



**ASA Plumbing Fixture and Appliance Code Committee -
Summary Notes from ICC Code Hearings April 11-29, 2021**

ASA TOOK A POSITION ON PROPOSALS HIGHLIGHTED THIS COLOR

PROPOSED CHANGES TO THE PLUMBING CODE

Proposal	Section(s)	Proponent(s)	Summary of Proposed Revision	ICC Tech Committee Decision	Comments
P1	SECTION 202, 709.1, TABLE 709.1, TABLE 709.1(2) (New)	J. Ballanco	Add definition for "Bathroom Group - Half Group and new table for drainage fixture units for bathroom groups.	Disapprove	<p><u>ASA Position</u> Neutral</p> <p><u>ICC Code Hearing Results</u> Motion: disapprove with a vote of 8 yes to 6 no</p> <p>General agreement on the concept of the proposal but the proposal needs work and clarification. Some concern about reducing the size of the vent stacks without having a good understanding of the impacts.</p>
P2	202 and Table 604.4	J. Ballanco	<p><u>BODY SPRAY. A shower device for spraying water onto a bather from other than the overhead position.</u></p> <p>Table 604.4 - add <u>Body spray (total per shower enclosure)</u> and 2.5 gpm at 80psi Max Flow Rate</p>	Disapprove	<p><u>ASA Position:</u> <u>Oppose:</u> Applying the 2.5 gpm to “total per shower enclosure”, instead of individual body sprays, is not consistent with industry standards. In addition, although the term “body spray” is now defined in DOE regulation, the definition is provided to clarify that “body sprays” are not covered in DOE energy and water efficiency requirements.</p> <p><u>ICC Code Hearing Results:</u> Modification to lower to 2.0 gpm was considered but not approved.</p> <p>Motion: disapprove based on lack of clarity to the proposal with a vote of 12 yes and 2 no.</p>



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P4	202	Virginia PMIA	<u>SERVICE SINK. A general purpose sink exclusively intended to be used for facilitating the cleaning of a building or tenant space.</u>	Approve as Modified	<p><u>ASA Position:</u> Neutral</p> <p><u>ICC Code Hearing Result</u> General discussion and concern with the term “general purpose” and “exclusively”. These sinks are used for other purposes and the key is that they not be used as food prep sinks.</p> <p>Motion: approve with a slight modification by the TC to resolve concerns.</p>
P13	Section 311, Toilet Facilities for Workers	NRDC	311.1 General. Toilet facilities shall be provided for construction workers and such facilities shall be maintained in a sanitary condition. Construction worker toilet facilities of the nonsewer type shall conform to PSIA Z4.3 <u>or to IAPMO/ISO 30500</u>	Approve as Modified	<p><u>ASA Position:</u> Neutral</p> <p><u>ICC Code Hearing Result</u> Motion: approved as modified with a vote of 14 yes to 0 no. Modification was to add “ed” after sewer.</p>
P16	Table 403.1	WABO	Add new description in “Business Classification” – Training and skill development not in a school or academic program.	Disapprove	<p><u>ASA Position:</u> Neutral</p>



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			Minimum number of fixtures for new description: Water Closets 1 per 50, Lavatories 1 per 50, Drinking Fountain 1 per 100 and 1 service sink.		ICC Code Hearing Result Motion: disapprove based on category being too broad and issue not having technical rationale for the fixture counts. Vote was 13 yes vs. 1 no.
P18	Table 403.1	SNICC and SNBO	Proposal separates adult daycares from child day cares and removes the requirement for a bathtub/shower from child day cares.	Disapprove	ASA Position: Neutral ICC Code Hearing Result Motion: disapprove with a vote of 8 yes to 6 no
P19	Table 403.1	E. Bressman (Architect)	Add footnote to "Residential – Apartment house" - <u>g. Accessory storage and service spaces shall not be required to have additional fixtures except where the occupant load of those spaces exceeds 50. Occupant loads greater than 50 shall be provided with one single user toilet facility.</u>	Disapprove	ASA Position: Neutral ICC Code Hearing Result Motion: disapprove based on being overly broad and the note has a requirement which is not appropriate code language. Vote was 14 yes vs. 0 no
P20	Table 403.1	E. Bressman (Architect)	Add following description and requirements to "Residential" classification: <u>Occupants for normally occupied spaces other than dwelling units</u> <u>Water Closets: Male 1 per 50; Female 1 per 75</u> <u>Lavatories: 1 per 200</u> <u>Drinking Fountain: 1 per floor</u> <u>Kitchen Sink: 1 per unit</u> <u>Automatic Clothes Washer: 1 per 20 units</u>	Disapprove	ASA Position: Neutral ICC Code Hearing Result Motion: disapprove based on code already covers these types of spaces. Vote was 13 yes vs. 1 no
P21	Table 403.1	PMGCAC	Significant revisions to table including: Adding Ambulatory care facilities and outpatient clinics	Approved as Modified	ASA Position: Neutral ICC Code Hearing Result



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			Alcohol and drug centers, congregate care facilities, group homes, halfway houses, social rehabilitation facilities, foster care facilities (all in one description and same fixture requirements) Assisted living and residential board and care facilities broken down to 4 new sub-descriptions and new fixture requirements for each.		No notes taken
P22	Table 403.1 410.4 Substitution	PMGCAC	Add new classification: <u>Shelters – Shelters for day or overnight use</u> <u>Water Closets: 1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50</u> <u>Lavatories: 1 per 40 for the first 80 and 1 per 80 for the remainder exceeding 80</u> 410.4 Substitution. Where restaurants provide drinking water in a container free of charge, drinking fountains shall not be required in those restaurants. In other occupancies <u>except shelters</u> , where three or more drinking fountains are required, water dispensers shall be permitted to be substituted for not more than 50 percent of the required number of drinking fountains. <u>In shelters, alternative sources of drinking water such as bottle-supplied water dispensing units shall be permitted to be substituted for 100 percent of the required number of drinking fountains.</u>	Disapprove	ASAs Position: Approve with modification. It is not clear why shelters would be different, but if it goes forward revise “bottle-supplied water dispensing units” with “bottle filling stations” which is a the term used term in the code. ICC Code Hearing Result Motion: disapprove based on need for definition of shelter, the term “bottle-supplied water dispensing units” is not covered in the standard. Vote was 14 yes vs. 0 no. TC supported basic principle but liked the modification from ASA along with other recommended changes.
P23	Table 403.1	Daniel Dain, Huckabee	Add following footnote to Classification “Education” <u>g. The number of occupants used for Educational occupancies to determine the minimum number of plumbing fixtures required shall be based upon the actual student capacity of the facility, not the occupants as determined by this code. The minimum number of plumbing fixtures required for any other occupancies within the</u>	Disapprove	ASA Position Neutral ICC Code Hearing Result Motion: disapprove based on a vote of 14 yes to 0 no



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			<p>same Educational facility on the same site shall be determined separately. Any plumbing fixtures that are accessible to another occupancy by location can contribute toward the total number of required plumbing fixtures for such occupancy, with no simultaneous use among other occupancies considered. All occupancies shall have access by location per Section 403.3 to the minimum number of plumbing fixtures required.</p>		
P24	<p>Part I - 403.1.1 Fixture calculations; 403.2 Separate facilities</p>	NYS DOS	<p>Revise 403.1.1 as follows:</p> <p>2. Where multiple-user facilities are designed to serve all genders, the minimum fixture count shall be calculated 100 percent, based on total occupant load. In such multiple-user facilities, each fixture type shall be in accordance with ICC A117.1 and each urinal that is provided shall be located in a stall.</p> <p>Revise 403.2 as follows:</p> <p>Separate facilities shall not be required where rooms having both water closets and lavatory fixtures are designed for use by both sexes-all persons regardless of sex and privacy is provided for water closets and urinals is provided in accordance with Section 405.3.4. Urinals shall be located in an area visually separated from the remainder of the facility or each urinal that is provided shall be located in a stall.</p>	Approve as Modified	<p>ASA Position Neutral</p> <p>ICC Code Hearing Result Motion: approve as modified. Vote was 14 yes vs 0 no Modification was to add to revise item 6 of 403.2 as follows – “Separate facilities shall not be required where rooms having both water closets and lavatory fixtures are designed for use by all persons regardless of sex and privacy is provided for water closets and urinals in accordance with Section 405.3.4 and for urinals in accordance with Section 405.3.5.”</p>
	<p>Part II - Revision to Building Code - 1210.3.2, 2903.1.5, 2903.1.4</p>		<p>Revise 1210.3.2 Urinal Partitions as follows:</p> <p>1210.3.2 Urinal partitions. Each urinal utilized by the public or employees shall occupy a separate area with walls or partitions to provide privacy. The horizontal dimension between walls or partitions at each urinal shall be no less than 30 inches (762 mm). The walls or partitions shall begin at a height not more greater than 12 inches (305 mm) from and extend not less than 60 inches (1524</p>		Approve



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			<p>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 (152 mm) beyond the outermost front lip of the urinal measured from the finished backwall surface, whichever is greater. <u>Urinals located in facilities designed for the use of all persons regardless of sex shall be located in an area visually separated from the remainder of the facility or each urinal that is provided shall be located in a stall.</u></p> <p>Delete: 2903.1.5 Urinal Partitions and 2903.1.4 Water Closet Compartment</p>		
P25	403.1.1 Fixture Calculations	NYS DOS	<p>Delete last Exceptions Note to 403.1.1.1:</p> <p>3- Distribution of the sexes is not required where single-user water closets and bathing room fixtures are provided in accordance with Section 403.1.2.</p>	Approve as Modified	<p>ASA Position Neutral</p> <p>ICC Code Hearing Result Proposal modified and approved as follows:</p> <p>403.1.2 Single-user toilet and bathing room fixtures The plumbing fixtures located in single-user toilet <u>or single-user</u> and bathing rooms, including family or assisted-use toilet and bathing rooms, shall contribute toward the total number of required plumbing fixtures for a building or tenant space, and. <u>The number of fixtures in single-user toilets, single-user bathing fixtures and family or assisted-use toilets shall be deducted proportionately from the required gender ratios of Table 403.1.</u> Single-user toilet and bathing rooms, and family or assisted-use toilet rooms and bathing rooms shall be identified as being available for use by all persons regardless of sex.</p>
	403.1.2 Single-user toilet and bathing room fixtures		<p>Revise 403.1.2 as follows:</p> <p>403.1.2 Single-user toilet and bathing room fixtures. The plumbing fixtures located in single-user toilet and bathing rooms, including family or assisted-use toilet and bathing rooms that are required by Section 1109.2.1 of the International Building Code, shall contribute toward the total number of required plumbing fixtures for a building or tenant space, <u>and shall be deducted proportionately from the required gender ratios of Table 403.1.</u> Single-user toilet and bathing rooms, and family or assisted-use toilet rooms and bathing rooms shall be identified as being available for use by all persons regardless of their sex.</p> <p>The total number of fixtures shall be permitted to be based on the required number of separate facilities or based on the aggregate of any combination of single-user or separate <u>multi-user</u> facilities.</p>		



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					The total number of fixtures shall be permitted to be based on the required number of separate facilities or based on the aggregate of any combination of single-user or <u>male and female designated multi-user</u> facilities.
P26	403.1.1 Fixture calculations	ICC Chapter-Kansas City	Revise 403.1.1, Exception not 2 as follows: 2. Where multiple-user facilities are designed to serve all genders, the minimum fixture count shall be calculated 100 percent, based on total occupant load, <u>applying the more restrictive fixture requirements to at least 50 percent of the total occupant load.</u> In such multiple-user facilities, each fixture type shall be in accordance with ICC A117.1 and each urinal that is provided shall be located in a stall.	Disapprove	ASA Position: Neutral ICC Code Hearing Result: Motion to Disapprove based on it creating additional confusion to a requirement that is already not clear. Vote was 13 yes vs. 1 no.
P27	403.1.2 Single-user toilet and bathing room fixtures.	ICC Chapter-Kansas City	Add the following to the end of 403.1.2: <u>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 single-user toilet rooms shall be permitted to serve as the required separate facilities.</u>	Disapprove	ASA Position: Neutral ICC Code Hearing Result: Motion to Disapprove proposal based on confusing language. Vote was 13 yes vs. 1 no.
	403.2.1 Family or assisted-use toilet facilities serving as separate facilities		Delete entire 403.2.1		
P28	SECTION 310, 310.1, 310.3, TABLE 403.1, 403.1.2, 403.1.3, 403.2, 403.3.1, 403.3.2, 403.3.5, 403.3.6, 403.4,	The Preview Group	Revise following throughout all sections – washroom and toilet rooms-facilities; and where appropriate incorporate the term <u>toilet facilities</u> in all sections.	Approve	ASA Position: Neutral ICC Code Hearing Result: Motion to approve based on providing clarity of terminology. Vote was 14 yes vs. 0 no.



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	405.3.2, 405.3.4, 405.3.5				
P37	Part I. IPC Section 403	J. Ballanco	<p><u>403.7 Adult changing station. Where adult changing stations are provided in addition to the requirements of the <i>International Building Code</i>, such stations shall be located in accordance with one of the following:</u></p> <ol style="list-style-type: none"> 1. <u>The adult changing station shall be installed in a single-user toilet room or bathing room.</u> 2. <u>The adult changing station shall be installed in a family or assisted-use toilet room or bathing room.</u> 3. <u>The adult changing station shall be installed in a toilet room or bathing room with multiple compartments. The adult changing station shall be provided with privacy by a curtain or wall or be installed within a privacy compartment. Where separate facilities are provided for each sex, the adult changing station shall be installed in both toilet rooms or bathing rooms.</u> 4. <u>The adult changing station shall be installed in a separate room.</u> <p><u>403.7.1 Lavatory location. Where an adult changing station is installed in a privacy compartment or separate room, a lavatory shall be provided within that space. The lavatory shall comply with the accessibility requirement of ICC A117.1.</u></p> <p><u>Exception: Where an adult changing station is located in a separate room, a lavatory shall not be required in the room provided that an alcohol-based hand sanitizer dispenser is installed in the room.</u></p> <p><u>403.7.2 Floor drain required. Toilet rooms and bathing rooms with an adult changing station shall have a floor drain installed.</u></p>	Disapprove	<p>ASA Position: Neutral</p> <p>ICC Code Hearing Result: Motion to disapprove with request for further clarification of the language and concern with requiring a floor drain. Yes 13 vs No 1</p>



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	Part II. International Building Code – 1210.2.3, Adult changing table surround		<p>Add following new text:</p> <p>1210.2.3 Adult changing table surround. Walls and partitions within <u>2 feet (610 mm) of the adult changing table shall have a smooth, hard, nonabsorbent surface, to a height of not less than 72 inches (1829 mm) above the floor, and except for structural elements, the materials used in such walls shall be of a type that is not adversely affected by moisture.</u></p>	Disapprove	<p>ASA Position: Neutral</p> <p>ICC Code Hearing Result: Motion to disapprove with a vote of 8 yes and 6 no</p>
P38	404.1, 404.2 (New), 404.3 (New), 404.3.1 (New), 404.3.2 (New), 404.3.3 (New), 404.3.4 (New), 404.3.5 (New), 404.3.6 (New)	The Preview Group	<p>The following is new text being added under 404.1 related to accessible plumbing facilities directly related to fixtures:</p> <p>404.3 Plumbing fixtures. Except as provided for in Sections 404.3.1 and 404.3.2, at least one of each type of fixture, element, control or dispenser in each accessible toilet room and bathing room shall be <u>accessible.</u></p> <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Where not more than one urinal is provided in a toilet room or bathing room, the urinal shall not be required to be accessible. 2. Where permitted in Section 1108 of the International Building Code, in toilet rooms or bathrooms serving Accessible units, <u>water closets designed for assisted toileting shall comply with Section 1110.2.2 of the International Building Code.</u> 3. Where permitted in Section 1108 of the International Building Code, in bathrooms serving Accessible units, showers designed for assisted bathing shall comply with Section 1110.2.3 of the <u>International Building Code.</u> 4. Where toilet facilities are primarily for children’s use, <u>required accessible water closets, toilet compartments and lavatories shall be permitted to comply with the children’s provisions of ICC A117.1.</u> 	Disapprove	<p>ASA Position: Neutral</p> <p>ICC Code Hearing Result: Motion to disapprove with recommendation to clean up clumsy language. 14 yes vs. 1 no</p>



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			<p>404.3.1 Water closet compartment. Where water closet compartments are provided in a toilet room or bathing room, at least 5 percent of the total number of compartments shall be wheelchair accessible. Where the combined total water closet compartments and urinals provided in a toilet room or bathing room is six or more, at least 5 percent of the total number of compartments shall be ambulatory accessible, provided in addition to the wheelchair-accessible compartment.</p> <p>404.3.2 Lavatories. Where lavatories are provided, at least 5 percent, but not less than one, shall be accessible. Where an accessible lavatory is located within the accessible water closet compartment at least one additional accessible lavatory shall be provided in the multi-compartment toilet room outside the water closet compartment. Where the total lavatories provided in a toilet room or bathing facility is six or more, at least one lavatory with enhanced reach ranges shall be provided.</p> <p>404.3.3 Sinks. Where sinks are provided, at least 5 percent but not less than one provided in accessible spaces shall be accessible. Exception: Mop or service sinks shall not be required to be accessible.</p> <p>404.3.4 Drinking fountains. Where drinking fountains are provided on an exterior site, on a floor or within a secured area, the drinking fountains shall be provided in accordance with Sections 1110.5.1 and 1110.5.2 of the International Building Code.</p> <p>404.3.5 Minimum number. Not fewer than two drinking fountains shall be provided. One drinking fountain shall comply with the requirements for people who use a wheelchair and one drinking fountain shall comply with the requirements for standing persons. Exceptions:</p> <p>1. A single drinking fountain with two separate spouts that complies with the requirements for people who use a wheelchair and standing persons shall be permitted to be substituted for two separate drinking fountains.</p>		



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			<p>2. Where drinking fountains are primarily for children’s use, drinking fountains for people using wheelchairs shall be permitted to comply with the children’s provisions in ICC A117.1 and drinking fountains for standing children shall be permitted to provide the spout at 30 inches (762 mm) minimum above the floor.</p> <p>404.3.6 More than the minimum number. Where more than the minimum number of drinking fountains specified in Section 404.4.5 is provided, 50 percent of the total number of drinking fountains provided shall comply with the requirements for persons who use a wheelchair and 50 percent of the total number of drinking fountains provided shall comply with the requirements for standing persons.</p> <p>Exceptions:</p> <p>1. Where 50 percent of the drinking fountains yields a fraction, 50 percent shall be permitted to be rounded up or down, provided that the total number of drinking fountains complying with this section equals 100 percent of the drinking fountains.</p> <p>2. Where drinking fountains are primarily for children’s use, drinking fountains for people using wheelchairs shall be permitted to comply with the children’s provisions in ICC A117.1 and drinking fountains for standing children</p>		
P40	PMGCAC	407.2	<p>407.2 Bathtub waste outlets and overflows. Bathtubs shall be equipped with a waste outlet that is not less than 1 / inches (38 mm) in diameter. The waste outlet shall be equipped with a watertight stopper. Where an overflow is installed in a bathtub, the piping from the overflow outlet shall be connected upstream of the fixture trap. The overflow outlet shall discharge to the trap whether the waste outlet is closed or open, the overflow shall be not less than 1 / inches (38 mm) in diameter.</p>		<p>ASA Position: Neutral</p> <p>ICC Code Hearing Result: Motion to approve passed.</p>
P41	410.1	ASHRAE	<p>410.1 Approval. Drinking fountains shall conform to ASME A112.19.1/CSA B45.2, ASME A112.19.2/CSA B45.1 or ASME A112.19.3/CSA B45.4, and water coolers shall conform to ASHRAE 18. Drinking fountains, water coolers and water dispensers shall conform to NSF 61, Section 9. Drinking fountains shall also conform</p>	Approve as Modified	<p>ASA Position: Oppose: Although ASHRAE 18 has been withdrawn by the SDO, the standard still exists and should remain in the code since it is the only industry standard available covering</p>



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			to ASME A112.19.1/CSA B45.2 or ASME A112.19.2/CSA B45.1. Electrically operated, refrigerated drinking water coolers and water dispensers shall be listed and labeled in accordance with UL 399.		water cooling capacity. ASA is working on supporting that ASHRAE 18 be reinstated. In addition, ASME A112.19.3 should be added because it covers stainless steel plumbing fixtures including drinking fountains. ICC Hearing Results: Motion to approve with modification adding ASME A112.19.3 back into the text.
P42	410.2	E. Spayd	410.2 Small occupancies. Drinking fountains shall not be required for an occupant load of 45 <u>30</u> or fewer.	Disapprove	ASA Position: Oppose. No technical justification for the proposed change and rationale for increasing to 30. ICC Hearing Results: Motion to disapprove passed based on a vote of 13 yes and 1 no
P43	410.4	E. Spayd	410.4 Substitution. Where restaurants provide drinking water in a container free of charge, drinking fountains shall not be required in those restaurants. <u>In covered mall and open mall buildings, where less than three drinking fountains are required within a tenant space, water dispensers shall be permitted to be substituted for the required number of drinking fountains within that tenant space.</u> In other occupancies where three or more drinking fountains are required, water dispensers shall be permitted to be substituted for not more than 50 percent of the required number of drinking fountains.		ASA Position: Neutral ICC Hearing Results: Motion to disapprove passed based on a vote of 13 yes and 1 no.
P44	410.4	ICC - Kansas City Chapter	410.4 Substitution. Where restaurants <u>or other establishments providing food</u> provide drinking water in a container free of charge, drinking fountains shall not be required in those restaurants	Disapprove	ASA Position:



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			<u>establishments</u> . In other occupancies where three or more drinking fountains are required, water dispensers shall be permitted to be substituted for not more than 50 percent of the required number of drinking fountains.		Oppose. No definition for “other establishments” which creates an ambiguous unenforceable requirement. ICC Hearing Results: Motion to disapprove based on ambiguity of “other establishments”. Vote was 14 yes vs 0 no
P45	Part I – IPC 410.6	State Div of Fire Prevention	410.6 Drinking fountain maintenance. Drinking fountains, water coolers and bottle fillers shall be maintained in a safe, sanitary and working condition.	Disapprove	ASA Position: Oppose. Should modify to read “bottle filling stations”. Also, section 102.3 in the IPC already addresses maintenance of all equipment. Maybe reference 102.3 if you want to reinforce existing requirement vs. creating duplicative requirement. ICC Code Hearing Results: After discussion ASA took the position to oppose the proposal Motion to disapprove based on no need to include since it is already covered. No reason to single out drinking fountains. Vote was 14 yes vs 0 no
	Part II – IPMC 502.4.1		[P] 502.4.1 Drinking facilities. Drinking facilities shall be a drinking fountain, water cooler, bottled water cooler or disposable cups next to a sink or water dispenser. Drinking facilities shall not be located in toilet rooms or bathrooms. <u>Drinking fountains, water coolers and bottle fillers shall be maintained in a safe, sanitary and working condition in accordance with the International Plumbing Code. Except for periodic maintenance or cleaning, public access and use shall be provided to the drinking facilities at all times during occupancy of the premises.</u>	Disapprove	ASA Position: Oppose ICC Code Hearing Results: Motion to disapprove based on it already being covered in other section of the IPMC. Vote was 14 yes vs. 0 no



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P46	412.10	ASSE	<p>412.10 Head shampoo sink faucets. Head shampoo sink faucets shall be supplied with hot water that is limited to not more than 120°F (49°C). Each faucet shall have integral check valves to prevent crossover flow between the hot and cold water supply connections. The means for regulating the maximum temperature shall be one of the following:</p> <ol style="list-style-type: none"> 1. A limiting device conforming to ASSE 1070/ASME A112.1070/CSA B125.70. 2. A water heater conforming to ASSE 1082 1084. 3. A temperature-actuated, flow-reduction device conforming to ASSE 1062. 	Approve as Modified	<p>ASA Position: Neutral</p> <p>ICC Code Hearing Results: Modification provided adding 1084 but not deleting 1082. "would read 1082 or 1084"</p> <p>Motion to approve with above modification based on a vote of 14 yes to 0 no</p>
P47	412.2	ASSE	<p>412.2 Hand showers. Hand-held showers shall conform to ASME A112.18.1/CSA B125.1. Hand-held showers shall provide backflow protection in accordance with ASME A112.18.1/CSA B125.1 or shall be protected against backflow by a device complying with ASME A112.18.3 <u>or ASSE 1014</u>.</p>	Approve	<p>ASA Position: Neutral</p> <p>ICC Code Hearing Results: Motion to approve proposal based on 14 yes to 0 no</p>
P48	412.5	ASSE	<p>412.5 Bathtub and whirlpool bathtub valves. Bathtubs and whirlpool bathtub valves shall have or be supplied by a water-temperature-limiting device that conforms to ASSE 1070/ASME A112.1070/CSA B125.70 or by a water heater complying with ASSE 1082 or ASSE 1084, except where such valves are combination tub/shower valves in accordance with Section 412.3</p>	Disapprove	<p>ASA Position: Neutral</p> <p>ICC Code Hearing Results: No notes taken</p>
P49	New 419.6	J. Ballanco and ASA	<p><u>419.6 Soap dispenser.</u> Each public lavatory shall have an <u>accompanying soap dispenser.</u></p>	Approve with Modification	<p>ASA Position: Modify to: A public lavatory shall have access to a soap dispenser.</p>



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Proposal	Section(s)	Proponent(s)	Summary of Proposed Revision	ICC Tech Committee Decision	Comments
					ICC Hearing Result: Motion to approve with modification consistent with ASAs position. Modification approved with a vote of 10 yes vs 4 no. Modified proposal passed based on a vote of
P50	Section 423, Specialty Plumbing Fixtures,	ASSE	423.3 Footbaths and pedicure baths. The water supplied to specialty plumbing fixtures, such as pedicure chairs having an integral foot bathtub and footbaths, shall be limited to not greater than 120°F (49°C) by a water-temperature-limiting device that conforms to ASSE 1070/ASME A112.1070/CSA B125.70 or by a water heater complying with ASSE 1082 <u>1084</u> .	Approve as Modified	ASA Position: Neutral ICC Code Hearing Results: Modification of putting back 1082. Motion to approve with modification. Vote was 14 yes vs 0 no
P51	New 423.4	ASSE	423.4 Water Dispensers. All potable water dispensers directly connected to the plumbing system shall comply with one of the following: <u>1. Beverage faucets shall comply with ASME A112.18.1/CSA B125.1</u> <u>2. Dispensers that supply electrically heated or cooled water shall comply with ASSE 1023</u> <u>3. Electronic devices that heat water shall comply with UL 499</u>	Approve with Modification	ASA Position: Modify Proposal - 423.4 Water Dispensers. All potable water dispensers directly connected to the plumbing system shall comply with one of the following: ICC Code Hearing: Modification changed title to Electrically heated or cooled water dispensers and deleted all remaining text providing a direct reference to ASSE 1023 only. ASA supported the modification. Motion to approve proposal as modified resulted in a vote of 14 yes vs 0 no
P60		Watts	605.2.1 Lead content of drinking water pipe and fittings. Pipe, pipe fittings, joints, valves, faucets and fixture fittings utilized to supply contacting water for drinking or cooking purposes shall	Disapprove	ASA Position:



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Proposal	Section(s)	Proponent(s)	Summary of Proposed Revision	ICC Tech Committee Decision	Comments				
			comply with NSF 372 and shall have a weighted average lead content of 0.25 percent or less.		<p>Oppose. Change is unnecessary and could lead to confusion related to exempted products such as fill valves and flush valves being misinterpreted as requiring compliance to the NSF Standard. Current language is well understood.</p> <p>ICC Hearing Results: Motion to disapprove with a vote of 14 yes to 0 no</p>				
P87	Part I – IPC, Table 604.4 Max Flow Rates and Consumption for Plumbing Fixtures and Fixture Fittings	NRDC	<p>Portions of table not shown remain unchanged.</p> <table border="1"> <thead> <tr> <th>PLUMBING FIXTURE OR FIXTURE FITTING</th> <th>MAXIMUM FLOW RATE OR QUANTITY^b</th> </tr> </thead> <tbody> <tr> <td>Shower head^{a, c}</td> <td>2.0 2.5 gpm at 80 psi</td> </tr> </tbody> </table> <p>For SI: 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.</p> <p>a. A hand-held shower spray is a shower head.</p> <p>b. Consumption tolerances shall be determined from referenced standards.</p> <p>c. <u>Shower heads shall comply with USEPA WaterSense Specification for Showerheads.</u></p>	PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY ^b	Shower head ^{a, c}	2.0 2.5 gpm at 80 psi	Approve as Modified	<p>ASA Position: Oppose. The IPC is a baseline standard and 2.5 gpm DOE regulations. Watersense is a voluntary standard and any reference to lowering flow rate should be addressed in “green codes”</p> <p>ICC Hearing Results: Modification: Removes WaterSense and replaces with ASME standard for high efficiency showerheads.</p> <p>Motion for disapproval failed by 1 vote.</p> <p>Motion to approve as modified (replace WaterSenses with ASME High Efficiency Stnd.) passed by a vote of 8 yes to 6 no</p>
	PLUMBING FIXTURE OR FIXTURE FITTING		MAXIMUM FLOW RATE OR QUANTITY ^b						
Shower head ^{a, c}	2.0 2.5 gpm at 80 psi								
Part II – Residential Code, Table P2903.2	Identical changes as shown for Table 604.4 in the IPC.	Disapprove	<p>ASA Position: Oppose. The IRC is a baseline standard and 2.5 gpm DOE regulations. Watersense is a voluntary standard and any reference to</p>						



