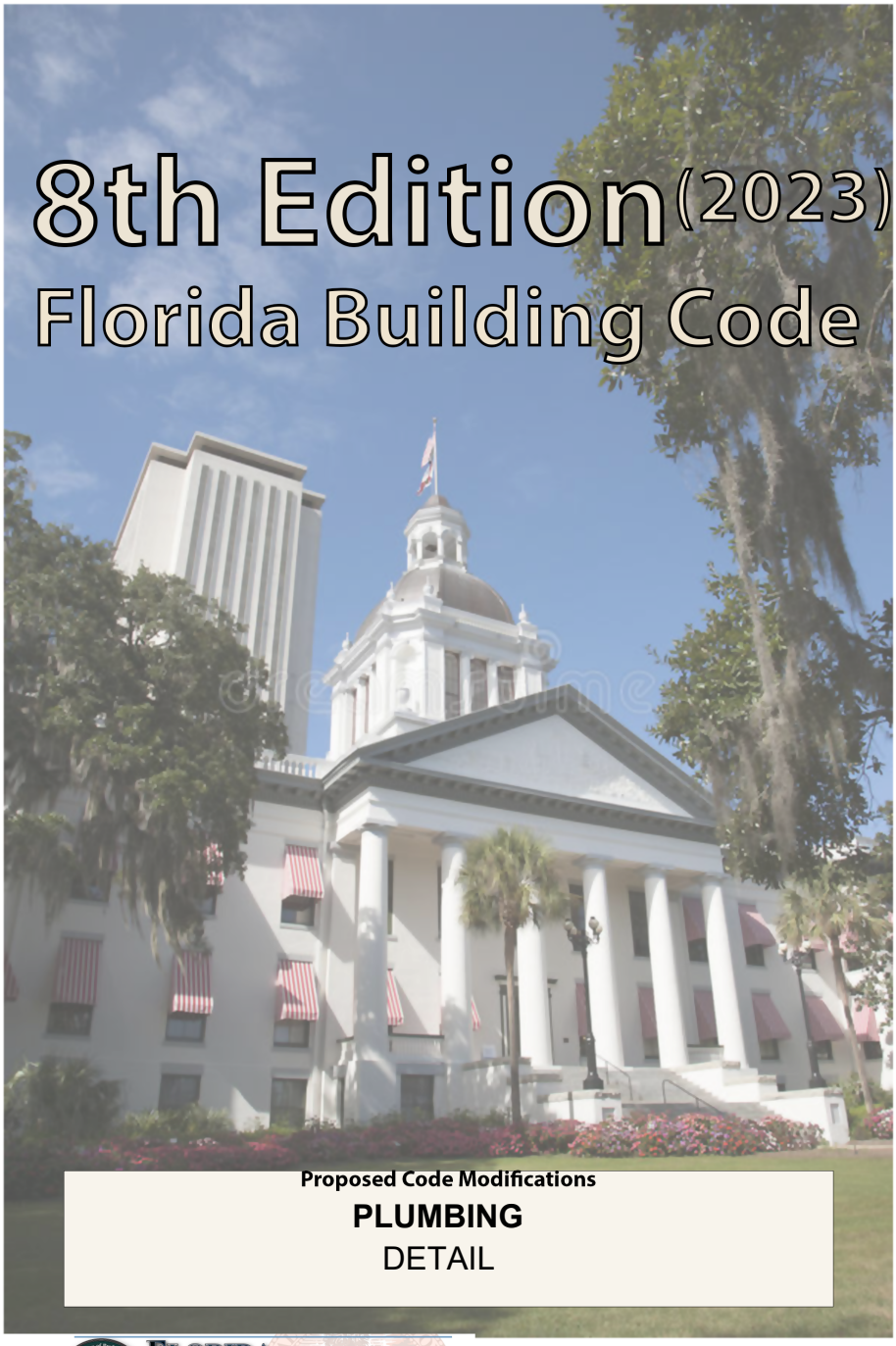


FLORIDA BUILDING COMMISSION
"Stronger Codes Through Science and Consensus"

dbpr Department of Business & Professional Regulation

This document created by the Florida Department of Business and Professional Regulation -

850-487-1824

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Fuel Gas

1

P9962

Date Submitted	02/09/2022	**Section**	310	**Proponent**	Jonathan Sargeant
Chapter	3	**Affects HVHZ**	No	**Attachments**	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

Summary of Modification

Sections 310.1.1 through 310.1.1.5 were pre-existing language from the Florida Building Code – Fuel Gas, Sixth Edition (2017). Sections 310.2 through 310.3 were added with the adoption of the Florida Building Code – Fuel Gas, Seventh Edition (2020).

