IRC - Plumbing

2024 GROUP A PROPOSED CHANGES TO THE I-CODES

April 7 – 16, 2024
Doubletree by Hilton
Universal Orlando - Orlando, FL

ICC
INTERNATIONAL CODE COUNCIL®

First Printing

Publication Date: March 2024

PRINTED IN THE U.S.A.

2024 GROUP A – PROPOSED CHANGES TO THE INTERNATIONAL RESIDENTIAL CODE – PLUMBING/ MECHANICAL

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TENTATIVE ORDER OF DISCUSSION
2024 PROPOSED CHANGES TO THE INTERNATIONAL RESIDENTIAL CODE – PLUMBING

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 RP code change proposals may not be included on this list, as they are being heard by another committee.

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RP1-24

IRC: P2904.1.1

Proponents: Jeffrey M Hugo, CBO, NFSA, National Fire Sprinkler Association (hugo@nfsa.org)

2024 International Residential Code

Revise as follows:

P2904.1.1 Required sprinkler locations.
Sprinklers shall be installed to protect all areas of a *dwelling unit*.

Exceptions:

1. *Attics*, *crawl spaces* and normally unoccupied concealed spaces that do not contain fuel-fired *appliances* do not require sprinklers. In *attics*, *crawl spaces* and normally unoccupied concealed spaces that contain fuel-fired appliances ~~equipment,~~ ~~a~~ one quick response intermediate temperature sprinkler shall be installed above the appliance ~~equipment~~; however, additional sprinklers shall not be required in the remainder of the space.
2. Clothes *closets*, linen *closets* and pantries not exceeding 24 square feet (2.2 m^2) in area~~, with the smallest dimension not greater than 3 feet (915 mm) and~~ having wall and ceiling surfaces of *gypsum board*.
3. Bathrooms not more than 55 square feet (5.1 m^2) in area.
4. Garages; carports; exterior porches; unheated entry areas, such as mud rooms, that are adjacent to an exterior door; and similar areas.

Reason: This proposal for the residential sprinkler criteria in the IRC, Section P2904, correlates with the 2022 edition of NFPA 13D. While both documents are considered equivalent, having the correlation benefits designers and code officials using the IRC alone.

As currently written, this section uses the defined terms “equipment” and “appliance.” This change uses the term “appliance” and replaces any reference to “equipment.” NFPA 13D allows one quick response sprinkler installed to protect the area where the fuel fired appliance is and allows the remainder of the space to remain unprotected. Removing the smallest dimension in the closet correlates to NFPA 13D. Small closets, up to 24 sq ft are exempt from sprinklers.

Cost Impact: Decrease

Estimated Immediate Cost Impact:

Source: Actual estimates

Residential pendent sprinklers cost ranges from approximately $18-$40 apiece

Quick response pendent sprinklers cost ranges from approximately $13-$20 apiece

Estimated Immediate Cost Impact Justification (methodology and variables):

Analogous methodology using actual current material costs to create a range of cost. This proposal decreases the cost of construction by offering a quick response sprinkler in lieu of a residential sprinkler with similar characteristics, such as activation time. Residential sprinklers do cost more because they are listed for the residential fire load. Quick response sprinklers cost less and can control the residential fire load near the fuel fired appliance.

RP2-24

IRC: P2904.2.4.2

Proponents: Jeffrey M Hugo, CBO, NFSA, National Fire Sprinkler Association (hugo@nfsa.org)

2024 International Residential Code

Revise as follows:

P2904.2.4.2 Obstructions to coverage.
Sprinkler discharge shall not be blocked by obstructions unless additional sprinklers are installed to protect the obstructed area. Additional sprinklers shall not be required where the sprinkler separation from obstructions complies with either the minimum distance indicated in Figure P2904.2.4.2 or the minimum distances specified in the sprinkler manufacturer's instructions where the manufacturer's instructions permit a lesser distance. Additional sprinklers shall not be required where obstructions caused by architectural features produce not more than an aggregate of 15 square feet (1.4 m 2) of dry floor area per sprinkler.

Reason: This proposal for the residential sprinkler criteria in the IRC, P2904 correlates with the 2022 edition of NFPA 13D. While both documents are considered equivalent, having the correlation benefits designers and code officials using the IRC.