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Proposal	Section(s)	Proponent(s)	Summary of Proposed Revision	ICC Tech Committee Decision	Comments
					lowering flow rate should be addressed in "green codes" ICC Hearing Results: Rejected
P90	607.4	City of Longmont	<p>607.4 Flow of hot water to fixtures. Fixture fittings, faucets and diverters shall be installed and adjusted so that the flow of hot water from the fittings corresponds to the left-hand side of the fixture fitting. <u>Single handle fixture fittings shall be installed and adjusted so that the flow of hot water corresponds to the far side of the fixture fitting.</u></p> <p>Exception: Shower and tub/shower mixing valves conforming to ASSE 1016/ASME A112.1016/CSA B125.16 or ASME A112.18.1/CSA B125.1, where the flow of hot water corresponds to the markings on the device.</p>	Disapprove	<p>ASA Position: Oppose. Definition does not cover all products currently in the marketplace and will lead to confusion in the field.</p> <p>ICC Hearing Results: Modification proposed that adds second sentence – "<u>Fixture fittings, faucets, and diverters with a side-mounted single-handle valve or single-control valve. Single handle fixture fittings shall be installed and adjusted so that the back position of the water temperature control represents the flow of hot water when facing away from the outlet or the temperature control settings shall be identified alphabetically, numerically, or graphically on corresponds to the far side of the fixture fitting.</u>"</p> <p>Motion to disapprove passed based on a vote of 14 yes to 0 no</p>
P102			<p>609.3 Hot water. Hot water shall be provided to supply all of the hospital fixture, kitchen and laundry requirements. Special fixtures and equipment shall have hot water supplied at a temperature specified by the manufacturer. The hot water system shall be installed in accordance with Section 607.</p> <p><u>609.3 Water. Water shall be provided in health care facilities in accordance with Section 609.3.1 and 609.3.2.</u> Add new text as follows:</p>	Disapprove	<p>ASA Position: Oppose. New term is being added "hand-washing water" without a clear definition of the term and "dedicated handwashing stations" is not defined. Current language is adequate.</p> <p>ICC Hearing Results:</p>



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Proposal	Section(s)	Proponent(s)	Summary of Proposed Revision	ICC Tech Committee Decision	Comments
			<p><u>609.3.1 Hand-washing water. Hand-washing water shall be provided to all dedicated handwashing stations. Dedicated hand-washing stations shall be permitted to be colder than tempered water.</u></p> <p><u>609.3.2 Hot water. Hot water shall be provided in accordance with Section 607.</u></p>		Motion to disapprove passed
P103	Chapter 15	ASSE	<p>611.1 Design. Point-of-use reverse osmosis drinking water treatment units shall comply with CSA B483.1 or NSF 58. Drinking water treatment units shall meet the requirements of CSA B483.1, NSF 42, NSF 44, NSF 53 or NSF 62. <u>Commercial and food service water treatment equipment shall comply with ASSE 1087.</u></p>	Disapprove	<p>ASA Position: Oppose. Addition of ASSE 1087 will lead to confusion as to what standards apply and cause duplication since a clear delineation between the scope of the currently referenced NSF and CSA standards and the ASSE standard does not exist. POU and POE systems listed to the NSF standards are used in commercial and food service establishments. In addition, the following issues are noted: 1) there is no definition of the term “commercial” provided in ASSE 1087 nor in the IPC; 2) there is confusion in 1087 related to “commercial modular systems” – forward states “The contaminant reduction and structural integrity requirements for commercial modular systems are covered by NSF/ANSI 42 and NSF/ANSI 53, as appropriate; 3) There is potential conflict between structural integrity criteria between the ASSE and NSF standards.; 4) there is potential conflict between the ASSE and NSF standards related to installation and maintenance instructions and product labeling. This standard states it covers the other plumbing aspects that are not otherwise addressed in those and other standards.”</p>



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Proposal	Section(s)	Proponent(s)	Summary of Proposed Revision	ICC Tech Committee Decision	Comments
					<p>However, structural integrity requirements are included in the ASSE standard; 3) it is not clear how compliance to ASSE 1087 will be achieved for “commercial modular systems” since most modular systems are designed for a given site.</p> <p>ICC Hearing Results:</p> <p>Motion to disapprove proposal was accepted by a vote of 14 yes to 0 no</p>
P133	Part I, IPC – Traps, Interceptors and Separators	G. Duren	<p>Add new definition as follows: <u>SANITARY WASTE VALVE. A device conforming to ASME A112.18.8 used as an alternate to a water-filled tubular waste trap that provides protections of the property from foul air in the sewer.</u> Add new text as follows: <u>1003.1 General. Sanitary waste valve shall be permitted to be installed as an alternate to the liquid seal tubular traps required in Section 1002. Sanitary waste valves shall conform to ASME A112.18.8.</u> <u>1003.2 Installation. Sanitary waste valves shall be installed in accordance with the requirements of this section and the manufacturer’s instructions.</u> <u>1003.3 Where permitted. Sanitary waste valves shall be permitted to be installed as an alternate to 1 1/4 inch (32 mm) and 1 1/2 inch (38mm) tubular traps. Where a sanitary waste valve is installed on the outlet of a food waste grinder, the device shall be installed in the vertical orientation.</u> <u>1003.4 Location. Sanitary waste valves shall be permitted to be installed as an alternate where tubular traps are required for sinks, lavatories, laundry trays, tubs, showers or similar fixtures.</u></p>	Disapprove	<p>ASA Position: Neutral</p> <p>ICC Code Hearing Results: Proposal failed.</p>



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PROPOSED CHANGES TO THE PLUMBING CODE

Proposal	Section(s)	Proponent(s)	Summary of Proposed Revision	ICC Tech Committee Decision	Comments
			<p><u>Sanitary waste valves shall not be used on urinals. Sanitary waste valves shall be provided with access.</u></p>		
	Part II, IRC, Chapter 32 Traps		<p><u>SANITARY WASTE VALVE.</u></p> <p><u>filled tubular waste trap that provides protections of the property from foul air in the sewer.</u> Add new text as follows:</p> <p><u>P3202 SANITARY WASTE VALVES.</u> <u>P3202.1 General. Sanitary waste valve shall be permitted to be installed as an alternate to the liquid seal tubular traps required in Section P3201. Sanitary waste valves shall conform to ASME A112.18.8.</u></p> <p><u>P3202.2 Installation. Sanitary waste valves shall be installed in accordance with the requirements of this section and the manufacturer's instructions.</u></p> <p><u>P3202.3 Where permitted. Sanitary waste valves shall be permitted to be installed as an alternate to 1 1/4 inch (32 mm) and 1 1/2 inch (38 mm) tubular traps. Where a sanitary waste valve is installed on the outlet of a food waste grinder, the device shall be installed in the vertical orientation.</u></p> <p><u>P3202.4 Location. Sanitary waste valves shall be permitted to be installed as an alternate where tubular traps are required for sinks, lavatories, laundry trays, tubs showers or similar fixtures. Sanitary waste valves shall not be used on urinals. Sanitary waste valves shall be accessible.</u></p>	Disapprove	<p><u>ASA Position:</u> Neutral</p> <p><u>ICC Code Hearing Results:</u> Proposal failed.</p>



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PROPOSED CHANGES TO THE PLUMBING CODE

Proposal	Section(s)	Proponent(s)	Summary of Proposed Revision	ICC Tech Committee Decision	Comments
P146	Section 1302, On-Site Nonpotable Water Reuse Systems	SFPUC	<p>Revise as follows:</p> <p>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. Where <i>approved</i> and as appropriate for the intended application, water <u>and wastewater</u> from other nonpotable sources shall be collected for reuse by on-site nonpotable water reuse systems.</p> <p>1302.2.1 Prohibited sources. Wastewater 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 wastewater, dishwasher wastewater and wastewater discharged from wet-hood scrubbers shall not be collected for reuse in an on-site nonpotable water reuse system.</p> <p>1302.6.1 Graywater <u>or wastewater</u> used for fixture flushing. Graywater <u>or wastewater</u> used for flushing water closets and urinals shall be disinfected and treated by an on-site water reuse treatment system complying with NSF 350 <u>or other approved methods.</u></p> <p>Add new text as follows:</p> <p><u>1302.14 Odor control. The designed operation and maintenance methods for treatment, storage, distribution, and reuse of onsite sources of non- potable water shall incorporate provisions to reduce, control, or eliminate odors as appropriate for the intended application.</u></p>	Disapprove	<p>ASA Position: Oppose. No definition for the term “wastewater” and no enforceable mechanism to address new item for odor control. NSF 350 and no need to add or other approved methods.</p>



**ASA Plumbing Fixture and Appliance Code Committee -
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PROPOSED CHANGES TO THE PLUMBING CODE

Proposal	Section(s)	Proponent(s)	Summary of Proposed Revision	ICC Tech Committee Decision	Comments
147	Part I – Add New Appendix G for Non-Sewered Sanitation System	NRDC, et al.	<p>Adds a brand new Appendix for Non-Sewered Sanitation Systems. The following is the first two sections of the new Appendix –</p> <p><u>SECTION G101 GENERAL.</u></p> <p><u>G101.1 Applicability. The provisions of this chapter shall apply to the installation of non-sewered sanitation systems.</u></p> <p><u>G101.2 System requirements. Non-sewered sanitation systems shall comply with ANSI/CAN/IAPMO/ISO 30500.</u></p>	Disapprove	ASA Position: Neutral
	Part II – Adds New Appendix G for Non-Sewered Sanitation System to Residential Code		Identical to IPC proposed Appendix	Approve as Modified	ASA Position: Neutral

PROPOSED CHANGES TO SEWAGE DISPOSAL CODE

Proposal	Section(s)	Proponent(s)	Summary of Proposed Revision	Committee Position	Comments
PSD1-21	Section 1101	NRDC	1101.2 Residential wastewater treatment systems. The regulations for materials, design, construction and performance shall comply with NSF 40 <u>or with IAPMO/ISO 30500.</u>		<p>ASA Position: Neutral</p> <p>Results of ICC Code Hearing: Motion: approved with a vote of 11 yes to 2 no.</p>



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PROPOSED CHANGES TO THE RESIDENTIAL CODE

Proposal	Section(s)	Proponent(s)	Summary of Proposed Revision	Committee Position	Comments
RP2	P2704 Slip-Joint Connections	G. Duran	Revise as follows: P2704.1 Slip joints. Slip-joint 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 <i>approved</i> elastomeric sealing gasket. Slip-joint connections shall be accessible. Such access shall provide an opening that is not less than 12 inches (305 mm) in its smallest dimension.	Disapprove	ASA Position: Oppose based on acceptance of RP3 revised definition. ICC Code Hearing Results: Disapprove
RP3	P2704 Slip-Joint Connections	PMGCAC	Revise as follows: P2704.1 Slip joints. Slip-joint connections shall be installed only for tubular waste piping and only between the waste trap outlet of a fixture and the connection to the drainage piping. Slip-joint connections shall be made with an <i>approved</i> elastomeric sealing gasket. Slip-joint connections shall be accessible. Such access shall provide an opening that is not less than 12 inches (305 mm) in its smallest dimension.	Approve	ASA Position: Approve
RP10	P2901, Water Supply and Distribution	NRDC	Revise as follows: P2905.3 Hot water supply to fixtures. The <i>developed length</i> of hot water piping, from the source of the hot water to the fixtures that require hot water, shall not exceed 75 100 feet (22 860 30 480 mm). Water heaters and recirculating system piping shall be considered to be sources of hot water.	Disapprove	ASA Position: Oppose. Concern with further limiting length in a residential setting and no technical justification supporting the reduction in length without looking at pipe diameter. Would consider if a table is provided that (similar to the one in the IPC).

PROPOSED CHANGES TO BUILDING CODE

Proposal	Section(s)	Proponent(s)	Summary of Proposed Revision	Committee Position	Comments
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**ASA Plumbing Fixture and Appliance Code Committee -
Summary Notes from ICC Code Hearings April 11-29, 2021**

<p>G-172</p>	<p>IBC Section 1210, Toilets and Bathroom Requirements</p>	<p>J. Pauls</p>	<p>Significant amount of additions to Section 1210 with the overall purpose to mandate the inclusion of stanchions and grab bars in bathroom and shower installations.</p>	<p>Disapprove</p>	<p>ASA Position: Oppose.</p> <ul style="list-style-type: none"> • The proposed changes will eliminate most of the bathtubs, bathtub/shower combinations and showers in the marketplace, drastically reducing consumer choice. • Proposed changes could result in an increase of up to 50% in costs to the consumer. Installing a stanchion into the rim of a bathtub or bathtub/shower combination in accordance with the proposed • Changes will void the manufacturer's warranty. • Many able-bodied people do not need or want unsightly grab bars diminishing the aesthetic appearance of their bathroom.
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IPC



cdpACCESS

2021 GROUP A PROPOSED CHANGES TO THE I-CODES

April 11 – May 5, 2021
Virtual Committee Action Hearings

P1-21

IPC: SECTION 202, 709.1, TABLE 709.1, TABLE 709.1(2) (New)

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

2021 International Plumbing Code

Revise as follows:

BATHROOM GROUP. A group of fixtures consisting of a water closet, lavatory, bathtub or shower, including or excluding a bidet, an *emergency floor drain* or both. Such fixtures are located together on the same floor level.

Half Group. A group of fixtures consisting of a water closet and lavatory, including or excluding a bidet, located in the same room.

709.1 Values for fixtures. *Drainage fixture unit* values as given in Table 709.1 (1) and 709.1(2) designate the relative load weight of different kinds of fixtures that shall be employed in estimating the total load carried by a soil or waste pipe, and shall be used in connection with Tables 710.1(1) and 710.1(2) of sizes for soil, waste and vent pipes for which the permissible load is given in terms of fixture units.

**TABLE 709.1(1)
DRAINAGE FIXTURE UNITS FOR FIXTURES AND GROUPS**

FIXTURE TYPE	DRAINAGE FIXTURE UNIT VALUE AS LOAD FACTORS	MINIMUM SIZE OF TRAP (inches)
Automatic clothes washers, commercial ^{a, g}	3	2
Automatic clothes washers, residential ^g	2	2
Bathroom group as defined in Section 202 (1.6 gpf water closet) ^f	5	—
Bathroom group as defined in Section 202 (water closet flushing greater than 1.6 gpf) ^f	6	—
Bathtub ^b (with or without overhead shower or whirlpool attachments)	2	1½
Bidet	1	1¼
Combination sink and tray	2	1½
Dental lavatory	1	1¼
Dental unit or cuspidor	1	1¼
Dishwashing machine ^c , domestic	2	1½
Drinking fountain	½	1¼
Emergency floor drain	0	2
Floor drains ^h	2 ^h	2
Floor sinks	Note h	2
Kitchen sink, domestic	2	1½
Kitchen sink, domestic with food waste disposer, dishwasher or both	2	1½
Laundry tray (1 or 2 compartments)	2	1½
Lavatory	1	1¼
Shower (based on the total flow rate through showerheads and body sprays) flow rate:		
5.7 gpm or less	2	1½
Greater than 5.7 gpm to 12.3 gpm	3	2
Greater than 12.3 gpm to 25.8 gpm	5	3
Greater than 25.8 gpm to 55.6 gpm	6	4
Service sink	2	1½
Sink	2	1½
Urinal	4	Note d
Urinal, 1 gallon per flush or less	2 ^e	Note d
Urinal, nonwater supplied	½	Note d
Wash sink (circular or multiple) each set of faucets	2	1½
Water closet, flushometer tank, public or private	4 ^e	Note d
Water closet, private (1.6 gpf)	3 ^e	Note d
Water closet, private (flushing greater than 1.6 gpf)	4 ^e	Note d
Water closet, public (1.6 gpf)	4 ^e	Note d
Water closet, public (flushing greater than 1.6 gpf)	6 ^e	Note d

For SI: 1 inch = 25.4 mm, 1 gallon = 3.785 L, gpf = gallon per flushing cycle, 1 gallon per minute (gpm) = 3.785 L/m.

- a. For traps larger than 3 inches, use Table 709.2.
- b. A showerhead over a bathtub or whirlpool bathtub attachment does not increase the drainage fixture unit value.
- c. See Sections 709.2 through 709.4.1 for methods of computing unit value of fixtures not listed in this table or for rating of devices with intermittent flows.
- d. Trap size shall be consistent with the fixture outlet size.

- e. For the purpose of computing loads on building drains and sewers, water closets and urinals shall not be rated at a lower drainage fixture unit unless the lower values are confirmed by testing.
- f. ~~For fixtures added to a bathroom group, add the dfu value of those additional fixtures to the bathroom group fixture count.~~
- g. See Section 406.2 for sizing requirements for fixture drain, branch drain and drainage stack for an automatic clothes washer standpipe.
- h. See Sections 709.4 and 709.4.1.

Add new text as follows:

**TABLE 709.1(2)
DRAINAGE FIXTURE UNITS FOR BATHROOM GROUPS**

FIXTURE GROUP	DRAINAGE FIXTURE UNIT - INDIVIDUAL DWELLING UNIT¹	DRAINAGE FIXTURE UNIT - 3 OR GREATER DWELLING UNITS
Bathroom group as defined in Section 202 (1.6 gpf or less water closet)		
Half Group	<u>3.5</u>	<u>2.5</u>
1 Bathroom Group	<u>5</u>	<u>3</u>
1-1/2 Bathroom Groups	<u>6</u>	<u>3.5</u>
2 Bathroom Groups	<u>7</u>	<u>4.5</u>
2-1/2 Bathroom Groups	<u>8</u>	<u>5</u>
3 Bathroom Groups	<u>9</u>	<u>5.5</u>
Each Addition Half Group	<u>0.5</u>	<u>0.5</u>
Each Additional Bathroom Group	<u>1</u>	<u>1</u>
Bathroom group as defined in Section 202 (greater than 1.6 gpf water closet)		
Half Group	<u>3.5</u>	<u>2.5</u>
1 Bathroom Group	<u>6</u>	<u>4</u>
1-1/2 Bathroom Groups	<u>8</u>	<u>5.5</u>
2 Bathroom Groups	<u>10</u>	<u>6.5</u>
2-1/2 Bathroom Groups	<u>11</u>	<u>7.5</u>
3 Bathroom Groups	<u>12</u>	<u>8</u>
Each Addition Half Group	<u>0.5</u>	<u>0.5</u>
Each Additional Bathroom Group	<u>1</u>	<u>1</u>

a. Individual dwelling units includes guest rooms, patient rooms, and single user bathrooms in other buildings. For multiple family dwelling units greater than 3 dwelling units, the drainage fixture unit within the dwelling unit shall be based on the individual dwelling drainage fixture unit value. The drainage fixture unit value for the system, shall be based on the greater than 3 dwelling units drainage fixture unit value.

Reason Statement: The late Tom Konen did extensive research on the impact of flows in drainage systems using low flow fixtures. The proposed new table of fixture unit values was published by Tom Konen in 1994. While going through the history of changes to the International Plumbing Code, there has never been a proposal to introduce the table Konen developed in his research. By the time the report was published, the first edition of the International Plumbing Code was already completed and published. For the last 25 years, there hasn't been any consideration of adding the modified fixture unit table.

What Konen identified in his paper is that families are getting smaller and houses are getting bigger with more bathrooms. Using the queuing theory developed by Dr. Roy B. Hunter, Konen determined that the use of fixtures varies based on the number of fixture installed in a dwelling unit. A five bathroom home occupied by 3 people could not possibly have a peak demand whereby half of the fixture are used simultaneously. Konen's data identified the frequency of use. The data resulted in a revised fixture unit table for bathroom groups. This table has been included in the IAPMO National Standard Plumbing Code (formerly known as the PHCC National Standard Plumbing Code) for the last 25 years. The history of using these revised fixture unit values have been proven out in states such as New Jersey and Maryland.

The International Plumbing Code should be updated to reflect the research and field experience with revised fixture units for dwelling unit bathroom groups.

Bibliography: Impact of Water Conservation on Interior Plumbing, Thomas P. Konen, P.E., Stevens Institute of Technology, ASPE 1994 Convention Technical Proceedings, Copyright 1995, American Society of Plumbing Engineers

Cost Impact: The code change proposal will decrease the cost of construction. This change will lower the cost of construction by allowing lower drainage fixture unit values for larger dwelling units. The result can be smaller diameter drainage pipes.

P2-21

IPC: 202 (New), TABLE 604.4

Proponents: Julius Ballanco, representing Self (JBEngineer@aol.com)

2021 International Plumbing Code

Add new definition as follows:

BODY SPRAY. A shower device for spraying water onto a bather from other than the overhead position.

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^b
Body spray (total per shower enclosure)	2.5 gpm at 80 psi
Lavatory, private	2.2 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 ^a	2.5 gpm at 80 psi
Sink faucet	2.2 gpm at 60 psi
Urinal	1.0 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 Statement: In December 2020, DOE issued a definition of body spray. The proposed definition is consistent with the DOE definition. The only statement not included is that a body spray is not a showerhead. However, that statement is not needed in the code. With the addition of body spray, the water conservation requirements are added to Table 604.4. The allowable amount of water for the body sprays in a shower enclosure is consistent with the flow rate for a showerhead. The body sprays will provide the same level of water conservation as a showerhead with this change.

Bibliography: <https://www.energy.gov/sites/prod/files/2020/12/f81/showerheads-final-rule.pdf>

Cost Impact: The code change proposal will not increase or decrease the cost of construction. A body spray is an optional plumbing fixture that may be installed. As an optional fixture there is no added or reduced cost of construction.

P4-21

IPC: 202 (New)

Proponents: Richard Grace, representing Virginia Plumbing and Mechanical Inspectors Association (VPMIA) and Virginia Building and Code Officials Association (VBCOA) (richard.grace@fairfaxcounty.gov)

2021 International Plumbing Code

Add new definition as follows:

SERVICE SINK. A general purpose sink exclusively intended to be used for facilitating the cleaning of a building or tenant space.

Reason Statement: The only specific physical characteristic currently defining a service sink is that it shall have a minimum 1-1/2 inch trap per Table 709.1. This requirement is the same as a "kitchen sink" and "sink" in Table 709.1. As a result the code does not appear to prohibit the use of a kitchen sink to be designated as the minimum fixture service sink. To alleviate the possibility of sinks, which may be used for dishwashing, food preparation or handwashing, from being appropriated for building cleaning and associated caustic products, the definition indicates the service sink as a specific fixture "exclusively" intended for building cleaning.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This code change should not increase the cost of construction unless a project had intended to use a kitchen sink or other hand sink as the intended service sink.

P4-21

P13-21

IPC: 311.1, ISO (New), IAPMO Chapter 15 (New)

Proponents: Edward R. Osann, Natural Resources Defense Council, representing Natural Resources Defense Council (eosann@nrdc.org); CJ Lagan, American Standard / LIXIL, representing LIXIL (cj.lagan@lixil.com); albert rubin, representing self (rubin@ncsu.edu)

2021 International Plumbing Code

Revise as follows:

311.1 General. Toilet facilities shall be provided for construction workers and such facilities shall be maintained in a sanitary condition. Construction worker toilet facilities of the nonsewer type shall conform to PSAL Z4.3 or to IAPMO/ISO 30500.

Add new text as follows:

ISO

New Promulgator

Add new standard(s) as follows:

IAPMO

IAPMO Group
4755 E. Philadelphia Street
Ontario CA 91761 USA

ANSI/CAN/IAPMO/ISO 30500-2019: Non-sewered sanitation systems - Prefabricated integrated treatment units - General Safety and performance requirements for design and testing

Staff Analysis: A review of the standard(s) proposed for inclusion in the code, ANSI/CAN/IAPMO/ISO 30500-2019 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 March 20, 2021.

Reason Statement: Currently, this section of the code requires toilet facilities to be provided for construction workers, and that if such toilets are of the non-sewered type, they must conform to standard PSAL Z4.3. This proposal allows (but does not require) an additional type of non-sewered toilet to be provided for construction workers -- a sanitation system meeting the requirements of ANSI/CAN/IAPMO/ISO 30500.

To facilitate the commercialization of hi-tech toilets providing complete onsite treatment of human waste without connection to a sanitary drainage system or septic tank, an ISO standard was adopted in 2018 to establish the key performance attributes and test procedures. Standard 30500, *Non-sewered sanitation systems - Prefabricated integrated treatment units - General safety and performance requirements for design and testing*, sets performance requirements for solid and liquid outputs, odor, noise, air emissions, materials, safety, marking, and ergonomics, together with relevant test procedures for measuring the attainment of these requirements. This ISO standard that was adopted in identical form as a US and Canadian national standard in 2019.

Criteria for the functioning of the unit for the capture and treatment of sanitary waste are established by the ISO standard and do not need to be repeated in plumbing code language. It should be noted that the ISO standard was developed by an international group of scientists, engineers, and regulators to assure the highest levels of treatment would apply to all outputs (air, water, and solids) from the device. The microbiological reduction requirements for solid and liquid waste are based on the quantitative microbial risk assessment (QMRA) method recognized by the World Health Organization for this purpose.

With "Reinvented Toilets" meeting the 30500 standard now on the cusp of commercialization, the arrival of such toilets at job sites across the country can reasonably be expected by the time this code update is published and adopted by states and localities, e.g., 2025. Such units may be offered as portable units. Operators of portable toilets should have the option of providing essential sanitation for construction workers with a toilet meeting the 30500 standard.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

This code change proposal adds an additional choice of equipment to satisfy the need for temporary toilet facilities for construction workers. But their use an option, not a requirement. Thus the proposal has no impact on the cost of construction.

P13-21

P16-21

IPC: TABLE 403.1

Proponents: Lee Kranz, representing Washington Association of Building Officials Technical Code Development Committee (lkranz@bellevuewa.gov); Micah Chappell, representing Washington Association of Building Officials (micah.chappell@seattle.gov)

2021 International Plumbing Code

Revise as follows:

**TABLE 403.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES^a (See Sections 403.1.1 and 403.2)**

Portions of table not shown remain unchanged.

NO.	CLASSIFICATION	DESCRIPTION	WATER CLOSETS (URINALS: SEE SECTION 424.2)		LAVATORIES		BATHTUBS/SHOWERS	DRINKING FOUNTAIN (SEE SECTION 410)	OTHER
			MALE	FEMALE	MALE	FEMALE			
2	Business	Buildings for the transaction of business, professional services, other services involving merchandise, office buildings, banks, ambulatory care, light industrial and similar uses	1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50		1 per 40 for the first 80 and 1 per 80 for the remainder exceeding 80		—	1 per 100	1 service sink ^e
		<u>Training and skill development not in a school or academic program</u>	<u>1 per 50</u>		<u>1 per 50</u>		—	<u>1 per 100</u>	<u>1 service sink</u>

- 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 classifications with an occupant load of 15 or fewer, service sinks shall not be required.
- f. The required number and type of plumbing fixtures for outdoor public swimming pools shall be in accordance with Section 609 of the International Swimming Pool and Spa Code.

Reason Statement: Training and skill development uses such as tutoring centers, martial arts studios and gymnastics facilities are often mistaken as educational uses even though they are listed in Section 304 as a business occupancy. Adding training and skill development as a business use in Table 2902.1 will clarify the intended application of these facilities and bring the table into alignment with Section 304. The factors to determine the minimum number of fixtures is proposed to be consistent with a business use due to the typically low occupant loads seen for these types of facilities. If approved, this code change will create better consistency in the application of the code.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This change will not impact the cost of construction. The purpose is to create consistency in application of the code for training and skill development uses.