Rationale

Sections 310.1.1 through 310.1.1.5 were pre-existing language from the Florida Building Code – Fuel Gas, Sixth Edition (2017). Sections 310.2 through 310.3 were added with the adoption of the Florida Building Code – Fuel Gas, Seventh Edition (2020). When the NFPA 54 (2018), International Fuel Gas Code (2018), and International Residential Code (2018) added the new language contained in sections 310.2 through 310.3, it was accompanied by the deletion, in their entirety, of sections 310.1.1 through 310.1.1.5. I believe that was the intent of the Florida Building Commission as well. I believe that not deleting sections 310.1.1 through 310.1.1.5 was an error that needs to be corrected by means of a code change. The current language of the 2020 Florida Building Code conflicts with itself because these three sections exist within the same document. The 2017 language directs the installer to directly bond all CSST tubing systems. The current 2020 language instructs the installer to directly bond only non-arc-resistant (yellow) CSST tubing systems, but permits arc-resistant (black) CSST “to be bonded where it is connected to an appliance that is connected to the appliance grounding conductor of the circuit that supplies that appliance.” Because the bonding provisions are in conflict, the commission issued a declaratory statement to guide inspectors and installers on the use and interpretation of this code section. I am submitting this proposal to eliminate the conflicting language and make the declaratory statement unnecessary.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

The proposal makes enforcement of the code easier by correcting a conflict.

Impact to building and property owners relative to cost of compliance with code

None. Proposal does not change the requirements of the code. The proposal corrects a conflict in the code.

Impact to industry relative to the cost of compliance with code

None. Proposal does not change the requirements of the code. The proposal corrects a conflict in the code.

Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

The proposal clarifies the correct bonding practices of CSST and fixes a conflict. Does not impact the welfare of the general public.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

The proposal improves the code by correcting a conflict.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No. Does not descriminate.

Does not degrade the effectiveness of the code

No.

310.1 Pipe and tubing other than CSST. Each aboveground portion of a gas piping system other than corrugated stainless steel tubing (CSST) that is likely to become energized shall be electrically continuous and bonded to an effective ground-fault current path. Gas piping other than CSST shall be considered to be bonded where it is connected to appliances that are connected to the equipment grounding conductor of the circuit supplying that appliance.

~~310.1.1 CSST. Corrugated stainless steel tubing (CSST) gas piping systems and piping systems containing one or more segments of CSST shall be bonded to the electrical service grounding electrode system or, where provided, the lightning protection grounding electrode system.~~

~~310.1.1.1 Point of connection. The bonding jumper shall connect to a metallic pipe, pipe fitting or CSST fitting.~~

~~310.1.1.2 Size and material of jumper. The bonding jumper shall be not smaller than 6 AWG copper wire or equivalent.~~

~~310.1.1.3 Bonding jumper length. The length of the bonding jumper between the connection to a gas piping system and the connection to a grounding electrode system shall not exceed 75 feet (22 860 mm). Any additional grounding electrodes used shall be bonded to the electrical service grounding electrode system or, where provided, the lightning protection grounding electrode system.~~

~~310.1.1.4 Bonding connections. Bonding connections shall be in accordance with NFPA 70.~~

~~310.1.1.5 Connection devices. Devices used for making the bonding connections shall be listed for the application in accordance with UL 467.~~

310.2 CSST. This section applies to corrugated stainless steel tubing (CSST) that is not listed with an arc-resistant jacket or coating system in accordance with ANSI LC 1/CSA 6.26. CSST gas piping systems and piping systems containing one or more segments of CSST shall be electrically continuous and bonded to the electrical service grounding electrode system or, where provided, the lightning protection grounding electrode system.

310.2.1 Point of connection. The bonding jumper shall connect to a metallic pipe, pipe fitting or CSST fitting.

310.2.2 Size and material of jumper. The bonding jumper shall be not smaller than 6 AWG copper wire or equivalent.

310.2.3 Bonding jumper length. The length of the bonding jumper between the connection to a gas piping system and the connection to a grounding electrode system shall not exceed 75 feet (22 860 mm). Any additional grounding electrodes installed to meet this requirement shall be bonded to the electrical service grounding electrode system or, where provided, the lightning protection grounding electrode system.

310.2.4 Bonding connections. Bonding connections shall be in accordance with NFPA 70.

310.2.5 Connection devices. Devices used for making the bonding connections shall be listed for the application in accordance with UL 467.

310.3 Arc-resistant CSST. This section applies to corrugated stainless steel tubing (CSST) that is listed with an arc-resistant jacket or coating system in accordance with ANSI LC 1/CSA 6.26. The CSST shall be electrically continuous and bonded to an effective ground fault current path. Where any CSST component of a piping system does not have an arc-resistant jacket or coating system, the bonding requirements of Section 310.2 shall apply. Arc-resistant jacketed CSST shall be considered to be bonded where it is connected to an appliance that is connected to the appliance grounding conductor of the circuit that supplies that appliance.