NFPA 13D permits shadow areas per sprinkler, in Section 8.2.5.7, "Shadow areas shall be permitted in the protection area of a sprinkler as long as the cumulative dry areas do not exceed 15 ft2 (1.4 m 2) per sprinkler." This concept is permitted to address when certain architectural features can impact the sprinkler spray pattern. This change to the IRC does not supersede the obstruction rules. Sprinklers have to meet the obstruction rules first, then allow for the shadowed areas.

Cost Impact: Decrease

Estimated Immediate Cost Impact:

Source: Actual estimates

Residential pendent sprinklers cost ranges from approximately $18-$40 apiece

Estimated Immediate Cost Impact Justification (methodology and variables):

Analogous methodology using actual current material cost estimates to create a range of cost. This proposal lowers construction costs by a potential reduction to the number of sprinkler(s) in a compartment.

RP3-24

IRC: P3103.1.2, P3103.1.4

Proponents: Jeanne Rice, NYS DOS, NYS DOS (jeanne.rice@dos.ny.gov); Chad Sievers, NYS, NYS DOS (chad.sievers@dos.ny.gov); Kevin Duerr-Clark, NYS DOS, NYS DOS (kevin.duerr-clark@dos.ny.gov); China Clarke, New York State Dept of State, Manager Technical Support Unit (china.clarke@dos.ny.gov)

2024 International Residential Code

Revise as follows:

P3103.1.2 Roof used for recreational or assembly purposes.
~~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 the roof.~~ Where a roof is to be used as a promenade, restaurant, bar, or sunbathing deck, as an observation deck, or for similar purposes, open vent pipes shall terminate not less than 7 feet (2134 mm) above the roof.

P3103.1.4 Sidewall vent terminal. Vent terminals extending through the wall shall terminate not less than 10 feet (3048 mm) from ~~a~~ the *lot line* and ~~not less than~~ 10 feet (3048 mm) above the highest adjacent grade ~~elevation~~ within 10 feet (3048 mm) ~~in any direction~~ horizontally of the vent terminal. V~~ent 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.~~
Vent terminals shall not terminate under the overhang of a structure with soffit vents. Sidewall vent terminals shall be protected to prevent birds and rodents from entering or blocking the vent opening.

Reason: The language in sections 3103.1.2 and 3103.1.4 (IRC) do not match sections 903.1.2 and 903.1.4 of the IPC. This proposed change edits the IRC provisions to match the ones found in the IPC.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

The proposed change merely edits the provision language to match the IPC. The code requirements are not changed, merely edited into a more clear format.

RP4-24

IRC: P2903.4, P2903.4.1, P2903.4.2

Proponents: Dennis Hart, Fairfax County, Virginia, Virginia Plumbing and Mechanical Inspectors Association (VPMIA) and Virginia Building and Code Officials Association (VBCOA) (dennis.hart@fairfaxcounty.gov)

2024 International Residential Code

Revise as follows:

P2903.4 Thermal expansion control.

~~A means for controlling increased pressure caused by thermal expansion shall be installed where required in accordance with Sections P2903.4.1 and P2903.4.2~~Where a storage water heater is supplied with cold water that passes through a check valve, pressure reducing valve or backflow preventer, a thermal expansion control device shall be connected to the water heater cold water supply pipe at a point that is downstream of all check valves, pressure reducing valves and backflow preventers. Thermal expansion tanks shall be sized in accordance with the tank manufacturer's instructions and shall be sized such that the pressure in the water distribution system shall not exceed that required by Section P2903.3.2.

Delete without substitution:

~~**P2903.4.1 Pressure-reducing valve.** For water service system sizes up to and including 2 inches (51 mm), a device for controlling pressure shall be installed where, because of thermal expansion, the pressure on the downstream side of a pressure-reducing valve exceeds the pressure-reducing valve setting.~~

~~**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 shall be installed.~~

Reason: This proposal brings in line language from the IPC to the IRC for thermal expansion controls. Thermal expansion in water piping does not know the difference between whether the piping is located in a commercial building or a one- or two-family dwelling, and there is no logical reason that the language should be different when requirements are the same. This proposal also clears up any confusion on whether thermal expansion controls are required on a non-storage type water heater. This change does not change current code requirements and brings language forward from the IPC to the IRC for correlation.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

There are already requirements for thermal expansion controls in the code. This clarification does not add conditions that would require additional thermal expansion controls.