P18-21

IPC: TABLE 403.1

Proponents: Valarie Evans, representing SNICC, SNBO (evansv@cityofnorthlasvegas.com)

2021 International Plumbing Code

Revise as follows:

TABLE 403.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES^a (See Sections 403.1.1 and 403.2)

NO.	CLASSIFICATION	DESCRIPTION	WATER CLOSETS (URINALS: SEE SECTION 424.2)		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAIN (SEE SECTION 410)	OTHER
			MALE	FEMALE	MALE	FEMALE			
1	Assembly	Theaters and other buildings for the performing arts and motion pictures ^d	1 per 125	1 per 65	1 per 200		—	1 per 500	1 service sink
		Nightclubs, bars, taverns, dance halls and buildings for similar purposes ^d	1 per 40	1 per 40	1 per 75		—	1 per 500	1 service sink
		Restaurants, banquet halls and food courts ^d	1 per 75	1 per 75	1 per 200		—	1 per 500	1 service sink
		Casino gaming areas	1 per 100 for the first 400 and 1 per 250 for the remainder exceeding 400	1 per 50 for the first 400 and 1 per 150 for the remainder exceeding 400	1 per 250 for the first 750 and 1 per 500 for the remainder exceeding 750		—	1 per 1,000	1 service sink
		Auditoriums without permanent seating, art galleries, exhibition halls, museums, lecture halls, libraries, arcades and gymnasiums ^d	1 per 125	1 per 65	1 per 200		—	1 per 500	1 service sink
		Passenger terminals and transportation facilities ^d	1 per 500	1 per 500	1 per 750		—	1 per 1,000	1 service sink
		Places of worship and other religious services ^d	1 per 150	1 per 75	1 per 200		—	1 per 1,000	1 service sink
		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
		Stadiums, amusement parks, bleachers and grandstands for outdoor sporting events and activities ^f	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
2	Business	Buildings for the transaction of business, professional services, other services involving merchandise, office buildings, banks, ambulatory care, light industrial and similar uses	1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50		1 per 40 for the first 80 and 1 per 80 for the remainder exceeding 80		—	1 per 100	1 service sink ^e
3	Educational	Educational facilities	1 per 50		1 per 50		—	1 per 100	1 service sink
4	Factory and industrial	Structures in which occupants are engaged in work fabricating, assembly or processing of products or materials	1 per 100		1 per 100		—	1 per 400	1 service sink

5	Institutional	Custodial care facilities	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink
		Medical care recipients in hospitals and nursing homes	1 per room ^c	1 per room ^c	1 per 15	1 per 100	1 service sink per floor
		Employees in hospitals and nursing homes ^b	1 per 25	1 per 35	—	1 per 100	—
		Visitors in hospitals and nursing homes	1 per 75	1 per 100	—	1 per 500	—
		Prisons ^b	1 per cell	1 per cell	1 per 15	1 per 100	1 service sink
		Reformatories, detention centers, and correctional centers ^b	1 per 15	1 per 15	1 per 15	1 per 100	1 service sink
		Employees in reformatories, detention centers and correctional centers ^b	1 per 25	1 per 35	—	1 per 100	—
		Adult day care and child day care	1 per 15	1 per 15	1	1 per 100	1 service sink
		<u>Child day care</u>	<u>1 per 15</u>	<u>1 per 15</u>	<u>—</u>	<u>1 per 100</u>	<u>1 service sink</u>
6	Mercantile	Retail stores, service stations, shops, salesrooms, markets and shopping centers	1 per 500	1 per 750	—	1 per 1,000	1 service sink ^e
7	Residential	Hotels, motels, boarding houses (transient)	1 per sleeping unit	1 per sleeping unit	1 per sleeping unit	—	1 service sink
		Dormitories, fraternities, sororities and boarding houses (not transient)	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink
		Apartment house	1 per dwelling unit	1 per dwelling unit	1 per dwelling unit	—	1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per 20 dwelling units
		Congregate living facilities with 16 or fewer persons	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink
		One- and two-family dwellings and lodging houses with five or fewer guestrooms	1 per dwelling unit	1 per dwelling unit	1 per dwelling unit	—	1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per dwelling unit
		Congregate living facilities with 16 or fewer persons	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink
8	Storage	Structures for the storage of goods, warehouses, storehouse and freight depots. Low and	1 per 100	1 per 100	—	1 per 1,000	1 service sink

- 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 classifications with an occupant load of 15 or fewer, service sinks shall not be required.
- f. The required number and type of plumbing fixtures for outdoor public swimming pools shall be in accordance with Section 609 of the International Swimming Pool and Spa Code.

Reason Statement: The majority of day cares are classified as Group E occupancies. When a day care is classified as a Group I-4 occupancy, Table 2902.1 requires a bathtub/shower to be provided that is not required within Group E day care occupancies. Table 2902.1 requires the same minimum number of required plumbing fixtures for adult and child daycares. This proposal will separate adult daycares from child day cares and remove the requirement for a bathtub/shower from child day cares. All other plumbing fixture requirements for both categories will remain the same (i.e. water closets, lavatories, service sinks, etc.).

Removing the bathtub/shower fixture from these occupancies does not reduce the overall level of sanitary services and/or conditions within the facility. It is believed that the reason a bathtub/shower requirement has traditionally applied to this occupancy group was to accommodate the need to change the diapers of children less than 2.5 years old (i.e. children that are not "potty-trained") which is redundant given these facilities likely have baby changing tables provided.

Additionally, removing the bathtub/shower fixture requirement from this occupancy group increases a child's level of safety by reducing the risk of potential exposure to sexual misconduct. Group I-4 daycares accept children of all ages and it is not unreasonable to question why a facility is required to provide bathing facilities wherein children are under the custodial care by persons other than parents or guardians.

Cost Impact: The code change proposal will decrease the cost of construction. The cost of construction will be reduced when the bathtub/shower is not installed.

P19-21

IPC: TABLE 403.1

Proponents: Eric Bressman, representing Ankrom Moisan Architects (ericb@ankrommoisan.com)

2021 International Plumbing Code

Revise as follows:

TABLE 403.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES^a (See Sections 403.1.1 and 403.2)

Portions of table not shown remain unchanged.

NO.	CLASSIFICATION	DESCRIPTION	WATER CLOSETS (URINALS: SEE SECTION 424.2)		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAIN (SEE SECTION 410)	OTHER
			MALE	FEMALE	MALE	FEMALE			
7	Residential	Hotels, motels, boarding houses (transient)	1 per sleeping unit		1 per sleeping unit		1 per sleeping unit	—	1 service sink
		Dormitories, fraternities, sororities and boarding houses (not transient)	1 per 10		1 per 10		1 per 8	1 per 100	1 service sink
		Apartment houses ^d	1 per dwelling unit		1 per dwelling unit		1 per dwelling unit	—	1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per 20 dwelling units
		Congregate living facilities with 16 or fewer persons	1 per 10		1 per 10		1 per 8	1 per 100	1 service sink
		One- and two-family dwellings and lodging houses with five or fewer guestrooms	1 per dwelling unit		1 per dwelling unit		1 per dwelling unit	—	1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per dwelling unit
		Congregate living facilities with 16 or fewer persons	1 per 10		1 per 10		1 per 8	1 per 100	1 service sink

- 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 classifications with an occupant load of 15 or fewer, service sinks shall not be required.
- f. The required number and type of plumbing fixtures for outdoor public swimming pools shall be in accordance with Section 609 of the International Swimming Pool and Spa Code.
- g. Accessory storage and service spaces shall not be required to have additional fixtures except where the occupant load of those spaces exceeds 50. Occupant loads greater than 50 shall be provided with one single user toilet facility.

Reason Statement: A typical apartment building includes a variety of spaces such as bike storage rooms, electrical closets, and other spaces that are not normally occupied. The current Code exempts the parking areas, but not other spaces. In many jurisdictions, requirements for bike storage alone can result in spaces that may have up to 20 or more occupants. These spaces are often scattered throughout the building and can trigger requirements for multiple separate toilet fixtures due to travel distance limitations per Section 2902.3.3, even though the occupants all live in the building and are provided with fixtures in their units.

This proposal would not apply to normally occupied spaces such as leasing offices, amenity or recreation facilities in the building. Toilets would still be required based on the number of occupants for those spaces.

Cost Impact: The code change proposal will decrease the cost of construction
 By not requiring additional plumbing fixtures for normally unoccupied spaces, this proposal would reduce construction costs

P20-21

IPC: TABLE 403.1

Proponents: Eric Bressman, representing Ankrom Moisan Architects (ericb@ankrommoisan.com)

2021 International Plumbing Code

Revise as follows:

**TABLE 403.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES^a (See Sections 403.1.1 and 403.2)**

Portions of table not shown remain unchanged.

NO.	CLASSIFICATION	DESCRIPTION	WATER CLOSETS (URINALS: SEE SECTION 424.2)		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAIN (SEE SECTION 410)	OTHER
			MALE	FEMALE	MALE	FEMALE			
7	Residential	Hotels, motels, boarding houses (transient)	1 per sleeping unit		1 per sleeping unit		1 per sleeping unit	—	1 service sink
		Dormitories, fraternities, sororities and boarding houses (not transient)	1 per 10		1 per 10		1 per 8	1 per 100	1 service sink
		Apartment house	1 per dwelling unit		1 per dwelling unit		1 per dwelling unit	—	1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per 20 dwelling units
		<u>Occupants for normally occupied spaces other than dwelling units</u>	<u>1 per 150</u>	<u>1 per 75</u>	<u>1 per 200</u>		—	<u>1 per floor</u>	
		Congregate living facilities with 16 or fewer persons	1 per 10		1 per 10		1 per 8	1 per 100	1 service sink
		One- and two-family dwellings and lodging houses with five or fewer guestrooms	1 per dwelling unit		1 per dwelling unit		1 per dwelling unit	—	1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per dwelling unit
		Congregate living facilities with 16 or fewer persons	1 per 10		1 per 10		1 per 8	1 per 100	1 service sink

- 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 classifications with an occupant load of 15 or fewer, service sinks shall not be required.
- f. The required number and type of plumbing fixtures for outdoor public swimming pools shall be in accordance with Section 609 of the International Swimming Pool and Spa Code.

Reason Statement: The current table does not take into account that many of the occupants of spaces other than the dwelling units, have access to plumbing fixtures in their units. Recognizing that some occupants won't live in the building, such as leasing agents and maintenance staff, a limited number of fixtures will be required. However, when determining the number of occupants using amenity spaces such as exercise rooms, social gathering spaces or other assembly areas the code should take into account that at least some portion of the occupants are likely to have access to their own bathrooms within the distance limits of Section 403.3.3

The factors proposed will result in a lower number of fixtures than Business or some Assembly uses, but is not so extreme that it would create delays for occupants, or over-use of the fixtures.

Cost Impact: The code change proposal will decrease the cost of construction

The lower plumbing fixture requirements will reduce construction costs for the fixtures and associated piping as well as the enclosing elements of the rooms.

P21-21

IPC: TABLE 403.1

Proponents: Joseph Summers, Chair, representing Chair of PMGCAC (PMGCAC@iccsafe.org)

2021 International Plumbing Code

Revise as follows:

TABLE 403.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES^a (See Sections 403.1.1 and 403.2)

NO.	CLASSIFICATION	DESCRIPTION	WATER CLOSETS (URINALS: SEE SECTION 424.2)		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAIN (SEE SECTION 410)	OTHER
			MALE	FEMALE	MALE	FEMALE			
1	Assembly	Theaters and other buildings for the performing arts and motion pictures ^d	1 per 125	1 per 65	1 per 200		—	1 per 500	1 service sink
		Nightclubs, bars, taverns, dance halls and buildings for similar purposes ^d	1 per 40	1 per 40	1 per 75		—	1 per 500	1 service sink
		Restaurants, banquet halls and food courts ^d	1 per 75	1 per 75	1 per 200		—	1 per 500	1 service sink
		Casino gaming areas	1 per 100 for the first 400 and 1 per 250 for the remainder exceeding 400	1 per 50 for the first 400 and 1 per 150 for the remainder exceeding 400	1 per 250 for the first 750 and 1 per 500 for the remainder exceeding 750		—	1 per 1,000	1 service sink
		Auditoriums without permanent seating, art galleries, exhibition halls, museums, lecture halls, libraries, arcades and gymnasiums ^d	1 per 125	1 per 65	1 per 200		—	1 per 500	1 service sink
		Passenger terminals and transportation facilities ^d	1 per 500	1 per 500	1 per 750		—	1 per 1,000	1 service sink
		Places of worship and other religious services ^d	1 per 150	1 per 75	1 per 200		—	1 per 1,000	1 service sink
		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
		Stadiums, amusement parks, bleachers and grandstands for outdoor sporting events and activities ^f	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
2	Business	Buildings for the transaction of business, <u>non-medical</u> professional services, other services involving merchandise, office buildings, banks, ambulatory care , light industrial and similar uses	1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50		1 per 40 for the first 80 and 1 per 80 for the remainder exceeding 80		—	1 per 100	1 service sink ^e
		<u>Ambulatory care facilities and Outpatient clinics</u>	<u>1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50</u>	<u>1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50</u>	<u>1 per 50</u>			<u>1 per 100</u>	<u>1 service sink per floor</u>

3	Educational	Educational facilities	1 per 50	1 per 50	—	1 per 100	1 service sink		
4	Factory and industrial	Structures in which occupants are engaged in work fabricating, assembly or processing of products or materials	1 per 100	1 per 100	—	1 per 400	1 service sink		
5	Institutional	<u>Alcohol and drug centers</u>	1 per 10 care recipients	1 per 10 care recipients	—	1 per 8 care recipients			
		<u>Congregate care facilities</u>							
		<u>Group homes</u>							
		<u>Halfway houses</u>							
		<u>Social rehabilitation facilities</u>							
		<u>Foster care facilities</u>							
		<u>Footnote b</u>							
		<u>Assisted living and residential board and care facilities with care recipients who receive Custodial care facilities</u>	<u>Sleeping units for care recipients</u> Footnote c	1 per 2 to 4 sleeping units	1 per 2 to 4 sleeping units	1 per 8 sleeping units	1 per 100	1 service sink	
			<u>Dwelling units for care recipients</u>	1 per dwelling unit	1 per dwelling unit	1 per dwelling unit		1 kitchen sink per dwelling unit	
			<u>Employee facilities</u>	1 per 60 care recipient units	1 per 60 care recipient units		1 per 100	1 service sink per floor	
			<u>Visitor facilities</u>	1 per 75 care recipient units	1 per 75 care recipient units				
			<u>Nursing homes</u>	<u>Sleeping units for care recipients</u> Footnote c	1 per 2 care recipient sleeping units	1 per 2 care recipient sleeping units	1 per 8 care recipient sleeping units		
				<u>Employee facilities</u>	1 per 60 care recipient units	1 per 60 care recipient sleeping units		1 per 100	1 service sink per floor
		<u>Visitor facilities</u>	1 per 75 care recipient units	1 per 75 care recipient sleeping rooms					
		<u>Medical care recipients in hospitals and nursing homes</u> Footnote b	<u>Sleeping units for care recipients</u>	1 per room care recipient sleeping unit	1 per room care recipient sleeping unit	1 per 15 to 100 care recipient sleeping unit	1 per 100	1 service sink per floor	
			<u>Care recipient treatment areas</u>	1 per 25 care recipient treatment rooms	1 per 50 care recipient treatment rooms		1 per 100		
			<u>Employee facilities</u>	1 per 25 care recipient sleeping units or treatment room	1 per 35 care recipient sleeping units or treatment room	1 per 50 care recipient sleeping units or treatment room	1 per 100	1 service sink per floor	

	Visitor facilities	1 per 75 care recipient sleeping room or treatment room	1 per 100 care recipient sleeping room or treatment room	1 per 50 care recipient sleeping room or treatment room		1 per 500	=
	Employees in hospitals and nursing homes ^b	1 per 25	1 per 35	—	1 per 100	—	
	Visitors in hospitals and nursing homes	1 per 75	1 per 100	—	1 per 500	—	
	Prisons ^b	1 per cell	1 per cell	1 per 15	1 per 100	1 service sink	
	Reformatories, detention centers, and correctional centers ^b	Cells	1 per 15	1 per 15	1 per 15	1 per 100	1 service sink
		Employees in reformatories, detention centers and correctional centers ^b	1 per 25	1 per 35	—	1 per 100	—
	Adult day care and child day care	1 per 15	1 per 15	1	1 per 100	1 service sink	
6	Mercantile	Retail stores, service stations, shops, salesrooms, markets and shopping centers	1 per 500	1 per 750	—	1 per 1,000	1 service sink ^e
7	Residential	Hotels, motels, boarding houses (transient)	1 per sleeping unit	1 per sleeping unit	1 per sleeping unit	—	1 service sink
		Dormitories, fraternities, sororities and boarding houses (not transient)	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink
		Apartment house	1 per dwelling unit	1 per dwelling unit	1 per dwelling unit	—	1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per 20 dwelling units
		Congregate living facilities with 16 or fewer persons care recipients receiving custodial care	1 per 10 care recipients	1 per 10 care recipients	1 per 8 care recipients	1 per 100	1 service kitchen sink
		One- and two-family dwellings and lodging houses with five or fewer guestrooms	1 per dwelling unit	1 per dwelling unit	1 per dwelling unit	—	1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per dwelling unit
		Congregate living facilities with 16 or fewer persons	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink

8	Storage	Structures for the storage of goods, warehouses, storehouse and freight depots. Low and Moderate Hazard.	1 per 100	1 per 100	—	1 per 1,000	1 service sink
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- 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-care recipient sleeping units shall be permitted provided that each patient-care recipient 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 classifications with an occupant load of 15 or fewer, service sinks shall not be required.
- f. The required number and type of plumbing fixtures for outdoor public swimming pools shall be in accordance with Section 609 of the International Swimming Pool and Spa Code.

Reason Statement: The calculations for occupant load in the IBC does not distinguish between employees, customers, patients, inmates, etc.

The above recommendation for reformatories, detention centers and correctional centers translates the recommended staffing/patient ratio to the number of beds.

Example: A detention center has an average ratio of one employee to eight inmates (1:8). Assume a 1000 bed facility would require a minimum of 125 employees (1000/8=125). The 2021 IPC required 1 water closets per 25 employees and using the 1:8 ratio would required 5 water closets. 1,000 bed facility with 5 water closets for employees = 1 water closet required for every 200 beds. Lavatory criteria is 1.4 times the requirements for water closets (35/25 = 1.4). 200 beds*1.4 = 280 employees per lavatory, rounded up to 1 lavatory per 300 employees.

The calculation for the number of visitors to patient beds for hospitals and nursing homes was developed as follows;

1,000 bed facility
 1 visitor per bed on average
 1,000 visitors at 1 wc per 75 visitors = 13 water closets required
 1,000 beds / 13 wac = 1 wc per 75 beds

This proposal is submitted by the ICC Plumbing/Mechanical/Gas Code Action Committee (PMG CAC). The PMG CAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2020, the PMG CAC has held several virtual meetings open to any interested party. Numerous interested parties attended the committee meetings and offered their input. Related documentation and reports are posted on the PMG CAC website at: <https://www.iccsafe.org/products-and-services/i-codes/code-development-process/pmg-code-action-committee-pmgcac/> Reference PMGCAC Working Document Item 22.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The design requirements for licensing these types of care facilities already require these minimum numbers of plumbing fixtures. This proposal simply brings the table in alignment with what is already being done by the care industry. Although the proposal adds more “requirements” to the code (leading one to believe that there is an increase in cost), the care industry has been providing these numbers of fixtures for some time. As no additional materials or labor result from stating what is already being done, there is no impact to the cost of construction.

P22-21

IPC: TABLE 403.1, 410.4

Proponents: Joseph Summers, Chair, representing Chair of PMGCAC (PMGCAC@iccsafe.org)

2021 International Plumbing Code

Revise as follows:

TABLE 403.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES^a (See Sections 403.1.1 and 403.2)

NO.	CLASSIFICATION	DESCRIPTION	WATER CLOSETS (URINALS: SEE SECTION 424.2)		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAIN (SEE SECTION 410)	OTHER
			MALE	FEMALE	MALE	FEMALE			
1	Assembly	Theaters and other buildings for the performing arts and motion pictures ^d	1 per 125	1 per 65	1 per 200		—	1 per 500	1 service sink
		Nightclubs, bars, taverns, dance halls and buildings for similar purposes ^d	1 per 40	1 per 40	1 per 75		—	1 per 500	1 service sink
		Restaurants, banquet halls and food courts ^d	1 per 75	1 per 75	1 per 200		—	1 per 500	1 service sink
		Casino gaming areas	1 per 100 for the first 400 and 1 per 250 for the remainder exceeding 400	1 per 50 for the first 400 and 1 per 150 for the remainder exceeding 400	1 per 250 for the first 750 and 1 per 500 for the remainder exceeding 750		—	1 per 1,000	1 service sink
		Auditoriums without permanent seating, art galleries, exhibition halls, museums, lecture halls, libraries, arcades and gymnasiums ^d	1 per 125	1 per 65	1 per 200		—	1 per 500	1 service sink
		Passenger terminals and transportation facilities ^d	1 per 500	1 per 500	1 per 750		—	1 per 1,000	1 service sink
		Places of worship and other religious services ^d	1 per 150	1 per 75	1 per 200		—	1 per 1,000	1 service sink
		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
		Stadiums, amusement parks, bleachers and grandstands for outdoor sporting events and activities ^f	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
2	Business	Buildings for the transaction of business, professional services, other services involving merchandise, office buildings, banks, ambulatory care, light industrial and similar uses	1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50		1 per 40 for the first 80 and 1 per 80 for the remainder exceeding 80		—	1 per 100	1 service sink ^e
3	Educational	Educational facilities	1 per 50		1 per 50		—	1 per 100	1 service sink
4	Factory and industrial	Structures in which occupants are engaged in work fabricating, assembly or processing of products or materials	1 per 100		1 per 100		—	1 per 400	1 service sink

5	Institutional	Custodial care facilities	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink
		Medical care recipients in hospitals and nursing homes	1 per room ^c	1 per room ^c	1 per 15	1 per 100	1 service sink per floor
		Employees in hospitals and nursing homes ^b	1 per 25	1 per 35	—	1 per 100	—
		Visitors in hospitals and nursing homes	1 per 75	1 per 100	—	1 per 500	—
		Prisons ^b	1 per cell	1 per cell	1 per 15	1 per 100	1 service sink
		Reformatories, detention centers, and correctional centers ^b	1 per 15	1 per 15	1 per 15	1 per 100	1 service sink
		Employees in reformatories, detention centers and correctional centers ^b	1 per 25	1 per 35	—	1 per 100	—
		Adult day care and child day care	1 per 15	1 per 15	1	1 per 100	1 service sink
6	Mercantile	Retail stores, service stations, shops, salesrooms, markets and shopping centers	1 per 500	1 per 750	—	1 per 1,000	1 service sink ^e
7	Residential	Hotels, motels, boarding houses (transient)	1 per sleeping unit	1 per sleeping unit	1 per sleeping unit	—	1 service sink
		Dormitories, fraternities, sororities and boarding houses (not transient)	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink
		Apartment house	1 per dwelling unit	1 per dwelling unit	1 per dwelling unit	—	1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per 20 dwelling units
		Congregate living facilities with 16 or fewer persons	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink
		One- and two-family dwellings and lodging houses with five or fewer guestrooms	1 per dwelling unit	1 per dwelling unit	1 per dwelling unit	—	1 kitchen sink per dwelling unit; 1 automatic clothes washer connection per dwelling unit
		Congregate living facilities with 16 or fewer persons	1 per 10	1 per 10	1 per 8	1 per 100	1 service sink
8	Storage	Structures for the storage of goods, warehouses, storehouse and freight depots. Low and Moderate Hazard.	1 per 100	1 per 100	—	1 per 1,000	1 service sink
				1 per 40 for the			

9.	Shelters	Shelters for day or overnight use	1 per 25 for the first 50 and 1 per 50 for the remainder exceeding 50	first 80 and 1 per 80 for the remainder exceeding 80	1 per 40	1 per 100	1 service sink
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- 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 classifications with an occupant load of 15 or fewer, service sinks shall not be required.
- f. The required number and type of plumbing fixtures for outdoor public swimming pools shall be in accordance with Section 609 of the International Swimming Pool and Spa Code.

410.4 Substitution. Where restaurants provide drinking water in a container free of charge, drinking fountains shall not be required in those restaurants. In other *occupancies except shelters*, where three or more drinking fountains are required, *water dispensers* shall be permitted to be substituted for not more than 50 percent of the required number of drinking fountains. In shelters, alternative sources of drinking water such as bottle-supplied water dispensing units shall be permitted to be substituted for 100 percent of the required number of drinking fountains.

Reason Statement: More and more municipalities are being tasked with providing shelter facilities for homeless persons. Some of these shelters are only temporary (180 days or less) because the need only exists in winter months. The existing code requirements are difficult to apply and provide less than adequate services for this population. The proposed requirements comes from experience in providing services in Fort Collins, CO.

This proposal is submitted by the ICC Plumbing/Mechanical/Gas Code Action Committee (PMG CAC). The PMG CAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2020, the PMG CAC has held several virtual meetings open to any interested party. Numerous interested parties attended the committee meetings and offered their input. Related documentation and reports are posted on the PMG CAC website at: <https://www.iccsafe.org/products-and-services/i-codes/code-development-process/pmg-code-action-committee-pmgcac/> Reference PMGCAC Working Document Item 27.

Cost Impact: The code change proposal will increase the cost of construction. Adding requirements to the code for shelter facilities (where no requirements existed before) will likely require more fixtures and the associated labor to provide/install than what a municipality might believe as needed for such facilities. In the majority of cases, shelter facilities are temporary and as such, the required plumbing fixtures are also temporary because the vacant buildings chosen for shelters such as a warehouses, large assembly halls, do not have enough permanent fixtures. Thus, the added costs would be for potable rental units as needed.

P23-21

IPC: TABLE 403.1

Proponents: Daniel Dain, Huckabee, representing Huckabee (daniel.dain@huckabee-inc.com)

2021 International Plumbing Code

Revise as follows:

TABLE 403.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES^a (See Sections 403.1.1 and 403.2)

Portions of table not shown remain unchanged.

NO.	CLASSIFICATION	DESCRIPTION	WATER CLOSETS (URINALS: SEE SECTION 424.2)		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAIN (SEE SECTION 410)	OTHER
			MALE	FEMALE	MALE	FEMALE			
3	Educational ^a	Educational facilities	1 per 50		1 per 50		—	1 per 100	1 service sink

- 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 classifications with an occupant load of 15 or fewer, service sinks shall not be required.
- f. The required number and type of plumbing fixtures for outdoor public swimming pools shall be in accordance with Section 609 of the International Swimming Pool and Spa Code.
- g. The number of occupants used for Educational occupancies to determine the minimum number of plumbing fixtures required shall be based upon the actual student capacity of the facility, not the occupants as determined by this code. The minimum number of plumbing fixtures required for any other occupancies within the same Educational facility on the same site shall be determined separately. Any plumbing fixtures that are accessible to another occupancy by location can contribute toward the total number of required plumbing fixtures for such occupancy, with no simultaneous use among other occupancies considered. All occupancies shall have access by location per Section 403.3 to the minimum number of plumbing fixtures required.

Reason Statement: To potentially reduce the overall number of plumbing fixtures required by allowing for more efficient designs based on the actual use and arrangement of those uses, and their potential for shared use. This will provide design efficiencies in reducing square footage, initial and life cycle cost, and maintenance.

Cost Impact: The code change proposal will decrease the cost of construction by reducing square footage, material, equipment, and labor.

P24-21 Part I

IPC: 403.1.1, 403.2

Proponents: Emma Gonzalez-Laders, NYS DOS Division of Building Standards and Codes, representing NYS DOS Division of Building Standards and Codes (emma.gonzalez-laders@dos.ny.gov); China Clarke, New York State Dept of State, representing New York State Dept of State (china.clarke@dos.ny.gov)

THIS IS A 2 PART CODE CHANGE. PART I AND PART II WILL BE HEARD BY PLUMBING CODE COMMITTEE.

2021 International Plumbing Code

Revise as follows:

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.

