceptors and automatic grease removal devices required.** A grease interceptor or automatic grease removal device shall be required to receive the drainage from fixtures and equipment with greaseladen waste located in food preparation areas, such as in restaurants, hotel kitchens, hospitals, school kitchens, bars, factory cafeterias and clubs. Fixtures and equipment shall include pot sinks, prerinse sinks; soup kettles or similar devices; wok stations; floor drains or sinks into which kettles are drained; automatic hood wash units and dishwashers without prerinse sinks. <u>Commercial food waste disposers shall not be required to discharge to a grease interceptor or to an automatic grease removal device.</u> Grease interceptors and automatic grease removal devices shall receive waste only from fixtures and equipment that allow fats, oils or grease to be discharged. Where lack of space or other constraints prevent the installation or replacement of a grease interceptor, one or more grease interceptors shall be permitted to be installed on or above the floor and upstream of an existing grease interceptor.

Reason: This change merely clarifies the requirements for commercial food waste disposers. Chapter 3 already requires food waste disposers to be listed and labeled. When UL 430 was added during the last code change cycle, it was only added as a reference to domestic food waste disposers. However, the standard also regulates commercial food waste disposers. Food waste disposers are required to connect directly to the drainage system. There have been incidents whereby there was a misinterpretation of Chapter 8 and food waste disposers were required to discharge indirectly to the drainage system because they are located in a food handling establishment. By adding the word "directly" there will not be such misinterpretation.

Finally, there have been occasions where there has been a misinterpretation of Section 1003.3.1, whereby health inspectors required grease interceptors to discharge through a grease interceptor. By adding a sentence to this section, it clarifies that this is not required by this section. The added sentence could also be converted to an exception.

Cost Impact: Will not increase the cost of construction This proposal adds clarity to the code. There is no change that impacts cost of installation.

P 231-15 : 1003.3.1-BALLANCO3808

# P 232-15

## 1003.3.1

Proponent: Ken Loucks, Schier Products Company, representing Schier Products Company (ken.loucks@schierproducts.com)

## 2015 International Plumbing Code

#### Revise as follows:

**1003.3.1 Grease interceptors and automatic grease removal devices required.** A<u>One or more</u> grease interceptorinterceptors or automatic grease removal devicedevices shall be required provided to receive the drainage containing fats, oils or grease from kitchen fixtures and food preparation equipment. Such fixtures and equipment with greaseladen wasteshall include pot sinks, prerinse sinks, soup kettles or similar devices, wok stations, floor drains, floor sinks, automatic nood wash units and dishwashers that are located in the food preparation areas, of food-handling establishments such as in restaurants, hotel kitchens, hospitals, school kitchens, bars, factory cafeterias and clubs. Fixtures and equipment shall include pot sinks, prerinse sinks, soup kettles or sinks into which kettles are drained; automatic hood wash units and dishwashers without prerinse sinks. Grease interceptors and automatic grease removal devices shall receive waste only from fixtures and equipment that allow fats, oils or grease to be discharged. Where lack of space or other constraints prevent the installation or replacement of a grease interceptor, one or more grease interceptors shall be permitted to be installed on or above the floor and upstream of an existing grease interceptor.

**Reason:** The current plumbing code and its interpretation does not provide adequate control of Fats, Oils, and Greases (FOG) from food service establishments (restaurants, delis, and commercial kitchens). FOG in the wastewater collection system causes blockages, increases utility costs and disrupts wastewater treatment plants<sup>1</sup>.

The phrase, "A grease interceptor or automatic grease removal device shall be required to receive the drainagefrom fixtures and equipment with greaseladen waste..." is too ambiguous. Many people are not sure whether a fixture carries greaseladen waste and in many cases fixtures that are now know to carry at least some greaseladen waste routinely do not get routed to a grease interceptor. This leads to unanticipated bypass in violation of EPA mandates and NPDES requirements.

The presence of a prerinse sink should not preclude a dishwasher from being routed to an interceptor since the use of the prerinse sink is not a guarantee that food scraps and greasy residue will be removed from dishware prior to entering the dishwasher.

This proposal amends the 2015 IPC by mandating that all fixtures and equipment in food preparation areas be routed to an interceptor in support of federally mandated FOG abatement requirements<sup>2</sup>.

#### Bibliography:

1. EPA Report to Congress, 833-R-04-001, US EPA, 2004, pages ES-1 through ES-4, 4-27 and 4-28

http://water.epa.gov/polwaste/npdes/cso/2004-Report-to-Congress.cfm

#### Cost Impact: Will not increase the cost of construction

It is not possible to quantify actual costs because it is dependent on the specifics of a particular application, such as building type/size, design variables, construction methods and materials, however the associated costs for post construction changes to a grease interceptor system that fails to meet pretreatment compliance requirements can cost tens of thousands of dollars. These changes should not impact state agencies, units of local government, or the public either since building codes division's and local building departments already enforce the requirements of the plumbing code.

P 232-15 : 1003.3.1-LOUCKS3296

# P 233-15

## 1003.3.2

Proponent: Julius Ballanco, JB Engineering and Code Consulting, P.C., representing InSinkErator (JBENGINEER@aol.com)

## 2015 International Plumbing Code

#### Revise as follows:

1003.3.2 Food waste disposers restriction. Where A food waste disposers connect to grease interceptors, a solids interceptor shall separate the discharge before connecting to the grease interceptor. Solids interceptors and grease interceptors shall be sized and rated for the discharge of the food waste disposers. Emulsifiers, chemicals, enzymes and bacteria disposer shall not discharge into the food waste disposer. To a grease interceptor.

**Reason:** It has been well established that food waste from a disposer must not discharge through a grease interceptor. If food waste passes through a grease interceptor, it greatly reduces the efficiency of the interceptor. Food waste decomposition in a grease interceptor will dramatically increase the oxygen consumption. The food waste will also drop the pH, increase corrosion, and increase the hydrogen sulfide production. The only means of preventing this occurrence is to not have the food waste disposer discharge to the grease interceptor. Using a solids interceptor before a grease interceptor is not a viable solution. The solids interceptor will continually fill up with food waste requiring maintenance. In a food handling establishment, this maintenance could be hourly.

A food waste disposer must discharge directly to the sanitary drainage system. This code change will result in such a requirement.

#### Cost Impact: Will not increase the cost of construction

This identifies a limitation on the discharge of food waste disposers through grease interceptor. By properly connecting the food waste disposer, the cost will be less because of material savings.

P 233-15 : 1003.3.2-BALLANCO3807

# P 234-15

## 1003.3.2, 1003.3.3 (New)

Proponent: JEFFREY HUTCHER, cleanblu, representing Cleanblu (jhutcher@pacbell.net)

## 2015 International Plumbing Code

#### Revise as follows:

**1003.3.2 Food waste disposers.** Where food waste disposers connect to grease interceptors, a solids interceptor shall separate the discharge before connecting to the grease interceptor. Solids interceptors and grease interceptors shall be sized and rated for the discharge of the food waste disposers. <del>Emulsifiers, chemicals, enzymes and bacteria shall not discharge into the food waste disposer.</del>

#### Add new text as follows:

**1003.3.3 Additives to grease interceptors.** Dispensing systems that dispense interceptor performance additives to grease interceptors shall not be installed except where such systems dispense microbes for the enhancement of aerobic bio remediation of grease and other organic material, or for inhibiting growth of pathogenic organisms by anaerobic methods. Such microbial dispensing systems shall be installed only where the grease interceptor manufacturer's instructions allow such systems and the systems conform to ASME A112.14.6. Systems that discharge emulsifiers, chemicals or enzymes to grease interceptors shall be prohibited.

**Reason:** Section 1003.3.2 is outdated and ignores the advances of new technology. To include bacteria in the prohibition is not only ignoring science, it is akin to prohibiting electricity as an energy solution. bioremediation is the sole mechanism of ALL waste water treatment plants and natures way to handle waste. Enzymes and microbes are not the same. Enzymes are dead strings of protein that disperse grease and is a common additive in dish soap. Microbes are lifeforms that eat and digest waste. Microbes can be blended (not altered) to feed on grease, sulfur, while inhibiting the growth of pathogens and other harmful organisms. Waste water treatment depends on microbes and and would simply cease to function without them; So would the human body. Yeast are microbes too. It makes our bread rise, they give us beer, wine and cheese. They are not additives. It's impossible not to have microbes in any establishment. Using Microbes in point source pollution control is enchancing already naturally occuring bacteria and introducing them to their food source. Just like yeast, the by-products are Carbon Dioxide and water. Systems designed to use aerobic Microbes are now listed and meet ASME A112.4.6, using the rigorous EPA test protocol 1664. There is no reason to exclude them in point source pollution control. Exclusion of microbal treatment would be irresponsible, unnatural and dangerous to human and animal health.

#### Cost Impact: Will not increase the cost of construction

The microbe dispensing systems are optional and therefore, there is no additional cost of material or labor. The new section simply allows these optional systems to be installed as long as they comply with the requirements indicated by the section.

P 234-15 : 1003.3.2-HUTCHER4455
## P 235-15

1003.4.2.1

Proponent: James Richardson, Jr (jarichardson@columbus.gov)

### 2015 International Plumbing Code

### Revise as follows:

**1003.4.2.1 General design requirements.** Oil separators shall have a depth of not less than 2 feet (610 mm) below the invert of the discharge drain. The outlet opening of the separator shall have not less than an <del>18inch</del><u>18-inch</u> (457 mm) water seal. <u>Oil separators shall be provided with a local vent that extends.</u> undiminished in size, to the outdoors. The local vent shall be independent from the venting system of a sanitary drainage system. Plumbing fixtures discharging to the oil separator and requiring a vent for the fixture trap, shall have the vent for the trap connected to the local vent or the vent for the trap shall extend to the outdoors, independent from the venting system. The termination of such vents shall be in accordance with Section 903.

**Reason:** General design requirements - Oil separators have always been designed with a local vent stack to allow for toxic and flammable vapors to be vented to a safe place and were always kept independent of the sanitary system. Since there is no requirement in the code for the local vent stack, many design professionals have not been designing these systems with the local vent stack. Without the requirement that it remain independent from the sanitary venting system, they are also designing systems interconnected allowing for the transfer of the toxic or flammable vapor to be transferred to the public sewer system, especially in larger systems where there can exists high positive pressures and high negative pressures.