RP5-24

IRC: P2903.4

Proponents: Dennis Hart, Fairfax County, Virginia, Virginia Plumbing and Mechanical Inspectors Association (VPMIA) and Virginia Building and Code Officials Association (VBCOA) (dennis.hart@fairfaxcounty.gov)

2024 International Residential Code

Revise as follows:

P2903.4 Thermal expansion control.
Where a storage water heater is supplied, a means for controlling increased pressure caused by thermal expansion shall be installed where required in accordance with Sections P2903.4.1 and P2903.4.2.

Reason: This proposal clarifies that thermal expansion controls are not required on a non-storage type tank water heater. Tankless water heater manufacturers typically do not require thermal expansion controls unless installed in conjunction with a storage tank. If a tankless water heater manufacturer requires thermal expansion controls per the manufacturer's installation instructions, then the requirement to install thermal expansion controls will apply per R102.4.1.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

There are already requirements for thermal expansion controls in the code. This clarification does not add conditions that would require additional thermal expansion controls.

RP6-24

IRC: P2904.1

Proponents: Dennis Hart, Fairfax County, Virginia, Virginia Plumbing and Mechanical Inspectors Association (VPMIA) and Virginia Building and Code Officials Association (VBCOA) (dennis.hart@fairfaxcounty.gov)

2024 International Residential Code

Revise as follows:

P2904.1 General.
The design and installation of automatic sprinkler systems shall be in accordance with NFPA 13D or Section P2904, which shall be considered to be equivalent to NFPA 13D. Partial automatic sprinkler systems shall be permitted to be installed only in buildings not required to be equipped with an automatic sprinkler system. Section P2904 shall apply to stand-alone and multipurpose wet-pipe sprinkler systems that do not include the use of antifreeze. A multipurpose automatic sprinkler system shall provide domestic water to both fire sprinklers and plumbing fixtures. A stand-alone automatic sprinkler system shall be separate and independent from the water distribution system and shall comply with P2902.5.4. A backflow preventer shall not be required to separate an automatic sprinkler system from the water distribution system, provided that the sprinkler system complies with all of the following:

1. The system complies with NFPA 13D for a multipurpose piping sprinkler system, a passive purge sprinkler system or Section P2904.
2. The piping material complies with Section P2906.
3. The system does not contain antifreeze.
4. The system does not have a fire department connection.

Reason: NFPA 13D has several design options for a residential sprinkler system. There are multipurpose systems, passive purge systems and standalone systems. When a standalone sprinkler system is installed, it is required to be separate and independent from the water distribution system. This is achieved by having a branch off the water distribution piping after it enters the dwelling that only serves the NFPA 13D standalone sprinkler system. The other branch on the water distribution system will serve as the potable water for the dwelling. Backflow protection on these NFPA 13D standalone systems is necessary because of concerns with life safety. Stagnation can occur in the piping of a standalone sprinkler system, which leads to an increased risk of bacterial growth, mold growth and leaching of metals. Multipurpose sprinkler systems and passive purge sprinkler systems allow the flow through of water; therefore, the issue of stagnation is not present. This proposal ensures that backflow is required to be installed on these systems if installed, ensuring a backflow event will not occur.

Cost Impact: Increase

Estimated Immediate Cost Impact:

$0 to $800

Estimated Immediate Cost Impact Justification (methodology and variables):

This code change proposal would increase the cost of construction when the designer chooses to install an NFPA 13D standalone system. If the designer chooses to install either a multipurpose or a passive purge NFPA 13D sprinkler system, or comply with Section 2904, then there would be no added costs.
a standalone 13D sprinkler system, in order for a backflow event to be prevented, backflow protection is necessary. Additional costs would be for the purchase and installation of the backflow preventer, and the cost of the annual inspections/maintenance of the testable device.

Costs for an ASSE 1015, Double Check Valve Assembly is listed at $469 (see the link below). Including labor, the overall initial cost for installation would be approximately $800.