Exceptions:

1. The total occupant load shall not be required to be divided in half where *approved* statistical data indicate a distribution of the sexes of other than 50 percent of each sex.
2. Where multiple-user facilities are designed to serve all genders, the minimum fixture count shall be calculated 100 percent, based on total occupant load. In such multiple-user facilities, each fixture type shall be in accordance with ICC A117.1 ~~and each urinal that is provided shall be located in a stall.~~
3. Distribution of the sexes is not required where single-user water closets and bathing room fixtures are provided in accordance with Section 403.1.2.

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 business *occupancies* in which the maximum occupant load is 25 or fewer.
5. Separate facilities shall not be required to be designated by sex where single-user toilet rooms are provided in accordance with Section 403.1.2.
6. Separate facilities shall not be required where rooms having both water closets and lavatory fixtures are designed for use by ~~both sexes~~ all persons regardless of sex and privacy is provided for water closets and urinals is provided in accordance with Section 405.3.4. ~~Urinals shall be located in an area visually separated from the remainder of the facility or each urinal that is provided shall be located in a stall.~~

P24-21 Part I

P24-21 Part II

IBC: [P] 1210.3.2, [P] 2903.1.5, [P] 2903.1.4

Proponents: Emma Gonzalez-Laders, NYS DOS Division of Building Standards and Codes, representing NYS DOS Division of Building Standards and Codes (emma.gonzalez-laders@dos.ny.gov); China Clarke, New York State Dept of State, representing New York State Dept of State (china.clarke@dos.ny.gov)

2021 International Building Code

Revise as follows:

[P] 1210.3.2 Urinal partitions. Each urinal utilized by the public or employees shall occupy a separate area with walls or partitions to provide privacy. The horizontal dimension between walls or partitions at each urinal shall be no less than 30 inches (762 mm). The walls or partitions shall begin at a height not ~~more~~ 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 (152 mm) beyond the outermost front lip of the urinal measured from the finished backwall surface, whichever is greater. Urinals located in facilities designed for the use of all persons regardless of sex shall be located in an area visually separated from the remainder of the facility or each urinal that is provided shall be located in a stall.

Exceptions:

1. Urinal partitions shall not be required in a single-occupant or family or 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.

~~**[P] 2903.1.5 Urinal partitions.** Each urinal utilized by the public or employees shall occupy a separate area with walls or partitions to provide privacy. The horizontal dimension between walls or partitions at each urinal shall be not less than 30 inches (762 mm). 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 (152 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.~~

~~**[P] 2903.1.4 Water-closet compartment.** Each water-closet utilized by the public or employees shall occupy a separate compartment with walls or partitions and a door enclosing the fixtures to ensure privacy.~~

Exceptions:

- ~~1. Water-closet compartments shall not be required in a single-occupant toilet room with a lockable door.~~
- ~~2. Toilet rooms located in child day care facilities and containing two or more water-closets shall be permitted to have one water-closet without an enclosing compartment.~~
- ~~3. This provision is not applicable to toilet areas located within Group I-3 housing areas.~~

Reason Statement: Sections 1210 and 2902 of the 2021 IBC are complementary to each other, thus, pointers are provided in Sections 2902 and 1210.1. However, their focus and purpose are different.

The purpose of Chapter 29 of the IBC, as stated in the commentary, is “to provide a building with the necessary **number** of plumbing fixtures of a specific type and quality.” The commentary explains in great detail the methodology and difficulties in establishing the appropriate number of fixtures for each type of facility. Those difficulties continue beyond the code books as code users attempt to establish the appropriate number of fixtures for specific buildings and facilities. Much clarification is still needed in this section to enable users to make the appropriate determination.

On the other hand, and also according to the commentary, “the purpose of Chapter 12 is to establish minimum conditions for the **interior environment** of a building.” Conditions that include not only the physical but also the psychological needs of the occupants, including space perception and privacy.

In keeping with that distinction, this proposal seeks to maintain issues pertaining to the interior environment of toilet facilities in Chapter 12 and to streamline Section 2902 to include only those requirements that address the calculation and the distribution of the number and type of plumbing fixtures required.

Also, in response to public comment received from design professionals, this proposal seeks to resolve the practical challenges and misuse that results from placing urinals in stalls and to remove unnecessarily repetitive language. Specifically, and in summary, this proposal seeks to:

1. Relocate the privacy requirements for urinals from exception 2 in 2902.1.1 to Section 1210.3.2 of the 2021 IBC.
2. Relocate the performance language to accomplish privacy for urinals from exception 6 in Section 2902.2 to Section 1210.3.2 of the 2021 IBC.
3. Modify Section 1210.3.2 by incorporating the differences in language that were made to Section 2903.1.5 of the 2021 IBC in the last code cycle.
4. Since Section 2903.1.4 pertaining to privacy for water closets is a duplicate of Section 1210.3.1 and Section 2901.1 already includes a pointer to Section 1210, to remove the duplicate section in Chapter 29 of the 2021 IBC.
5. Since Section 2903.1.5 pertaining to privacy for urinals is a duplicate of Section 1210.3.2 and Section 2901.1 already includes a pointer to Section 1210, to remove the duplicate section in Chapter 29 of the 2021 IBC.

Sections 2903.1.4 and 2903.1.5 were modified by public comment during the last code cycle as Code Change No: G133-18. According to the proponent's justification, the proposal intended to bring *"language from the IPC into the IBC where designers that utilize the IBC can find this information more readily. [since] Most architectural firms do not have an IPC in their office."* However, those provisions already existed in the IBC and adding them to Chapter 29 was unnecessary.

This proposal neither introduces new nor eliminates existing language or code requirements. It seeks instead to consolidate all privacy provisions into one place (Chapter 12) and to ensure that the provisions included in Chapter 29 are consistent with the stated Scope of the Chapter.

Bibliography: Code Change Proposal G133-18 as Modified by Public Comment. Eirene Knott, representing Metropolitan Kansas City Chapter of the ICC; David Collins.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

This proposal neither adds nor subtracts code requirements and simply re-organizes existing provisions and deletes duplicate provisions within the IBC.

P25-21

IPC: 403.1.1, 403.1.2

Proponents: Emma Gonzalez-Laders, NYS DOS Division of Building Standards and Codes, representing NYS DOS Division of Building Standards and Codes (emma.gonzalez-laders@dos.ny.gov); China Clarke, New York State Dept of State, representing New York State Dept of State (china.clarke@dos.ny.gov); David Collins, The American Institute of Architects, representing The American Institute of Architects (dcollins@preview-group.com)

2021 International Plumbing Code

Revise as follows:

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.

Exceptions:

1. The total occupant load shall not be required to be divided in half where *approved* statistical data indicate a distribution of the sexes of other than 50 percent of each sex.
2. Where multiple-user facilities are designed to serve all genders, the minimum fixture count shall be calculated 100 percent, based on total occupant load. In such multiple-user facilities, each fixture type shall be in accordance with ICC A117.1 and each urinal that is provided shall be located in a stall.
3. ~~Distribution of the sexes is not required where single-user water closets and bathing room fixtures are provided in accordance with Section 403.1.2.~~

403.1.2 Single-user toilet and bathing room fixtures. The plumbing fixtures located in single-user toilet and bathing rooms, including family or assisted-use toilet and bathing rooms ~~that are required by Section 1109.2.1 of the International Building Code~~, shall contribute toward the total number of required plumbing fixtures for a building or tenant space, ~~and shall be deducted proportionately from the required gender ratios of Table 403.1.~~ Single-user toilet and bathing rooms, and family or assisted-use toilet rooms and bathing rooms shall be identified as being available for use by all persons regardless of their sex.

The total number of fixtures shall be permitted to be based on the required number of separate facilities or based on the aggregate of any combination of single-user or ~~separate multi-user~~ facilities.

Reason Statement: Exception 3 to Section 2902.1.1 of the 2021 IBC was added during the last code cycle and it indicates that *"distribution of the sexes is not required where single-user water closets and bathing room fixtures are provided in accordance with Section 2902.1.2."* Section 403.1.1 of the 2021 IPC is nearly identical. The section referenced (2902.1.1) pertains to single-user facilities and how their number contributes to the total required fixture counts. Neither Section, however, provides any guidance on how the required gender ratios are to be maintained in accordance with Table 2902.1. This ambiguity may lead some code users to assume that the lower ratios can be used, while other code users would assume that the more restrictive requirement should apply (in accordance with Section 102.1). In either scenario, the resulting number of fixtures would be either too low and not serve the needs of facility users or too high and not serve the needs of developers by unreasonably increasing cost. Also, this exception may suggest that proportionality in the distribution of toilet fixtures by gender is not required. This is contrary to the intent of the proponents, based on conversations with one of them, and also contrary to the intent of the different Table values found in the Plumbing Code and the Building Code as stated in the commentary, which is to provide *"an 'equality of fixture availability' in those particular occupancies"* with *"historically [...] long lines of females waiting to use toilet facilities while male facilities had no lines."*

A better way to address the issue of proportionate distribution and how single-user facilities are to be deducted from the total required number of fixtures is to explicitly say so in Section 2902.1.2, and we, therefore, propose that the language *"and shall be deducted proportionately from the required gender ratios of Table 2902.1"* be added to that section.

Additionally, the reference in Section 2902.1.2 of the IBC and Section 403.1.2 of the IPC to *"family or assisted-use toilet and bathing rooms that are required by Section 1110.2.1"* is unnecessary and may incorrectly suggest that ONLY those facilities required by Section 1110.2.1 of the IBC can be counted and *"contribute toward the total number of required plumbing fixtures,"* where we believe that the intent is to have ALL single-user fixtures contribute to those totals, regardless of being required or provided voluntarily, therefore, we propose that the reference to Section 1110.2.1 be deleted.

And, to say "single-user and separated facilities" may incorrectly suggest that single-user facilities could be separated by gender, contrary to the 2nd sentence in the Section. We believe the intent to be for ALL facilities, single- or multi-user, separated or not, to contribute to the total fixture count. Therefore, we propose that the word *"separated"* in the last sentence of the code provision be replaced with the word *"multi-user."*

Cost Impact: The code change proposal will not increase or decrease the cost of construction

This proposal does not eliminate any existing code provisions, nor does it create new provisions. Instead, it provides consistency across related

code sections.

P26-21

IPC: 403.1.1

Proponents: Eirene Knott, BRR Architecture, representing Metropolitan Kansas City Chapter of the ICC (eirene.knott@brrarch.com)

2021 International Plumbing Code

Revise as follows:

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.

Exceptions:

1. The total occupant load shall not be required to be divided in half where *approved* statistical data indicate a distribution of the sexes of other than 50 percent of each sex.
2. Where multiple-user facilities are designed to serve all genders, the minimum fixture count shall be calculated 100 percent, based on total occupant load, applying the more restrictive fixture requirements to at least 50 percent of the total occupant load. In such multiple-user facilities, each fixture type shall be in accordance with ICC A117.1 and each urinal that is provided shall be located in a stall.
3. Distribution of the sexes is not required where single-user water closets and bathing room fixtures are provided in accordance with Section 403.1.2.

Reason Statement: Based on the language as written, the water closets counts for a sporting arena could be calculated at one per 75 for the first 1,500 and then 1 per 120. What does this do for potty parity that has been a code debate for a number of years? I believe one way to solve for this is to apply the fixture requirements for the female fixture counts for 50 percent of the occupant load.

Cost Impact: The code change proposal will increase the cost of construction

Based on the language in the 2021 IPC, this code change will increase the cost of construction as it will require more fixtures. The increase in fixtures will provide for the potty parity to be more in line with previous fixture count requirements.

P26-21

P27-21

IPC: 403.1.2, 403.2.1

Proponents: Eirene Knott, BRR Architecture, representing Metropolitan Kansas City Chapter of the ICC (eirene.knott@brrarch.com)

2021 International Plumbing Code

Revise as follows:

403.1.2 Single-user toilet and bathing room fixtures. The plumbing fixtures located in single-user toilet and bathing rooms, including family or assisted-use toilet and bathing rooms that are required by Section 1109.2.1 of the International Building Code, shall contribute toward the total number of required plumbing fixtures for a building or tenant space. Single-user toilet and bathing rooms, and family or assisted-use toilet rooms and bathing rooms shall be identified as being available for use by all persons regardless of their sex. The total number of fixtures shall be permitted to be based on the required number of separate facilities or based on the aggregate of any combination of single-user or 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 single-user toilet rooms shall be permitted to serve as the required separate facilities.

Delete without substitution:

~~**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.~~

Reason Statement: As the original proponent for the language in 2909.2.1 my intended language was to allow for two unisex toilet rooms to be an option for a tenant space which would only need a single men's toilet room and a single women's toilet room based on the total occupant load. With the changes in the 2021 IPC that recognize that single user toilet rooms to be available to all persons regardless of their sex, it seems to me that this language should be relocated to correlate with that new language.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This change is for clarification purposes only and should not impact the cost of construction.

P27-21

P28-21

IPC: SECTION 310, 310.1, 310.3, TABLE 403.1, 403.1.2, 403.1.3, 403.2, 403.3.1, 403.3.2, 403.3.5, 403.3.6, 403.4, 405.3.2, 405.3.4, 405.3.5

Proponents: Sarah Rice, representing The Preview Group (srice@preview-group.com)

2021 International Plumbing Code

Revise as follows:

SECTION 310 ~~WASHROOM AND TOILET~~ FACILITIES ~~ROOM~~ REQUIREMENTS.

310.1 Light and ventilation. ~~Washrooms and toilet rooms~~ Toilet facilities shall be illuminated and ventilated in accordance with the *International Building Code* and *International Mechanical Code* .

310.3 Interior finish. Interior finish surfaces of toilet facilities ~~rooms~~ shall comply with the *International Building Code* .

TABLE 403.1
MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES^a (See Sections 403.1.1 and 403.2)

Portions of table not shown remain unchanged.

NO.	CLASSIFICATION	DESCRIPTION	WATER CLOSETS (URINALS: SEE SECTION 424.2)		LAVATORIES		BATHTUBS/ SHOWERS	DRINKING FOUNTAIN (SEE SECTION 410)	OTHER
			MALE	FEMALE	MALE	FEMALE			
5	Institutional	Medical care recipients in hospitals and nursing homes	1 per room ^c		1 per room ^c		1 per 15	1 per 100	1 service sink per floor

- 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-user toilet facility 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 classifications with an occupant load of 15 or fewer, service sinks shall not be required.
- f. The required number and type of plumbing fixtures for outdoor public swimming pools shall be in accordance with Section 609 of the International Swimming Pool and Spa Code.

403.1.2 Fixtures in Single-user toilet facilities and bathing room fixtures. The plumbing fixtures located in single-user toilet facility and single-user bathing rooms, including family or assisted-use toilet facilities and bathing rooms that are required by Section 1109.2.1 of the International Building Code, shall contribute toward the total number of required plumbing fixtures for a building or tenant space. Single-user toilet facilities and bathing rooms, and family or assisted-use toilet facilities rooms and bathing rooms shall be identified as being available for use by all persons regardless of their sex. The total number of fixtures shall be permitted to be based on the required number of separate facilities or based on the aggregate of any combination of single-user or separate facilities.

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

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

Exceptions:

1. Separate toilet facilities shall not be required for dwelling units and sleeping units.
2. Separate toilet 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 toilet facilities shall not be required in mercantile occupancies in which the maximum occupant load is 100 or fewer.
4. Separate toilet facilities shall not be required in business occupancies in which the maximum occupant load is 25 or fewer.
5. Separate toilet facilities shall not be required to be designated by sex where single-user toilet rooms are provided in accordance with Section 403.1.2.
6. Separate toilet facilities shall not be required where rooms having both water closets and lavatory fixtures are designed for use by both sexes and privacy for water closets is provided in accordance with Section 405.3.4. Urinals shall be located in an area visually separated from the remainder of the facility or each urinal that is provided shall be located in a stall.

403.3.1 Access. The route to the public toilet facilities required by Section 403.3 shall not pass through kitchens, storage rooms or closets. Access to the required toilet facilities shall be from within the building or from the exterior of the building. The public shall have access to the required toilet facilities at all times that the building is occupied.

403.3.2 Prohibited toilet room location for toilet facilities. Toilet facilities rooms shall not open directly into a room used for the preparation of food for service to the public.

403.3.5 Pay toilet facilities. Where pay toilet facilities are installed, such toilet facilities shall be in excess of the required minimum toilet facilities. Required toilet facilities shall be free of charge.

403.3.6 Door locking. Where a toilet ~~facility room~~ is provided for the use of multiple occupants, the egress door for the room shall not be lockable from the inside of the room. This section does not apply to family or assisted-use toilet ~~facilities rooms~~.

403.4 Signage. Required *public* ~~toilet~~ facilities shall be provided with signs that designate the sex, 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.

405.3.2 Public lavatories. In employee and *public* toilet ~~facilities rooms~~, the required lavatory shall be located in the same room as the required water closet.

405.3.4 Water closet compartment. Each water closet utilized by the *public* or employees shall occupy a separate compartment with walls or partitions and a door enclosing the fixtures to ensure privacy.

Exceptions:

1. Water closet compartments shall not be required in a single-occupant toilet room with a lockable door.
2. Toilet ~~facilities rooms~~ located in child day care facilities and containing two or more water closets shall be permitted to have one water closet without an enclosing compartment.
3. This provision is not applicable to toilet areas located within Group I-3 housing areas.

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. The horizontal dimension between walls or partitions at each urinal shall be not less than 30 inches (762 mm). 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 (152 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 ~~facility room~~ with a lockable door.
2. Toilet ~~facilities rooms~~ located in child day care facilities and containing two or more urinals shall be permitted to have one urinal without partitions.

Reason Statement: This is one of several code changes which is intended to implement a consistent use of the term "toilet facility".

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This is a correlation code change between the IPC and IBC and has no affect on the the cost of construction.

P37-21 Part I

IPC: 403.7 (New), 403.7.1 (New), 403.7.2 (New)

Proponents: Julius Ballanco, representing Adult Changing Table Committee (JBEngineer@aol.com)

THIS IS A 2 PART CODE CHANGE. BOTH PARTS WILL BE HEARD BY THE PLUMBING CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES.

2021 International Plumbing Code

Add new text as follows:

403.7 Adult changing station. Where adult changing stations are provided in addition to the requirements of the *International Building Code*, such stations shall be located in accordance with one of the following:

1. The adult changing station shall be installed in a single-user toilet room or bathing room.
2. The adult changing station shall be installed in a family or assisted-use toilet room or bathing room.
3. The adult changing station shall be installed in a toilet room or bathing room with multiple compartments. The adult changing station shall be provided with privacy by a curtain or wall or be installed within a privacy compartment. Where separate facilities are provided for each sex, the adult changing station shall be installed in both toilet rooms or bathing rooms.
4. The adult changing station shall be installed in a separate room.

403.7.1 Lavatory location. Where an adult changing station is installed in a privacy compartment or separate room, a lavatory shall be provided within that space. The lavatory shall comply with the accessibility requirement of ICC A117.1.

Exception: Where an adult changing station is located in a separate room, a lavatory shall not be required in the room provided that an alcohol-based hand sanitizer dispenser is installed in the room.

403.7.2 Floor drain required. Toilet rooms and bathing rooms with an adult changing station shall have a floor drain installed.

P37-21 Part I

P37-21 Part II

IBC: 1210.2.3 (New)

Proponents: Julius Ballanco, representing Adult Changing Table Committee (jbengineer@aol.com)

2021 International Building Code

Add new text as follows:

1210.2.3 Adult changing table surround. Walls and partitions within 2 feet (610 mm) of the adult changing table shall have a smooth, hard, nonabsorbent surface, to a height of not less than 72 inches (1829 mm) above the floor, and except for structural elements, the materials used in such walls shall be of a type that is not adversely affected by moisture.

Reason Statement: The Adult Changing Table Committee of ICC A117.1 developed this code change to address the installation of adult changing stations that are installed on a voluntary basis. There is no mandate within this code change. A companion code change being proposed to Chapter 11 of the Building Code would mandate adult changing stations in certain buildings. This proposed change is consistent with the proposed change to mandate adult changing stations. This proposal will supplement the requirements being proposed to Chapter 11. However, this proposed change can also stand on its own if the proposed change to Chapter 11 is not accepted. If this change is accepted, Chapter 29 of the Building Code would be correlated with the addition of the requirements to the existing sections. If an adult changing station is installed, this code change provides the requirements for public access, cleanliness, and sanitation. The access to an adult changing station is outlined in the first section which lists the rooms in which an adult changing station can be installed. The first two options are obvious in that they would be installed in an individual toilet or bathing room. The third option would allow the changing station to be installed in a men's or ladies room or all gender toilet room having multiple fixtures. Privacy requirements are specified to allow the adult diaper changing to take place out of public view. The fourth option would be a separate room similar to a lactating room in a commercial building or nurses station in a school. The initial sanitation requirements are specified in the proposed new section 1210.2.3. This section would require surround material similar to the requirement for urinals. It would provide a surface that is readily cleanable and not impacted by moisture.

Every toilet or bathing room has a lavatory. The new requirement would stipulate that when an adult changing station is installed in a privacy compartment or separate room a lavatory would be required for that room to allow for cleanup during and after diaper changing. If there is a separate room without plumbing located in the close proximity, an alcohol-based hand sanitizer dispenser could be used as a substitute for a lavatory.

Since the adult changing station involves the changing of adult diapers, a waste receptacle is required to dispose of the diaper. To minimize the odor from the diaper, the waste receptacle is required to be self-closing. While the Committee considered mandating ventilation for the waste receptacle, it was decided to at a minimum require self closing.

A floor drain is also required to facilitate the washing of the area in the event of an accident during the diaper changing operation. While floor drains are common in toilet rooms and bathing rooms, the Plumbing Code does not mandate the fixture. This section would result in mandating the floor drain when an adult changing station is installed.

It is intended that Section 1210.2.3 be scoped to the IPC committee.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

This change is adding optional requirements if someone chooses to install an adult changing station. There are no mandates for such an installation in this change. As such, there is no impact to the cost of construction.

P37-21 Part II

P38-21

IPC: 404.1, 404.2 (New), 404.3 (New), 404.3.1 (New), 404.3.2 (New), 404.3.3 (New), 404.3.4 (New), 404.3.5 (New), 404.3.6 (New)

Proponents: Sarah Rice, representing The Preview Group (srice@preview-group.com)

2021 International Plumbing Code

Revise as follows:

404.1 Where required. Accessible plumbing facilities and fixtures shall be provided in accordance with this section and Chapter 11 of the International Building Code.

Add new text as follows:

404.2 Toilet facilities. Each toilet room and bathing room shall be accessible in accordance with the International Building Code. Where a floor level is not required to be connected by an accessible route, the only toilet rooms or bathing rooms provided within the facility shall not be located on the inaccessible floor level.

Exceptions:

1. Toilet rooms or bathing rooms accessed only through a private office, not for common or public use and intended for use by a single occupant, shall be permitted to comply with the specific exceptions in ICC A117.1.
2. This section is not applicable to toilet and bathing rooms that serve dwelling units or sleeping units that are not required to be accessible by Section 1108 of the International Building Code.
3. Where multiple single-user toilet rooms or bathing rooms are clustered at a single location, at least 50 percent but not less than one room for each use at each cluster shall be accessible.
4. Toilet rooms or bathing rooms that are part of critical care or intensive care patient sleeping rooms serving Accessible units are not required to be accessible.
5. Toilet rooms or bathing rooms designed for bariatrics patients are not required to comply with the toilet room and bathing room requirements in ICC A117.1.

404.3 Plumbing fixtures. Except as provided for in Sections 404.3.1 and 404.3.2, at least one of each type of fixture, element, control or dispenser in each accessible toilet room and bathing room shall be accessible.

Exceptions:

1. Where not more than one urinal is provided in a toilet room or bathing room, the urinal shall not be required to be accessible.
2. Where permitted in Section 1108 of the International Building Code, in toilet rooms or bathrooms serving Accessible units, water closets designed for assisted toileting shall comply with Section 1110.2.2 of the International Building Code.
3. Where permitted in Section 1108 of the International Building Code, in bathrooms serving Accessible units, showers designed for assisted bathing shall comply with Section 1110.2.3 of the International Building Code.
4. Where toilet facilities are primarily for children's use, required accessible water closets, toilet compartments and lavatories shall be permitted to comply with the children's provisions of ICC A117.1.

404.3.1 Water closet compartment. Where water closet compartments are provided in a toilet room or bathing room, at least 5 percent of the total number of compartments shall be wheelchair accessible. Where the combined total water closet compartments and urinals provided in a toilet room or bathing room is six or more, at least 5 percent of the total number of compartments shall be ambulatory accessible, provided in addition to the wheelchair-accessible compartment.

404.3.2 Lavatories. Where lavatories are provided, at least 5 percent, but not less than one, shall be accessible. Where an accessible lavatory is located within the accessible water closet compartment at least one additional accessible lavatory shall be provided in the multicompartiment toilet room outside the water closet compartment. Where the total lavatories provided in a toilet room or bathing facility is six or more, at least one lavatory with enhanced reach ranges shall be provided.

404.3.3 Sinks. Where sinks are provided, at least 5 percent but not less than one provided in accessible spaces shall be accessible.

Exception: Mop or service sinks shall not be required to be accessible.

404.3.4 Drinking fountains. Where drinking fountains are provided on an exterior site, on a floor or within a secured area, the drinking fountains shall be provided in accordance with Sections 1110.5.1 and 1110.5.2 of the International Building Code.

404.3.5 Minimum number. Not fewer than two drinking fountains shall be provided. One drinking fountain shall comply with the requirements for people who use a wheelchair and one drinking fountain shall comply with the requirements for standing persons.

Exceptions:

1. A single drinking fountain with two separate spouts that complies with the requirements for people who use a wheelchair and standing persons shall be permitted to be substituted for two separate drinking fountains.
2. Where drinking fountains are primarily for children's use, drinking fountains for people using wheelchairs shall be permitted to comply with the children's provisions in ICC A117.1 and drinking fountains for standing children shall be permitted to provide the spout at 30 inches (762 mm) minimum above the floor.

404.3.6 More than the minimum number. Where more than the minimum number of drinking fountains specified in Section 404.4.5 is provided, 50 percent of the total number of drinking fountains provided shall comply with the requirements for persons who use a wheelchair and 50 percent of the total number of drinking fountains provided shall comply with the requirements for standing persons.

Exceptions:

1. Where 50 percent of the drinking fountains yields a fraction, 50 percent shall be permitted to be rounded up or down, provided that the total number of drinking fountains complying with this section equals 100 percent of the drinking fountains.
2. Where drinking fountains are primarily for children's use, drinking fountains for people using wheelchairs shall be permitted to comply with the children's provisions in ICC A117.1 and drinking fountains for standing children

Reason Statement: Currently in IPC Chapter 4, and specifically Section 404, the code user is given the means to determine how many plumbing fixtures are required in a facility. Thee IPC then goes on in Section 404 to dictate how to divide up the number of required fixtures between the various types of toilet facilities - female, male, family, assisted-use, etc. But it never tells the code user how many of the plumbing fixtures need to be made accessible. So you know how many, but not what kind. In order to find that out IPC Section 404 sends the code user to the IBC to try to find this information rather than give it to them right there.

404.3.1 is a duplication of IBC 1110.2.4

404.3.2 is a duplication of IBC 1110.2.5

404.3.3 is a duplication of IBC 1110.3

This proposal brings into the plumbing code that information. There are no technical changes involved, only reproducing the applicable sections from Section 1110 of the IBC so the IPC will now say how many and what kind.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This code change is intended to correlate information between the IPC and the IBC.

P40-21

IPC: 407.2

Proponents: Joseph J. Summers, Chair of the PMGCAC, representing Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

2021 International Plumbing Code

Revise as follows:

407.2 Bathtub waste outlets and overflows. Bathtubs shall be equipped with a waste outlet that is not less than 1¹/₂ inches (38 mm) in diameter. The waste outlet shall be equipped with a watertight stopper. Where an overflow is installed in a bathtub, the piping from the overflow outlet shall be connected upstream of the fixture trap. The overflow outlet shall discharge to the trap whether the waste outlet is closed or open. the overflow shall be not less than 1¹/₂ inches (38 mm) in diameter.

Reason Statement: There are several bathtubs that have overflows that are not a perfect circle and an 1-1/2 inch diameter requirement could prevent the installation of non-circular overflows. What is important is if a bathtub does have an overflow, that standing water is only permitted in the overflow when the fixture is filled to the point of overflow and that the overflow does not bypass the trap of the bathtub.