#### Cost Impact: Will increase the cost of construction

As a separate vent piping system for oil separators and the fixtures connected to the oil separators must be installed, there will be a moderate cost for materials and labor for these venting systems to be installed. Knowledgable contractors have already be installing these separate venting systems so, as there will be only some contrators that will be asking for an upcharge to install these oil separator systems. The other contractors have been doing it correctly and charging appropriately all along.

P 235-15 : 1003.4.2.1-RICHARDSON6024

## P 236-15

## Table 1102.4, Chapter 14

**Proponent:** Shawn Coombs, Advanced Drainage Systems, Inc., representing Advanced Drainage Systems, Inc. (shawn.coombs@ads-pipe.com)

## 2015 International Plumbing Code

## **Revise as follows:**

### TABLE 1102.4 BUILDING STORM SEWER PIPE

MATERIAL	STANDARD
Polypropylene (PP) Pipe	<u>CSA B182.13</u>

(Portions of table not shown remain unchanged)

### Add new standard(s) as follows:

CSA B182.13-2011 Profile Polypropylene (Pp) Sewer Pipe And Fittings For Leak-Proof Sewer Applications

**Reason:** This code change is proposed because there is currently an CSA Standard Specification for this pipe material. PP pipe has been used in gravity flow storm sewer applications (both watertight and soil tight) in Europe for over 25 years and is now being manufactured in the United States. AASHTO has approved the material under AASHTO Specification M330. The American Society Testing Materials (ASTM) has also approved PP pipe per ASTM F2881-11. The acceptance of the proposed change will enable manufacturers with products that meet the requirements of the ASTM Standard to have their products used. This change will also allow the authorities having jurisdiction to permit the use of products that meet this CSA standard.

### Cost Impact: Will increase the cost of construction

Using PP will slightly increase the pipe material cost, but will fascilitate ease of installation, due to the stiffer nature of the pipe's wall.

Analysis: A review of the standard proposed for inclusion in the code, CSA B182.13-2011, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 236-15 : 1102.4-COOMBS4183

## P 237-15

## Table 1102.4, Chapter 14

**Proponent:** Shawn Coombs, Advanced Drainage Systems, Inc., representing Advanced Drainage Systems, Inc. (shawn.coombs@ads-pipe.com)

## 2015 International Plumbing Code

## **Revise as follows:**

### TABLE 1102.4 BUILDING STORM SEWER PIPE

MATERIAL	STANDARD
Polyethylene (PE) plastic	<u>ASTM F667;</u> ASTM F
pipe	2306/F 2306M

(Portions of table not shown remain unchanged)

### Add new standard(s) as follows:

ASTM F667 - 12 "Standard Specification for 3 through 24 in. Corrugated Polyethylene Pipe and Fittings"

Reason: This code change is proposed because the currently listed ASTM F2306 has a size range of 12" to 60". There are applications where the designer uses smaller diameter polyethylene pipe to convey storm water or other drainage from the end of the building drain to a public sewer, private sewer, individual sewage disposal system or other point of disposal. Proposed ASTM F667-06 is needed as it covers pipe sizes 3" to 24"

The acceptance of the proposed change will allow the authorities having jurisdiction to permit the use of this product in smaller diameters where required.

Cost Impact: Will not increase the cost of construction

The addition of this standard will allow more appropriately sized diameters of PE to be used, thus optimizing cost.

Analysis: A review of the standard proposed for inclusion in the code, ASTM F667, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 237-15 : T1102.4-COOMBS4123

## P 238-15

## Table 1102.4, Chapter 14

Proponent: Shawn Coombs, representing Advanced Drainage Systems, Inc. (shawn.coombs@ads-pipe.com)

### 2015 International Plumbing Code

### **Revise as follows:**

#### TABLE 1102.4 BUILDING STORM SEWER PIPE

MATERIAL	STANDARD
Polyethylene (PE) plastic	ASTM F 2306/F 2306M;
pipe	<u>ASTM F2648/F2648M</u>

(Portions of table not shown remain unchanged)

#### Add new standard(s) as follows:

ASTM F2648/F2648M-13 Standard Specification for 2 to 60 inch [50 to 1500 mm] Annular Corrugated Profile Wall Polyethylene (PE) Pipe and Fittings for Land Drainage Applications

**Reason:** Section 503 Material Selection of the IGCC discusses the use of recyclable building materials and the use of indigenous materials on projects. This code change is proposed because ASTM F2648 allows the use of recycled materials to be used in the manufacture of High Density Polyethyene pipe. The addition of ASTM F2648 to Table 1102.4 is in support of the IGCC initiative. The acceptance of the proposed change will allow the authorities having jurisdiction to permit the use of this product on projects in direct support of the IGCC.

#### Cost Impact: Will not increase the cost of construction

The use of recycled materials in our products in most cases make the pipe more cost effective.

Analysis: A review of the standard proposed for inclusion in the code, ASTM F2648/F2648M, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 238-15 : T1102.4-COOMBS4173

## P 239-15

## Table 1102.4, Chapter 14

**Proponent:** Shawn Coombs, Advanced Drainage Systems, Inc., representing Advanced Drainage Systems, Inc. (shawn.coombs@ads-pipe.com)

### 2015 International Plumbing Code

### **Revise as follows:**

### TABLE 1102.4 BUILDING STORM SEWER PIPE

MATERIAL	STANDARD
Polypropylene (PP) Pipe	ASTM F2881

(Portions of table not shown remain unchanged)

### Add new standard(s) as follows:

ASTM F2881-11 "Standard Specification for 12 to 60 in. [300 to 1500 mm] Polypropylene (PP) Dual Wall Pipe and Fittings for Non-Pressure Storm Sewer Applications"

**Reason:** This code change is proposed because there is currently an ASTM Standard Specification for this pipe material. PP pipe has been used in gravity flow storm sewer applications (both watertight and soil tight) in Europe for over 25 years and is now being manufactured in the United States. AASHTO has approved the material under AASHTO Specification M330. The Canadian Standards Association (CSA) has also approved PP pipe per CSA B182.13-11. The acceptance of the proposed change will enable manufacturers with products that meet the requirements of the ASTM Standard to have their products used. This change will also allow the authorities having jurisdiction to permit the use of products that meet this ASTM standard.

### Cost Impact: Will increase the cost of construction

Using polypropylene pipe will slightly increase the pipe material cost, but will facilitate installation, due to the stiffer nature of the pipe's wall.

Analysis: A review of the standard proposed for inclusion in the code, ASTM F2881, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 239-15 : T1102.4-COOMBS4180

## P 240-15

## Table 1102.4

Proponent: Mike Cudahy, representing Plastic Pipe and Fittings Association (mikec@cmservnet.com)

## 2015 International Plumbing Code

Revise as follows:

### TABLE 1102.4 BUILDING STORM SEWER PIPE

MATERIAL	STANDARD		
Acrylonitrile butadiene styrene (ABS) plastic pipe in IPS diameters, including Schedule 40, DR 22 (PS 200) and DR 24 (PS 140); with a solid, cellular core or composite wall.	ASTM D 2661; <del>ASTM D</del> <del>2751;</del> ASTM F 628; <u>ASTM</u> <u>F 1488;</u> CSA B181.1; CSA B182.1		
Cast-iron pipe	ASTM A 74; ASTM A 888; CISPI 301		
Concrete pipe	ASTM C 14; ASTM C 76; CSA A257.1M; CSA A257.2M		
Copper or copper-alloy tubing (Type K, L, M or DWV)	ASTM B 75; ASTM B 88; ASTM B 251; ASTM B 306		
Polyethylene (PE) plastic pipe	ASTM F 2306/F 2306M		
Polyvinyl chloride (PVC) plastic pipe (Type DWV, SDR26, SDR35, SDR41, PS50 or PS100) <u>in IPS</u> <u>diameters, including</u> <u>Schedule 40, DR 22 (PS</u> <u>200) and DR 24 (PS 140);</u> <u>with a solid, cellular core or</u> <u>composite wall.</u>	ASTM D 2665; ASTM D 3034; ASTM F 891; <u>ASTM</u> <u>F 1488:</u> CSA B182.4; CSA B181.2; CSA B182.2		
Vitrified clay pipe	ASTM C 4; ASTM C 700		
Stainless steel drainage systems, Type 316L	ASME A112.3.1		

Reason: ASTM D2751 has been withdrawn in 2014.

ASTM F1488, "Standard Specification for Coextruded Composite Pipe" is found in table 702.2, but not table 1102.4

Cost Impact: Will not increase the cost of construction

This proposal simply adds another option for piping material into the code and corrects others, and as such, the option is not requiring that this material be chosen. Thus the code with this proposal added will not cause the cost of construction to increase.

P 240-15 : T1102.4-CUDAHY4621

## P 241-15

## Table 1102.5, Chapter 14

**Proponent:** Shawn Coombs, Advanced Drainage Systems, Inc., representing Advanced Drainage Systems, Inc. (shawn.coombs@ads-pipe.com)

### 2015 International Plumbing Code

### **Revise as follows:**

### TABLE 1102.5 SUBSOIL DRAIN PIPE

MATERIAL	STANDARD
Polyethylene (PE) plastic pipe	ASTM F 405; <u>ASTM F667;</u> CSA B182.1; CSA B182.6; CSA B182.8

(Portions of table not shown remain unchanged)

### Add new standard(s) as follows:

ASTM F667 - 12 Standard Specification for 3 through 24 in. Corrugated Polyethylene Pipe and Fittings

Reason: This code change proposal is proposed because the currently listed ASTM F405 is limited in size to only 3" to 6" diameter pipe. There are applications where larger diameters of perforated polyethylene pipe are required to collect subsurface water or seepage water and convey such water to a place of disposal. The proposed ASTM F667-06 is needed as it covers pipe sizes 3" to 24" diameters. The acceptance of the proposed change will allow the authorities having jurisdiction to permit the use of this product in larger diameters where required.

#### Cost Impact: Will not increase the cost of construction

The addition of this standard will allow more appropriately sized diameters of PE to be used, thus optimizing cost.

Analysis: A review of the standard proposed for inclusion in the code, ASTM F667 - 12, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 241-15 : T1102.5-COOMBS4182

## P 242-15

## 1102.6, Chapter 14

Proponent: Julius Ballanco, JB Engineering and Code Consulting, P.C., representing Self (JBENGINEER@aol.com)

### 2015 International Plumbing Code

#### **Revise as follows:**

1102.6 Roof Drains. Roof drains shall conform to ASME A112.6.4 or ASME A112.3.1. Roof drains shall be tested and rated in accordance with ASPE/IAPMO Z1034.