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Fuel Gas

2

P9992

Date Submitted	02/01/2022	**Section**	301.12	**Proponent**	T Stafford
Chapter	3	**Affects HVHZ**	No	**Attachments**	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

Summary of Modification

This modification is one of a series of modifications that delete the seismic and snow requirements from the code. In accordance with Exception 2 to Section 101.2 of the FBCB, seismic and snow requirements are not to be utilized or enforced in the State of Florida.

Rationale

This modification is the culmination of a project funded by the Florida Building Commission through Building a Safer Florida (BASF) that the deletes the seismic and snow provisions from the Florida Building Codes. In accordance with Exception 2 to Section 101.2 of the Florida Building Code, Building, the seismic and snow provisions are exempted from the scope of the Florida Building Codes. Exception 2 to Section 101.2 states the following: "2. Code requirements that address snow loads and earthquake protection are pervasive; they are left in place but shall not be utilized or enforced because Florida has no snow load or earthquake threat." These modifications clarify and simplify the code by deleting requirements that do not apply in the State of Florida.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entities relative to enforcement of the code.

Impact to building and property owners relative to cost of compliance with code

No impact to building and property owners relative to cost of compliance with the code.

Impact to industry relative to the cost of compliance with code

No impact to industry relative to the cost of compliance with the code.

Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Clarifies and simplifies the code by deleting requirements that do not apply in the State of Florida.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Improves the code by deleting requirements that do not apply in the State of Florida.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

This proposal does not degrade the effectiveness of the code.

P9992Text Modification

Revise as follows:

301.12 Seismic resistance. Reserved. ~~When earthquake loads are applicable in accordance with the *Florida Building Code, Building,* the supports shall be designed and installed for the seismic forces in accordance with that code.~~

Mod_9992_TextOfModification.pdf Page: 1

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Fuel Gas

3

P10447

Date Submitted	02/15/2022	**Section**	403.6	**Proponent**	William Chapin
Chapter	4	**Affects HVHZ**	No	**Attachments**	**Yes**
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments Yes **Alternate Language No**

Related Modifications

Summary of Modification

PEX-AL-PEX has been used for gas distribution for over 15 years under numerous ISO, EU, and Australian standards. ASTM F1281 includes allowance for use with gases that are compatible with the pipe and fittings.

Rationale

This is part of a series of code changes to allow the use of PEX-AL-PEX distribution systems in the Fuel Gas Code. PEX-AL-PEX has been used for gas distribution for over 15 years under numerous ISO, EU, and Australian standards. ASTM F1281 was first published in the year 2000 and includes allowance for use with gases that are compatible with the pipe and fittings.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

Impact to building and property owners relative to cost of compliance with code

May reduce the cost of construction.

Impact to industry relative to the cost of compliance with code

None

Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Reduces workplace injuries for installers.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Equivalent performance to other systems allowed in the code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

Does not degrade the effectiveness of the code.

1st Comment Period History

Proponent Gary Kozan Submitted 3/10/2022 11:23:35 AM Attachments No

Comment:

The proponent is proposing several code mods to permit the use of PEX-AL-PEX for fuel gas piping, yet it does not appear that PEX-AL-PEX has ever been proposed or approved for inclusion into the IFGC, including the current 2024 I-Code cycle. Why? It may be more prudent to obtain I-Code approval first.

10447-G1

403.6 Plastic pipe, tubing and fittings. Polyethene plastic pipe, tubing and fittings used to supply fuel gas shall conform to ASTM D2513. Such pipe shall be marked "Gas" and "ASTM D2513".

Polyamide pipe, tubing and fittings used to supply fuel gas shall conform to ASTM F2945. Such pipe shall be marked "Gas" and "ASTM F2945".

Crosslinked PEX-Aluminum-PEX (PEX-AL-PEX) composite pipe and fittings used to supply and or distribute fuel gas shall conform to ASTM F1281. Such pipe shall be marked "Gas" and "ASTM F1281".

Polyvinyl chloride (PVC) and chlorinated polyvinyl chloride (CPVC) plastic pipe, tubing and fittings shall not be used to supply fuel gas.

Rationale: PEX-AL-PEX has been used for gas distribution for over 15 years under numerous ISO, EU, and Australian standards. ASTM F1281 was first published in the year 2000 and includes allowance for use with gases that are compatible with the pipe and fittings.

This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

Designation: F1281 – 17

An American National Standard

Standard Specification for Crosslinked Polyethylene/Aluminum/Crosslinked Polyethylene (PEX-AL-PEX) Pressure Pipe[1]

This standard is issued under the fixed designation F1281; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This specification covers a coextruded crosslinked polyethylene composite pressure pipe with a welded aluminum tube reinforcement between the inner and outer layers. The inner and outer crosslinked polyethylene layers are bonded to the aluminum tube by a melt adhesive. Included is a system of nomenclature for the crosslinked polyethylene-aluminum-crosslinked polyethylene (PEX-AL-PEX) pipes, the requirements and test methods for materials, the dimensions of the component layers and finished pipe, adhesion tests, and the burst and sustained pressure performance. Also given are the requirements and methods of marking. The pipe covered by this specification is intended for use in potable water distribution systems for residential and commercial applications, water service, underground irrigation systems, and radient panel heating systems, baseboard, snow- and ice-melt systems, and gases that are compatible with the composite pipe and fittings.