This proposal is submitted by the ICC Plumbing/Mechanical/Gas Code Action Committee (PMG CAC). The PMG CAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2020, the PMG CAC has held several virtual meetings open to any interested party. Numerous interested parties attended the committee meetings and offered their input. Related documentation and reports are posted on the PMG CAC website at: <https://www.iccsafe.org/products-and-services/i-codes/code-development-process/pmg-code-action-committee-pmgcac/> Reference PMGCAC Working Document Item 17.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

This change is only a clarification of the existing requirements to allow for newer designs of tub overflows on the market. Clarifications of the code do not have a cost impact.

P40-21

P41-21

IPC: 410.1

Proponents: Emily Toto, ASHRAE, representing ASHRAE (etoto@ashrae.org)

2021 International Plumbing Code

Revise as follows:

410.1 Approval. ~~Drinking fountains shall conform to ASME A112.19.1/CSA B45.2, ASME A112.19.2/CSA B45.1 or ASME A112.19.3/CSA B45.4, and water coolers shall conform to ASHRAE 18.~~ Drinking fountains, *water coolers* and *water dispensers* shall conform to NSF 61, Section 9. Drinking fountains shall also conform to ASME A112.19.1/CSA B45.2 or ASME A112.19.2/CSA B45.1. Electrically operated, refrigerated drinking *water coolers* and *water dispensers* shall be listed and labeled in accordance with UL 399.

Reason Statement: ASHRAE 18 has been withdrawn so it is appropriate to remove from this list. The proposed modification to the sentence order is intended to clarify the requirements that apply to each product type.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This proposal is editorial in nature and does not include new or revised requirements.

P41-21

P42-21

IPC: 410.2

Proponents: Erica Spayd, Warby Parker, representing Self

2021 International Plumbing Code

Revise as follows:

410.2 Small occupancies. Drinking fountains shall not be required for an occupant load of ~~15~~ 30 or fewer.

Reason Statement: Drinking fountains are underutilized fixtures that take up valuable space and resources in small occupancies. The California Plumbing Code, which offers a progressive approach to fixture counts, limits the drinking fountain requirement to occupant loads above 30, and serves as a proven test for the success of this proposed revision.

Further, given the increasing rate of vacancy in retail spaces across the country due to the ongoing COVID-19 pandemic, revising cumbersome restrictions like this could allow new businesses to open more quickly and with less expense, contributing positively to our nation's economic recovery.

Bibliography: California Building Code 2019, Section 415.2.

Cost Impact: The code change proposal will decrease the cost of construction \$5,000-\$6,000 for occupant loads of 16-30.

P42-21

P43-21

IPC: 410.4

Proponents: Erica Spayd, Warby Parker, representing Self

2021 International Plumbing Code

Revise as follows:

410.4 Substitution. Where restaurants provide drinking water in a container free of charge, drinking fountains shall not be required in those restaurants. In covered mall and open mall buildings, where less than three drinking fountains are required within a tenant space, water dispensers shall be permitted to be substituted for the required number of drinking fountains within that tenant space. In other *occupancies* where three or more drinking fountains are required, *water dispensers* shall be permitted to be substituted for not more than 50 percent of the required number of drinking fountains.

Reason Statement: Drinking fountains are underutilized fixtures that take up valuable space and resources in small occupancies. Further, given the increasing rate of vacancy in retail spaces across the country due to the ongoing COVID-19 pandemic, revising cumbersome restrictions like this could allow new businesses to open more quickly and with less expense, contributing positively to our nation's economic recovery. Additionally, the lasting sociocultural impacts of the COVID-19 pandemic are likely to drive utilization of drinking fountains down even further, with citizens becoming ever more cautious about the spread of infectious diseases. Whereas most water dispensers (plumbed bottle filling stations) are touchless, they present as a much safer option in our post-pandemic lives.

Cost Impact: The code change proposal will decrease the cost of construction \$4,000-\$5,000 for covered mall and open mall tenants required to have less than three drinking fountains.

P43-21

P44-21

IPC: 410.4

Proponents: Eirene Knott, BRR Architecture, representing Metropolitan Kansas City Chapter of the ICC (eirene.knott@brrarch.com)

2021 International Plumbing Code

Revise as follows:

410.4 Substitution. Where restaurants or other establishments providing food provide drinking water in a container free of charge, drinking fountains shall not be required in those ~~restaurants~~ establishments. In other *occupancies* where three or more drinking fountains are required, *water dispensers* shall be permitted to be substituted for not more than 50 percent of the required number of drinking fountains.

Reason Statement: Many convenience stores offer water free of charge through the use of a beverage dispenser. These stores will also have food available for purchase, which makes them comparable to a restaurant, though it may be grab and go. These establishments should not be penalized by having to provide an additional drinking fountain when they have the ability to provide water to their customers.

Cost Impact: The code change proposal will decrease the cost of construction. This proposal could decrease the cost of construction as drinking fountains would not need to be provided in an establishment that already offers water free of charge through a beverage dispenser.

P44-21

P45-21 Part I

IPC: 410.6 (New)

Proponents: Kyle Parag, representing Division of Fire Prevention & Control (Kyle.Parag@state.co.us)

THIS IS A 2 PART CODE CHANGE. PART I AND PART II WILL BE HEARD BY PLUMBING CODE COMMITTEE.

2021 International Plumbing Code

Add new text as follows:

410.6 Drinking fountain maintenance. *Drinking fountains, water coolers and bottle fillers shall be maintained in a safe, sanitary and working condition.*

P45-21 Part I

P45-21 Part II

IPMC: [P] 502.4.1

Proponents: Kyle Parag, representing Division of Fire Prevention & Control (kyle.parag@state.co.us)

2021 International Property Maintenance Code

Revise as follows:

[P] 502.4.1 Drinking facilities. Drinking facilities shall be a drinking fountain, water cooler, bottled water cooler or disposable cups next to a sink or water dispenser. Drinking facilities shall not be located in *toilet rooms* or *bathrooms*. Drinking fountains, water coolers and bottle fillers shall be maintained in a safe, sanitary and working condition in accordance with the International Plumbing Code. Except for periodic maintenance or cleaning, public access and use shall be provided to the drinking facilities at all times during occupancy of the premises.

Reason Statement: The world of Covid-19 has created a lot of new issues, and one of the largest changes to our built world due to Covid-19 was the barricading of all drinking fountains throughout commercial properties.

Although there are code paths to issue notices of violation for these instances, it is a difficult path. Adding a clear cut section for jurisdictions to quote from directly from the IPC eliminates a lot of confusion and creates direct requirements for many future generations and unforeseeable circumstances ahead.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
No effect on construction

P45-21 Part II

P46-21

IPC: 412.10

Proponents: Jason Shank, ASSE International, representing ASSE International (jshank@plumbers55.com)

2021 International Plumbing Code

Revise as follows:

412.10 Head shampoo sink faucets. Head shampoo sink faucets shall be supplied with hot water that is limited to not more than 120°F (49°C). Each faucet shall have integral check valves to prevent crossover flow between the hot and cold water supply connections. The means for regulating the maximum temperature shall be one of the following:

1. A limiting device conforming to ASSE 1070/ASME A112.1070/CSA B125.70.
2. A water heater conforming to ASSE ~~1082~~ 1084.
3. A temperature-actuated, flow-reduction device conforming to ASSE 1062.

Reason Statement: ASSE 1082 is designed for the following - This standard is for water heaters that control the outlet temperature to specific limits and are installed within a hot water distribution system but not at point-of-use.

Being this code section is in regards to point of use the ASSE 1082 is the wrong application. The correct application is the ASSE 1084 which is designed for the following - Water heaters covered by this standard have a cold water inlet connection, a means of heating the water, a means of controlling the water temperature, a means of limiting the temperature to a maximum of 120 °F (48.9 °C), and have an outlet connection to connect to downstream fixture fittings.

This water heater is intended to supply tempered water at point of use in order to reduce and control the risks of scalding. This water heater is not intended to limit thermal shock. This water heater is not a substitute for an automatic compensative valve complying with ASSE 1016 / ASME A112.1016 / CSA B125.16.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The change still is requiring a TLD.

P46-21

P47-21

IPC: 412.2, ASSE Chapter 15 (New)

Proponents: Jason Shank, ASSE International, representing ASSE International

2021 International Plumbing Code

Revise as follows:

412.2 Hand showers. Hand-held showers shall conform to ASME A112.18.1/CSA B125.1. Hand-held showers shall provide backflow protection in accordance with ASME A112.18.1/CSA B125.1 or shall be protected against backflow by a device complying with ASME A112.18.3 or ASSE 1014.

Add new standard(s) as follows:

ASSE

ASSE International
18927 Hickory Creek Drive, Suite 220
Mokena IL 60448

1014-2020: Performance Requirements for Backflow Prevention Devices for Hand-held Showers

Staff Analysis: A review of the standard(s) proposed for inclusion in the code, ASSE 1014-2020 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 March 20, 2021.

Reason Statement: By adding the ASSE 1014 to this section it allows another option of equal protection to this code section.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposed change adds an extra option.

P47-21

P48-21

IPC: 412.5

Proponents: Jason Shank, ASSE International, representing ASSE International

2021 International Plumbing Code

Revise as follows:

412.5 Bathtub and whirlpool bathtub valves. Bathtubs and whirlpool bathtub valves shall have or be supplied by a water-temperature-limiting device that conforms to ASSE 1070/ASME A112.1070/CSA B125.70 or by a water heater complying with ~~ASSE 1082~~ or ASSE 1084, except where such valves are combination tub/shower valves in accordance with Section 412.3. The water-temperature-limiting device required by this section shall be equipped with a means to limit the maximum setting of the device to 120° F (49° C), and, where adjustable, shall be field adjusted in accordance with the manufacturer's instructions to provide hot water at a temperature not to exceed 120° F (49° C). Access shall be provided to water-temperature-limiting devices that conform to ASSE 1070/ASME A112.1070/CSA B125.70.

Exception: Access shall not be required for nonadjustable water-temperature-limiting devices that conform to ASSE 1070/ASME A112.1070/CSA B125.70 and are integral with a fixture fitting, provided that the fixture fitting itself can be accessed for replacement.

Reason Statement: ASSE 1082 is designed for the following - This standard is for water heaters that control the outlet temperature to specific limits and are installed within a hot water distribution system but not at point-of-use.

ASSE 1082 is not for point of use which is what this section of the Code is addressing.

Bibliography: N/A

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This change will still require an TLD.

P48-21

P49-21

IPC: 419.6 (New)

Proponents: Julius Ballanco, representing Bradley Corp. (JBENGINEER@aol.com); James Kendzel, American Supply Association, representing American Supply Association (jkendzel@asa.net)

2021 International Plumbing Code

Add new text as follows:

419.6 Soap dispenser. Each public lavatory shall have an accompanying soap dispenser.

Reason Statement: One thing we have learned from the COVID-19 pandemic is the importance of washing ones hand with soap. Surprisingly, the code does not require soap dispensers for public lavatories. However, most engineers and architects specify soap dispensers. Plumbing contractors install soap dispensers when located in a counter top lavatory.

This is an important health issue that the Plumbing Code must address.

Bibliography: <https://www.rwjf.org/en/blog/2020/03/a-happy-habit-of-healthy-handwashing.html>

<https://www.cdc.gov/handwashing/when-how-handwashing.html>

<https://globalhandwashing.org/wp-content/uploads/2020/09/GHD-2020-Fact-Sheet-English.pdf>

<https://globalhandwashing.org/wp-content/uploads/2020/10/Handwashing-Learning-Brief.pdf>

https://globalhandwashing.org/wp-content/uploads/2015/03/Handwashing-Literature-Review_Jan-thru-June-2013_v2-clean-1.pdf

Cost Impact: The code change proposal will increase the cost of construction

Because this change will mandate the installation of soap dispensers, for those projects that providing soap dispenser was not part of the building's design feature, there will be added cost. The cost of the dispensers will vary depending on the type of dispenser chosen.

P49-21

P50-21

IPC: 423.3

Proponents: Jason Shank, ASSE International, representing ASSE International

2021 International Plumbing Code

Revise as follows:

423.3 Footbaths and pedicure baths. The water supplied to specialty plumbing fixtures, such as pedicure chairs having an integral foot bathtub and footbaths, shall be limited to not greater than 120°F (49°C) by a water-temperature-limiting device that conforms to ASSE 1070/ASME A112.1070/CSA B125.70 or by a water heater complying with ASSE ~~1082~~ 1084.

Reason Statement: ASSE 1082 is designed for the following - This standard is for water heaters that control the outlet temperature to specific limits and are installed within a hot water distribution system but not at point-of-use. Being this code section is in regards to point of use the ASSE 1082 is the wrong application. The correct application is the ASSE 1084 which is designed for the following - Water heaters covered by this standard have a cold water inlet connection, a means of heating the water, a means of controlling the water temperature, a means of limiting the temperature to a maximum of 120 °F (48.9 °C), and have an outlet connection to connect to downstream fixture fittings. This water heater is intended to supply tempered water at point of use in order to reduce and control the risks of scalding. This water heater is not intended to limit thermal shock. This water heater is not a substitute for an automatic compensative valve complying with ASSE 1016 / ASME A112.1016 / CSA B125.16.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The code change proposal will not increase or decrease the cost of construction

The change still is requiring a TLD.

P50-21

P51-21

IPC: 423.4 (New), ASSE Chapter 15 (New), UL Chapter 15 (New)

Proponents: Jason Shank, ASSE International, representing ASSE International

2021 International Plumbing Code

Add new text as follows:

423.4 Water Dispensers. All potable water dispensers directly connected to the plumbing system shall comply with one of the following:

1. Beverage faucets shall comply with ASME A112.18.1/CSA B125.1
2. Dispensers that supply electrically heated or cooled water shall comply with ASSE 1023
3. Electronic devices that heat water shall comply with UL 499

Add new standard(s) as follows:

ASSE

ASSE International
18927 Hickory Creek Drive, Suite 220
Mokena IL 60448

1023-19: Performance Requirements for Electrically Heated or Cooled Water Dispensers

UL

UL LLC
333 Pfingsten Road
Northbrook IL 60062-2096

499-2014:

Standard for Electric Heating Appliances with revisions through February 23, 2017

Staff Analysis: A review of the standard(s) proposed for inclusion in the code, ASSE 1023-19 and UL 499-2014 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 March 20, 2021.

Reason Statement: Water dispensers are being used more and more. By adding this proposal it provides some regulations to what is allowed in the plumbing system.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This proposal is enforcing what is common practice already in the industry.

P51-21

P60-21

IPC: 605.2.1

Proponents: Chris Haldiman, representing Watts Water Technologies (chris.haldiman@wattswater.com); Cameron Rapoport, Watts, representing Watts (cameron.raoport@wattswater.com)

2021 International Plumbing Code

Revise as follows:

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

Reason Statement: Current code language allows for the use of leaded backflow preventers when downstream water is considered non-potable, however all or portions of that valve may still be in contact with water that may be used for drinking or cooking purposes. A common example would be a leaded ASSE 1012 backflow preventer on a residential boiler fill line. Only after the backflow preventer has the water been isolated from the potable water used to supply drinking/cooking water, however the backflow preventer itself, which frequently will not comply with NSF 372, will be in contact with water that may be used for drinking or cooking purposes.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. There is no impact to the cost of construction since the proposal is only providing clarification.

P60-21

P87-21 Part I

IPC: TABLE 604.4, USEPA (New), (New)

Proponents: Edward R. Osann, Natural Resources Defense Council, representing Natural Resources Defense Council (eosann@nrdc.org); sharon bonesteel, salt river project, representing salt river project (sharon.bonesteel@srpnet.com); David Collins, representing The Preview Group, Inc. (dcollins@preview-group.com); Anthony Floyd, City of Scottsdale, representing City of Scottsdale (afloyd@scottsdaleaz.gov)

THIS IS A 2 PART PROPOSAL. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-P&M COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES.

2021 International Plumbing Code

Revise as follows:

**TABLE 604.4
MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING FIXTURES AND FIXTURE FITTINGS**

Portions of table not shown remain unchanged.

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY ^b
Shower head ^{a,c}	<u>2.0</u> 2.5 gpm at 80 psi

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. Shower heads shall comply with USEPA WaterSense Specification for Showerheads.

Add new text as follows:

USEPA

United States Environmental Protection
Agency
Ariel Rios Building
1200 Pennsylvania Avenue, NW
Washington DC 20460

Add new standard(s) as follows:

USEPA WaterSense Specification for Showerheads Version 1.1, July 26, 2018.

Staff Analysis: A review of the standard(s) proposed for inclusion in the code, USEPA WaterSense Specification for Showerheads Version 1.1, July 26, 2018 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 March 20, 2021.

P87-21 Part II

IRC: TABLE P2903.2, USEPA (New), (New)

Proponents: Edward R. Osann, Natural Resources Defense Council, representing Natural Resources Defense Council (eosann@nrdc.org); Anthony Floyd, City of Scottsdale, representing City of Scottsdale (afloyd@scottsdaleaz.gov); sharon bonesteel, salt river project, representing salt river project (sharon.bonesteel@srpnet.com); David Collins, representing The Preview Group, Inc. (dcollins@preview-group.com)

2021 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,c}	<u>2.0</u> 2-5 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.
- b. Consumption tolerances shall be determined from referenced standards.
- c. Shower heads shall comply with USEPA WaterSense Specificaiton for Showerheads.

Add new text as follows:

USEPA

United States Environmental Protection
Agency
Ariel Rios Building
1200 Pennsylvania Avenue, NW
Washington DC 20460

Add new standard(s) as follows:

USEPA WaterSense Specification for Showerheads Version 1.1, July 26, 2018.

Staff Analysis: A review of the standard(s) proposed for inclusion in the code, USEPA WaterSense Specification for Showerheads Version 1.1, July 26, 2018 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 March 20, 2021.

Reason Statement: Showerheads operating at 2.0 gpm at 80 psi are commonly available and perform well. The U.S. EPA's WaterSense specification of 2.0 gpm was first adopted in 2010, along with criteria that ensure adequate spray pattern, spray force, and minimum flow at pressures less than 80 psi. Based on the most recent reports of participating manufacturers, more than 10,000 models from over 200 brands currently meet all WaterSense specifications, demonstrating the widespread availability and commercial viability of efficient showerheads. One factor in customer acceptance is the growing use of built-in pressure compensation, by which a showerhead will perform at its rated flow, even in buildings or portions of buildings with low water pressure.

For designers of plumbing systems, it is important to match the building's water distribution system with the anticipated performance of fixture fittings such as showerheads. Plumbing systems designed to meet the 2024 IPC should accommodate the nation's ongoing transition to high-efficiency showerheads. Water, energy, and materials will be saved if plumbing distribution systems are right-sized at the time of construction.

The WaterSense label is easily recognizable, and will allow building officials to easily verify compliance with this provision.

There are significant water, energy, and greenhouse gas savings that would accrue nationwide if all newly installed showerheads met the WaterSense specification beginning in 2025, the earliest practical application of the IPC as modified by this proposal. Even accounting for several states that have already require efficient showerheads, the potential for further savings are substantial. These savings, drawn from the supporting analysis of a November 2020 report by the Appliance Standards Awareness Project, would reach the following:

Estimated Savings from Efficient (2.0 gpm) Showerheads Effective 2025

Annual Savings in 2035

- Electricity (TWh) 4.1
- Nat gas & oil (TBtu) 25.8
- Water (billion gallons) 79.5
- Utility bills (billion 2019 \$) 1.9
- CO2 reductions (MMT)
- --- Low-carbon grid scenario 1.9
- --- AEO reference case 2.7

Annual Savings in 2050

- Electricity (TWh) 4.1
- Nat gas & oil (TBtu) 25.8
- Water (billion gallons) 79.5
- Utility bills (billion 2019 \$) 2.1
- CO2 reductions (MMT)
- --- Low-carbon grid scenario 1.7
- --- AEO reference case 2.5

Cumulative Savings through 2050

- Energy (Quads) 1.3
- Water (billion gallons) 1,669
- Utility bills (billion 2019 \$) 41.4
- CO2 reductions (MMT)
- --- Low-carbon grid scenario 38.4
- --- AEO reference case 54.8

Cost-effectively reducing unnecessary water use is an integral part of the stated purpose of the International Plumbing Code. As noted in Chapter 1 of the 2021 Edition, "101.3 Purpose. The purpose of this code is to establish minimum requirements to provide a reasonable level of safety, health, property protection, and general welfare by regulating and controlling the design, construction, installation, quality of materials, location, operation and maintenance or use of plumbing equipment and systems." Nothing is more fundamental to health, safety, property protection, and general welfare than the maintenance of adequate water supplies. Water-saving technologies, such as showerheads meeting EPA WaterSense criteria, help building occupants save water, energy, and utility bills, while helping to ensure that drinking water supplies are maintained at safe and reliable levels, protecting human health and firefighting capability, as well as environmental resources.

Bibliography: U.S. Environmental Protection Agency, *WaterSense Specification for Showerheads, version 1.1*, July 26, 2018, available at <<https://www.epa.gov/watersense/showerheads#Showerhead%20Specification>>.

Mauer, J. and deLaski, A., *A Powerful Priority: How Appliance Standards Can Help Meet U.S. Climate Goals and Save Consumers Money*, Appliance Standards Awareness Project and American Council for an Energy-Efficient Economy, November 2020, available at <<https://appliance-standards.org/document/report-overview-powerful-priority-how-appliance-standards-can-help-meet-us-climate-goals>>.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. Showerheads that meet WaterSense criteria are widely available and competitively priced.

P90-21

IPC: 607.4

Proponents: Matthew Payette, City of Longmont, representing City of Longmont

2021 International Plumbing Code

Revise as follows:

607.4 Flow of hot water to fixtures. Fixture fittings, faucets and diverters shall be installed and adjusted so that the flow of hot water from the fittings corresponds to the left-hand side of the fixture fitting. Single handle fixture fittings shall be installed and adjusted so that the flow of hot water corresponds to the far side of the fixture fitting.

Exception: Shower and tub/shower mixing valves conforming to ASSE 1016/ASME A112.1016/CSA B125.16 or ASME A112.18.1/CSA B125.1, where the flow of hot water corresponds to the markings on the device.

Reason Statement:



This type of faucet currently has no requirement for which direction should be the hot supply. I am proposing that hot should be to the back or far side of the fixture to prevent scalding to small children. A child that can barely reach the controls will inherently pull the handle toward themselves. If this is the direction of the hot supply, it could lead to injury of the child.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This is a simple installation direction.

P90-21

P102-21

IPC: 609.3, 609.3.1 (New), 609.3.2 (New)

Proponents: John Williams, Chair, representing Healthcare Committee (ahc@iccsafe.org)

2021 International Plumbing Code

Delete and substitute as follows:

~~**609.3 Hot water.** *Hot water* shall be provided to supply all of the hospital fixture, kitchen and laundry requirements. Special fixtures and equipment shall have hot water supplied at a temperature specified by the manufacturer. The hot water system shall be installed in accordance with Section 607.~~

609.3 Water. Water shall be provided in health care facilities in accordance with Section 609.3.1 and 609.3.2.

Add new text as follows:

609.3.1 Hand-washing water. Hand-washing water shall be provided to all dedicated handwashing stations. Dedicated hand-washing stations shall be permitted to be colder than tempered water.

609.3.2 Hot water. Hot water shall be provided in accordance with Section 607.

Reason Statement: A major source of infection in the healthcare setting is the presence of waterborn contaminants, including Legionella, C-Difficile, and others that thrive in a certain water temperature. In particular, Leginella thrives in higher temperature water. Recently, outbreaks in New York City and other municipalities have highlighted the need to manage water to prevent contamination. For this reason, ASHRAE 188-2015 was implemented for water management plans in the healthcare setting.

Hand washing sinks in ares such as emergency departments and intensive care units are common, and have been required in the FGI Guidelines for many versions. This proposal seeks to make the allowance for cold hand washing in higher acuity areas at handwashing sinks.

The ASHRAE guideline 12 states “Conditions that are favorable for the amplification of legionellae growth include the presence of other bacteria, amoebae and other protozoan hosts, water temperatures of 25-42°C (77-108°F), stagnation, scale, sediment and biofilms.” Tempered water falls within this breeding area that is dangerous for the sensitive populations in health care facilities. Research has shown that “warm or hot” water have not significant impact on levels of bacterial reduction¹.

Common pathogens such as Escherichia coli, Salmonella typhimurium and Klebsiella pneumonia stay alive at temperatures up to 55°C (131°F) for over ten minutes and Staphylococcus aureus would require at least 50 minutes of exposure at a temperature of 60°C (140°F) to be reduced to an immeasurable level. By comparison, just 30 seconds of skin exposure to water heated to 55°C would cause deep second-degree burns, and water heated to 60°C could be tolerated for less than six seconds before causing serious harm.

Bibliography: 1. Carrico AR, Spoden M, Wallston KA, Vandenberg MP. The Environmental Cost of Misinformation: Why the Recommendation to Use Elevated Temperatures for Handwashing is Problematic. Int J Consum Stud. 2013;37(4):433-441. doi:10.1111/ijcs.12012

Cost Impact: The code change proposal will decrease the cost of construction

Allowing for cold water decrease the cost for piping for to supply hot water and increase operational safety.

P102-21

P103-21

IPC: 611.1, ASSE Chapter 15 (New)

Proponents: Jason Shank, ASSE International, representing ASSE International

2021 International Plumbing Code

Revise as follows:

611.1 Design. Point-of-use reverse osmosis drinking water treatment units shall comply with CSA B483.1 or NSF 58. Drinking water treatment units shall meet the requirements of CSA B483.1, NSF 42, NSF 44, NSF 53 or NSF 62. Commercial and food service water treatment equipment shall comply with ASSE 1087.

Add new standard(s) as follows:

ASSE

ASSE International
18927 Hickory Creek Drive, Suite 220
Mokena IL 60448

1087-18:

Commercial and Food Service Water Treatment Equipment Utilizing Drinking Water

Staff Analysis: A review of the standard(s) proposed for inclusion in the code, ASSE 1087-18 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 March 20, 2021.

Reason Statement: Commercial water treatment equipment is used in point-of-entry (POE) and point-of-use (POU) applications connected to building plumbing to improve the water quality characteristics of potable water. This standard includes testing requirements for components and complete systems. Electrical compliance is not covered by the standard.

Plumbed water treatment units include any device or component, point-of-entry and point-of-use, that is used in a building to improve the quality of the water. This standard covers all water treatment products that are connected to the building's potable water plumbing system. This standard is not intended to cover water treatment products used for process water or wastewater applications. Examples of water treatment equipment include deionizers, filters, softeners, reverse osmosis assemblies, ultraviolet systems, ozone systems, and distillers.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This proposal is adding another standard to choose from for the application.

P103-21

P133-21 Part I

IPC: 202 (New), 1003.1 (New), 1003.2 (New), 1003.3 (New), 1003.4 (New), ASME Chapter 15 (New)

Proponents: Gary Duren, representing self (codecompliance1@aol.com)

THIS IS A 2 PART PROPOSAL. PART I WILL BE HEARD BY THE IPC COMMITTEE. PART II WILL BE HEARD BY THE IRC-P&M COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES.

2021 International Plumbing Code

Add new definition as follows:

SANITARY WASTE VALVE. A device conforming to ASME A112.18.8 used as an alternate to a water-filled tubular waste trap that provides protections of the property from foul air in the sewer.

Add new text as follows:

1003.1 General. Sanitary waste valve shall be permitted to be installed as an alternate to the liquid seal tubular traps required in Section 1002. Sanitary waste valves shall conform to ASME A112.18.8.

1003.2 Installation. Sanitary waste valves shall be installed in accordance with the requirements of this section and the manufacturer's instructions.

1003.3 Where permitted. Sanitary waste valves shall be permitted to be installed as an alternate to 1 1/4 inch (32 mm) and 1 1/2 inch (38mm) tubular traps. Where a sanitary waste valve is installed on the outlet of a food waste grinder, the device shall be installed in the vertical orientation.

1003.4 Location. Sanitary waste valves shall be permitted to be installed as an alternate where tubular traps are required for sinks, lavatories, laundry trays, tubs, showers or similar fixtures. Sanitary waste valves shall not be used on urinals. Sanitary waste valves shall be provided with access.

Add new standard(s) as follows:

ASME

American Society of Mechanical Engineers
Two Park Avenue
New York NY 10016-5990

ANSI/ASME A112.18.8-2020: Sanitary Waste Valves for Plumbing Drainage Systems

Staff Analysis: A review of the standard(s) proposed for inclusion in the code, ASME A112.18.8-2020 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 March 20, 2021.