Double Check Valve Assembly | Gateway Supply Co., Inc

RP7-24

IRC: TABLE P2903.2

Proponents: Diana Burk, Energy Solutions, Energy Solutions (dburk@energy-solution.com)

2024 International Residential Code

Revise as follows:

TABLE P2903.2 MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING FIXTURES AND FIXTURE FITTINGS [b]

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY
Lavatory faucet	2.2 gpm at 60 psi
Shower head [a]	~~2.5~~2.0 gpm at 80 psi
Sink faucet	2.2 gpm at 60 psi
Water closet	1.6 gallons per flushing cycle

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

a. A hand-held shower spray shall be considered to be a shower head. Where a shower compartment is served by multiple shower heads, the concurrent discharge of all shower heads controlled by a single valve shall not exceed the maximum flow rate.

b. Consumption tolerances shall be determined from referenced standards.

Reason: This proposal requires a maximum flow-rate of 2.0 gpm at 80 psi standard for showerheads in residential homes. This requirement is consistent with a similar requirement in the 2024 International Plumbing Code. More stringent standards have been adopted in multiple states including Maine, Hawaii, Washington, Oregon, New York and California. There is wide technological availability and very cost-effective water and energy savings for hot water usage. There is wide technological availability—of the 17,275 showerheads listed in DOE's Compliance Certification Database, 14,146 or 82% meet the 2.0 gpm standard. Plumbing systems in older buildings are not expected to be negatively impacted as the standards allow for only 20% less water to flow (for a 5 minute shower, that would mean 8 gallons of water with a compliant showerhead versus 10 gallons of water for a non-compliant showerhead). For a typical single family home which has roughly 2.2 showerheads, this proposal would save approximately 5,100 gallons of water per year and result in $1,170 in utility cost savings over the 10 year life of the fixture. While this has significant energy and water savings, the incremental impact for a building's plumbing system is negligible.

Bibliography: [1] https://efiling.energy.ca.gov/getdocument.aspx?tn=205654

[2] https://appliance-standards.org/sites/default/files/States%20Go%20First.pdf

[3] https://www.safeplumbing.org/files/safeplumbing.org/documents/misc/7-1-19-WaterSense-2019-Report.pdf

[4] https://appliance-standards.org/sites/default/files/States%20Go%20First.pdf

[5] https://www.eia.gov/consumption/residential/data/2020/#waterheating

[6] https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_5_3

[7] https://www.eia.gov/dnav/ng/ng_pri_sum_dcu_nus_a.htm

[8] https://www.eia.gov/dnav/pet/pet_pri_wfr_dcus_nus_m.htm

Cost Impact: Decrease

Estimated Immediate Cost Impact:

In their analysis to establish this standard in 2015, the California Energy Commission found the incremental cost for showerheads is zero because there is no cost premium for a compliant product.[1]

Estimated Immediate Cost Impact Justification (methodology and variables):

In their analysis to establish this standard in 2015, the California Energy Commission found the incremental cost for showerheads is zero because there is no cost premium for a compliant product.[1]

Estimated Life Cycle Cost Impact:

For a typical single family home which has roughly 2.2 showerheads, this proposal would save approximately 5,100 gallons of water per year and result

in $1,170 in utility cost savings over the 10 year life of the fixture.

Estimated Life Cycle Cost Impact Justification (methodology and variables):

To estimate the roughly $1,170 in life cycle cost savings, we assumed one showerhead would save 2,247 gallons of water per year resulting in 261 kWh of electricity savings and 13.4 therms/year of savings from a natural gas or oil water heater was made based on savings estimates from the appliance standards awareness program.[2] It was assumed that a typical single family home has roughly 2.2 showerheads.[3] Water and waste water prices were estimated at $11 per thousand gallons and the effective useful life of the showerhead was estimated to be 10 years.[4] It was assumed that 48% of water heaters were natural gas, 46% were electric and 6% were fuel oil based on the 2020 Residential Energy Consumption Survey.[5]Electricity was estimated to cost $0.15/kWh[6], natural gas was estimated at $1.42/therm[7] fuel oil was estimated at $3.06/therm[8] using average annual residential utility prices from the Energy Information Administration.