1.2 This specification covers only composite pipes incorporating a welded aluminum tube. Pipes consisting of metallic layers not welded together are outside the scope of this specification.

1.3 Specifications for connectors for use with pipe meeting the requirements of this specification are given in Annex A1.

1.4 This specification excludes polyethylene-aluminum-polyethylene pipes (see Specification F1282).

1.5 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.6 The following precautionary caveat pertains only to the test methods portion, Section 9, of this specification: *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.7 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D618 Practice for Conditioning Plastics for Testing
D883 Terminology Relating to Plastics
D1598 Test Method for Time-to-Failure of Plastic Pipe Under Constant Internal Pressure
D1599 Test Method for Resistance to Short-Time Hydraulic Pressure of Plastic Pipe, Tubing, and Fittings
D1600 Terminology for Abbreviated Terms Relating to Plastics
D1898 Practice for Sampling of Plastics (Withdrawn 1998)[3]
D2122 Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings
D2765 Test Methods for Determination of Gel Content and Swell Ratio of Crosslinked Ethylene Plastics
D3350 Specification for Polyethylene Plastics Pipe and Fittings Materials
E8 Test Methods for Tension Testing of Metallic Materials
F412 Terminology Relating to Plastic Piping Systems
F1282 Specification for Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Composite Pressure Pipe
F1974 Specification for Metal Insert Fittings for Polyethylene/Aluminum/Polyethylene and Crosslinked Polyethylene/Aluminum/Crosslinked Polyethylene Composite Pressure Pipe

2.2 *National Sanitation Foundation Standard:*

Standard No. 61 Drinking Water System Components—Health Effects[4]

[1] This specification is under the jurisdiction of ASTM Committee F17 on Plastic Piping Systems and is the direct responsibility of Subcommittee F17.11 on Composite.

Current edition approved Aug. 1, 2017. Published August 2017. Originally approved in 1990. Last previous edition approved in 2011 as F1281 – 11. DOI: 10.1520/F1281-17.

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] The last approved version of this historical standard is referenced on www.astm.org.

[4] Available from NSF International, P.O. Box 130140, 789 N. Dixboro Rd., Ann Arbor, MI 48113-0140, http://www.nsf.org.

*A Summary of Changes section appears at the end of this standard

Standard No. 14 Plastics Piping System Components and Related Materials[4]

2.3 *Federal Standard:*

Fed. Std. No. 123 Marking for Shipments (Civil Agencies)[5]

2.4 *Military Standard:*

MIL-STD-129 Marking for Shipment and Storage[5]

2.5 *Uniform Classification Committee Standard:*

Uniform Freight Classification[6]

2.6 *National Motor Freight Traffic Association Standard:*

National Motor Freight Classification[7]

3. Terminology

3.1 *Definitions*—Definitions are in accordance with Terminology F412, and abbreviations are in accordance with Terminology D1600, unless otherwise specified.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *assembly*—the joint between a fitting and a length of pipe.

3.2.2 *PEX-AL-PEX pipe*—composite pipe produced by co-extrusion or extrusion of layers of polyethylene/aluminum/polyethylene bonded together with a melt adhesive and cross-linked by irradiation or chemical means in combination heat and moisture.

3.2.3 *pipe hoop stress*—for simplicity the value of the hoop stress quoted assumes a homogeneous wall. Local values of stress will vary with the different layers (see 3.2.3.1).

3.2.3.1 *Discussion*—Thick walled plastic pipes produced from one material have hoop stresses that vary through the wall, and are usually described by the Lame Theory. The composite nature of the PEX-AL-PEX pipe, composed of materials with very different Young's Modulus values, will, on pressurization, not have a uniform stress distribution through the thickness of the wall of the pipe. The PEX-AL-PEX pipes have a hoop stress distribution that differs substantially from both the thick and thin walled pipe cases.

4. Pipe Classification

4.1 *Pipe Diameter*—The PEX-AL-PEX pipes are classified by the outside diameter.

4.2 *Pipe Dimension Ratio*—The concept of dimension ratio is not relevant to PEX-AL-PEX composite pipes, and cannot be used to relate pressure rating with total wall thickness.