### Add new standard(s) as follows:

ASPE/IAPMO Z1034 Test Method for Evaluating Roof Drain Performance

Reason: ASPE/IAPMO Z1034 is the new consensus standard for testing and rating roof drains for their flow rate. The current code requires the manufacturer to publish their flow rates. The flow rates are determined by testing to this standard.

The testing requirements in the standard are consistent with the results published in the ASPE Research Foundation Roof Drainage Research Report. The standard also allows flexibility in design to allow manufacturers to develop their own test rig for certifying their roof drains.

Cost Impact: Will not increase the cost of construction

While this testing will cost the manufacturers, such costs are not passed on to the construction costs. Testing and listing of products is a normal business expense for manufacturers.

Analysis: A review of the standard proposed for inclusion in the code, ASPE/IAPMO Z1034, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 242-15 : 1102.6-BALLANCO3657

## P 243-15

## 1102.6, Chapter 14

**Proponent:** Billy Smith, American Society of Plumbing Engineers Legislative Committee, representing American Society of Plumbing Engineers Legislative Committee (bsmith@aspe.org)

### 2015 International Plumbing Code

Revise as follows:

1102.6 Roof Drains. Roof drains shall conform to ASME A112.6.4 or ASME A112.3.1. Roof drains shall be tested and rated in accordance with ASPE/IAPMO 21034.

### Add new standard(s) as follows:

ASPE/IAPMO Z1034-2015 Test Method for Evaluating Roof Drain Performance

Reason: ASPE/IAPMO Z1034 is the new consensus standard for testing and rating roof drains for their flow rate. The current code requires the manufacturer to publish their flow rates. The flow rates are determined by testing to this standard.

The testing requirements in the standard are consistent with the results published in the ASPE Research Foundation Roof Drainage Research Report. The standard also allows flexibility in design to allow manufacturers to develop their own test rig for certifying their roof drains.

Cost Impact: Will increase the cost of construction

There are already cost associated with testing of roof drains. However, this being a new consensus standard, cost could increase.

Analysis: A review of the standard proposed for inclusion in the code, ASPE/IAPMO Z1034-2015, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 243-15 : 1102.6-SMITH5403

## P 244-15

### 1105.2

Proponent: MAX WEISS, Plumbing & Drainage Institute, representing Plumbing & Drainage Institute (max@weissresearch.net)

### 2015 International Plumbing Code

#### **Revise as follows:**

**1105.2 Roof drain flow rate.** The published roof drain flow rate, based on the head of water above the roof drain, shall be used to size the storm drainage system in accordance with Section 1106roof drain. The flow rate used for sizing the storm drainage piping shall be based on the maximum anticipated ponding at the roof drain.

**Reason:** The effort to use the roof drain alone as a flow rate determiner ignores the ASPE data cited as support for the previous change. The ASPE data demonstrates the discharge piping configuration has a greater effect on system flow rate than either ponding depth or drain design. Therefore, while roof drain only flow rate, independent of discharge piping can be used as a flow quantifying element in the overall system design, it is not possible to use that element alone to determine the flow rate for the entire system. Piping configuration effect on flow must be calculated to obtain system flow accuracy.

### Cost Impact: Will not increase the cost of construction

The proposal does not add or subtract material, elements, or method of construction. It simply amends the method of calculation.

P 244-15 : 1105.2-WEISS5758

## P 245-15

## 1106.1, 1106.2, 1106.2.1 (New), Table 1106.2.1 (New), 1106.2.1.1 (New), 1106.2.1.2 (New), 1106.2.2 (New), 1106.2.2.1 (New)

Proponent: Julius Ballanco, JB Engineering and Code Consulting, P.C., representing Self (JBENGINEER@aol.com)

### 2015 International Plumbing Code

### Revise as follows:

**1106.1 General.** The size of the vertical conductors and leaders, building *storm drains*, building storm *sewers* and any horizontal branches of such drains or *sewers* shall be based on the 100-year hourly rainfall rate indicated in Figure 1106.1 or, on other rainfall rates determined from *approved* local weather data or, where an engineered roof drainage piping system is used, in accordance with the rainfall rates indicated in Section 1106.2.2.

### 1106.2 Size of storm draindrainage piping. Vertical and horizontal storm drain

Storm drainage piping shall be sized based on the flow rate through the roof drain. The flow rate in storm drain piping shall not exceed that specified in Table 1106.2.accordance with Section 1106.2.1 or Section 1106.2.2.

#### TABLE 1106.2.1 ROOF DRAINAGE FLOW RATE

	Drainage Flow Rate (gpm)					
<u>Roof Drainage Area (sq ft)</u>	Based on Rainfall Rates (in/hr)					
	1	2	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
<u>500</u>	<u>5</u>	<u>10</u>	<u>16</u>	<u>21</u>	<u>26</u>	<u>31</u>
1000	<u>10</u>	<u>21</u>	<u>31</u>	<u>42</u>	<u>52</u>	<u>62</u>
1500	<u>16</u>	<u>31</u>	<u>47</u>	<u>62</u>	<u>78</u>	<u>94</u>
2000	<u>21</u>	<u>42</u>	<u>62</u>	<u>83</u>	<u>104</u>	<u>125</u>
2500	<u>26</u>	<u>52</u>	<u>78</u>	<u>104</u>	<u>130</u>	<u>156</u>
3000	<u>31</u>	<u>62</u>	<u>94</u>	<u>125</u>	<u>156</u>	<u>187</u>
3500	<u>36</u>	<u>73</u>	<u>109</u>	<u>145</u>	<u>182</u>	<u>218</u>
4000	<u>42</u>	<u>83</u>	<u>125</u>	<u>166</u>	208	<u>249</u>
4500	<u>47</u>	<u>94</u>	<u>140</u>	<u>187</u>	234	<u>281</u>
5000	<u>52</u>	<u>104</u>	<u>156</u>	<u>208</u>	<u>260</u>	<u>312</u>
5500	<u>57</u>	<u>114</u>	<u>171</u>	229	286	<u>343</u>
<u>6000</u>	<u>62</u>	<u>125</u>	<u>187</u>	<u>249</u>	<u>312</u>	<u>374</u>
<u>6500</u>	<u>68</u>	<u>135</u>	<u>203</u>	270	<u>338</u>	<u>405</u>
7000	<u>73</u>	<u>145</u>	<u>218</u>	<u>291</u>	<u>364</u>	<u>436</u>
7500	<u>78</u>	<u>156</u>	<u>234</u>	<u>312</u>	<u>390</u>	<u>468</u>
8000	<u>83</u>	<u>166</u>	<u>249</u>	<u>332</u>	<u>416</u>	<u>499</u>
9000	<u>94</u>	<u>187</u>	<u>281</u>	<u>374</u>	<u>468</u>	<u>561</u>
10000	<u>104</u>	208	312	<u>416</u>	<u>519</u>	<u>623</u>
<u>11000</u>	<u>114</u>	229	343	<u>457</u>	<u>571</u>	<u>686</u>
12000	125	249	374	499	623	748

#### Add new text as follows:

**1106.2.1** Roof drainage. The stormwater drainage flow rate from a roof surface shall be in accordance with Table 1106.2.1 using a rainfall rate of a 60 minute duration storm of 100 year return period and the horizontal projected area of the roof. Stormwater drainage flow from a roof surface through secondary (emergency) roof drainage means shall not be considered when determining the flow rate for the primary storm drainage piping system.

**1106.2.1.1** Roof drain. The roof drain shall have a manufacturer's published flow rate greater than or equal to the stormwater drainage flow rate determined in Section 1106.2.1. The flow rate used for sizing the roof drainage system shall be the roof drain manufacturer's published flow rate based at a head height of 4 inches (102 mm) of water ponding. Roof drainage piping shall be sized in accordance with Table 1106.2.

1106.2.1.2 Elevation of secondary roof drainage means. The bottom of the opening for secondary (emergency) roof drainage means shall be not less than 2 inches (51 mm) and not more than 3 inches (76 mm) higher than the lowest opening of the primary roof drain served by the secondary (emergency) roof drainage

#### means.

**1106.2.2 Engineered roof drain flow rate.** Vertical and horizontal storm drain piping shall be sized based on the flow rate through the roof drain. The flow rate through a roof drain shall be based on the maximum anticipated height of water ponding above the roof drain that serves a roof area subjected to a rainfall rate of a 60-minute duration storm of 100-year return period and a 5-minute duration storm of 10-year return period. The flow rate through a roof drain shall be determined from the specific roof drain manufacturer's published flow rate at the maximum anticipated height of water ponding. The size of storm drainage piping from the roof drains to the termination of the storm drainage piping system shall be not less than the sizes indicated in Table 1106.2. The maximum anticipated height of water ponding above a roof drain and the stormwater drainage flow from a roof surface shall not include the effects of storm water drainage through any secondary (emergency) roof drainage means.

**1106.2.2.1 Elevation of secondary roof drainage means.** The bottom of the opening for secondary (emergency) roof drainage means shall be not less than 2 inches (51 mm) higher that the lowest opening of the primary roof drain served by the secondary (emergency) roof drainage means.

Reason: ASPE Research Foundation and IAPMO cosponsored research on the performance of roof drains in storm drainage system. The code change further updates the code requirements based on the recommendations in the ASPE RF report. The research report states the problem and the justification for this change. The research report is included with the submittal and can be downloaded at no cost at <u>www.aspe.org</u>.

The only difference between this change and the recommendation in the ASPE RF report is the first methodology for sizing a storm drainage system in proposed Section 1106.2.1. These requirements were developed to provide a cook-book method of sizing rather than conducting a proper engineering design. As a result, this sizing method takes a very conservative approach to sizing the drainage piping. The drainage piping with be equal to or larger than the pipe size when using the engineered design.

The sizing of the storm drainage system still relies on the values published by the roof drain manufacturers. This data identifies the flow rate based on head height through the roof drain.

Another addition to the engineered sizing requirement is the evaluation of the roof drainage system for a microburst. While a 100 year storm may appear to be the most drastic storm for sizing a system, a microburst can overpower the storm drainage piping resulting in failure of the piping system. The microburst will typically not have a significant impact on the roof loading compared to a 100 year storm of 60 minute duration.