RP8-24

IRC: P2905.3

Proponents: Anthony Floyd, City of Scotsdale, City of Scottsdale (afloyd@scottsdaleaz.gov)

2024 International Residential Code

Revise as follows:

P2905.3 Hot water supply to fixtures.
The *developed length* of *hot water* piping, from the source of the *hot water* to the fixtures that require *hot water*, shall not exceed ~~100 feet (30 480 mm)~~50 feet (15 240 mm) Water heaters and recirculating system piping shall be considered to be sources of hot water.

Reason: This change reduces the length of hot water supply line from the source of hot water to the fixtures unless part of a hot water recirculation system. The 50-foot limit is replicated from IPC Section 607.2. Hot water supply lines greater than 50 feet waste water (proportional to pipe size) while occupants wait for hot water to reach fixtures for bathing, washing and culinary purposes. Even though hot water supply lines are insulated, the hot water remaining in the lines between demand periods cools down. Limiting the length and consequent volume of heated water in the supply lines reduce the amount of wasted water and occupant waiting time.

Bibliography: WaterSense Guide for Efficient Hot Water Delivery Systems -https://www.epa.gov/sites/default/files/2017-01/documents/ws-homes-hot-water-distribution-guide.pdf

Cost Impact: Increase

Estimated Immediate Cost Impact:

A hot water pump will be required where the hot water supply line exceeds 50 feet between the water heater and furthest fixture. The immediate cost of a recirculation pump range from $100 to $400 depending on size and control features.

Estimated Immediate Cost Impact Justification (methodology and variables):

Variables include length of hot water supply line between the water heater and the furthest fixture. Approximately 10 to 15 percent of the energy use associated with a hot water delivery system is wasted in distribution losses. The average home wastes more than 3,650 gallons of water per year waiting for hot water to arrive at the point of use. Annual energy and water savings will offset the upfront cost within 5 years.

RP9-24

IRC: P2903.4.3 (New)

Proponents: Joseph Summers, Mashantucket Pequot Tribal Nation, Building Code Enforcement

2024 International Residential Code

Add new text as follows:

P2903.4.3 Thermal expansion tanks. A thermal expansion tank shall be supported in accordance with the manufacturer's instructions. Thermal expansion tanks shall not be supported by the piping that connects to such tanks.

Reason: This is to provide consistency with the IPC and to emphasize that piping shall not be used to support thermal expansion tanks. The supporting of expansion tanks by means of the piping has resulted in pipe breaks and leaks as the fittings are not designed for the stresses exerted on.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

This is using the same language that is in the IPC and reinforces the manufacturer's requirements for the proper installation and support of the tank(s). Piping and fittings are not intended to support equipment.

RP10-24

IRC: TABLE P2906.6

Proponents: Christopher Adam Smith, Viega, LLC, Codes and Standards Manager for Viega, LLC

2024 International Residential Code

Revise as follows:

TABLE P2906.6 PIPE FITTINGS

MATERIAL	STANDARD
Acrylonitrile butadiene styrene (ABS) plastic	ASTM D2468
Cast iron	ASME B16.4
Chlorinated polyvinyl chloride (CPVC) plastic	ASSE 1061; ASTM D2846; ASTM F437; ASTM F438; ASTM F439; CSA B137.6
Copper or copper alloy	ASME B16.15; ASME B16.18; ASME B16.22; ASME B16.26; ASME B16.51; ASSE 1061; ASTM F3226
Cross-linked polyethylene/aluminum/high-density polyethylene (PEX-AL-HDPE)	ASTM F1986
Fittings for cross-linked polyethylene (PEX) plastic tubing	ASSE 1061; ASTM F877; ASTM F1807; ASTM F1960; ASTM F2080; ASTM F2098; ASTM F2159; ASTM F2434; ASTM F2735; ASTM F3347; ASTM F3348; CSA B137.5
Gray iron and ductile iron	AWWA C110/A21.10; AWWA C153/A21.53
Malleable iron	ASME B16.3
Insert fittings for polyethylene/aluminum/polyethylene (PE-AL-PE) and cross-linked polyethylene/aluminum/cross-linked polyethylene (PEX-AL-PEX)	ASTM F1281; ASTM F1282; ASTM F1974; CSA B137.9; CSA B137.10
Polyethylene (PE) plastic	ASTM D2609; CSA B137.1
Fittings for polyethylene of raised temperature (PE-RT) plastic tubing	ASSE 1061; ASTM D2683; ASTM D3261; ASTM F1055; ASTM F1807; ASTM F2098; ASTM F2159; ASTM F2735; ASTM F2769; ASTM F3347; ASTM F3348; CSA B137.18
Polypropylene (PP) plastic pipe or tubing	ASTM F2389; CSA B137.11
Polyvinyl chloride (PVC) plastic	ASTM D2464; ASTM D2466; ASTM D2467; CSA B137.2; CSA B137.3
Stainless steel (Type 304/304L) pipe	ASTM A312; ASTM A778
Stainless steel (Type 316/316L) pipe	ASTM A312; ASTM A778
Steel	ASME B16.9; ASME B16.11; ASME B16.28