5. Materials

5.1 *General*—The PEX-AL-PEX pipe is composed of one metallic layer, two layers of polymeric adhesive, and two layers of crosslinked polyethylene. For pipe made to this specification the constituent materials must meet the following requirements:

5.2 *Aluminum*—The aluminum shall have a thickness as specified in Table 1. The material shall have minimum elongations and ultimate tensile strengths of 20 % and 100 MPa (14 600 psi), respectively. The tests shall be conducted according to Test Methods E8.

5.3 *Crosslinked Polyethylene:*

5.3.1 The polyethylene shall be, in the final finished state in the pipe, crosslinked as defined in Terminology D883.

5.3.2 Polyethylene plastics used to make pipe meeting the requirements of this specification shall be virgin resin meeting the requirements of either Grade PE20A, B, or C; Grade PE23A, B, or C; Grade PE30A, B, or C; or Grade PE33A, B, or C in accordance with Specification D3350.

5.3.3 Class B compounds shall have sufficient ultraviolet (UV) stabilizers to protect the pipe from deleterious effects due to continuous outdoor exposure during storage and shipping. Pipe produced from Class B compounds are not suitable for exposed outdoor application. Class A, B, and C compounds shall have sufficient antioxidants to meet the requirements in Specification D3350.

5.4 *Melt Adhesive*—The material shall have a density cell of 1, 2, or 3; a melt index cell of 1, 2, or 3; and a color code of A or B, in accordance with Specification D3350.

[5] Available from DLA Document Services, Building 4/D, 700 Robbins Ave., Philadelphia, PA 19111-5094, http://quicksearch.dla.mil.

[6] Available from the Uniform Classification Committee, Suite 1106, 222 South Riverside Plaza, Chicago, IL 60606.

[7] Available from the National Motor Freight Traffic Association, Inc., National Motor Freight Classification, American Tracking Associations, Inc., Traffic Dept., 1616 P St., NW, Washington, DC 20036.

TABLE 1 Outside Diameters, Aluminum Thickness, and Tolerances for PEX-AL-PEX

Diameter Nominal (DN)	Nominal Pipe Size (NPS)	Minimum Outside Diameter, mm (in.)	Tolerance on Minimum, mm (in.)	Maximum Out-of-Roundness,[A] mm (in.)	Minimum Aluminum Thickness, mm (in.)	Tolerance on Thickness, mm (in.)
12	⅜	12.00 (0.472)	+0.30 (0.012)	0.3 (0.012)	0.18 (0.007)	+0.09 (+0.0035)
16	½	16.00 (0.630)	+0.30 (0.012)	0.4 (0.016)	0.18 (0.007)	+0.15 (+0.006)
20	⅝	20.00 (0.787)	+0.30 (0.012)	0.5 (0.020)	0.23 (0.009)	+0.23 (+0.009)
25	¾	25.00 (0.984)	+0.30 (0.012)	0.5 (0.020)	0.23 (0.009)	+0.09 (+0.0035)
26	⅞	26.00 (1.022)	+0.30 (0.012)	0.5 (0.020)	0.53 (0.021)	+0.10 (+0.004)
32	1	32.00 (1.260)	+0.30 (0.012)	0.5 (0.020)	0.28 (0.011)	+0.09 (+0.0035)
40	1¼	39.95 (1.573)	+0.30 (0.012)	0.5 (0.020)	0.33 (0.013)	...
50	1½	49.90 (1.964)	+0.30 (0.012)	0.5 (0.020)	0.47 (0.018)	...
63	2	62.90 (2.484)	+0.40 (0.016)	0.5 (0.020)	0.57 (0.022)	...
75	2¼	75.10 (2.957)	+0.60 (0.024)	1.0 (0.039)	0.67 (0.026)	...

[A] The out-of-roundness specification applies only to tubing prior to coiling.

5.5 *Rework Material*—The use of reclaimed, recycled, or rework plastics is not permitted.

6. Requirements

6.1 *General*—The requirements and test methods in this specification cover PEX-AL-PEX pipes. Tests on the individual layers that comprise this composite pipe are outside the scope of this specification. The raw materials used, however, must conform to the requirements as set out in Section 5.

6.2 *Dimensions and Tolerances of Pipe:*

6.2.1 *Pipe Diameter*—The minimum outside diameter and tolerances of the pipe shall meet the requirements given in Table 1, when measured in accordance with 9.1 and 9.1.2. Maximum and minimum (out-of-roundness) tolerances apply only to measurements made on pipe prior to coiling.

6.2.2 *Pipe Wall Thickness*—The total pipe wall thickness shall meet the requirements given in Table 2, when measured in accordance with 9.1 and 9.1.3. The minimum wall thickness at any point of measurement of the pipe shall not be less than the value specified in Table 2.

6.2.3 *Inner and Outer Crosslinked Polyethylene Layer Thicknesses*—The thicknesses of the inner and outer layers of crosslinked polyethylene in the PEX-AL-PEX pipe shall have minimum values and tolerance as specified in Table 2, except for the polyethylene material in the outer PEX layer overlaying the weld, which shall have a minimum thickness of half those specified in Table 2. The polyethylene thicknesses shall be measured in accordance with 9.2.