P133-21 Part I

P133-21 Part II

IRC: 202 (New), P3202 (New), P3202.1 (New), P3202.2 (New), P3202.3 (New), P3202.4 (New), ASME Chapter 44 (New)

Proponents: Gary Duren, representing self (codecompliance1@aol.com)

2021 International Residential Code

Add new definition as follows:

SANITARY WASTE VALVE. A device conforming to ASME A112.18.8 used as an alternative to a water-filled tubular waste trap that provides protections of the property from foul air in the sewer.

Add new text as follows:

P3202 SANITARY WASTE VALVES.

P3202.1 General. Sanitary waste valve shall be permitted to be installed as an alternate to the liquid seal tubular traps required in Section P3201. Sanitary waste valves shall conform to ASME A112.18.8.

P3202.2 Installation. Sanitary waste valves shall be installed in accordance with the requirements of this section and the manufacturer's instructions.

P3202.3 Where permitted. Sanitary waste valves shall be permitted to be installed as an alternate to 1 1/4 inch (32 mm) and 1 1/2 inch (38 mm) tubular traps. Where a sanitary waste valve is installed on the outlet of a food waste grinder, the device shall be installed in the vertical orientation.

P3202.4 Location. Sanitary waste valves shall be permitted to be installed as an alternate where tubular traps are required for sinks, lavatories, laundry trays, tubs showers or similar fixtures. Sanitary waste valves shall not be used on urinals. Sanitary waste valves shall be accessible.

Add new standard(s) as follows:

ASME

American Society of Mechanical Engineers
Two Park Avenue
New York NY 10016-5990

ANSI/ASME A112.18.8 - 2020

:

Sanitary Waste Valves for Plumbing Drainage Systems

Reason Statement: PURPOSE

This group of code changes is being introduced to improve the efficacy of the drain waste and vent system by providing a more sanitary option to the ancient practice of requiring water reservoir p-traps as the exclusive method of preventing sewer gas from entering occupied spaces. Public health and safety is thereby improved by allowing an alternate solution which reduces the risk of foul odor and disease spreading via the DWV system. The cost of construction is not negatively impacted.

BACKGROUND

Foul air routinely enters the occupied building space when p-traps lose their water seal. Such losses are a serious area of public health concern since in recent years important research has been published that directly links the spread of harmful pathogens via the DWV piping system. The research demonstrates that there are essentially two primary means by which harmful pathogens are spread in occupied building spaces via the *conventional* water-reservoir-trap-based DWV system:

1. Evaporation, lack of use or over/under-pressure conditions caused by the routine discharge of a water closet depletes the water level within the trap to a point where waste water is aerosolized and released into the air currents present in buildings.[*Gormley et al*]
2. Water reservoirs within traps have been shown to spread pathogens via "biological slime" creeping up the drainage pipes into the adjacent sinks.[*Mathers, et al*]

The age old mantra of the Plumbing Industry is: "Plumbers Protect the Health of the Nation". If this is true, now it is time to introduce an alternative to the ancient water reservoir traps into the code. ANSI/ASME A112.18.8 -2020 compliant Sanitary Waste Valves (SWV) provide an effective alternate to 1-1/4" and 1-1/2" tubular water reservoir p-traps.

Since SWV's *do not* retain water or other waste they are inherently more sanitary than water filled p-traps. The ASME A112.18.8-2020 Standard has

been strengthened following comments at previous code cycles and now provides a 100% higher level of protection against sewer gas intrusion than is provided by water filled tubular traps currently required.

Complete copies of the latest research referenced above and additional educational materials are available at PlumbingResearchGroup.org

Proponent respectfully requests that the Committee improve the efficacy of the UPC by permitting the use of ANSI/ASME A112.18.8-20 compliant sanitary waste valves as an alternate to accessible tubular traps and improve the plumbing code. In support of this request, please consider the following statements:

SUPPORTING STATEMENT

Sanitary Waste Valves Intended for Use as an Alternate to 1-1/4 and 1-1/2 Tubular P-traps.

It is clearly the intent of the plumbing code that there is a water seal at every plumbing fixture outlet. The exclusive water reservoir sealing that the code currently requires has inherent physical limitations against pressure fluctuations within the DWV system. The most significant pressure fluctuations occur within the waste system upon the discharge of one or more water closets. It is well known and documented that water traps are subject to failure (full or partial loss of the two inch water seal) due to excessive positive or negative pressure excursions and also loss of the water seal can and routinely does occur due to evaporation especially in conditions of low use or high ambient temperature.

When considering acceptance of an alternate a code official must determine that the alternate meets the intent of the current code, by demonstrating equivalency in terms of strength, effectiveness, safety, and performance: Sanitary Waste Valves comply with the code in the following ways

1. A Sanitary Waste Valve conforming to ANSI/ASME A112.18.8 is equal in strength to conventional tubular water traps since the material requirements of ASTM F409 are part of the standard.

The strength of a trap is determined by the materials used in construction and by its resistance to pressure fluctuations in the sanitary drainage system produced by flowing water.

2. A Sanitary Waste Valve conforming to ANSI/ASME A112.18.8 is more effective than a conventional tubular trap in terms of sanitation and over/under-pressure resistance.

Water traps not only retain water, they retain waste solids and other potentially dangerous bacteriological, fungal and viral pathogens. They are in effect miniature septic systems. Depending on the frequency of use and the location of the trap these solids may decay or harmful pathogens can breed, multiply and spread to surrounding areas. In food prep sinks this may cause food contamination and/or food-borne illness to occur.

A Sanitary Waste Valve is not a trap since by definition it does not significantly retain liquid (water) or foreign particles so there is not the same scope to provide a breeding ground for potentially dangerous bacteriological and harmful viral pathogens. Since a Sanitary Waste Valve has a greater resistance against pressures excursions the effectiveness of its sealing ability is greater and thereby safer over a conventional water reservoir trap, even in the fixture it serves is infrequently or never used.

3. A Sanitary Waste Valve conforming to ANSI/ASME A112.18.8 is actually safer than a conventional tubular trap in that conventional traps are subject to loss of water seal by evaporation or siphonage and the SWV is not.

Studies by Professor JA Swaffield *et al* of Heriot-Watt University, Edinburgh, Scotland have shown how the SARS virus was spread in 2003 throughout Amoy Gardens, a high-rise residential structure located in Hong Kong. Part of the causal effect was the failure of water traps due to evaporation, and/or losses from pressure excursions. A Sanitary Waste Valve is not subject to evaporation. A Sanitary Waste Valve is much more effective than a water trap in resisting positive and negative pressure fluctuations.

4. A Sanitary Waste Valve that conforms to ANSI/ASME A112.18.8 performance is at a minimum equal to a tubular trap in regard to reliability, connectivity, material durability and flow capacity.

The referenced Standard contains prescriptive requirements to insure that a compliant/listed Sanitary Waste Valve meets the flow capacity and material requirements of conventional code-required 1-1/4 and 1-1/2 tubular traps. Specifically the Standard requires that the Sanitary Waste Valve must reliably and repeatedly withstand a 4" water gage back-pressure test, which is significantly beyond the capability of a fully replenished p-trap

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This is only a option that is not mandated by the code and as such, there is impact to construction cost.

P133-21 Part II

P146-21

IPC: 1302.2, 1302.2.1, 1302.6.1, 1302.14 (New)

Proponents: Taylor Chang, San Francisco Public Utilities Commission, representing San Francisco Public Utilities Commission (tachang@sfgwater.org)

2021 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. Where *approved* and as appropriate for the intended application, water and wastewater from other nonpotable sources shall be collected for reuse by on-site nonpotable water reuse systems.

1302.2.1 Prohibited sources. ~~Wastewater 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 wastewater, dishwasher wastewater and wastewater discharged from wet-hood scrubbers shall not be collected for reuse in an on-site nonpotable water reuse system.

1302.6.1 Graywater or wastewater used for fixture flushing. Graywater or wastewater used for flushing water closets and urinals shall be disinfected and treated by an on-site water reuse treatment system complying with NSF 350 or other approved methods.

Add new text as follows:

1302.14 Odor control. The designed operation and maintenance methods for treatment, storage, distribution, and reuse of onsite sources of non-potable water shall incorporate provisions to reduce, control, or eliminate odors as appropriate for the intended application.

Reason Statement: The option for collecting, treating, and reusing wastewater onsite should be explicitly allowed in the plumbing code due to the opportunity to save potable water and the ability for systems to be designed and operated safely. The concept and technology has been proven effective by many examples of successful systems in operation around the world today. This proposal seeks to remove the existing prohibition and instead, allow wastewater to be collected for reuse onsite where approved by Authority Having Jurisdiction and appropriate for the application. Onsite wastewater treatment and reuse should be allowed in the plumbing code because of the significant opportunity to improve the water efficiency of buildings and reduce valuable potable water being used for non-potable purposes. For example, a commercial office building treating and reusing wastewater onsite can offset 100% of a building's toilet and urinal flushing demand, which can represent up to 70% of a building's total indoor potable water demands. In San Francisco, the San Francisco Public Utilities Commission headquarters building treats wastewater onsite for toilet and urinal flushing, reducing the use of potable water within the building by roughly 50%.

In addition, the treatment and reuse of wastewater onsite can be done safely for meeting both indoor water demands such as toilet flushing and outdoor water demands such as landscape irrigation. This practice is being done safely in areas that have established water quality standards for the treatment and reuse of wastewater onsite. Standards such NSF 350 and IGC 324 exist to guide the safe implementation of onsite wastewater treatment. Water quality standards are also evolving as public health regulators and utilities from across the country are adopting a health risk-based water quality approach that applies to onsite non-potable water sources including wastewater, graywater, and rainwater. This risk-based water quality framework focuses on the removal of pathogens and ensures the water is being treated appropriately for the end use.

Furthermore, onsite treatment and reuse of wastewater is an accepted practice in California, Oregon, Colorado, New York, and other states as well as internationally in Australia. Cities such as San Francisco and Portland have been successfully operating onsite wastewater treatment systems with no public health violations. One example from Portland, Oregon is the Hassalo on Eighth eco-district, a cluster of residential, commercial, and mixed-use buildings collecting all of the district's wastewater onsite and reusing it for toilet flushing and irrigation. This system saves up to 7 million gallons of potable water per year. Another example from New York City is the Solaire Building, which has been successfully operating an onsite wastewater treatment system for over a decade to meet the building's toilet flushing, cooling tower makeup, and irrigation demands. Finally, an example from Sydney, Australia is 1 Bligh Street, a commercial high rise tower offsetting 100% of the building's non-potable water demands by reusing wastewater onsite.

Bibliography:

- Link to San Francisco Public Utilities Commission (SFPUC) Onsite Water Reuse Program web page: www.sfgwater.org/np
- Link to SFPUC Guidebook for Onsite Water Reuse Program: <https://sfgwater.org/Modules/ShowDocument.aspx?documentID=11629>
- Link to SFPUC Onsite Water Reuse Projects Case Studies: <https://sfgwater.org/Modules/ShowDocument.aspx?documentID=7089>
- Link to the report Risk-Based Framework for the Development of Public Health Guidance for Decentralized Non-Potable Water Systems: <https://sfgwater.org/Modules/ShowDocument.aspx?documentID=10493>
- Link to the National Blue Ribbon Commission's Guidebook for Developing and Implementing Regulations for Onsite Non-potable Water Systems: <https://sfgwater.org/Modules/ShowDocument.aspx?documentID=11586>
- Link to National Blue Ribbon Commission's Guidance Manual for designing and permitting onsite non-potable water systems: <https://sfgwater.org/modules/showdocument.aspx?documentid=15071>
- Link to National Blue Ribbon Commission's report Making the Utility Case for Onsite Non-potable Water Systems: <https://sfgwater.org/Modules/ShowDocument.aspx?documentID=12142>

Cost Impact: The code change proposal will not increase or decrease the cost of construction

The proposal to remove the existing prohibition of onsite wastewater reuse will not increase the cost of construction. The proposal is allowing for onsite wastewater reuse systems as an option, but not mandating they be installed. Buildings that choose to install a system would experience increased construction costs to install storage tanks, treatment, and collection and distribution piping. However, buildings can also realize ongoing monetary savings on water and sewer bills by reusing wastewater onsite because they use less potable water and send a reduced flow of wastewater to the sewer. An analysis was conducted that looked at the amount of wastewater that could be treated and reused onsite in an example new mixed-use development in San Francisco. Using the water utility's rate schedule to estimate the financial savings, the analysis showed installing an onsite wastewater reuse system could result in an estimated savings of about \$50,000 annually on the example project's water bill. Furthermore, with the rising cost of water, the return on investment will continue to improve.

P146-21

P147-21 Part I

IPC: APPENDIX G (New), SECTION G101 (New), G101.1 (New), G101.2 (New), SECTION G102 (New), G102.1 (New), SECTION G103 (New), G103.1 (New), G103.2 (New), G103.3 (New), G103.4 (New), G103.5 (New), G103.6 (New), G103.7 (New), SECTION G104 (New), G104.1 (New), SECTION G105 (New), G105.1 (New), G106.1 (New), TABLE G106.1 (New)

Proponents: Edward R. Osann, Natural Resources Defense Council, representing Natural Resources Defense Council (eosann@nrdc.org); CJ Lagan, representing LIXIL (cj.lagan@lixil.com); albert rubin, representing self (rubin@ncsu.edu); Sharon Bonesteel, representing salt river project (sharon.bonesteel@srpnet.com)

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

2021 International Plumbing Code

Add new text as follows:

APPENDIX G NON-SEWERED SANITATION SYSTEMS

SECTION G101 GENERAL.

G101.1 Applicability. The provisions of this chapter shall apply to the installation of non-sewered sanitation systems.

G101.2 System requirements. Non-sewered sanitation systems shall comply with ANSI/CAN/IAPMO/ISO 30500.

SECTION G102 DEFINITIONS.

G102.1 General. For purposes of this Appendix, the following definitions shall apply:

CONDITIONED SPACE. An area, room, or space normally occupied by humans that is heated or cooled by equipment.

NON-SEWERED SANITATION SYSTEM. A prefabricated integrated sewage treatment unit that is not connected to a public sewer or private sewage disposal system.

SECTION G103 INSTALLATION.

G103.1 General. The installation of non-sewered sanitation systems shall be in accordance with the manufacturer's installation instructions and with Section G103.2 through Section G103.7.

G103.2 Operating conditions. A non-sewered sanitation system in either a conditioned or unconditioned space shall be installed where the ambient temperature, ambient humidity, and atmospheric pressure are within the ranges indicated in the manufacturer's installation instructions or product listing.

G103.3 Clearances for servicing and maintenance. A non-sewered sanitation system shall be located to allow access and clearance for service and maintenance. Unless otherwise specified by the manufacturer's installation instructions, not less than 30 inches in depth, width, and height of working space shall be provided at any access panel.

G103.4 Backflow prevention. A potable water supply connected to a non-sewered sanitation system shall be protected from backflow in accordance with Section 608 of this code.

G103.5 Effluent storage. Any container or vessel for the storage of effluent discharged from a non-sewered sanitation system and not integral to such system shall be installed in accordance with Section 1301.9 of this code.

G103.6 Systems utilizing a combustion process. A non-sewered sanitation system utilizing a combustion process shall comply with the *International Mechanical Code* or *International Fuel Gas Code*.

Exception: A non-sewered sanitation system *listed* for unvented use.

G103.7 Connection to plumbing drainage system. Unless the code official determines otherwise, a non-sewered sanitation system shall not be required to be connected to the sanitary drainage system of the building or premises.

SECTION G104 OPERATION AND MAINTENANCE MANUALS.

G104.1 Operation and maintenance manual. Non-sewered sanitation systems shall be provided with a manufacturer's operation and maintenance manual.

SECTION G105 USE OF EFFLUENT AND SOLID WASTE.

G105.1 System output. The use or disposal of all substances exiting a non-sewered sanitation system shall be in accordance with the authority

having jurisdiction.

G106.1 REFERENCE STANDARDS.

G106.1 General. See Table G106.1 for standards that are referenced in various sections of this appendix. Standards are listed by the standard identification with the effective date, the standard title, and the section or sections of this appendix that reference the standard.

TABLE G106.1 REFERENCE STANDARDS.

<u>STANDARD ACRONYM</u>	<u>STANDARD NAME</u>	<u>SECTIONS HEREIN REFERENCED</u>
ANSI/CAN/IAPMO/ISO 30500-2019	Non-sewered sanitation systems - Prefabricated integrated treatment units - General Safety and performance requirements for design and testing	AG101.2

Staff Analysis: A review of the standard(s) proposed for inclusion in the code, ANSI/CAN/IAPMO/ISO 30500-2019 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 March 20, 2021.

P147-21 Part II

IRC: APPENDIX AX (New), SECTION AX101 (New), AX101.1 (New), AX101.2 (New), SECTION AX102 (New), AX102.1 (New), SECTION AX103 (New), AX103.1 (New), AX103.2 (New), AX103.3 (New), AX103.4 (New), AX103.5 (New), AX103.6 (New), AX103.7 (New), SECTION AX104 (New), AX104.1 (New), AX105 (New), AX106.1 (New), TABLE AX106.1 (New)

Proponents: Edward R. Osann, Natural Resources Defense Council, representing Natural Resources Defense Council (eosann@nrdc.org); CJ Lagan, representing LIXIL (cj.lagan@lixil.com); albert rubin, North Carolina State University, representing self (rubin@ncsu.edu)

2021 International Residential Code

Add new text as follows:

APPENDIX AX **NON-SEWERED SANITATION SYSTEMS**

SECTION AX101 GENERAL.

AX101.1 Applicability. The provisions of this chapter shall apply to the installation of non-sewered sanitation systems.

AX101.2 System requirements. Non-sewered sanitation systems shall comply with ANSI/CAN/IAPMO/ISO 30500.

SECTION AX102 DEFINITIONS.

AX102.1 General. For purposes of this chapter, the following definitions shall apply.

Conditioned Space. An area, room, or space normally occupied and being heated or cooled for human habitation by any equipment.

Non-Sewered Sanitation System. A prefabricated integrated sewage treatment unit that is not connected to a public sewer or private sewage disposal system.

SECTION AX103 INSTALLATION.

AX103.1 General. The installation of non-sewered sanitation systems shall be in accordance with the manufacturer's installation instructions and with Section AX103.2 through AX103.7.

AX103.2 Operating conditions. A non-sewered sanitation system in either a conditioned or unconditioned space shall be installed where the ambient temperature, ambient humidity, and altitude (atmospheric pressure) are in accordance with the manufacturer's installation instructions or product listing.

AX103.3 Clearances for servicing and maintenance. A non-sewered sanitation system shall be located to permit access and sufficient clearance for service and maintenance. Unless otherwise specified by the manufacturer's installation instructions, not less than 30 inches in depth, width, and height of working space shall be provided at any access panel.

AX103.4 Backflow prevention. A domestic water supply connection to a non-sewered sanitation system shall be protected in accordance with Section P2902 of this code.

AX103.5 Effluent storage. Any container or vessel for the storage of effluent discharged from a non-sewered sanitation system and not integral to such system shall be installed in accordance with Section P2910.9 of this code.

AX103.6 Systems employing combustion. A non-sewered sanitation system employing combustion shall comply with the mechanical code.

Exception: A non-sewered sanitation system listed for unvented use.

AX103.7 Connection to plumbing system not required. Unless the Authority Having Jurisdiction determines otherwise, a non-sewered sanitation system is not required to be connected to the sanitary drainage system of the building or premises.

SECTION AX104 MANUAL REQUIRED.

AX104.1 Operation and maintenance manual. Non-sewered sanitation systems shall have an operation and maintenance manual provided by the manufacturer.

AX105 System output. The use or disposal of all substances exiting the non-sewered sanitation system shall be determined by the Authority Having Jurisdiction.

AX106.1 General. See Table AX106.1 for standards that are referenced in various sections of this appendix. Standards are listed by the standard identification with the effective date, the standard title, and the section or sections of this appendix that reference the standard.

TABLE AX106.1
REFERENCE STANDARDS

STANDARD ACRONYM	STANDARD NAME	SECTIONS HEREIN REFERENCED
ANSI/CAN/IAPMO/ISO 30500-2019	Non-sewered sanitation systems - Prefabricated integrated treatment units - General Safety and performance requirements for design and testing	AX101.2

Staff Analysis: A review of the standard(s) proposed for inclusion in the code, ANSI/CAN/IAPMO/ISO 30500-2019 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 March 20, 2021.

Reason Statement: This proposal covers the essential considerations that a building official must assess when a non-sewered sanitation system (NSSS) as defined herein is installed in a building. Designed for operation without a sewer connection and, in many cases, without a dedicated water supply, NSSSs are anticipated to meet critical public health needs in areas with limited water and wastewater infrastructure, water supply constraints, and/or unfavorable soils for traditional on-site disposal methods. In the U.S., over 20% of the population relies on an on-site wastewater system. And even today, a portion of our population does not have access to fully functioning sanitation, largely due to lack of affordable infrastructure or to challenging site conditions.

In 2011, the Bill & Melinda Gates Foundation launched the "Reinvent the Toilet Challenge" to bring new technology to bear to achieve sustainable sanitation solutions. The target is a factory-built device that provides complete and effective treatment of human sanitary waste, unconnected to any sewer or drainage network and with minimal inputs of energy and water. Eight teams received Foundation support to develop prototypes for lab testing, field trials, and commercialization. Among these initial devices, three broad pathways for treatment technology have emerged -- electro-chemical, biological, and combustion -- and in some cases, combinations of these in the same device. Manufacturers have been involved in these efforts, and LIXIL (owner of the American Standard brand) and other companies are working to develop compliant systems for both domestic and international installations. It is the general preference of manufacturers to design and market systems that are compliant with published codes and standards, rather than one-off compliance reviews by individual jurisdictions.

To facilitate commercialization of hi-tech toilets and their acceptance by state and national regulatory bodies, an ISO standard was adopted in 2018 to establish the key performance attributes of NSSSs. Standard 30500, *Non-sewered sanitation systems - Prefabricated integrated treatment units - General safety and performance requirements for design and testing*, sets performance requirements for solid and liquid outputs, odor, noise, air emissions, materials, safety, marking, and ergonomics, together with relevant test procedures for measuring the attainment of these requirements. This ISO standard was adopted in identical form as a U.S. and Canadian national standard in 2019, designated as ANSI/CAN/IAPMO/ISO 30500:2019.

This proposal addresses the considerations that must be taken into account by building officials regarding the placement and installation of NSSSs in buildings. The proposal would permit (but not require) the installation of a NSSS listed to the ISO standard, and provide an exception to the general requirement in the IPC that sanitation devices be connected to the building drainage system, unless a connection is required by the AHJ. Certain key protections, such as backflow prevention, proper ventilation of combustion-based units, and proper siting of storage tanks (if any) external to the unit are each specified in the proposal. Considerations of the use and disposal of outputs of the system are specifically referred to an AHJ, which most likely will be a health department.

Criteria for the functioning of the unit for its intended purpose are established by the ISO standard and do not need to be repeated in plumbing code language. It should be noted that the ISO standard was developed by an international group of scientists, engineers, and regulators to assure the highest levels of treatment would apply to all outputs (air, water, and solids) from the device. The performance-based standards allow a variety of technologies to be applied, so long as key metrics are achieved. The microbiological reduction requirements for solid and liquid waste are based on the quantitative microbial risk assessment (QMRA) method recognized by the World Health Organization for this purpose. The requirements of the standard mimic the highest quality standards imposed by regulatory agencies on waste-derived materials destined for reuse. The standard's test procedures are rigorous (both lab and field tests are required), and the proposal allows only NSSSs listed to the standard to be approved for installation under this appendix.

With "Reinvented Toilets" meeting the 30500 standard now on the cusp of commercialization, the arrival of such toilets at job sites across the country can reasonably be expected by the time this code update is published and adopted by states and localities, e.g., 2025. Clear code language will accelerate the availability of safe sanitation for people who lack it today. While much is still unknown about the cost, maintenance, and reliability of NSSSs, or even the business model for their installation and servicing, forward-looking communities and jurisdictions with acute sanitation needs will want to be prepared for the safe installation and use of this promising new technology as it enters the market. This proposal lays out the necessary groundwork for code officials to inspect and approve their installation, set out in an appendix available for voluntary adoption by state and local code bodies.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

The proposal creates an appendix for voluntary adoption, and thus poses no additional costs on construction built to the base code. In jurisdictions where it is adopted, the proposal authorizes, but does not require, installation of a non-sewered sanitation device, as defined. Builders remain free to install less expensive sanitary ware if they so choose. First costs of an NSSD are expected to be higher than a conventional flush toilet, but may reduce sewer connection charges. NSSDs may also allow construction on sites that might otherwise be unbuildable due to lack of sewer

infrastructure or site conditions unsuitable for conventional on-site systems.

IPSDC



cdpACCESS

2021 GROUP A PROPOSED CHANGES TO THE I-CODES

April 11 – May 5, 2021
Virtual Committee Action Hearings

PSD1-21

IPSDC: 1101.2, ISO (New), ANSI/CAN/IAPMO/ISO 30500-2019 (New), IAPMO (New), NP (New)

Proponents: Edward R. Osann, Natural Resources Defense Council, representing Natural Resources Defense Council (eosann@nrdc.org); CJ Lagan, representing LIXIL (cj.lagan@lixil.com); albert rubin, Self, representing self (rubin@ncsu.edu)

2021 International Private Sewage Disposal Code

Revise as follows:

1101.2 Residential wastewater treatment systems. The regulations for materials, design, construction and performance shall comply with NSF 40 or with IAPMO/ISO 30500.

Add new standard(s) as follows:

ISO

International Organization for
Standardization
Chemin de Blandonnet 8
Geneva Switzerland CP 401 - 1214

ANSI/CAN/IAPMO/ISO 30500-2019 Non-sewered sanitation systems - Prefabricated integrated treatment units - General safety and performance requirements for design and testing.

IAPMO

IAPMO Group
4755 E. Philadelphia Street
Ontario CA 91761

ANSI/CAN/IAPMO/ISO 30500-2019 Non-sewered sanitation systems - Prefabricated integrated treatment units - General safety and performance requirements for design and testing.

Add new text as follows:

NP

New Promulgator

Reason Statement: As stated in the user note at the beginning of Chapter 11, septic tanks are not the only method for treatment of sewage from a residence. Section 1101.2 allows for factory-built wastewater treatment facilities, and specifies a single required standard -- NSF 40. This proposal would allow builders another factory-built equipment option -- non-sewered sanitation systems (NSSSs) meeting the requirements of ANSI/CAN/IAPMO/ISO 30500.

In 2011, the Bill & Melinda Gates Foundation launched the "Reinvent the Toilet Challenge" to bring new technology to bear to achieve sustainable sanitation solutions. To facilitate commercialization of hi-tech "Reinvented Toilets" and their acceptance by state and national regulatory bodies, an ISO standard was adopted in 2018 to establish the key performance attributes of NSSSs. Standard 30500, *Non-sewered sanitation systems - Prefabricated integrated treatment units - General safety and performance requirements for design and testing*, sets performance requirements for solid and liquid outputs, odor, noise, air emissions, materials, safety, marking, and ergonomics, together with relevant test procedures for measuring the attainment of these requirements. This ISO standard was adopted in identical form as a U.S. and Canadian national standard in 2019, designated as ANSI/CAN/IAPMO/ISO 30500:2019.

Criteria for the functioning of the unit for capturing and fully treating human waste are established by the ISO standard and do not need to be repeated in IPSDC language. Among initial devices, three broad pathways for treatment technology have emerged -- electro-chemical, biological, and combustion -- and in some cases, combinations of these in the same device. Manufacturers have been involved in these efforts, and LIXIL (owner of the American Standard brand) and other companies are working to develop compliant systems for both domestic and international installations. It is the general preference of manufacturers to design and market systems that are compliant with published codes and standards, rather than one-off compliance reviews by individual jurisdictions.

Designed for operation without a sewer connection and, in many cases, without a dedicated water supply, NSSSs are anticipated to meet critical public health needs in areas with limited water and wastewater infrastructure, water supply constraints, and/or unfavorable soils for traditional on-site disposal methods. In the U.S., over 20% of the population relies on an on-site wastewater system. And even today, a portion of our population does not have access to fully functioning sanitation, largely due to lack of affordable infrastructure or to challenging site conditions.

With "Reinvented Toilets" meeting the 30500 standard now on the cusp of commercialization, the arrival of such toilets at job sites across the country can reasonably be expected by the time this code update is published and adopted by states and localities, e.g., 2025. Clear code language

will accelerate the availability of safe sanitation for people who lack it today. While much is still unknown about the cost, maintenance, and reliability of NSSSs, or even the business model for their installation and servicing, forward-looking communities and jurisdictions with acute sanitation needs will want to be prepared for the safe installation and use of this promising new technology as it enters the market.