Staff Analysis: The proposed standards are in the current edition of the code.

Reason: The addition of ASTM F3347 "Standard Specification for Metal Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing" and ASTM F3348 "Standard Specification for Plastic Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing" are industry standards for PEX and PE-RT barbed fittings currently used in the International Plumbing Code and International Mechanical Code. The addition of these standards will keep the material tables aligned between the IRC and the other ICC codes, as well as keep the IRC up to date with the most relevant material standards.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

The addition of this standard does not increase the cost of construction. The addition of this standard allows for a wider selection of materials but does not make their use mandatory. By including this standard in the code, the options for installers will increase while the cost of construction should stay the same or even decrease.

RP11-24

IRC: TABLE P2903.10.4

Proponents: Christopher Adam Smith, Viega, LLC, Codes and Standards Manager for Viega, LLC

2024 International Residential Code

Revise as follows:

TABLE P2903.10.4 VALVES

MATERIAL	STANDARD
Chlorinated polyvinyl chloride (CPVC) plastic	ASME A112.4.14, ASME A112.18.1/CSA B125.1, ASTM F1970, CSA B125.3, MSS SP-122
Copper or copper alloy	ASME A112.4.14, ASME A112.18.1/CSA B125.1, ASME B16.34, CSA B125.3, IAPMO/ANSI Z1157; MSS SP-67, MSS SP-80, MSS SP-110, MSS SP-139
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, IAPMO/ANSI Z1157; NSF 359
Polypropylene (PP) plastic	ASME A112.4.14, ASTM F2389
Polyvinyl chloride (PVC) plastic	ASME A112.4.14, ASTM F1970, MSS SP-122

Staff Analysis: A review of the standard proposed for inclusion in the code, IAPMO/ANSI Z1157-2014e1(R2019) *Ball Valves*, with regard to some of the key ICC criteria for referenced standards (Section 4.6 of CP#28) will be posted on the ICC website on or before March 18, 2024.

Reason: This proposal adds IAPMO/ANSI Z1157 "Ball Valves" to the IRC. This Standard covers ball valves in sizes NPS-⅛ to NPS-4, with minimum rated working pressures of 860 kPa (125 psi) at 23°C (73°F), intended for use in water supply and distribution systems and specifies requirements for materials, physical characteristics, performance, testing and markings, and it is already used in the IPC. The addition of this standard will keep the material tables aligned between the IRC and the IPC, as well as keep the IRC up to date with the mast relevant materials standards.

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

The addition of this standard does not increase the cost of construction. The addition of this standard allows for a wider selection of materials but does not make their use mandatory. By including this standard in the code, the options for installers will increase while the cost of construction should stay the same or even decrease.

RP12-24

IRC: SECTION 202, M2002.4, P2503.6, P2706.2, SECTION P2709, P2709.1, P2709.2, P2709.4, P2902.3.1, TABLE P3004.1

Proponents: James Richardson, City of Columbus (Ohio), City of Columbus (Ohio) (jarichardson@columbus.gov)

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Revise as follows:

[MP] AIR BREAK (DRAINAGE SYSTEM). An arrangement where a discharge pipe from a fixture, *appliance* or device drains indirectly into a waste receptor below the *flood-level rim* of the waste receptor and above the trap seal.

[MP] AIR GAP, DRAINAGE SYSTEM. The unobstructed vertical distance through free atmosphere between the outlet of a waste pipe and the *flood-level rim* of the fixture or waste receptor into which it is discharging.