6.2.4 *Pipe Length*—The pipe shall be supplied coiled or in straight lengths as agreed upon with the purchaser and with an allowable tolerance of −0 mm (−0 in.).

6.3 *Adhesion Test:*

6.3.1 For Sizes 0912 (⅜) to 2532 (1) there shall be no delamination of the PEX and AL, either on the bore side or the outside (see Fig. 1). The test shall be conducted in accordance with 9.3.1.

6.3.2 The adhesion test of the PEX-layer to the aluminum for Sizes 3240 (1¼) to 6075 (2½) is carried out by a separation test. The minimum adhesive force is specified in Table 3. The adhesive force shall not fall below these levels. The test shall be conducted in accordance with 9.3.2.

6.4 *Apparent Tensile Strength of Pipe*—The pipe rings, when tested in accordance with 9.4, shall meet the minimum strength specifications defined in Table 4.

6.5 *Burst Pressure*—The minimum burst pressure for PEX-AL-PEX pipe shall be as given in Table 4, when determined in accordance with 9.5.

6.6 *Sustained Pressure*—The PEX-AL-PEX pipe shall not fail, balloon, burst, or weep, as defined in Test Method D1598, when tested for 10 h at the test at the test pressure given in Table 5 at a temperature of 82°C (180°F) in accordance with 9.6.

6.7 *Gel Content*—When tested in accordance with 9.7, the gel content of the inner and outer tubes of crosslinked polyethylene shall have minimum values of either 65 % for the fully crosslinked silane material or 60 % for radiation crosslinked polyethylene. Test Methods D2765 defines gel content (see Note 2).

NOTE 1—The gel test is one of several methods capable of indicating the degree of crosslinking. The different methods for assessing degree of crosslinking do not necessarily agree, so conformity to this specification requires degree of crosslinking to be determined in accordance with 9.7 only.

7. Workmanship

7.1 The pipe shall be free of visible cracks, holes, foreign inclusions, blisters, and other known injurious defects. The pipe shall be as uniform as practicable in color, opacity, density, and other physical properties.

8. Sampling and Conditioning

8.1 *Sampling*—Take a sample of the PEX-AL-PEX pipe sufficient to determine conformance with this specification. The number of specimens designated for each test shall be taken from pipe selected at random in accordance with the random sampling plan of Practice D1898.

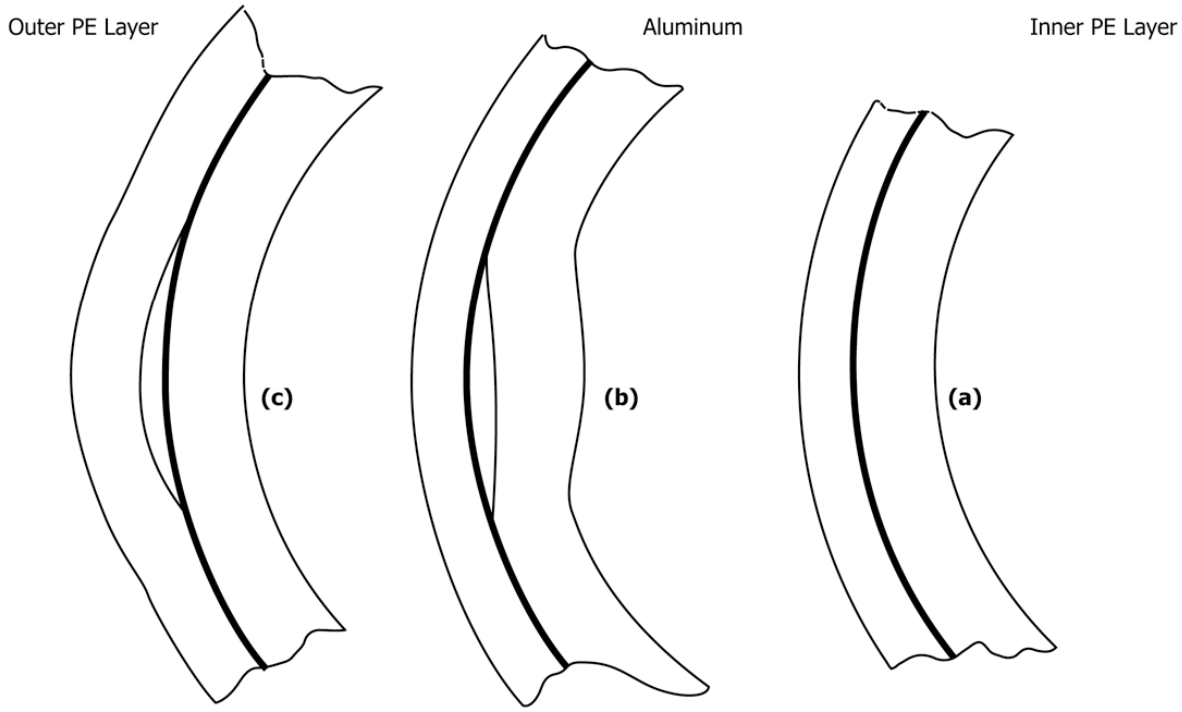
NOTE 2—Sample size and testing frequency of lots for quality control must be established by the manufacturer to ensure conformance to the specification. Sampling and frequency will vary with the specific circumstances.