Bibliography: Storm Drainage System Research Project, Flow Through Roof Drains, Ballanco, 2012, Copyright American Society of Plumbing Engineers Research Foundation

#### Cost Impact: Will not increase the cost of construction

This change only adds an optional design method. While the new method will increase the cost of construction, it is not a mandated design. If the engineered design is selected, the cost remains neutral.

P 245-15 : 1106.1-BALLANCO3687

## P 246-15

## 1106.5, 1108.3

Proponent: Janine Snyder, representing Plumbing, Mechanical, and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

## 2015 International Plumbing Code

### Revise as follows:

**1106.5 Parapet wall scupper locationscuppers.** Parapet wall Where scuppers are used for primary roof drainage scupperor for secondary (emergency overflow) roof drainage or both, the quantity, size, location and overflow scupper location shall comply with the requirements of Section 1503.4 inlet elevation of the scuppers shall be chosen to prevent the depth of ponding water on the roof from exceeding the maximum water depth that the roof was designed for as determined by Section 1611.1 of the International Building Code. Scupper openings shall be not less than 4 inches (102 mm) in height and have a width that is equal to or greater than the circumference of a roof drain sized for the same roof area. The flow through the primary system shall not be considered when locating and sizing secondary scuppers.

**1108.3 Sizing of secondary drains.** Secondary (emergency) roof drain systems shall be sized in accordance with Section 1106 based on the rainfall rate for which the primary system is sized. Scuppers shall be sized to prevent the depth of ponding water from exceeding that for which the roof was designed as determined by Section 1101.7. Scuppers shall have an opening dimension of not less than 4 inches (102 mm) in height and have an opening width equal to the circumference of the roof drain required for the area served, sized in accordance with Table 1106.2(1). The flow through the primary system shall not be considered when sizing the secondary roof drain system.

Reason: The current language in the IPC and IBC implies that scuppers are only approved for secondary roof drainage. However, there are many areas of the country where scuppers are used for the primary roof drain system with another set of scuppers (installed at a higher elevation) used for the secondary drainage system. Where scuppers are used for primary system, there needs to be method to equate the code required drain size to a scupper opening width. A simple design criteria of the scupper width equaling the circumference of the code required primary roof drain has worked very well in such areas such as Phoenix where buildings are subject to annual monsoon thunderstorms in the summer. Statement trailing the reason: This proposal is submitted by the ICC Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC) The PMGCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes and the code content in terms of scope and application of referenced standards. The PMGCAC has held one open meeting and multiple conference calls which included members of the PMGCAC. Interested parties also participated in all conference calls to discuss and debate the proposed changes. This is PMGCAC Item 168.

#### Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction because additional labor, materials, equipment, appliances or devices are mandated beyond what is currently required by the code.

P 246-15 : 1106.5-SNYDER4082

## P 247-15

## 1301.1.1 (New)

Proponent: Jeff Hugo, National Fire Sprinkler Association, representing National Fire Sprinkler Association (hugo@nfsa.org)

### 2015 International Plumbing Code

### Add new text as follows:

1301.1.1 Fire Protection Systems The storage, treatment and distribution of nonpotable water to be used for fire protection systems shall be in accordance with the International Fire Code.

**Reason:** This proposal is to insert text to remind designers and users of the International Plumbing Code for nonpotable water systems that use of these systems in fire protection warrant further examination and design considerations. While many of these systems are used and governed by the International Plumbing Code, there are a fair amount of these systems used for fire protection systems. By referencing the International Fire Code, the user of International Plumbing Code has direct reference to the installation standards used for fire protection systems. Many of these installation standards have specific listing requirements and design considerations that must be incorporated into the nonpotable water systems of Sections 1301, 1302, 1303 and 1304.

### Cost Impact: Will not increase the cost of construction

The reference to the IFC and the appropriate installation standards does not increase the cost of construction.

P 247-15 : 1301.1.1 (New)-HUGO5346

## P 248-15

1301.2.1

Proponent: Troy Vassos, Golder Associates Ltd., representing self (tvassos@golder.com)

## 2015 International Plumbing Code

#### Delete without substitution:

**1301.2.1 Residual disinfectants.** Where chlorine is used for disinfection, the nonpotable water shall contain not more than 4 ppm (4mg/L) of chloramines or free chlorine when tested in accordance with ASTM D 1253. Where ozone is used for disinfection, the nonpotable water shall not contain gas bubbles having elevated levels of ozone at the point of use.

#### Exception: Reclaimed water sources shall not be required to comply with these requirements.

#### Reason:

- 1. The reference in the Code Section to "not more than 4 ppm (4 mg/L) of chloramines or free chlorine" is a drinking (potable) water standard intended to provide a safe margin for total body exposure over a lifetime of consuming water with this concentration and has no relevancy for a non-potable water standard as the non-potable water will not be consumed,
- 2. US EPA drinking water criteria for maximum residual disinfectant level goals (MRDLG) references of 4 mg/L for chlorine and chloramine based solely on possible health risks and exposure over a lifetime of water consumption at this concentration, with an adequate margin of safety.
- 3. The Code Section could be interpreted to allow a maximum total chlorine residual of 8 mg/L, as total chlorine is the sum of free chlorine (max 4 mg/L) and chloramine (max 4 mg/L) residuals whereas the drinking water standard is based on either/or.
- 4. The list of disinfection residuals in the Code Section is incomplete. For example, chlorine dioxide and peracetic acid are not considered, both wastewater disinfectants that result in residual concentrations.
- 5. The presence of gas bubbles in an ozone application is not a measure of the ozone residual of the water.
- 6. The release of ozone in the air is likely a far more serious health concent than the residual concentration of ozone in the water.
- 7. The Code Section does not state monitoring frequency implying continuous monitoring and equipment cost.
- 8. Controlling a maximum disinfectant residual level could have significant cost (i.e chemcial neutralization or other means of residual destruction) versus.
- 9. Not clear whether the "intention" was health, environment or equipment protection related but it appears the individual(s) who prepared this Code Section did not specifically reference a particular residual impact or they wouldn't have referenced the stated concentrations.
- 10. No consideration for environmental impacts of disinfectant residual concentrations which also depend on the reuse application. Reuse water application for stream augmentation, or where the reuse water may flow into a surface body of water containing aquatic organisms. For example, chlorine or chloramine residual concentrations of less than 0.5 mg/L can be acutely toxic (lethal) to aquatic organisms. Canadian Federal legislation restricts maximum effluent chlorine residuals to 0.01 mg/L.

There are no alternative standards to reference, as the intention for the proposed residual concentrations has not been made clear (i.e. is it a health issue or an adverse material affect concern?)

Bibliography: http://water.epa.gov/drink/contaminants/basicinformation/disinfectants.cfm

[Disinfection of wastewater with peracetic acid: a review] [Environment International. Volume 30, Issue 1] Mehmet Kitis] [2004] [Page 47-55] https://www.ec.gc.ca/eu-ww/default.asp?lang=En&n=71E71A86-1

#### Cost Impact: Will increase the cost of construction

There is no indication as to the frequency of measurement to verify the residual chlorine concentrations are less than the 4 mg/L indicated; therefore, this infers that real time measurement and controls are required to ensure the total chlorine or chloramine residual limit is not exceeded. This will result in cost to provide the instrumentation to monitor the residual chlorine levels (est. \$5,000) and equipment to neutralize and limit the chlorine residual (est. \$20,000 for chemical feed pumps and controls), plus an increased labour cost to carry out daily calibration checks & adjustments as well as chemical top-ups (estimated at \$10 per day or about \$3,500 per year).

P 248-15 : 1301.2.1-VASSOS4815

## P 249-15

### 1301.4

Proponent: Karen Hobbs, Natural Resources Defense Council, representing Natural Resources Defense Council (khobbs@nrdc.org)

### 2015 International Plumbing Code

#### **Revise as follows:**

1301.4 Permits. Permits shall be required for the construction, installation, alteration and repair of nonpotable water systems. Construction documents, engineering calculations, diagrams and other such data pertaining to the nonpotable water system shall be submitted with each permit application.

Exceptions:

- 1. Rainwater systems that do not include storage and that supply water only for outdoor applications.
- 2. Nonpotable water systems collecting water only from a single clothes washer and supplying water only for outdoor applications where such outdoor discharges comply with the requirements of the jurisdication.

Reason: Permitting can be costly and time-consuming and therefore a deterrent for the reuse of onsite nonpotable water. Eliminating this requirement for simple reuse systems that pose little health risk can help to broaden the implementation of onsite reuse of nonpotable water. Additionally, states such as California (http://www.hcd.ca.gov/codes/shl/2007CPC\_Graywater\_Complete\_2-2-10.pdf) and Arizona (http://www.harvestingrainwater.com/wp-

content/uploads/Arizona\_Greywater\_Guidelines\_in\_English.pdf) have set precedents for not requiring permits for laundry to landscape graywater systems.

#### Cost Impact: Will not increase the cost of construction

No cost increase will result from this proposal; the proposal simply eliminates an unnecessary permit process for simple reuse systems.

P 249-15 : 1301.4-HOBBS5298

## P 250-15

### 1301.4

Proponent: Troy Vassos, representing self (tvassos@golder.com)

### 2015 International Plumbing Code

### **Revise as follows:**

**1301.4 Permits.** Permits shall be required for the construction, installation, alteration, <u>repair</u> and <u>repairoperation</u> of nonpotable water systems. Construction documents, engineering calculations, diagrams and other such data pertaining to the nonpotable water system shall be submitted with each permit application.

### Reason:

1. A permit or letter of authorization may also be required to operate a non-potable water treatment and distribution system or to use the non-potable water, or a water reuse system is permitted to operate subject to specific conditions. For example, the bibiography includes a reference to the province of British Columbia Municipal Wastewater Regulation that requires a letter of authorization from the local health jurisdiction to operate a water reuse system.

http://www.bclaws.ca/civix/document/id/complete/statreg/87 2012

Section 105 (1) .. a person must not provide reclaimed water unless the person .. receives authorization .. to provide reclaimed water for the proposed use, subject to the conditions specified by the health officer.

Bibliography: [http://www.bclaws.ca/civix/document/id/complete/statreg/87\_2012]

Cost Impact: Will not increase the cost of construction

There is no cost implication to noting there may also be a jurisdiction requirement or permit to operate the reuse facility, just as there is likely to be a permit to construct or repair.