Where an onsite sewage disposal challenge calls for a factory-built solution, this proposal provides an additional option for builders and homeowners to select if they choose.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

This proposal authorizes, but does not require, installation of a non-sewered sanitation device (NSSD), as defined. Builders remain free to install less expensive sanitation devices if they so choose. NSSDs may allow construction on sites that might otherwise be unbuildable due to lack of sewer infrastructure or site conditions unsuitable for conventional on-site systems.

PSD1-21

RP2-21

IRC: P2704.1

Proponents: Gary Duren, representing self (codecompliance1@aol.com)

2021 International Residential Code

Revise as follows:

P2704.1 Slip joints. Slip-joint 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. Slip-joint connections shall be accessible. Such access shall provide an opening that is not less than 12 inches (305 mm) in its smallest dimension.

Reason Statement: The term "trap outlet" is confusing. Fixtures have outlets and traps have outlets. The meaning of this section is clarified by eliminating the term "trap".

Cost Impact: The code change proposal will not increase or decrease the cost of construction
There is no negative cost impact associated with this proposal

RP2-21

RP3-21

IRC: P2704.1

Proponents: Joseph Summers, Chair, representing Plumbing, Mechanical and Fuel Gas Code Action Committee (PMGCAC@iccsafe.org)

2021 International Residential Code

Revise as follows:

P2704.1 Slip joints. Slip-joint connections shall be installed only for tubular waste piping and only between the ~~waste trap~~ outlet of a fixture and the connection to the drainage piping. Slip-joint connections shall be made with an *approved* elastomeric sealing gasket. Slip-joint connections shall be accessible. Such access shall provide an opening that is not less than 12 inches (305 mm) in its smallest dimension.

Reason Statement: The 2015-2017 PMGCAC successfully changed IRC Section P2704.1 concerning the location of slip joints. However, an error was made at the PMGCAC level that was not noticed by anyone until the 2018 IRC was published. This could not be corrected as Errata as the code reflects exactly how the approved proposal was written.

This proposal is submitted by the ICC Plumbing/Mechanical/Gas Code Action Committee (PMG CAC). The PMG CAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2020, the PMG CAC has held several virtual meetings open to any interested party. Numerous interested parties attended the committee meetings and offered their input. Related documentation and reports are posted on the PMG CAC website at: <https://www.iccsafe.org/products-and-services/i-codes/code-development-process/pmg-code-action-committee-pmgcac/> Reference PMGCAC Working Document Item 24.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

The proposal only clarifies the code. Clarifications of existing requirements do not change material or labor costs and therefore, do not impact the cost of construction.

RP3-21

RP10-21

IRC: P2905.3

Proponents: Edward R. Osann, Natural Resources Defense Council, representing Natural Resources Defense Council (eosann@nrdc.org); sharon bonesteel, salt river project, representing salt river project (sharon.bonesteel@srpnet.com); Anthony Floyd, City of Scottsdale, representing City of Scottsdale (afloyd@scottsdaleaz.gov); David Collins, representing The Preview Group, Inc. (dcollins@preview-group.com)

2021 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~~ 75 feet (~~30480~~ 22860 mm). Water heaters and recirculating system piping shall be considered to be sources of hot water.

Reason Statement: This proposal reduces the current limit on domestic hot water supply line length by 25%, from 100 feet to 75 feet. Lengthy hot water piping wastes water and energy while occupants wait for hot water to arrive at outlets for bathing, washing, and culinary purposes. Hot water in supply pipes cools down between draws, and the longer the pipe length, the more cooled-down hot water will need to be purged by the next user. The water sitting in the pipe will be purged, and a nearly equal volume of water will lose heat to the pipe wall on its way to the outlet, and be purged as well. Pipe insulation will partially reduce the volumes to be purged, but note that current I-Codes do not require insulation of piping less than 3/4", and 1/2" piping is widely used to supply sinks and showers. Reducing the maximum length from 100 feet to 75 feet will reduce the volume of water in DHW supply lines and the consequent volume of purged water. 75 feet will provide ample flexibility for designers to locate DHW outlets in sufficient proximity to the hot water heater to meet this requirement, more flexibility than the 50-foot limit on DHW pipe length currently in the IPC. Note also that reduced pipe length will reduce the waiting time for building occupants.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The code change proposal can be met through design changes without adding to construction costs. Reduced pipe length may result in cost savings for labor and materials.

RP10-21

G172-21

IBC: (New), 1210.3 (New), 1210.3.1 (New), 1012.3.1.1 (New), 1012.3.1.2 (New), 1210.3.2 (New), 1210.3.2.1 (New), 1210.3.2.2 (New), 1210.3.3 (New), 1210.3.3.1 (New), 1210.3.3.2 (New), 1210.3.3.3 (New), 1210.3.4 (New), 1210.3.4.1 (New), 1210.3.4.2 (New), 1210.3.4.3 (New), 1210.3.4.4 (New), 1210.3.4.5 (New)

Proponents: Jake Pauls, representing Myself (bldguse@aol.com)

2021 International Building Code

Add new definition as follows:

STANCHION. . An often vertical, tubular structure serving as a hand-grasped, point of control that is fixed between separate supporting structures such as surfaces or other railings, as opposed to being mounted, in cantilever fashion, on walls as occurs with conventional grab bars.

Add new text as follows:

1210.3 Grab bars and stanchions at bathtubs and showers in Groups R-1, R-2, R-3 and R-4. Bathtubs in Groups R-1, R-2, R-3 and R-4 occupancies shall be provided with grab bars or stanchions complying with Section 1210.3.1, 1210.3.2 and 1210.3.4. Showers in Groups R-1, R-2, R-3 and R-4 shall be provided with a grab bar or stanchion complying with Section 1210.3.3 and 1210.3.4.

Exception: Accessible units complying with ICC A117.1 Section 1102.11 are not required to comply with this section.

1210.3.1 Grab bar or stanchion at the access side to bathtubs and shower/bathtub combinations. A grab bar or stanchion shall be provided at the access side to each bathtub and shower/bathtub combination in accordance with Section 1210.3.1.1 or 1210.3.1.2. Location dimensions, except as provided for spacing in Section 1210.3.4.2, are to the centerline of the grab bar or stanchion at the fixed end of its graspable tubing component complying with Section 1210.3.4.1.

1012.3.1.1 End wall grab bar. A vertical grab bar on one end wall of the bathtub shall be provided between 9 inches (230 mm) and 12 inches (305 mm) horizontally, inward from the access side of the bathtub. The grab bar shall extend from 24 inches (610 mm) maximum to 60 inches (1524 mm) minimum above the finished floor.

1012.3.1.2 Bathtub access side, grab bar or stanchion. A vertical grab bar or a vertical stanchion shall be provided within 2 inches (51 mm) maximum inward, and within 6 inches (152 mm) maximum outward, from the access side of the bathtub. The grab bar or stanchion shall be located 2 inches (51 mm) minimum, horizontally, from the centerline of any shower curtain rod installation. The grab bar or stanchion shall extend from 24 inches (610 mm) maximum to 60 inches (1524 mm) minimum above the finished floor.

1210.3.2 Grab bar and stanchion at the back wall, or non-access side, of bathtubs and shower/bathtub combinations. A grab bar or stanchion shall be provided on the back wall, or non-access side of each bathtub and shower/bathtub combination in accordance with Section 1210.3.2.1 or 1210.3.2.2. Location dimensions, except as provided for spacing in Section 1210.3.4.2, are to the centerline of the grab bar or stanchion at the fixed end of its graspable tubing component complying with Section 1210.3.4.1.

Exception: For relatively deep bathtubs, where the required centerline height for the overall or lower end height exceeds 24 inches (610 mm) above the adjacent finished floor elevation, the centerline height shall be permitted to be 3 inches (76 mm) maximum above the bathtub rim height.

1210.3.2.1 Horizontal grab bar or stanchion. A grab bar 36 inches (910 mm) minimum in length, centered, plus or minus two inches (51 mm), along the length of the bathtub, or a full-length stanchion installed between end walls. Its height above the bathtub rim shall be 8 inches (203 mm) minimum and 10 inches (255 mm) maximum.

1210.3.2.2 Diagonal grab bar. A grab bar shall be installed in a diagonal position with its angle, to horizontal, 30 degrees minimum and 60 degrees maximum. The diagonal grab bar shall have the higher end located 12 inches (305 mm) maximum from the control end wall, measured horizontally. The lower end shall be 8 inches (203 mm) minimum and 10 inches (255 mm) maximum above the bathtub rim.

1210.3.3 Grab bar or stanchion at the access to showers. A grab bar or stanchion shall be provided for the shower in accordance with Section 1210.3.3.1 or 1210.3.3.2. or 1210.3.3.3. Location dimensions, except as provided for spacing in Section 1210.3.4.2, are to the centerline of the grab bar or stanchion at the fixed end of its graspable tubing component complying with Section 1210.3.4.1.

1210.3.3.1 At shower exterior. A vertical grab bar or stanchion shall be provided outside of the shower compartment, adjacent to the access opening. The grab bar or stanchion shall extend from 24 inches (610 mm) maximum to 60 inches (1524 mm) minimum, measured vertically above the finished floor.

1210.3.3.2 For smaller shower interior. For showers with interior plan dimensions, including diagonally between corners, 51 inches (1295 mm) maximum, a vertical grab bar shall be provided, interior to the shower compartment, 30 inches (762 mm) maximum, measured horizontally from the control wall on the side closest to the access opening. The grab bar shall extend from 24 inches (610 mm) maximum to 60 inches (1524 mm) minimum, measured vertically above the finished floor outside the shower.

1210.3.3.3 For larger shower interior. For showers with any interior plan dimensions exceeding 51 inches (1295 mm), including diagonally

between corners, a grab bar or stanchion located interior to the shower compartment shall be 30 inches (762 mm) maximum, measured horizontally to the access to the shower. If oriented vertically, the grab bar or stanchion shall extend from 24 inches (610 mm) maximum to 60 inches (1524 mm) minimum, measured vertically above the finished floor outside the shower. If oriented horizontally, the grab bar or stanchion shall have a length 36 inches (915 mm) minimum at a height, measured vertically above the finished floor outside the shower, of 48 inches (1220 mm) minimum and 60 inches (1524 mm) maximum.

1210.3.4 Grab bar and stanchion requirements. Grab bars and stanchions, shall comply with Section 1210.3.4.1 through 1210.3.4.5.

1210.3.4.1 Cross section. Grab bars and stanchions shall have a cross section complying with one of the following:

1. A circular cross section with an outside diameter of 1-1/4 inch (32 mm) minimum and 2 inches (51 mm) maximum.
2. A noncircular cross section complying with ICC A117.1.

1210.3.4.2 Spacing. The space between a grab bar or stanchion and any adjacent surface, including the closest surfaces of fixed, sliding or swinging panel enclosure system provided to prevent water migration on the access side of a bathtub or shower, shall be 1-1/2 inches (38 mm) minimum.

1210.3.4.3 Surface Hazards. Grab bars or stanchions and adjacent surfaces shall be free of sharp or abrasive elements. Edges shall be rounded.

1210.3.4.4 Structural characteristics. Grab bars and stanchions shall be designed and constructed for the structural loading conditions set forth in Section 1607.8.2.

1210.3.4.5 Moisture. Grab bars and stanchions, including mountings, shall be installed and sealed, or provided with permanent drainage such as weep holes for components subject to water intrusion, to protect structural elements from moisture.

Reason Statement: SECTION 202. DEFINITIONS: Stanchion.

An often vertical, tubular structure serving as a hand-grasped, point of control that is fixed between separate supporting structures, surfaces or other railings as opposed to being mounted, in cantilever fashion, on walls as occurs with conventional grab bars.

Brief Introduction to, and Demonstrating Use of, Stanchions and Points of Control. Stanchions have a long history beginning—especially in a facility safety engineering sense—with transportation vehicles such as buses and many intensive-occupancy trains.

See examples below of early stanchions dating back about 100 to 200 years, as photographed in 2018 at the London Transport Museum in London. The first example is of one of the earliest stanchions, likely a wrought iron, vertically-oriented rod, on a horse-drawn, omnibus carrying up to 22 passengers. Next to it are examples of stanchions dating back about 100 years and, at the right side, about one year ago, in a Canadian light rail train car.



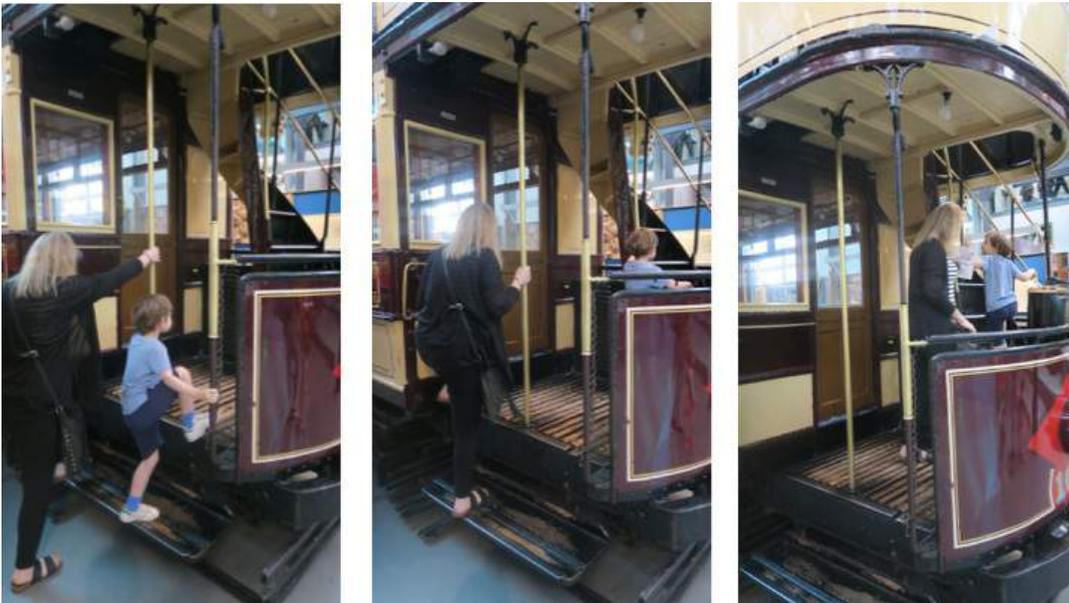
Not very long after the first example, such vehicles started carrying passengers on the roof level reached by a ladder in relatively rare examples and soon a helical stair became quite standard with relatively good railings on each side.

The central handrail for such helical stairs was often a nearly straight, vertical stanchion. Stair steps had more than a 50-degree pitch at the center

of the stair width with risers sometimes well over a foot in height.

They were well equipped with handholds which were used by ascending and descending passengers often with three Points of Control, e.g., both hands on railings to either side and at least one foot planted on the small treads.

The sequence of photos below demonstrate not just the range of numbers of Points of Control achieved by adults and children on one of the historic trams (about a hundred years old) in the London Transport Museum. When examined carefully, the photos bring new realizations of what typical users of facilities provided with stanchions do with them and what that means for the technical details we will see in this proposal for grab bars and stanchions in the IBC.



The woman at the right is traversing a step height of 16 inches, as is the young boy. This is comparable to what is needed to step up and over a bathtub wall.

Stanchions predate the relatively recent conventional, wall-mounted grab bars (for which an early example is installed on the tram's end wall adjacent to the woman's left arm). Note that the woman has chosen to grasp a point on the stanchion, with her right hand, at a height that would be at the top of the very short-length grab bar and thus only marginally useful with her left hand.

The people in the sequence of photographs (above) taken at the London Museum, include a very young boy and his mother, traversing two steps each in excess of one foot rise—indeed, the second step is has a full 16 inch (406 mm) rise. Note the young boy's most-effective handholds are at the elevation of his head; both children and adults instinctively know how high the more effective points of control are. (Now if adults drafting and applying point of control would only apply the same lessons learned early in life at about age 12 months.) Moreover the boy maintains a minimum of three points of control in both ascent and descent—to the full extent the available railings—mostly vertical stanchions—allow. I was able to capture images of children, as well as some adults using the railings with the precarious underfoot challenges (comparable in a way to what bathers need to do). Note these photos were not staged in any way; they are completely spontaneous with absolutely no communication between camera operator and subjects photographed who were unaware of the photography.

The boy, shown in his ascent of the both stairs leading to the upper level seating, would have had difficulty if he had attempted to use the short grab bar instead of the full-length stanchion. He would only have been able to reach the grab bar from a position on the first tread, not from the ground level. Both of his hands are grasping a stanchion in the first photo; his left hand is at about the elevation of his head (and thus hidden from the camera's view). You can see this is the situation shown in the last of the three photos; his left hand is reaching for a head-height grasp on a stanchion to his left while his right hand is at about his shoulder height.

An important lesson, from the photo sequence above, is that stanchions provide more options for placement and more options for users to choose

the points of control they perceive as important to their task and safety. In other words ordinary people, even of young age, are displaying skill in ergonomics (the science and technology of how people utilize things, systems, etc. available to them to perform tasks efficiently and safely).

Now, for purposes of this IBC proposal, along with grab bars, it should be clear that stanchions are reliable, indeed superior, time-tested means of providing for “points of control” and they provide options for location and length that greatly exceed what conventional grab bars can provide.

Comparing Points of Control Quantitatively.

Grab bars, handrails and stanchions are important building components (and some mobility aids such as walkers) providing—in combination with our hands and our feet—what are called (in ergonomics) “points of control” to maintain balance and aid in ambulation and other movement activities that are crucial to utilizing means of egress, for example, for safety generally (in both normal and emergency conditions) and which pose dangers of injurious falls, the leading source of injuries in most countries, including the USA.

Regarding ergonomics as a basis for regulating movement task safety, today, three points of control are the minimum acceptable standard for occupational settings in the USA for ladders, etc., including the minimal footholds and handholds that truck drivers (accessing and leaving their high-off-the-ground truck cabs) have learned to climb up and down safety by exercising, continuously, provision of three points of control; i.e., with only one extremity (or four) in motion at any one time. The table below describes the full range of points of control provided in several contexts.

Number of Points of Control Via Hands or Feet	≤1	1	2	3	3-4
Standard walker for older adult with altered gait.					✓
Occupational settings with risk of worker falls from heights. Also, stairs where users can use two handrails simultaneously, one on each side.				✓	
<u>Stairs where users have only a single handrail.</u> <i>Grab bar(s) usable for bathtub/shower entry/egress.</i>			✓ ★		
Bathtubs/showers with slip resistant underfoot surfaces when wet.		✓			
Bathtubs/showers without slip resistant underfoot surfaces when wet, the common condition currently.	✓				

Having introduced some key terminology related to Points of Control, we move to the proposal for a new Section of requirements for the International Building Code in which, currently, the requirements for points of control for bathing and showering facilities exist in the lower left corner of the Table shown above. The proposal of several new requirements follows next, along with supplementary text expanding on what is being required, how the requirements can be implemented, and what are the benefits and costs of doing so (as NFPA 101 plus NFPA 5000) have been doing since 2018 and the *National Building Code of Canada* has parallel new requirements proposed (and formally, publicly reviewed) for its 2020 edition (which is slated for publication later in 2021, a delay brought on by the COVID-19 pandemic).

IBC SECTION

1210

TOILET AND BATHROOM REQUIREMENTS

....

1210.3 Grab bars and stanchions at bathtubs and showers in Groups R-1, R-2 R-3 and R-4. Bathtubs in Groups R-1, R-2, R-3 and R-4 occupancies shall be provided with grab bars and/or stanchions complying with Section 1210.3.1, 12010.3.2 and 12010.3.4. Showers in Groups R-1, R-2, R-3 and R-4 shall be provided with a grab bar or stanchion complying with Section 1210.3.3 and 1210.3.4.

Exception: Accessible units complying with ICC A117.1 Section 1102.11 are not required to comply with this section.

A separate proposal for the IBC is being submitted as a “fall back” in the event ICC members are unhappy with these new requirements for grab bars and stanchions. It references the current requirements, for grab bars and stanchions, in NFPA 101 (and 5000), 2021 edition, after being first published in their 2018 editions. The NFPA requirements include broader scoping that extends what is proposed here for residential and includes all the residential settings listed here for the IBC as well as for the IRC which will be addressed in ICC’s Group B proposal review in 2022 (also for the 2024 edition for which this scoping is proposed for the IBC).

The largest number of approximately one million-plus professionally treated injuries annually in the USA, arising from fall events in bathing and showering facilities occur in residential settings.

See the extract from the best recent published paper on injury epidemiology involving consumer products, including the top two—stairs and bathtubs/showers—that are (or should be) regulated with improved building code requirements. The table below is extracted from Table 2 in the publication: Lawrence B, Spicer R, Miller T. A fresh look at the costs of non-fatal consumer product injuries. *Injury Prevention* 2015; 21:23-29. It shows products that are covered by building codes; this accounts for the omission, in this extract, of products ranked between 13 and 27.

Note that the “bathtubs/showers” category does not include “Toilets” which has its own data; neither does the “bathtubs/showers” category include scald-related injuries for which CPSC/NEISS has a separate coding.

Table 2 Leading products involved in injury, ranked by non-fatal injury cost, 2009–2010 (2009 dollars)

Rank	Product	Annual total cost (\$)	Percentage	Annual incidence	Mean cost (\$)
1	Stairs	92 294 000 000	10.1	1 231 619	74 937
2	Floors	81 233 000 000	8.9	941 296	86 299
3	Beds	44 192 000 000	4.9	612 658	72 131
4	Bicycles	38 898 000 000	4.3	536 360	72 521
5	Football	27 127 000 000	3.0	467 575	58 016
6	Basketball	25 677 000 000	2.8	508 167	50 529
7	Chairs	22 377 000 000	2.5	335 180	66 761
8	Bathtubs/showers	19 723 000 000	2.2	262 849	75 037
9	Ladders	18 662 000 000	2.1	179 195	104 144
10	Exercise (w/o equipment)	16 135 000 000	1.8	211 682	76 224
11	Doors	15 914 000 000	1.7	334 868	47 522
12	Ceilings and walls	15 545 000 000	1.7	288 755	53 833
28	Toilets	6 691 000 000	0.7	77 675	86 145

The available data from US CPSC NEISS (National Electronic Injury Surveillance System) are not fine grained enough to assign injuries to the subgroups of R1, R2, R3, and R4 occupancies (along with the likely biggest culprit, one and two-family dwellings). Injury treatment professionals (who provide the basic data collection for NEISS) are already too busy and not trained in the arcane topic of occupancy classification to provide the fine-grained location data some might like to have. (The current COVID pandemic means this shortcoming is even more pronounced.)

Thus, more-basic criteria based on etiology, epidemiology, ergonomics and economics must be used. To make a long complex story short, the public health approach has to be founded on basic equity we deserve, with this daily or otherwise frequent exposure to dangers of baths and showers.

The most dangerous aspect of “exposure to dangers of baths and showers” occurs in only a relatively few seconds—the transfers into and out of bathtubs and showers, unlike exposure to stairs which accounts for many seconds per day per person. Thus exposure to injury per use, e.g., only as much as an average one bathtub or shower use per day per residential occupant must be recognized.

With such correction for exposure, the injury risk for bathtubs/showers is in the same league as stairs. This is the most important factor to be kept in mind when considering the scoping for the new grab bar and stanchion requirements, the sole focus of IBC section 1210.3. Moreover, as is clear in the epidemiological data provided with a breakdown by age of injured people.

Like all good public health practice, this includes a focus on two topics: epidemiology (incidence of injuries, for example, in the population) and etiology (causes of, and contributing factors to, injuries—our focus here). Etiology is substantially linked to the ergonomics involved in bathing, showering and the injury incidents associated with each due to two major factors, points of control and underfoot conditions.

This latter topic, *underfoot conditions*, is beyond the scope of the this proposal and, moreover, is currently most effectively addressed with non-IBC interventions, partly because the plumbing industry is even less well equipped, technologically, to address underfoot conditions, including slipping within, and in the vicinity of, bathtubs and showers.

Beyond the scope of this IBC change proposal are non-code solutions for solving the slipping problem at extremely modest cost and bather effort; this involves having a wet terry cloth towel between a bather's feet and the bathtub or shower's underfoot surface. This works more reliably than does almost any attempt to have an inherent slip-resistant surface manufactured into the underfoot bathtub or shower surface for which, the proponents extensive worldwide travels are very, very rarely found, for example, in hotel guest room bathrooms. If hotel operators, who are relatively risk conscious, cannot reliably provide slip-resistant bathing surfaces, what can we expect of ordinary residential occupants or building officials, very few of whom are sufficiently expert on slip resistance.

See the fourth framed figure, a table with fine-grained analysis, of CPSC/NEISS data for a 4-year period, by the Pacific Institute for Research and Evaluation, PIRE, reproduced below—as part of a set of 13 selected slides from the proponent's presentation at a world congress on ergonomics in 2018. This is very relevant to the issue of scoping of these proposed IBC requirements.

In relation to the 2018 presentation, solutions to the ergonomics challenges of bathing and showering safety were addressed by the proponent in a 2018 publication as well as the related presentation delivered at the (latest) 20th Triennial Congress of the International Ergonomics Association which are provided, to the extent possible this proposal. The citation to the formally published paper is:

Pauls, J. and Johnson, D.A. (2018). **Applying Ergonomics to Bathing Safety: Including adoption of unorthodox practices for slip-resistant underfoot surfaces of bathtubs plus showers and provision of effective points of control.** *Proceedings of the 20th Congress of the International Ergonomics Association (IEA2018)*, Vol II, Springer, pp. 486-500.

To provide an overview of this scientific paper and full presentation on the ergonomics and epidemiology of the problem this proposal addresses, here follow 13 of the proposal-relevant slides from the 26 PowerPoint slides used in the formal presentation by the lead author (the proponent of this proposal) in Florence, Italy, in 2018. The full presentation can be delivered, at no cost, to any ICC Chapter in a one-hour Webinar by contacting Jake Pauls at bldguse@aol.com. Here follows a selection of the slides from 2018 to introduce the very large background for the full proposal. Presenting them here provides better readability for this proposal.

**Applying Ergonomics to Bathing Safety:
Including adoption of unorthodox practices for
slip-resistant underfoot surfaces of bathtubs plus
showers and provision of effective points of control**

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Proc.*, pages 486-500

1. Introduction to Epidemiology, Etiology and Economics of the Problem

... Falls are a typical mechanism leading to injuries, many of which occurred with bather movement before, during and after bathing when combinations of four key dangers are present:

- Geometry of the impediments over which one must transfer (e.g., bathtub walls and high sills for dedicated showers)
- Hard, unforgiving surfaces
- Insufficient, effective points of control
- Slippery underfoot surfaces.

Showers & Tubs More Dangerous than Stairs per Unit of Exposure

... A single step into or out of a bathtub imposes a higher risk of a misstep and fall than occurs in a person's typical single step on stair flight—which entails moving ones foot the height of two risers. Each entails traversing about 400 mm vertically. ...



Growth of bathing-related falls versus those associated with stairs.

Bath and shower-related injuries in the US grew in the two decades between 1991 and 2010 by a factor of two for those resulting in an ED visit and by a factor of three for those resulting in hospital admission after first going to the ED.

For 2010, in the USA, there were about 263,000 ED-treated injuries associated with bathtubs and showers and about one million treated by medical personnel in all settings. ... Toilet use involves some similar transfer issues to bathing with comparable mitigation measures, namely improving points of control. ... Vulnerability of older adults [with their non-voluntary exposure] leads to larger proportions of older person injuries from toilet use [relative to use of bathtubs or stairs].