8.2 *Test Specimens*—Not less than 50 % of the test specimens required for any pressure test shall have at least part of the marking in their central sections. The central section is that portion of the pipe that is at least one pipe diameter away from an end closure.

8.3 *Conditioning*—Condition the specimens at 23 ± 2°C (73.4 ± 3.6°F) and 50 ± 5 % relative humidity for not less than 40 h prior to test in accordance with Procedure A of

TABLE 2 Wall Thickness for PEX-AL-PEX Composite Pipe

Diameter Nominal (DN)	Nominal Pipe Size (NPS)	Total Wall Thickness, min, mm (in.)	Wall Tolerance (+) mm (in.)	Outer PEX Layer Thickness, min, mm (in.)	Inner PEX Layer Thickness, min, mm (in.)
12	⅜	1.60 (0.063)	0.40 (0.016)	0.40 (0.016)	0.70 (0.028)
16	½	1.65 (0.065)	0.65 (0.022)	0.40 (0.016)	0.90 (0.035)
20	⅝	1.90 (0.075)	0.40 (0.016)	0.40 (0.016)	0.96 (0.038)
25	¾	2.25 (0.089)	0.50 (0.020)	0.40 (0.016)	1.10 (0.043)
26	⅞	3.00 (0.118)	0.33 (0.013)	0.40 (0.016)	1.32 (0.052)
32	1	2.90 (0.114)	0.60 (0.024)	0.40 (0.016)	1.34 (0.053)
40	1¼	3.40 (0.134)	0.60 (0.024)	0.40 (0.016)	1.45 (0.057)
50	1½	4.00 (0.157)	0.60 (0.024)	0.40 (0.016)	1.75 (0.069)
63	2	4.60 (0.181)	0.60 (0.024)	0.40 (0.016)	1.75 (0.069)
75	2¼	7.25 (0.285)	0.60 (0.024)	0.40 (0.016)	2.80 (0.110)



NOTE 1—(a) Good pipe showing no delamination, (b) Delamination between the inner layer and the aluminum, and (c) Delamination between the outer layer and the aluminum.

FIG. 1 Detection of Delamination

TABLE 3 Minimum Adhesive Force for PEX-Al-PEX Composite Pipe

Diameter Nominal (DN)	Nominal Pipe Size (NPS)	Minimum Adhesive Force per 10-mm (0.394-in.) Pipe Strip, N (lbf)
40	1¼	40 (9.0)
50	1½	50 (11.2)
63	2	60 (13.5)
75	2¼	70 (15.7)

TABLE 4 Minimum Pipe Ring Strengths and 23°C (73.4°F) Burst Pressure of PEX-AL-PEX Composite Pipe

Diameter Nominal (DN)	Nominal Pipe Size (NPS)	Minimum Pipe Ring Strength, Type II PE, N(lb)	Minimum Pipe Ring Strength, Type III PE, N(lb)	Minimum 23°C (73.4°F) Burst Pressure, kPa (psi)
12	⅜	2000 (448)	2100 (470)	7000 (1020)
16	¼	2100 (470)	2300 (515)	6000 (880)
20	⅝	2400 (538)	2500 (560)	5000 (730)
25	¾	2400 (538)	2500 (560)	4000 (580)
26	⅞	2400 (538)	2500 (560)	4000 (580)
32	1	2650 (598)	2500 (560)	4000 (580)
40	1¼	3200 (719)	3500 (789)	4000 (580)
50	1½	3500 (789)	3700 (832)	3800 (554)
63	2	5200 (1169)	5500 (1236)	3800 (554)
75	2¼	6000 (1349)	6000 (1349)	3800 (554)

Practice D618, for those tests where conditioning is required. In cases of disagreement, the tolerances shall be ±1°C (±1.8°F) and ±2 % relative humidity.

TABLE 5 Minimum Sustained Pressure for PEX-AL-PEX Composite Pipe

Diameter Nominal (DN)	Nominal Pipe Size (NPS)	Minimum Sustained Pressure PEX-AL-PEX, kPa (psi)
12	⅜	2720 (395)
16	¼	2720 (395)
20	⅝	2720 (395)
25	¾	2720 (395)
26	⅞	2720 (395)
32	1	2720 (395)
40	1¼	2000 (295)
50	1½	2000 (295)
63	2	2000 (295)
75	2¼	2000 (295)

8.4 *Test Conditions*—Conduct the test in the standard laboratory atmosphere of 23 ± 2°C (73.4 ± 3.6°F) and 50 ± 5 % relative humidity, unless otherwise specified in the test methods or in this specification. In cases of disagreement, the tolerances shall be ±1°C (1.8°F) and ±2 % relative humidity.