P 250-15 : 1301.4-VASSOS5801

## P 251-15

## 1301.6

**Proponent:** David Cantrell, representing Joint Consensus Committee on Rainwater Collection System Design and Installation (IS-RCSDI) (dave.cantrell@kingcounty.gov)

### 2015 International Plumbing Code

### Revise as follows:

**1301.6** Approved components <u>Components</u> and materials. Piping, plumbing components and materials used in collection and conveyance systems shall be manufactured of material approved by the manufacturer for the intended application-and compatible with any disinfection and treatment systems used.

Reason: Treatment and disinfection systems are not expected to affect permitted piping, plumbing components and materials. Since the section already specifies that materials must be "approved" this term has no value added by remaining in the section heading.

### Cost Impact: Will not increase the cost of construction

This code change is for clarification only and does not increase the specific provisions addressed in the code section.

P 251-15 : 1301.6-CANTRELL5178

## P 252-15

## 1301.6

Proponent: Troy Vassos, representing self (tvassos@golder.com)

## 2015 International Plumbing Code

### Revise as follows:

1301.6 Approved components and materials. Piping, plumbing components and materials used in collection and conveyance systems shall be manufactured of material approved for the intended application and compatible with any disinfection and treatment systems used.

#### Reason:

- 1. The term compatible is not defined, but its use vaguely implies that treatment and disinfection systems could in some way damage commonly used plumbing components and materials used in collection and conveyance systems.
- 2. The nature of the "incompatibility" is unclear, so it is not possible to verify compatibility.
- 3. It is possible that the authors of the Code Section were referring to the effect of chemical disinfectants on plastic pipe, but as can be seen in the referenced report on this subject, the subject is far from being a well understood and defined subject. Further, the issue is addressed by many other standards that could be referenced by the code.

There are no incompatibility criteria related to disinfection and/or treatment technologies that can be referenced.

Bibliography: [http://hdpeoxidation.com/Carollo%20Study%20on%20HDPE-PVC%20Pipe%20-%20Disinfectant%20Oxidation%208-08.pdf]

#### Cost Impact: Will not increase the cost of construction

The requirement to ensure the plumbing conveyancing components are compatible with disinfection and/or treatment systems is not expected to have a cost impact, as it is expected that common plumbing materials used for conveying nonpotable water would be unaffected by disinfection and/or treatment systems.

P 252-15 : 1301.6-VASSOS5798

## P 253-15

## 1301.9.1

**Proponent:** David Cantrell, representing Joint Consensus Committee on Rainwater Collection System Design and Installation (IS-RCSDI) (dave.cantrell@kingcounty.gov)

### 2015 International Plumbing Code

### Delete without substitution:

## 1301.9.1 Sizing. The holding capacity of the storage tank shall be sized in accordance with the anticipated demand.

Reason: In the absence of providing more informed guidance, this section should be eliminated. For example, tank sizing for rainwater storage is based on anticipated demand patterns, rainfall characteristics, and cost, not just anticipated demand.

### $\label{eq:cost_cost_cost_cost} \textbf{Cost Impact:} \ \textbf{Will not increase the cost of construction}$

Deleting this sizing section does not add more restrictive requirements to the installation.

P 253-15 : 1301.9.1-CANTRELL5182

## P 254-15

### 1301.9.1

Proponent: Troy Vassos, representing self (tvassos@golder.com)

## 2015 International Plumbing Code

### Delete without substitution:

1301.9.1 Sizing. The holding capacity of the storage tank shall be sized in accordance with the anticipated demand.

#### Reason:

- 1. Sizing of rainwater harvesting (non-potable) storage is done based on anticipated demand patterns, rainfall characteristics, and cost not just anticipated demand.
- 2. Sizing of water reuse system storage (see bibliographic reference) may be considered in tandem with water treatment capacities and variations in demand. This is particularly true for
- treated wastewater which could be treated to meet the instantaneous non-potable water demands, or treated at a lower rate and stored to meet future demands. 3. In the absence of providing more comprehensive guidance on the sizing of storage, it is recommended that this section be deleted

Bibliography: [http://nepis.epa.gov/Adobe/PDF/P100FS7K.pdf]

**Cost Impact:** Will not increase the cost of construction The removal of an incomplete design criteria for storage will not have an adverse economic impact.

P 254-15 : 1301.9.1-VASSOS5802

## P 255-15

### 1301.9.2

**Proponent:** David Cantrell, representing Joint Consensus Committee on Rainwater Collection System Design and Installation (IS-RCSDI) (dave.cantrell@kingcounty.gov)

### 2015 International Plumbing Code

### Revise as follows:

**1301.9.2 Location.** Storage tanks shall be installed above<u>Any storage tank</u> or below grade. Above grade storage tanks portion thereof that is above-grade shall be protected from direct <u>exposure to</u> sunlight and shall be constructed by one of the following methods:

- 1. <u>Tank construction</u> using opaque, UV-resistant materials such as, but not limited to, heavily tinted plastic, fiberglass, lined metal, concrete, wood, or painted to prevent algae growth, or shall have specially\_
- 2. Specially constructed sun barriers-including, but not limited to, installation.
- 3. Installation in garages, crawl spaces or sheds.

Storage tanks and their manholes shall not be located directly under soil piping, waste piping or any source of contamination.

Reason: The first sentence has no added value. The provisions of this and other sections dictate the necessary requirements for storage tanks based on their installation above or below grade. The methods used for protection from sunlight is easier in a list format as opposed to a single paragraph.

Cost Impact: Will not increase the cost of construction

This code change merely reorganizes the section without adding or deleting any existing provisions.

P 255-15 : 1301.9.2-CANTRELL5171

## P 256-15

## 1301.9.2

Proponent: Troy Vassos, representing self (tvassos@golder.com)

### 2015 International Plumbing Code

### Revise as follows:

**1301.9.2 Location.** Storage tanks shall be installed above, at or below grade. Above-gradeAt or above-grade storage tanks shall be protected from direct sunlight and shall be constructed using opaque, UV-resistant materials such as, but not limited to, heavily tinted plastic, fiberglass, lined metal, concrete, wood, or painted to prevent algae growth, or shall have specially constructed sun barriers including, but not limited to, installation in garages, crawl spaces or sheds. Storage tanks and their manholes shall not be located directly under soil piping, waste piping or any source of contamination.

#### Reason:

1. Non-potable storage tanks could be installed fully buried, partially buried, at grade, or above grade (elevated). It is common to use elevated storage to generate water distribution pressure.

**Cost Impact:** Will not increase the cost of construction The proposed change in wording does not have a cost impact.

P 256-15 : 1301.9.2-VASSOS5807

## P 257-15

1301.9.6

Proponent: JEFFREY HUTCHER, Cleanblu, representing self

### 2015 International Plumbing Code

### Revise as follows:

**1301.9.6 Overflow.** The storage tank shall be equipped with an overflow pipe having a diameter not less than that shown in Table 606.5.4<u>the tank inlet</u> pipe diameter. The overflow pipe shall be protected from insects or vermin and shall discharge in a manner consistent with storm water runoff <u>and sanitary</u> drainage requirements of the jurisdiction. The overflow pipe from storm water and rainwater systems shall discharge at a sufficient distance from the tank to avoid damaging the tank foundation or the adjacent property. Drainage from overflow pipes shall be directed to prevent freezing on roof walkways. The overflow drain shall not be equipped with a shutoff valve. A cleanout shall be provided on each overflow pipe in accordance with Section 708. Overflow drains from gray water tank systems shall connect to the sanitary system downstream of the tank.

Reason: The section fails to address overflow from Gray Water systems which cannot be discharged overland as Storm or Rainwater systems. Overflows from gray water tanks shall discharge to sanitary. Point source pollutant discharge is a violation of US code 33 which includes the Clean Water Act 1972. It also violates the National Pollution Discharge Elimination System (NPDES)

### Cost Impact: Will increase the cost of construction

The proposal may increase the cost since it is now spelled out to allow the jurisdiction to require connections to sanitary for certain systems, but it will eliminate the confusion about Gray water and other non potable sources. Without the new wording, the possibility exists for a jurisdiction to allow for an llicit discharge in in violation of the clean water act

P 257-15 : 1301.9.6-HUTCHER4404

## P 258-15

## 1301.9.7

**Proponent:** David Cantrell, representing Joint Consensus Committee on Rainwater Collection System Design and Installation (IS-RCSDI) (dave.cantrell@kingcounty.gov)

### 2015 International Plumbing Code

### Revise as follows:

**1301.9.7** Access. Not less than one access opening shall be provided to allow inspection and cleaning of the tank interior. Access openings shall have an *approved* locking device or other approved method of securing access. Below-grade storage tanks, located outside of the building, shall be provided with a manhole either not less than 24 inches (610 mm) square or with an inside diameter not less than 24 inches (610 mm). Manholes shall extend not less than 4 inches (102 mm) above ground or shall be designed to prevent water infiltration. Finished grade shall be sloped away from the manhole to divert surface water. Manhole covers shall be secured to prevent unauthorized access. Service ports in manhole covers shall be not less than 8 inches (203 mm) in diameter and shall be not less than 4 inches (102 mm) above the finished grade level. The service port shall be secured to prevent unauthorized access.

Exception: StorageWater storage tanks for treated water that are less than 800 gallons (3028L) in volume and installed below grade shall not be required to be equipped with a manhole, but shall have provided that the tank has a service port of not less than 8 inches (203 mm) in diameter.

Reason: Raw water storage tanks should have an easy access for cleaning (i.e. manhole access). The exception more appropriately applies to treated water storage tanks.

Cost Impact: Will not increase the cost of construction

This code change clarifies the appropriate access for treated water tanks. Such tanks are typically smaller than water storage tanks that store water prior to treatment.

P 258-15 : 1301.9.7-CANTRELL5180

## P 259-15

## 1301.9.9

**Proponent:** David Cantrell, representing Joint Consensus Committee on Rainwater Collection System Design and Installation (IS-RCSDI) (dave.cantrell@kingcounty.gov)

### 2015 International Plumbing Code

### Revise as follows:

**1301.9.9 Draining of tanks.** Where tanks require draining for Tanks shall be provided with a means of emptying the contents for the purpose of service or cleaning, tanks. Tanks shall be drained by using a pump or by a drain located at the lowest point in the tank. The tank drain pipe shall discharge as required for overflow pipes and shall not be smaller in size than specified in Table 606.5.7. Not less than one cleanout shall be provided on each drain pipe in accordance with Section 708.

Reason: It is important for all water storage tanks to have a means for draining or emptying the tank for maintenance purposes and cleaning in order to protect the health and safety of users.