[MP] FLOOD-LEVEL RIM. The edge of the waste receptor or fixture from which water overflows.

[MP] INDIRECT WASTE PIPE. A waste pipe that discharges into the drainage system through an *air gap* into a trap, fixture or waste receptor.

M2002.4 Pressure relief valve.
Boilers shall be equipped with pressure relief valves with minimum rated capacities for the *equipment* served. Pressure relief valves shall be set at the maximum rating of the boiler.

Revise as follows:

P2503.6 Shower liner test.
Where shower floors ~~and receptors~~ are made watertight by the application of materials required by Section P2709.2, the completed liner installation shall be tested. The pipe from the shower drain shall be plugged watertight for the test. The shower floor ~~and receptor~~ area shall be filled with potable water to a depth of not less than 2 inches (51 mm) measured at the threshold. Where a threshold of not less than 2 inches (51 mm) in height does not exist, a temporary threshold shall be constructed to retain the test water in the lined shower floor ~~or receptor~~ area to a level not less than 2 inches (51 mm) in depth measured at the threshold. The water shall be retained for a test period of not less than 15 minutes and there shall not be evidence of leakage.

P2706.2 Prohibited waste receptors. Plumbing fixtures that are used for washing or bathing shall not be used to receive the discharge of indirect waste piping.

Exceptions:

1. A *kitchen* sink trap is acceptable for use as a waste receptor for a dishwasher.
2. A laundry tray is acceptable for use as a waste receptor for a clothes washing machine.

SECTION P2709
SHOWER ~~RECEPTORS~~CONSTRUCTION

P2709.1 Construction.
Where a shower ~~receptor~~ has a finished curb threshold, ~~it~~ the shower depth shall be not less than 1 inch (25.4 mm) ~~below~~ at the sides and back ~~of the receptor~~ below the curb threshold. The curb shall be not less than 2 inches (51 mm) and not more than 9 inches (229 mm) deep when measured from the top of the curb to the top of the drain. The finished floor shall slope uniformly toward the drain not less than $^1/_4$ unit vertical in 12 units horizontal (2-percent slope) nor more than $^1/_2$ unit vertical per 12 units horizontal (4-percent slope) and *floor drains* shall be flanged to provide a watertight joint in the floor.

P2709.2 Lining required.
The adjoining walls and floor framing enclosing on-site built-up shower ~~receptors~~ shall be lined with one of the following materials:

1. Sheet lead.
2. Sheet copper.
3. Plastic liner material that complies with ASTM D4068 or ASTM D4551.
4. Hot-mopping in accordance with Section P2709.2.3.
5. Sheet-applied load-bearing, bonded waterproof membranes that comply with ANSI A118.10.

The lining material shall extend not less than 2 inches (51 mm) beyond or around the rough jambs and not less than 2 inches (51 mm) above finished thresholds. Sheet-applied load bearing, bonded waterproof membranes shall be applied in accordance with the manufacturer's instructions.

P2709.4 ~~Receptor~~Shower drains.
An *approved* flanged drain shall be installed with shower subpans or linings. The flange shall be placed flush with the subbase and be equipped with a clamping ring or other device to make a watertight connection between the lining and the drain. The flange shall have weep holes into the drain.

P2902.3.1 Air gaps.
Air gaps shall comply with ASME A112.1.2 and *air gap* fittings shall comply with ASME A112.1.3. An *air gap* shall be measured vertically from the lowest end of a water outlet to the *flood level rim* of the fixture or waste receptor into which the water outlets discharge~~s to the floor~~. The required *air gap* shall be not less than twice the diameter of the effective opening of the outlet and not less than the values specified in Table P2902.3.1.