PIRE-calculated annual injuries in USA (2010-14) by treatment type and age

Bathtubs and Showers

Age	Doc/Outp	ED	Hospital-admitted		Total	%
			via ED	Direct		
00-09	37,421.8	43,503.5	1,167.9	620.3	82,713.5	14
10-19	35,732.0	23,165.9	449.5	164.8	59,512.1	
20-29	70,160.9	36,019.2	1,196.7	438.5	107,815.2	59
30-39	111,471.0	36,842.1	1,355.1	394.4	150,062.6	
40-49	128,771.0	37,902.7	2,180.3	666.2	169,520.2	28
50-59	123,201.0	38,110.5	3,513.7	1,235.5	166,060.7	
60-69	70,778.2	24,719.1	4,742.3	1,571.3	101,811.0	
70-79	50,653.0	18,959.1	5,648.5	1,762.5	77,023.1	
>=80	50,961.4	23,964.3	9,880.1	2,699.0	87,504.8	
Total	679,150.0	283,187.0	30,134.0	9,552.5	1,002,023.5	
	% 68	28	3	1		

PIRE-calculated annual injuries in USA (2010-14) by treatment type and age

Toilets

Age	Doc/Outp	ED	Hospital-admitted		Total	
			via ED	Direct		
00-09	8,189.7	7,788.1	200.2	79.0	16,257.0	7
10-19	3,013.0	2,532.5	84.2	24.4	5,654.0	
20-29	7,713.5	5,373.5	250.0	125.0	13,461.9	34
30-39	15,319.0	5,987.9	459.1	125.2	21,891.2	
40-49	19,713.9	6,995.6	1,055.7	391.1	28,156.3	
50-59	26,914.0	9,408.3	2,112.3	673.5	39,108.2	58
60-69	30,101.1	10,529.7	3,840.1	1,318.7	45,789.6	
70-79	28,111.9	10,741.6	5,512.9	1,751.8	46,118.2	
>=80	44,531.3	21,436.1	12,449.2	3,353.6	81,770.2	
Total	183,607.0	80,793.3	25,963.8	7,842.2	298,206.3	
%	62	27	9	3		

2 Practice Innovations Addressing 3 of the 4 Types of Dangers

2.1 Points of Control to Mitigate Transfers over Impediments

Points of control, usable simultaneously by one or both bather's hands, augment the limited and bare feet which are vulnerable to various missteps entering/using/exiting the bathtub or shower.

The costs of installing the two points of control (horizontal or diagonal and vertical) are comparable to the average USD280 societal cost of bathing and toileting-related injuries—expressed on an average, per-household basis—over a one-year period.

The economic bottom line: there is a close match in the annual societal cost-per household, of bathing and toileting-related fall injuries in the US and the cost of installing points of control, such as conventional grab bars and, as a cost-effective, more versatile innovation—*stanchions* (which are very common in buses, street cars and train cars).

See Figure 1 for both options shown simultaneously.



2.2 Hard, Unforgiving Surfaces, Including Those of Impediments

... Dangers are geometry of the impediments one must traverse by stepping over (e.g., bathtub walls and high sills for shower enclosures) and hard, unforgiving surfaces (e.g., enamel surfaces of rigid tub walls, ceramic tiles on walls and floors, and metal water controls plus spouts).



Showers require careful attention to underfoot slip resistance that is often inherent in wet conditions, even with certain tiles and surface roughness treatments underfoot. . . . Unfortunately, for conventional bathtubs with their smooth surfaces, another approach to slip resistance is needed and this is the largest focus of this paper, especially as the recommended intervention is somewhat unorthodox, even heretical to some objecting to a virtually no-cost, simple solution to a complex problem.

3. Provision of Effective Underfoot Slip Resistance

3.1 Recent and Current Safety Standard Situation

Efforts to deal with slippery underfoot surfaces of bathtubs with manufactured surface treatments have not been successful. . . .

Testing Slip Resistance of Terry Cloth Towels with a Tribometer.

The second author of this paper, who is certified in the use of a tribometer (the *Variable Incident Tribometer, VIT*) has, independently been testing comparable terry cloth towel samples with a smooth granite surface as well as a calibrated test tile of known slip resistance (SR) comparable to what a glazed enamel tub provides under dry, damp and sopping wet conditions.



4. Conclusions

Generally, the practice of using ordinary terry cloth towels to solve one of the main problems with bathing safety, along with installation of effective points of control—for example, using stanchions that integrate well with bathroom décor at low cost—should make bathing a less dangerous activity, at modest cost and low installation complexity in both new bathrooms and existing ones.

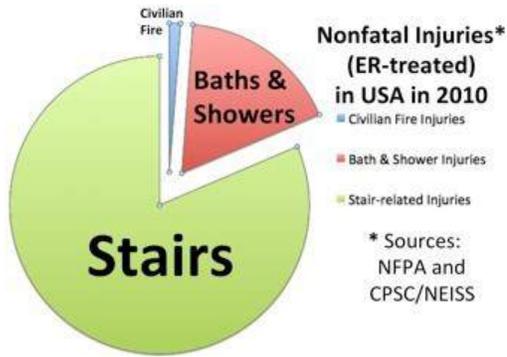
One bottom line is somewhat unorthodox, even heretical. Whereas in much of the work on slip resistance, water is considered an “enemy,” it turns out that for slip resistance of smooth, wet surfaces typically found underfoot in a bathtub or shower, the combination of ordinary terry cloth towels and water is your “friend.”

Solutions to the slipping and other problems for bathing—especially showering—can be elegant, counterintuitive, inexpensive and immediately at hand (or should we say also “at foot”) in every bathroom. Such solutions are addressed in freely accessible videos and, increasingly, those solutions requiring structurally adequate installation of points of control are being enshrined in North American safety standards and building codes. Thus improved bathing safety could be a success story in applying ergonomics to heretofore inadequately addressed public health problems.

References (20 provided)

See www.bldguse.com for related videos on bathing safety and the IEA2018 Proceedings, Vol 2, for the full, 15-page paper.

This overdue attention to this huge public health and safety problem is, significantly, the longstanding, official public policy position of the American Public Health Association (which the proponent has represented on ICC’s Industry Advisory Committee since the late 1990s) and the Canadian Public Health Association. As well as being a longtime member of both Associations, the proponent is also a recipient of both Associations’ public service awards for his work on model codes and safety standards committee for decades—now totaling over 280 Committee-years of experience, dating back to the 1970s, he has as a voting member on over a dozen national committees in the US alone. Before moving on scoping to technical requirements, there is one last exhibit, a pie chart showing the relative number of nonfatal injuries associated with bathtubs and showers relative to nonfatal stair-related injuries and nonfatal fire-related injuries.



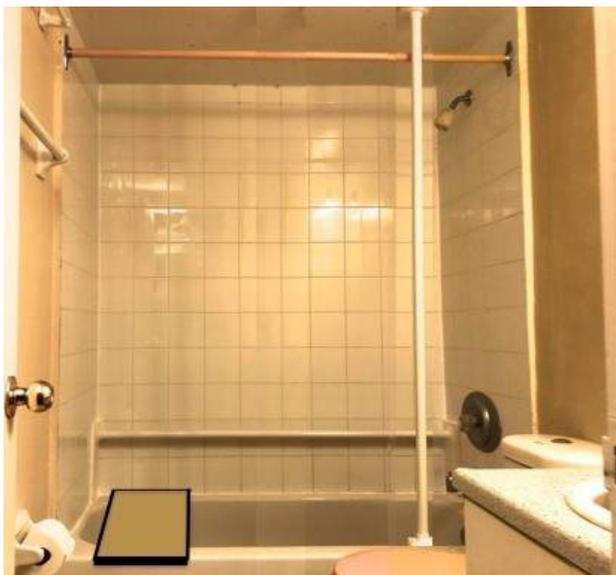
The vast majority of issues that make up the agendas of ICC code development hearings are not associated with the number of injuries that relate to bathing and showering. This is a major reason for the scoping being broad; the problem is broad and involve over one million injured Americans annually who seek professional medical attention for their bathing and showering-related injuries.

Proposed IBC Technical Requirements for Bathtubs with Points of Control Utilizing Grab Bars and Stanchions Front or Access Side of the Bathtub. Included within proposed section 1210.3.1, for the access (front) side of bathtubs, are five options, all premised on the assumption that the bathtub will be used for both immersion bathing and showering. The later involves some kind of water spray control barrier between the bathtub and the remainder of the bathroom which (at last in North American bathrooms) is designed to stay relatively dry. This can be as simple as an installed shower curtain rod or track over the tub's access side tub rim and manual sealing of the curtain (hung from the rod or track) before each shower at both the control end wall and the head end wall. Thus, at the end walls, an area several inches wide, horizontally, has to be kept free of wall mounted, conventional grab bars that interfere with such routine, yet critical sealing to capture all the shower spray water in the tub, not on the floor outside the tub. This is addressed in 1012.3.1.1 covering options for vertical grab bar, horizontally located *inside* the shower curtain rod or track and enclosure wall end framing area of each end wall. The graphic below shows all eight of the options from which a minimum of two are required by the proposed requirements for bathtubs. The eight options include two (grab bar) locations for each of two end walls plus one stanchion option for the entire length of the access side of the bathtub. The graphic shows such a stanchion option about midway along the bathtub length because that works best for the adjacent toilet for which the stanchion is an aid in stand-to-sit and sit-to-stand transfers. These front of tub access side options are discussed below the graphic.



Note that the figure shows the (50-year old enamel steel) bathtub rim-mounted stanchion is outside of the shower curtain rod by 2 to 3 inches, so that the stanchion interferes in no way with the (not shown) shower curtain. Although the curtain is not a matter for IBC scoping, the installed shower curtain rod or track should be as the location is critical to performance of the bathtub or shower both in terms of water control—which is addressed already in IBC Section 1210—as well as in user safety from falls that IBC Section 1210 must now incorporate. Section 1012.3.1.2, covers the access-side option which is outside the shower curtain rod/track either approximately over the outer edge of the bathtub or within 6 inches (150 mm), horizontally, outside the bathtub footprint. Either a wall-mounted conventional grab bar or a stanchion can be located within this area, up to 6 inches (150 mm) away from the access side tub wall as well as the first two inches over the outer edge of the tub rim. Thus there are five options for a single required grab bar as well as multiple additional options for a vertical stanchion anywhere along the length of the access side tub wall. This provides maximum flexibility with bathroom layouts including double-duty service provided by a floor (or tub rim for steel bathtubs) lower mount-to-ceiling vertical stanchion if there is a toilet adjacent to the bathtub. For some users this stanchion will be the most used of all (eight) options included

in the proposal package. Also, demonstrating the flexibility of placement with the access side, vertical stanchion is the figure below which has the rim-mounted stanchion (which could also be floor mounted for the same utility) shifted away from the center of the tub wall to allow a person using a head end, tub seat which means more bathtub rim length needs to be clear so ones legs can be easily lifted over the tub rim and into (or out of) the tub. There is also a wall-mounted grab bar located just outside the head end wall to assist with stand-to-sit and sit-to-stand transfers to/from the tub seat.



Although it would drastically affect the tub seat just described, there is also an option of installing rigid glazed panels, fixed, sliding or, more rarely, hinged to form an access side enclosure for the bathtub and manage the shower water capture. The installation and use of such an enclosure, also involves keeping end wall-mounted grab bars and the end-wall framing for the enclosure separated. This is specified in 1210.3.4.2 Spacing, which is addressed later near the end of the proposed technical requirements, the first group of which follow directly below. **1210.3.1 Grab bar or stanchion at the access side to bathtubs and shower/bathtub combinations.** A grab bar or stanchion shall be provided at the access side to each bathtub and shower/bathtub combination in accordance with Section 1210.3.1.1 or 1210.3.1.2. Location dimensions, except as provided for spacing in 1210.3.4.2, are to the centerline of the grab bar or stanchion at the fixed end of its graspable tubing component complying with 1210.3.4.1.

1012.3.1.1 End wall grab bar. A vertical grab bar on one end wall of the bathtub shall be provided between 9 inches (230 mm) and 12 inches (305 mm) horizontally, inward from the access side of the bathtub. The grab bar shall extend from 24 inches (610 mm) maximum to 60 inches (1524 mm) minimum above the finished floor.

1012.3.1.2 Bathtub access side, grab bar or stanchion. A vertical grab bar or a vertical stanchion shall be provided within 2 inches (51 mm) maximum inward, and within 6 inches (152 mm) maximum outward, from the access side of the bathtub. The grab bar or stanchion shall be located 2 inches (51 mm) minimum, horizontally, from the centerline of any shower curtain rod installation. The grab bar or stanchion shall extend from 24 inches (610 mm) maximum to 60 inches (1524 mm) minimum above the finished floor.

Back Wall or Non-access Side of the Bathtub. Shifting attention now to the back wall or non-access side, there are three options there with a few the diagonal grab bar having multiple options with the slope angle permitted to be between 30 and 60 degrees to horizontal which could serve differing statures of users. The back wall options are shown in the graphics below.



1210.3.2 Grab bar and stanchion at the back wall, or non-access side, of bathtubs and shower/bathtub combinations. A grab bar or stanchion shall be provided on the back wall, or non-access side of each bathtub and shower/bathtub combination in accordance with Section 1210.3.2.1 or 1210.3.2.2. Location dimensions, except as provided for spacing in 1210.3.4.2, are to the centerline of the grab bar or stanchion at the fixed end of its graspable tubing component complying with 1210.3.4.1. **Exception:** For relatively deep bathtubs, where the required centerline height for the overall or lower end height exceeds 24 inches (610 mm) above the adjacent finished floor elevation, the centerline height shall be permitted to be 3 inches (76 mm) maximum above the bathtub rim height. **1210.3.2.1 Horizontal grab bar or stanchion.** A grab bar 36 inches (910 mm) minimum in length, centered, plus or minus two inches (51 mm), along the length of the bathtub, or a full-length stanchion installed between end walls. Its height above the bathtub rim shall be 8 inches (203 mm) minimum and 10 inches (255 mm) maximum. **1210.3.2.2 Diagonal grab bar.** A grab bar shall be installed in a diagonal position with its angle, to horizontal, 30 degrees minimum and 60 degrees maximum. The diagonal grab bar shall have the higher end located 12 inches (305 mm) maximum from the control end wall, measured horizontally. The lower end shall be 8 inches (203 mm) minimum and 10 inches (255 mm) maximum above the bathtub rim. It should be clear that the back wall (or non-access side) points of control are mostly intended for use in stand-to-sit and the more difficult to perform (with lower limb weakness and issues with postural hypotension), sit-to-stand transfers. The points of control are less used—with the exception of missteps that lead one to fall during tub entry or egress that might be mitigated with a (desperate) grab for something on the non-access side—for the challenge of stepping over the access side of the tub wall. One increasing situation is larger tubs that can be completely or relatively free-standing with no immediately adjacent walls on any side of the tub. **Summing Up Bathtub Requirements.** To underline how minimal or flexible this code change proposal is, it only requires two points of control—out of several options—for bathtub users to enter and exit a bathtub which can have tub walls to surmount that exceed one foot in height (305 mm) with possibly slippery conditions under the weight-bearing foot. Currently that single point of control, under a person's weight-bearing foot, is all that is provided for bathtubs. This merits repetition: *the IBC currently permits one dubious point of control underfoot with no possibility of a hand providing a point of control because there are no grab bars or stanchions at hand.* **Lessons about “Reinforcement” (“Backing”) Instead of Actual Installation of Points of Control.** There are many lessons in this proposal's use of many photos (which are but a tiny part of the proponent's image collection); one that has special relevance to the argument about providing only reinforcement for future grab bar installation and thus rely, into the future, on code rules which have begun to provide for this. However, the dimensions for installing such backing, based on (unlikely to be timely) future grab bar installations, were premised on a different paradigm or set of assumptions, namely to provide for future grab bars that, while perhaps working for non-ambulatory users who were relying upon seated-position-to-seated-position transfers into and out of bathtubs and transfer-type showers. Grab bars installed within the limits of such backing would all ambulatory users. Furthermore, they are often based on horizontal grab bar installations that are not as useful as vertical ones for *ambulatory* transfers over tub rims. Thus, instead of having the option of using conventional wall-mounted (into reinforcement or backing) grab bars for *ambulatory* users, especially taller adults, there will possibly be greater reliance on stanchion solutions which do not rely on cantilevered structures attached to walls (which might or might not have appropriate reinforcement) and needing to sustain loads of up to a few hundred pounds, possibly on screwed in attachments that will have substandard performance, for grab bars, if affected by water issues that are addressed at the end of this Reason statement.

Proposed IBC Technical Requirements for Showers with A Single Point of Control Utilizing a Grab Bar or Stanchion Although stand-alone showers are simpler than are combination bathtubs and showers, they are changing from the conventional small plan area showers to larger plan areas, including retrofit showers where there were formerly bathtubs. Those plan areas were often about 30 by 60 inches (762 by 1524 mm), a retrofit that is increasingly seeing in hotel guest rooms. An example follows of such a conversion before and after the retrofit of a floor-to-ceiling stanchion located at the side of the opening near the edge of the (safety) glass half panel on the access side of the shower. The upper photographs show, on the left side, the poor graspability of the edge of the glass panel, the only thing available as a point of control, albeit a relatively poor one. The lower photographs show the stainless steel stanchion (33 mm diameter) and both hands of a person preparing to exit the shower enclosure





Note that the shower has the controls for the shower water convenient to the entry to the shower enclosure, one of the considerations for such larger showers, especially where the shower head is far away from the entry opening to limit water discharge onto the bathroom floor. The stanchion is located within 36 inches (762 mm), measured horizontally, from both the shower head (which was chosen—in this first proposal—as a reference point for locating the stanchion; another choice—triggered by an amendment to this proposal could reference this to the control or at least one of both). With the lengthened facility, it became clear that a horizontal bar might be more effective than a vertical one, for example to serve bathers needing to take a few steps to get from one end to the other, especially in showers with the (roughly) half-length (safety) glass barrier to help prevent water spray from ending up on the bathroom floor (as illustrated above). There is also (as the ICC ANSI A117 Committee, Accessible Bathing Task Group has started discussing) the problem of where controls for the shower water flow and temperature should be placed, i.e., near the entry end (the situation in the photos above) or at the shower head(s) end. Another consideration, beyond the scope of this code proposal is that, if a point of control for the toilet also becomes important, such a stanchion is also within reach of a person using the toilet.



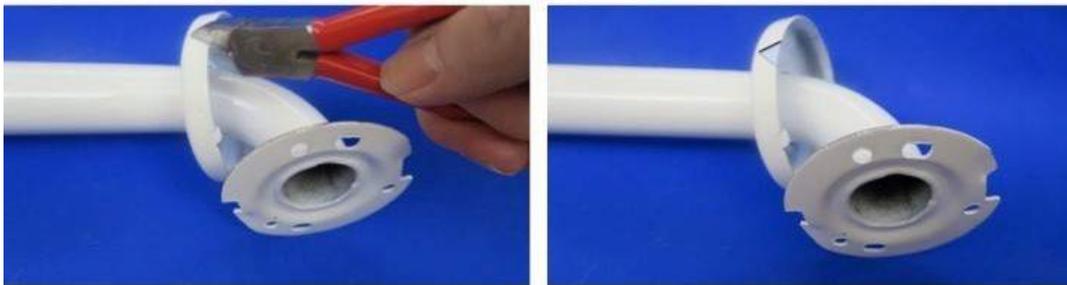
Thus the stanchion, installed primarily for the shower, also serves stand-to-sit and sit-to-stand transfers associated with the toilet. This option was confirmed by the hotel guest at the time these photographs were taken (as documented in the photograph above). There are also many instances where, depending on the layout of a bathtub (including its controls) and an adjacent shower, a single grab bar or, more likely, a stanchion can serve both bathing/showering facilities. Below is one example (selected from many other bathroom settings in the proponent's photo library of new dwelling unit and hotel guest room bathrooms during the last decade. In this case, this is a hotel guest room which, contrary to the hotel chain's policy, had no grab was provided for either facility. This led to a meeting with the Manager on Duty to complain and point out how easy it would be to retrofit a grab bar or, easier still, a stanchion (similar to the one depicted here which was "installed" digitally). Such a grab bar would comply with both 1210.3.3.1 (for the shower) and 1210.3.1.2 (for the bathtub).



Generally, there is a need for some of the current developments with showers to have the benefit of focused discussions by other experts in both the field of ergonomics as well as the accessibility field. Discussions have already begun with interested members of the previously mentioned A117 Accessible Bathing Task Group who recognize the benefits of what is proposed here for ambulatory users has a benefit for ongoing considerations of bathing and showering facilities for those not capable of ambulation. Some of this rethinking of ICC A117.1 requirements will continue to occur as this proposal goes to the CAH part of the ICC process and as amendments are possible subsequently. With that background to showers, here are the currently proposed requirements for showers as addressed in the IBC. **1210.3.3 Grab bar or stanchion at the access to showers.** A grab bar or stanchion shall be provided for the shower in accordance with Section 1210.3.3.1 or 1210.3.3.2, or 1210.3.3.3. Location dimensions, except as provided for spacing in 1210.3.4.2, are to the centerline of the grab bar or stanchion at the fixed end of its graspable tubing component complying with 1210.3.4.1. **1210.3.3.1 At Shower Exterior.** A vertical grab bar or stanchion shall be provided outside of the shower compartment, adjacent to the access opening. The grab bar or stanchion shall extend from 24 inches (610 mm) maximum to 60 inches (1524 mm) minimum, measured vertically above the finished floor. **1210.3.3.2 For Smaller Shower Interior.** For showers with interior plan dimensions, including diagonally between corners, 51 inches (1295 mm) maximum, a vertical grab bar shall be provided, interior to the shower compartment, 36 inches (910mm) maximum, measured horizontally from the control wall on the side closest to the access opening. The grab bar shall extend from 24 inches (610 mm) maximum to 60 inches (1524 mm) minimum, measured vertically above the finished floor outside the shower. **1210.3.3.3 For Larger shower Interior.** For showers with any interior plan dimensions exceeding 51 inches (1295 mm), including diagonally between corners, a grab bar or stanchion located interior to the shower compartment shall be 36 inches (915 mm) maximum, measured horizontally to the access to the shower. If oriented vertically, the grab bar or stanchion shall extend from 24 inches (610 mm) maximum to 60 inches (1524 mm) minimum, measured vertically above the finished floor outside the shower. If oriented horizontally, the grab bar or stanchion shall have a length 36 inches (915 mm) minimum at a height, measured vertically above the finished floor outside the shower, of 48 inches (1220 mm) minimum and 60 inches (1524 mm) maximum. The final section, 12.3.4. deals with mostly well-established details based on the current ICC A117.1 or IBC Section 1210. **1210.3.4 Grab bar and stanchion requirements.** Grab bars and stanchions, shall comply with Section 1210.3.4.1 through 1210.3.4.5. With following requirements almost entirely consistent with the parallel A117.1 requirements, the only reason statement needed is for two matters, both tiny but important details. First, unlike A117.1, the clearance between walls and grab bars is 1.5 inches (38 mm) minimum, not 1.5 inches absolute. The latter is an error in A117.1 that will be corrected, I hope, in the next (2024) edition. The majority of users' hands will slip through a 1.5-inch opening and the danger, when bearing down onto a grab bar, of ones hand slipping into the space and breaking bones in ones forearm is not reduced by the absolute criterion rather than a minimum. See the photos below illustrating how even the hand of a large male, admittedly of advanced age (with some shrinkage of muscle mass), can slip through a 1.5-inch (38 mm) space. While this results in minor bruising of a very small area of the back of ones hand, there is a benefit to the hand not being jammed in the space as the area of the hand and wrist just above the hand is not an area one wants to injure, as with fracture(s). Having the hand go through the space and then having the arm caught nearer the elbow provides some protection from fracture due to the muscle mass in the upper forearm and the larger bones there.



Bottom line, one does not want to injure ones hand or wrist when “bearing down” on a (horizontal) grab bar with a grab bar that only nominally meets the 1.5-inch (38 mm), absolute spacing rule that must now be reconsidered in A117.1. Hence this draft for mainstreamed grab bars refers to the 1.5 inches as a “minimum” for good reason. **1210.3.4.1 Cross section.** Grab bars and stanchions shall have a cross section complying with one of the following:1. A circular cross section with an outside diameter of 1-1/4 inch (32 mm) minimum and 2 inches (51 mm) maximum.2. A noncircular cross section complying with ICC A117.1. **1210.3.4.2 Spacing.** The space between a grab bar or stanchion and any adjacent wall surface, shall be 1-1/2 inches (38 mm) minimum. **1210.3.4.3 Surface Hazards.** Grab bars or stanchions and adjacent surfaces shall be free of sharp or abrasive elements. Edges shall be rounded. **1210.3.4.4 Structural Characteristics.** Grab bars and stanchions shall be designed and constructed for the structural loading conditions set forth in Section 1607.8.2. **1210.3.4.5 Moisture.** G rab bars and stanchions, including mountings, shall be installed and sealed, or provided with permanent drainage (such as weep holes) for components subject to water intrusion, to protect structural elements from moisture. Aside from the clearance space issue in 1210.3.4, the other new detail is in the existing requirements in IBC 1210 with the addition of the “drainage” detail (in 1210.3.4.5 Moisture) which deals with a common problem with many conventional grab bars which trap water in the bottom third or so of the snap on caps over the fixing plates for screws into the wall. Water flowing along the grab bar can readily enter the void behind the caps and be trapped there indefinitely causing corrosion of the screws and deterioration of the wall materials resulting failure of the screws, especially to pull out forces on the grab bar. Sealing does not solve this problem. Drainage through weep holes or even prying the bottom of the cap away from the wall can mitigate this water entry/accumulation issue. (The latter solution is one the proponent practices in many of the hotels in which he is a guest and an investigator of water deterioration of conventional grab bar fixing systems. This is after describing the problem, among others, to the highest management leaders of the very large hotel chain for which he is a “Titanium” member.) A simple procedure for some minor “surgery” on the offending grab bar caps is illustrated below. Simple cut out a small triangle of the cap edge so water can escape after it (invariably) gets inside the cap by flowing through the typically oversized hole in the cap where the tubing passes through. The full justification (to be provided separately as it is largely consistent with what was submitted in the prior cycle.) will show what can collect and grow behind such caps. Below is shown the readily available tool for creating a permanent drainage hole in the relatively thin metal sheet material formed into the cap shape. The last photo depicts the “V” notch which should be on the bottom edge of the cap when it is installed.



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Approximately 50 internationally-produced scientific and technical references, on bathing/showering safety, were compiled by the proponent, in 2016, for an American Public Health Association (APHA) draft policy highlighting, especially two Canadian research studies that also are addressed in video presentations by Principal Investigators (Dr. Nancy Edwards, Dr. Alison Novak) for the research and posted, for free streaming viewing at, <https://vimeo.com/164239941> Accessed January 8, 2018. Additional videos covering technical aspects of bathing and showering safety (including cost impact and benefit issues*) are found at the following links (all of which are available, with descriptions, at www.bldguse.com, the proponent’s Professional Practice Website, Accessed January 8, 2018.).

<https://vimeo.com/237294479>

<https://vimeo.com/239276202> *

<https://vimeo.com/197742277>

<https://vimeo.com/193507768>

<https://vimeo.com/173883358>

<https://vimeo.com/175101448> *

<https://vimeo.com/117572176>

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Cost Impact: The code change proposal will increase the cost of construction
This proposal, if adopted, will increase the cost of construction but the payback period is only a few years.

The order of magnitude of such increase, covering two full, three-piece bathrooms with one bathing facility in each, is on the order of a hundred dollars, more specifically in the low hundreds, e.g., 300 to 400 per one-family dwelling and half as much for apartments, hotel rooms, etc. Against these additional costs, which should be amortized over approximately a 15-year period (if not longer), the societal injury costs averted annually are approximately \$150, per family, with a break-even point reached in a few years.

On a societal scale, in the USA, the estimated annual number of injuries nearly a decade ago led to over one million professional medical visits (second only to stairs at over four million such visits annually in the USA). About 90 percent of the injuries occur in residential settings, but the breakdown of injury occurrences, for ICC occupancy groupings of R1, R2, R3 and R4, is not available. (More-detailed information can be seen in a

more authoritative form in the video of world injury economics expert, Dr. Ted Miller, from Maryland, presenting at the World Public Health Congress in Melbourne, in 2017. This is available on a video streaming freely at <https://vimeo.com/channels/866600/239276202>).

The injury reduction benefits assumed in this analysis do not cover the much larger daily benefits of enhanced usability and ability to have, for example, a daily shower, which increases in value with the user's age. For example, at 78, proponent Jake Pauls values the daily "hedonistic" benefit (a standard term used in cost-benefit analysis) of each morning shower—facilitated with a single stanchion—at about a dollar per day or \$365 per year. The stanchion parts cost only about \$40 and DIY installation took about an hour. My total benefit per year, not even assuming any injury averted, exceeds my costs.

The COVID epidemic has likely increased the injury toll, perhaps also the need for therapeutic baths and showers, as it has also greatly increased home usage by all family members. It has also complicated, immensely, the availability of consultations with medical professionals with resulting increase in fall consequences, e.g., leading to physical disabilities. Reduced mobility also increases balance issues and falls generally in the entire population. It will be years before we have authoritative studies and impact analyses on what has happened in 2020 due to the pandemic which is expected to continue well into 2021.

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