### Cost Impact: Will not increase the cost of construction

This code change clarifies the methods for draining or emptying tanks, but does not add or increase any additional provisions for such.

P 259-15 : 1301.9.9-CANTRELL5176

## P 260-15

1301.9.9

Proponent: JEFFREY HUTCHER, representing ARCSA (jhutcher@pacbell.net)

### 2015 International Plumbing Code

Revise as follows:

### 1301.9.9 Draining of tanks. Where tanks require draining for service or cleaning, tanks

Tanks shall be <u>capable of being</u> drained by using a pump or by a drain located at the lowest point in the tank. The tank drain pipe shall discharge as required for overflow pipes and shall not be smaller in size than specified in Table 606.5.7. Not less than one cleanout shall be provided on each drain pipe in accordance with Section 708.

Reason: All tanks need to be cleaned and sometimes emptied for abandonment. The new language make it a requirement

### Cost Impact: Will not increase the cost of construction

This should have no impact on cost. Professionals already know a provision for draining should be provided

P 260-15 : 1301.9.9-HUTCHER5154

## P 261-15

## 1302.1, 1304.3

Proponent: Dru Meadows, theGreenTeam, Inc., representing Walmart (dmeadows@thegreenteaminc.com)

### 2015 International Plumbing Code

#### Revise as follows:

**1302.1 General.** The provisions of <u>ASTM E2635 and</u> Section 1302 shall govern the construction, installation, alteration and repair of on-site nonpotable water reuse systems for the collection, storage, treatment and distribution of on-site sources of nonpotable water as permitted by the jurisdiction.

1304.3 Reclaimed water systems. The design of the reclaimed water systems shall conform to ASTM E 2635 and accepted engineering practice.

#### Reason:

This proposal is intended to coordinate the scope of ASTM E2635 and its prior use in the IgCC, with the reorganization of IgCC Chapter 7 language to IPC Chapter 13.

There was some streamlining in the relocation of the language from IgCC Chapter 7 to IPC Chapter 13. That helped to clarify the difference between systems that use nonpotable water captured on-site, and systems that use nonpotable water capture off-site (i.e. nonpotable water delivered to the site, also called "reclaimed water" "municipal reclaimed water").

Reference to ASTM E2635 seems to have ended up in the wrong subsection. In the IgCC, it addressed water reclaimed/reused on-site. In the IPC, it is located in a section that appears limited to water reclaimed off-site. It should be moved from Section 1304 to Section 1302.

The scope of ASTM E2635 – 14, Standard Practice for Water Conservation in Buildings Through In-Situ Water Reclamation, states:

"This practice specifies limitations for use of reclaimed water in-situ. It is not intended for application to the use of reclaimed water delivered from an offsite municipal wastewater treatment facility."

### Cost Impact: Will not increase the cost of construction

No new requirements are identified so there is not a change in the cost of construction.

P 261-15 : 1302.1-MEADOWS3620

## P 262-15

### 1302.2

Proponent: Troy Vassos, representing self (tvassos@golder.com)

## 2015 International Plumbing Code

#### Revise as follows:

**1302.2 Sources.** On-site nonpotable water reuse systems shall collect waste discharge from only the following sources: bathtubs, showers, lavatories, clothes washers and laundry trays. Water Where *approved* and as appropriate for the intended application, water from other *approved*-nonpotable sources including swimming pool backwash operations, air conditioner condensate, rainwater, cooling tower blow-down water, foundation drain water, steam system condensate, fluid cooler discharge water, food steamer discharge water, combination oven discharge water, industrial process water and fire pump test water shall also be permitted to be collected for reuse by on-site nonpotable water reuse systems, as *approved* by the code official and as appropriate for the intended application.

#### Reason:

- 1. As approval of alternative sources of reuse water is required by the Code Section, it is unnecessary to provide an example list of alternative sources.
- 2. The list of alternative sources is not exhaustive, and other souces of reusable water could be considered.
- 3. Many of the alternative nonpotable wastewater sources have considerably different types of contaminants and levels of contamination than the greywater sources noted in the first sentence. Consequently, the type of treatment and treatment complexity is expected to be considerably different for many of the example non-potable water sources listed, than for the greywater sources noted. Non-potable water sources of particular concern in the alternative sources include cooling tower blow-down water, food steamer discharge water, and industrial process water.
- 4. Consequently, it is recommended that the example list of alternative non-potable water sources be deleted.

### Cost Impact: Will not increase the cost of construction

The elimination of an example list of alternative non-potable water sources will not have a cost impact, and does not affect the intent of the section to recognize that jurisdictions may also consider other appropriate sources of non-potable water.

P 262-15 : 1302.2-VASSOS5808

## P 263-15

## 1302.2.1

Proponent: Karen Hobbs, Natural Resources Defense Council, representing Natural Resources Defense Council (khobbs@nrdc.org)

### 2015 International Plumbing Code

#### Revise as follows:

**1302.2.1 Prohibited sources.** Waste water containing urine or fecal matter shall not be diverted to on-site nonpotable water reuse systems and shall discharge to the sanitary drainage system of the building or premises in accordance with Chapter 7. Reverse osmosis system reject water, water softener discharge water, kitchen sink waste water, dishwasher waste water and waste water discharged from wet-hood scrubbers shall not be collected for reuse in an on-site nonpotable water reuse system.

# **Exception:** Where prohibited sources of water have been treated onsite by *approved* methods, the use of the treated water in on-site nonpotable water reuse systems shall be in accordance with the requirements of the jurisdication.

**Reason:** In some instances, the treatment and reuse of blackwater can be more cost-effective than dual plumbing to collect graywater sources separately from blackwater for reuse. Some cities, such as San Francisco (http://www.sfwater.org/index.aspx?page=686), have programs that not only allow the treatment and reuse of blackwater, they provide incentives. Given water scarcity in many parts of the country, as well as infrsatructure limitations, the IPC should not prohibit the use of blackwater for onsite nonpotable reuse, if local jurisdictions permit its use. The onsite reuse of blackwater can improve local reliability of water and reduce loads on sanitary sewer collection systems and treatment plants.

#### Cost Impact: Will not increase the cost of construction

No cost impact; this proposal would simply allow the use of blackwater if the local jurisdiction already permits its use.

P 263-15 : 1302.2.1-HOBBS5300

## P 264-15

1302.2.1

Proponent: Troy Vassos, Golder Associates Ltd., representing self (tvassos@golder.com)

## 2015 International Plumbing Code

#### Revise as follows:

1302.2.1 Prohibited sources. Waste water containing urine or fecal matter shall not be diverted to on-site nonpotable water reuse systems and shall discharge to the sanitary drainage system of the building or premises in accordance with Chapter 7.

Reverse osmosis system reject water, water softener discharge water, kitchen sink waste water, dishwasher waste water and waste water discharged from wethood scrubbers shall not be collected for reuse in an on-site nonpotable water reuse system.

#### Reason:

- 1. The treatment of mixed municipal or domestic (sanitary) wastewater containing urine and fecal matter is considered to be an acceptable practice in all jurisdictions that permit reuse water to be used to satisfy non-potable water demands.
- 2. There is no technical reason to exclude blackwater sources (e.g. toilet & urinal, kitchen sink and dishwasher sources, for example) for treatment and reuse. In preparing the Canadian Guidelines for Domestic Reclaimed Water for Use in Toilet and Urinal Flushing, Health Canada concluded there was no significant health risk difference associated with reuse water generated from mixed wastewater sources versus greywater sources. In fact, the type and concentration of contaminants have been shown to be very similar for the two groups of wastewater (i.e. mixed wastewater versus greywater).
- 3. Generating reuse water by only treating greywater sources would require the separate collection of greywater, and would incur increased costs for drainage.
- 4. The existing NSF/ANSI Standard 350 and 350-1, and CSA 128.3 -12 water reuse treatment system performance standards include mixed wastewater and greywater sources within the standards, as does the recent Australian EPA standard for water reuse package treatment plant performance.
- 5. The water reuse water quality standards for non-potable applications are based on treating mixed wastewater (e.g. US EPA, California Title 22, Florida, Washington State, etc.) and do not consider segregating or preferentially treating greywater sources to generate reuse water for non-potable use.

Bibliography: [Canadian Guidelines for Domestic Reclaimed Water for Use in Toilet and Urinal Flushing] [ISBN: 978-1-100-15665-1] [Health Canada] [2010] [Guidelines for Water Reuse] [EPA/600/R-12/618] [US EPA] [2012]

Cost Impact: Will not increase the cost of construction

The inclusion of sanitary or blackwater sources will increase the amount of water available for reuse applications, and will decrease the associated cost of treatment as separate plumbing systems will not be required for blackwater and greywater sources and the inherent reduction in unit costs expected for increased scale treatment applications.

P 264-15 : 1302.2.1-VASSOS5810

## P 265-15

1302.5

Proponent: Troy Vassos, Golder Associates Ltd., representing self (tvassos@golder.com)

## 2015 International Plumbing Code

#### Delete without substitution:

**1302.5 Filtration.** Untreated water collected for reuse shall be filtered as required for the intended end use. Filters shall be accessible for inspection and maintenance. Filters shall utilize a pressure gauge or other *approved* method to provide indication when a filter requires servicing or replacement. Filters shall be installed with shutoff valves immediately upstream and downstream to allow for isolation during maintenance.

#### Reason:

- 1. "Untreated" wastewater sources should not be filtered. The wastewater source (mixed wastewater or greywater) contains a high concentration of soluble biodegradable organic matter and suspended solids which will rapidly clog a filter. The soluble organics will result in bacterial growth within the filter, and clogging.
- 2. Established reuse water quality standards, such as those stated in NSF/ANSI Standard 350 & 350-1 and CSA B 128.3-12, as well as state and federal guidelines and regulatory standards for water reuse quality have stringent turbidity requirements (typically less than 2 NTU) that inherently can only be achieved with a high degree of filtration, <u>BUT ONLY</u> FOLLOWING biological oxidation (treatment). Stating that filtration is required for reuse water (i.e. treated wastewater) is unnecessary as it is addressed by the water quality or treatment equipment requirements of the jurisdication.

The requirement to filter untreated wastewater will result in increased costs due to filter clogging and high O&M.

Bibliography: [Canadian Guidelines for Domestic Reclaimed Water for Use in Toilet and Urinal Flushing] [ISBN: 978-1-100-15665-1] [Health Canada [2010] [Guidelines for Water Reuse] [EPA/600/R-12/618] [US EPA] [2012]

[http://www.ecy.wa.gov/PROgrams/wq/reclaim/index.html]

**Cost Impact:** Will not increase the cost of construction One less piece of equipment required will lower construction costs.