TABLE P3004.1 DRAINAGE FIXTURE UNIT (d.f.u.) VALUES FOR VARIOUS PLUMBING FIXTURES

TYPE OF FIXTURE OR GROUP OF FIXTURES	DRAINAGE FIXTURE UNIT VALUE (d.f.u.) [a]
Bar sink	1
Bathtub (with or without a shower head or whirlpool attachments)	2
Bidet	1
Clothes washer standpipe	2
Dishwasher	2
Floor drain [b]	0
Kitchen sink	2
Lavatory	1
Laundry tub	2
Shower stall	2
Water closet (1.6 gallons per flush)	3
Water closet (greater than 1.6 gallons per flush)	4
Full-bath group with bathtub (with 1.6-gallons-per-flush water closet, and with or without shower head and/or whirlpool attachment on the bathtub or shower stall)	5
Full-bath group with bathtub (water closet greater than 1.6 gallonsper flush, and with or without shower head and/or whirlpool attachment on the bathtub or shower stall)	6
Half-bath group (1.6-gallons-per-flush water closet plus lavatory)	4
Half-bath group (water closet greater than 1.6 gallonsper flush plus lavatory)	5
Kitchen group (dishwasher and sink with or without food-waste disposer)	2
Laundry group (clothes washer standpipe and laundry tub)	3
Multiple-bath groups[c]: 1.5 baths 2 baths 2.5 baths 3 baths 3.5 baths	 7 8 9 10 11

For SI: 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m.

a. For a continuous or semicontinuous flow into a drainage system, such as from a pump or similar device, 1.5 fixture units shall be allowed per gpm of flow. For a fixture not listed, use the highest d.f.u. value for a similar listed fixture.

b. A floor drain itself does not add hydraulic load. Where used as a waste receptor, the fixture unit value of the fixture discharging into the waste receptor shall be applicable.

c. Add 2 d.f.u. for each additional full bath.

Reason: This definition of "RECEPTOR" is already covered by the definition of a "Waste Receptor", which provide clear direction on what is considered an appropriate waste receptor for indirect wastes.

[MP] WASTE RECEPTOR. A floor sink, standpipe, hub drain or a floor drain that receives the discharge of one or more indirect waste pipes.

The intent of this proposal is to remove the defined term "RECEPTOR"

Bibliography: This definition is redundant and already covered under the definition of a waste receptor which in fact provides greater clarification as to what fixtures can be classified as waste receptors.

"WASTE RECEPTOR. A device for receiving the discharge of a waste pipe or pipes and discharges them by gravity into the sanitary drainage system. Waste receptors include, but are not limited to, floor drains, floor sinks, trench drains, hub drains, standpipes, mop basins, service sinks, and laundry trays."

Cost Impact: The change proposal is editorial in nature or a clarification and has no cost impact on the cost of construction

Justification for no cost impact:

This proposal will not impact cost of construction, it is entirely for clarification since the definition of a waste receptor already exists. Refer to reason statement.

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IRC: P2904.2

Proponents: Jeffrey M Hugo, CBO, NFSA, National Fire Sprinkler Association (hugo@nfsa.org)

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Revise as follows:

P2904.2 Sprinklers.
Sprinklers shall be new *listed* residential sprinkler. Sprinklers ~~and~~ shall be installed in accordance with the sprinkler manufacturer's instructions.

Exceptions:

1. High temperature quick response sprinklers shall be permitted to be installed in sauna and steam rooms.
2. Quick response sprinklers shall be permitted to be installed in mechanical rooms.

Reason: This proposal for the residential sprinkler criteria in the IRC, P2904 correlates with the 2022 edition of NFPA 13D. While both documents are considered equivalent, having the correlation benefits designers and code officials using the IRC.

Residential sprinklers are limited to 225°F which are too low for saunas and steam rooms located in the dwelling unit. These rooms are required to be sprinklered. This change allows a quick response sprinkler (operating with the same response thermal index (RTI) range as a residential sprinkler) in the high temperature range of 250-300°F to protect these rooms.

The quick response sprinkler is permitted to protect the mechanical room. This is an option that reduces the installation cost as quick response sprinklers are generally less in cost than the residential sprinkler. Quick response sprinklers and residential sprinklers are both in the fast response RTI range.

Cost Impact: Decrease

Estimated Immediate Cost Impact:

Source: Actual estimates

Quick response pendent, high temperature sprinklers cost ranges from approximately $11-$17 apiece

Quick response pendent sprinklers cost ranges from approximately $11-$20 apiece

Estimated Immediate Cost Impact Justification (methodology and variables):

Analogous methodology using actual material cost estimates to create a range of cost. Listed residential sprinklers cannot be used in high temperature areas, so NFPA 13D allows a listed quick response sprinkler in lieu of residential sprinklers in these specific areas.