P 265-15 : 1302.5-VASSOS5813

## P 266-15

## 1302.6, 1302.6.1, 1302.7.1, 1302.7.3, 1302.12.6

Proponent: Troy Vassos, Golder Associates Ltd., representing self (tvassos@golder.com)

## 2015 International Plumbing Code

### Revise as follows:

**1302.6** Disinfection and treatment.Untreated gray water storage. Where the intended application for nonpotable water collected on site for reuse requires disinfection or other treatment or both, it shall be disinfected as needed to ensure that the required water quality is delivered at the point of use. Nonpotable water collected on site containing untreated gray water shall be retained in collection reservoirs for a maximum of 24 hours.

1302.6.1 Gray water used for fixture flushing. Gray water used for flushing water closets and urinals shall be disinfected and treated treated as required by an on-site water reuse treatment system complying with NSF 350-the jurisdiction.

### Delete without substitution:

ELEMENT	MINIMUM HORIZONTAL DISTANCE FROM STORAGE TANK (feet)
Critical root zone (CRZ) of protected trees	2
-	-
Seepage pits	5
Septic tanks	5
Water wells	<del>50</del>
-	-
Water service	5
Public water main	<del>10</del>

#### TABLE 1302.7.1 LOCATION OF NONPOTABLE WATER REUSE STORAGE TANKS

For SI: 1 foot = 304.8 mm.

1302.7.3 Outlets. Outlets shall be located not less than 4 inches (102 mm) above the bottom of the storage tank and shall not skim water from the surface.

1302.12.6 Water quality test. The quality of the water for the intended application shall be verified at the point of use in accordance with the requirements of the jurisdiction.

#### Reason:

- 1. The water quality requirement including the method and degree of disinfection is determined by the jurisdiction, and can vary between jurisdictions. For example, the BC Municipal Wastewater Regulation that governs water reuse in the province of British Columbia has four water reuse water quality classifications, two of which can be used for water reuse applications with direct public access (i.e. high potential for body contact).
- 2. By definition, water reuse means "treated wastewater" and for the non-potable applications considered in the Code also typically requires a high level of disinfection
- 3. The requirement for the point of compliance for water quality should be left to the jurisdiction.
- 4. It is recommended the first sentence be deleted and the title modified to refer to the storage of untreated greywater however, the storage requirement is usually specified by the jurisdiction.
- 5. The water quality requirement for using treated greywater as a source of reuse water for fixture flushing should be left to the jurisdiction, as it may vary between jurisdictions.
- 6. NSF/ANSI Standard 350 & 350-1, and CSA B 128.3 are treatment performance standards and not water quality standards.
- 7. CSA B 128.3 should be referenced where NSF/ANSI Standard 350 is appropriate to be referenced.
- 8. There is no reasonable rationale to restrict the the proximity of storage containers for reuse water (i.e. treated and disinfected water suitable for non-potable reuse applications) and property lines, or surface water bodies.
- 9. The setback requirements are expected to vary between jurisdictions therefore the table should be deleted and a reference made to jurisdiction.
- 10. The requirement for an outlet from a storage tank containing non-potable reuse water (by definition treated, low turbidity of less than 2 NTU, and disinfected) to be located not less than 4 inches (102 mm) above the bottom is unnecessary and in contradicition with Section 1301 which requires non-potable water storage tanks to drain from the lowest point in the tank.
- 11. The location of where the reuse water quality is to be met can vary from jurisdiction to jurisdiction and should be left to the jurisdiction, so stating this is unecessary as the Code does not address water quality anyway but leaves that to the jurisdiction.

Bibliography: NSF/ANSI 350 and 350-1: Onsite Water Reuse CSA B 128.3-12 Performance of Non-Potable Water Reuse Systems

**Cost Impact:** Will not increase the cost of construction The proposed changes do not have cost implications.

P 266-15 : 1302.6-VASSOS5817

## P 267-15

## 1302.7.2

**Proponent:** Richard Grace, Fairfax County, VA, representing VA Plumbing and Mechanical Inspectors Association (VPMIA) and VA Building Code Officials Association (VBCOA) (richard.grace@fairfaxcounty.gov)

### 2015 International Plumbing Code

#### Delete without substitution:

**1302.7.2 Design and construction.** Storage tanks shall be designed and constructed in accordance with Chapters 16 through 22 of the *International Building Code* and in accordance with the following standards, as appropriate for the material of the storage tank: AWWA D100, AWWA D115, AWWA D120, UL 58, UL 1746, UL 1316, UL 142, API 12F or API 12D.

Reason: Section 1301.9 as referenced under section 1302.7 already gives specific design and construction information for tanks. The references given to the specific standards under section 1302.7.2 leave out many material and methods used to store nonpotable water and is very restrictive and cost prohibitive.

### Cost Impact: Will not increase the cost of construction

By removing the referenced section th requirement for tanks to comply with the specific listed standards is removed which allows other materials and methods to be used.

P 267-15 : 1302.7.2-HARPER4521

## P 268-15

## 1303.1, Chapter 14

Proponent: JEFFREY HUTCHER, representing ARCSA (jhutcher@pacbell.net)

### 2015 International Plumbing Code

#### Revise as follows:

**1303.1 General.** The provisions of Section 1303ASPE/ARCSA/ANSI 63 and accepted engineering practice shall govern rainwater harvesting systems including the design, construction, installation, alteration and repair of rainwater collection and conveyance systems for including the collection, storage, treatment and distribution of rainwater for nonpotable applications, as permitted by the jurisdiction.

### Add new standard(s) as follows:

ASPE/ARCSA/ANSI 63-2013 Rainwater catchment systems

Reason: The American Rainwater Catchment Systems Association developed the ANSI accredited ASPE/ARCSA 63 Standard. It is the most comprehensive standard developed for the safe collection and design of Rainwater harvesting systems. The ARCSA standard is already the backbone of the industry and installers and manufacturers follow this standard which has been developed by experts in the field.

#### Cost Impact: Will not increase the cost of construction

Having reliable standards that can be followed always reduces the cost of construction when the application is already in the Code. Clarification of prescriptive and performance requirements and designs can be found in the standard

Analysis: A review of the standard proposed for inclusion in the code, ASPE/ARCSA/ANSI 63, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

P 268-15 : 1303.1-HUTCHER4405

## P 269-15

## 1303.2

**Proponent:** David Cantrell, representing Joint Consensus Committee on Rainwater Collection System Design and Installation (IS-RCSDI) (dave.cantrell@kingcounty.gov)

### 2015 International Plumbing Code

Revise as follows:

**1303.2 Collection surface.** Rainwater shall be collected only from above-ground impervious roofing surfaces constructed from <u>approved materials and where</u> approved\_materials. Collection of water from\_vehicular parking or pedestrian <del>surfaces shall be prohibited except where the water is used exclusively for landscape irrigation. Overflow and bleed-off pipes from roof-mounted appliances including, but not limited to, evaporative coolers, water heaters, and solar water heaters shall not discharge onto rainwater collection<u>walking</u> surfaces.</del>

**Reason:** Current rainwater harvesting practices include the collection of water from vehicular parking or pedestrian surfaces. While such restriction may be appropriate for collection of rainwater intended to be treated for potable use, this chapter address rainwater collection for nonpotable use. Rainwater harvesting technologies are able to safely accomodate collection from these surfaces. The change is required in order to allow the use of modern conservation techniques.

**Cost Impact:** Will not increase the cost of construction This code section clarifies the type of collection surfaces and to a degree expands the use of such surfaces.

P 269-15 : 1303.2-CANTRELL5175
## P 270-15

## 1303.3, 1303.4, 1303.15.2

**Proponent:** David Cantrell, representing Joint Consensus Committee on Rainwater Collection System Design and Installation (IS-RCSDI) (dave.cantrell@kingcounty.gov)

### 2015 International Plumbing Code

#### Revise as follows:

**1303.3 Debris excluders.** Downspouts and leaders shall be connected to a roof washer and shall be equipped with \_a debris excluder or equivalent device <u>that is</u> <u>designed</u> to prevent the contamination of collected rainwater with remove leaves, sticks, pine needles and similar material. Debris excluders and equivalent devices shall be self-cleaning. debris to prevent such from entering the storage tank

**1303.4 Roof washer.<u>First-flush diverter.</u>** A sufficient amount of rainwater<u>First-flush diverters</u> shall be diverted at the beginning of each rain event,<u>operate</u> <u>automatically</u> and not allowed to enter the storage tank, to wash accumulated debris from the collection surface. The amount of rainfall to be diverted shall be field adjustable as necessary to minimize storage tank water contamination. The roof washer shall not rely on <u>manually operated manually</u> operated valves or devices, and shall operate automatically. Diverted rainwater shall not be drained to the roof surface, and shall be discharged in a manner consistent with the storm water runoff requirements of the jurisdiction. <del>Roof washers <u>First-flush diverters</u> shall be accessible for maintenance and service.</del>

**1303.15.2 RoofwasherFirst-flush diverter test.** Roofwashers <u>First-flush diverters</u> shall be tested by introducing water into the <u>gutterscollection system upstream</u> <u>of the diverter</u>. Proper diversion of the first <u>quantityamount</u> of water <u>shall be</u> in accordance with the requirements of Section 1303.4-shall be verified.

Reason: The intent of the provisions in these sections is to divert the initial runoff of water from a roof with its contaminants that may build up during a non-rain event so that it does not enter the storage tank. While the result is basically an initial washing of the roof area, the term "roof washer" is commonly mistaken for a mechanical device. Using the term "first-flush diverter" will allow for both the typical non-mechanical standpipe application or an approved manufacturered mechanical device. This code change deletes the mandate to install roof washers or first-flush diverters since such would not be necessary for a rainwater system serving outside landscape irrigation only or for the common practice of using rain barrels for irrigation purposes.

#### Cost Impact: Will not increase the cost of construction

This code change results in clarifying where non-mechanical diverters may be used, and would actually decrease the cost of installation for nonpotable reuse of rainwater.

P 270-15 : 1303.3-CANTRELL5183

Proponent: JEFFREY HUTCHER, representing ARCSA (jhutcher@pacbell.net)

### 2015 International Plumbing Code

#### Delete without substitution:

1303.4 **Roof washer.** A sufficient amount of rainwater shall be diverted at the beginning of each rain event, and not allowed to enter the storage tank, to wash accumulated debris from the collection surface. The amount of rainfall to be diverted shall be field adjustable as necessary to minimize storage tank water contamination. The roof washer shall not rely on manually operated valves or devices, and shall operate automatically. Diverted rainwater shall not be drained to the roof surface, and shall be discharged in a manner consistent with the storm water runoff requirements of the jurisdiction. Roof washers shall be accessible for maintenance and service.

Reason: Roof washer is an outdated term. There are numerous technologies such as vortex flitrations devices that not only capture contaminates, they also contain debris excluders that initiate the first flush. These devices are readily available and tested to achieve desired results. The roof washer term has caused confusion in the field where inspectors expect to see the entire roof washed before the rainwater. This is costly and unnecessary

#### Cost Impact: Will not increase the cost of construction

this will have no impact on construction costs except where confusion is avoided and money saved

P 271-15 : 1303.4 (New)-HUTCHER5125

## P 272-15

1303.4

Proponent: JEFFREY HUTCHER, representing ARCSA (jhutcher@pacbell.net)

### 2015 International Plumbing Code

**Revise as follows:** 

**1303.4 Roof washer.First flush.** A sufficient amount of rainwater shall be diverted at the beginning of each rain event, and not allowed to enter the storage tank, to wash accumulated debris from the collection surface. The amount of rainfall to be diverted shall be field adjustable as necessary to minimize storage tank water contamination. The roof washer <u>first flush device</u> shall not rely on manually operated valves or devices, and shall operate automatically. Diverted rainwater shall not be drained to the roof surface, and shall be discharged in a manner consistent with the storm water runoff requirements of the jurisdiction. Roof washers <u>First flush devices</u> shall be accessible for maintenance and service.

Reason: Roof washer is an outdated term that causes interpretation problems for inspectors and end users. the substitution with First flush Clarifies the section

Cost Impact: Will not increase the cost of construction

Adding clarity to the language to eliminate confusion always saves money

P 272-15 : 1303.4-HUTCHER5129

## P 273-15

1303.5.2

Proponent: JEFFREY HUTCHER, representing ARCSA (jhutcher@pacbell.net)

## 2015 International Plumbing Code

#### Delete and substitute as follows:

**1303.5.2 SizeGutter and piping sizes**. Gutters and downspouts shall be installed and sized in accordance with Section 1106.6 and local rainfall rates. The rainwater flow for the design of gutters and rainwater conveyance systems shall be in accordance with Section 1106.1. Where a rainwater conveyance system with gutter collection is designed for gravity flow of rainwater to the storage tank entirely by partially-full piping. the size of the roof gutters, leaders, conductors and horizontal drains shall be not less than as required by Section 1106. Where a rainwater conveyance system with gutter collection is designed for rainwater by piping sections that are flooded with water, the size of the roof gutters, leaders, conductors and horizontal drains shall be not less than sizes determined by accepted engineering practice for preventing loss of rainwater at the gutters. The accepted engineering practice-determined sizes shall not be less than what is required by Section 1106.

Reason: Rainwater harvesting systems may be dry or wet conveyance. Wet conveyance systems typically use larger diameter piping on the downspouts to prevent flooding as the water rises from grade level to the tank inlet. Hydraulics, Head pressures and friction loss tables and formulas found in the ARCSA Manual are typically used by Rainwater Harvesting designers to calculate gutter and downspout size.

#### Cost Impact: Will not increase the cost of construction

Consistence and clarity always saves money and prevents costly mistakes. Piping that is too small can flood the gutters and render a collection system inefficient or useless in heavy rains. The new wording alerts the end user that chapter 11 may not be adequate for a wet conveyance system

P 273-15 : 1303.5.2-HUTCHER5153

## P 274-15

## 1303.10.1

Proponent: Troy Vassos, Golder Associates Ltd., representing self (tvassos@golder.com)

## 2015 International Plumbing Code

#### Delete without substitution:

1303.10.1 Location. Storage tanks shall be located with a minimum horizontal distance between various elements as indicated in Table 1303.10.1.

#### Reason:

- 1. There is no reason to require horizontal setbacks for rainwater storage units.
- 2. Any setback requirements should be left to the discretion of the jurisdiction.

**Cost Impact:** Will not increase the cost of construction The elimination of horizontal setbacks will not add to cost.

P 274-15 : 1303.10.1-VASSOS5819

## P 275-15

## 1303.15.8, 1303.15.9 (New)

**Proponent:** David Cantrell, representing Joint Consensus Committee on Rainwater Collection System Design and Installation (IS-RCSDI) (dave.cantrell@kingcounty.gov)

### 2015 International Plumbing Code

#### **Revise as follows:**

**1303.15.8 Water quality test.** The quality of the water for the intended application shall be verified at the point of use in accordance with the requirements of the jurisdiction. Except where site conditions as specified in ASTM E 2727 affect the rainwater, collected rainwater shall be considered to have the parameters indicated in Table 1303.15.8.

#### Delete without substitution:

#### TABLE 1303.15.8 RAINWATER QUALITY

PARAMETER	VALUE
<del>рН</del>	<del>6.0-7.0</del>
BOD	Not greater than 10 mg/L
NTU	Not greater than 2
Fecal coliform	No detectable fecal coli in 100 mL
Sodium	No detectable sodium in 100 mL
Chlorine	No detectable chlorine in 100 mL
Enteroviruses	No detectable enteroviruses in 100 mL

#### Add new text as follows:

1303.15.9 Collected raw rainwater quality. ASTM E2727 shall be used to determine what, if any, site conditions impact the quality of collected raw rainwater and whether those site conditions require treatment of the raw water for the intended end use or make the water unsuitable for specific end uses.

**Reason:** Table 1303.15.8 presents qualities that would wrongly be assumed to be typical of collected rainwater by many users of this code. The site conditions that affect collected rainwater quality vary significantly and often from one place to another. Directing the user to the ASTM standard alone without providing the table will result in a much better assessment of the collected rainwater quality and result in much better design of the required treatment and determination of suitability for an intended use. It is currently unclear as to whether the second sentence of Section 1303.15.8 applies to the raw collected rainwater or the product (treated) water to be used for a specific purpose. Breaking Section 1303.15.8 into two separate and distinct sections will improve clarity and application.

Cost Impact: Will not increase the cost of construction

This code change merely describes what is involved in the water quality test. It does not add additional testing requirements.

P 275-15 : 1303.15.8-CANTRELL5165

## P 276-15

1303.15.8

Proponent: JEFFREY HUTCHER, representing ARCSA (jhutcher@pacbell.net)

### 2015 International Plumbing Code

#### Revise as follows:

**1303.15.8 Water quality test.** The quality of the waterrainwater for the intended application shall be verified at the point of use in accordance with the requirements of the jurisdiction. Except where site conditions as specified in ASTM E 2727 affect the rainwater, collected rainwater shall be considered to have the parameters indicated in Table 1303.15.8.

**Reason:** ASTM E 2727 does not address the differing regulations that govern water quality. Since Jurisdictions have different requirements, testing shall reflect the Jurisdictions guidelines for different intended uses. Testing to ASTM E 2727 guidelines may not be acceptable to the jurisdiction. In addition, ASTM E 2727 does not account for different intended uses, commercial or otherwise. The water quality standard for a residential subsurface irrigation system would not have the same treatment requirements as cooling tower make up water.

#### Cost Impact: Will not increase the cost of construction

Since jurisdictions have different protocols and requirements regarding rainwater quality, even using the data in ASTM E 2727 may not apply. It is up to the permittee to obtain the jurisdiction's requirements regardless.

P 276-15 : 1303.15.8-HUTCHER5157

## P 277-15

## Table 1303.15.8

Proponent: Troy Vassos, Golder Associates Ltd., representing self (tvassos@golder.com)

## 2015 International Plumbing Code

Delete without substitution:

#### TABLE 1303.15.8 **RAINWATER QUALITY**

PARAMETER	VALUE
<del>рН</del>	<del>6.0-7.0</del>
BOD	Not greater than 10 mg/L
NTU	Not greater than 2
Fecal coliform	No detectable fecal coli in 100 mL
Sodium	No detectable sodium in 100 mL
Chlorine	No detectable chlorine in 100 mL
Enteroviruses	No detectable enteroviruses in 100 mL

#### Reason:

1. Rainwater quality should be left to the jurisdiction as water quality requirments can vary from jurisdiction to jurisdiction.

BOD and chlorides are not apporpriate water quality parameters for rainwater.
pH range is too narrow and does not reflect the potential for acid rain (low pH). The range is more restrictive than wastewater effluent discharges

Cost Impact: Will not increase the cost of construction No additional cost to eliminating WQ requirments for rainwater

P 277-15 : T1303.15.8-VASSOS5821

## P 278-15

### 1304.3.1.3

Proponent: Troy Vassos, Golder Associates Ltd., representing self (tvassos@golder.com)

### 2015 International Plumbing Code

Revise as follows:

1304.3.1.3 Labeling and marking. Nonpotable rainwater distribution piping labeling and marking shall comply with Section 608.8.

Reason:

1. Reclaimed water is not rainwater. Reclaimed water is reuse water, or wastewater that has been treated to an acceptable water quality standard for nonpotable water applications.

Cost Impact: Will not increase the cost of construction

Rainwater should not be referenced in the section - this is a zero cost correction.

P 278-15 : 1304.3.1.3-VASSOS5818

# PSD 1-15

505.13.1

Proponent: Pennie L Feehan, representing Copper Development Association (penniefeehan@me.com)

## 2015 International Private Sewage Disposal Code

## **Revise as follows:**

**505.13.1 Copper** <u>pipe</u> or <u>copper-alloy</u> tubing to <u>cast-iron hub pipe</u>. Joints between copper <u>pipe</u> or <u>copper-alloy</u> \_tubing and cast-iron hub pipe shall be made with a <u>brass copper-alloy</u> ferrule or compression joint. The copper <u>pipe</u> or <u>copper-alloy</u>\_tubing shall be soldered to the ferrule in an approved manner, and the ferrule shall be joined to the cast-iron hub by a caulked joint or a mechanical compression joint.

Reason: This proposal cleans up the section and does not change the intent. This proposal will match IPC Section 705.16.1.

### Cost Impact: Will not increase the cost of construction

This proposal will not increase the cost of construction as this change is only to update the name of a material that is already in the code.

PSD 1-15 : 505.13.1-FEEHAN3988