9. Test Methods

9.1 *Dimensions and Tolerances:*

9.1.1 *Pipe*—Any length of the PEX-AL-PEX composite pipe may be used to determine dimensions.

9.1.2 *Outside Diameter*—Measure the outside diameter of the PEX-AL-PEX pipe in accordance with Test Method D2122.

9.1.3 *Wall Thickness*—Make micrometre measurements of the wall thickness in accordance with Test Method D2122 to determine the maximum and minimum values. Measure the wall thickness at both ends of the pipe to the nearest 0.01 mm (0.0004 in.).

9.2 *Inner and Outer Crosslinked Polyethylene Layer Thicknesses:*

9.2.1 *Sample Preparation*—Cut the pipe with a sharp knife or other suitable cutter, ensuring that the pipe after cutting is not more than 10 % out-of-round.

9.2.2 *Thickness Determination*—Use a hand-held magnifying glass equipped with graduated reticule, or a laboratory microscope with graduated reticule. The reticule should measure to the nearest to 0.1 mm (0.004 in.). Determine the thickness of the inner and outer layers of crosslinked polyethylene (exclusive of the adhesive layer) at six points around the circumference. One of the points only should be at the aluminum weld.

9.3 *Adhesion Tests:*

9.3.1 *Visual Test:*

9.3.1.1 *Cutting the Spiral*—Mount a Stanley 1991 or similarly sharp but rigid razor-like blade within a protective housing and angle to cut a 45 ± 5° spiral in the pipe (see Fig. 2). Choose a PEX-AL-PEX pipe at random and insert into the housing and rotate to form the spiral cut. The cut goes through the complete wall on one side of the pipe only. Run the spiral along the pipe for a minimum distance along the pipe axis equal to five times the outside diameter.

9.3.1.2 *Examining for Delamination*—Firmly hold the pipe with the spiral cut firm at the uncut end and create a ribbon of pipe material by opening out the spiral-cut pipe. Pliers can be used to grip the spiral-cut pipe. Examine the wall of the pipe visually side-on for evidence of delamination between the metal and plastic layers (see Fig. 1).

9.3.2 *Separation Test:*

9.3.2.1 *Specimen*—Five pipe sections of 10-mm (0.394-in.) length are cut at random intervals. The outer layers of the pipe (outer PEX-layer together with the aluminum) are separated mechanically from the inner PEX-layer with an appropriate device on the opposite side to the welding seam. The outer layers are separated on one side to about 5 mm from the pipe in order to allow clamping. The adhesion for the outer PEX-layer to the aluminum is then visually examined for delamination at the corresponding test sample.

9.3.2.2 *Test Equipment:*

(1) Tension Testing Device, with suitable pull-off device (see Fig. 3).

(2) D_{roller} = 95 % of the required pipe inner diameter.

(3) d_i = pipe inner diameter.

9.3.2.3 *Test Procedure*—Remove the outer layers from the pipe at 23 ± 2°C (73.4 ± 3.6°F) with a linear speed of 50 mm/min (≈2 in./min). Record the force diagram.

9.4 *Ring Test:*

9.4.1 *Sample Size and Shape*—Cut rings of the PEX-AL-PEX pipe so that the two sides are parallel and at 90 ± 2° to the pipe axis. The width of each ring shall be 25 ± 1 mm (1 ± 0.04 in.). Cut a minimum of 15 samples consecutively along the axis of the pipe.

9.4.2 *Ring Tests*—Test the 15 consecutively cut samples using a tensile testing machine. Arrange the rings so that the aluminum weld is at 90° to the tensile axis as shown in Fig. 4. The crosshead speed shall be 50 ± 2.5 mm/min (2 ± 0.1 in./min). Mount the rings of pipe on two steel rods of minimum diameter of 4 mm (0.16 in.). Record the peak force.

9.5 *Burst Pressure:*

9.5.1 *Pipe Sample*—Select a length of PEX-AL-PEX pipe at random and prepare five consecutive lengths of 300 ± 5 mm (12 ± 0.2 in.). Seal samples at the ends with the appropriate fittings and test either free- or fixed-end.

9.5.2 *Temperature Control*—Test samples at a temperature of 23 ± 2°C (73.4 ± 3.6°F). Contain samples either in a temperature controlled water bath or in air (at standard laboratory atmosphere). For samples contained in a water bath, 1 h conditioning is required. For samples tested in air, a 16 h conditioning period is required.

9.5.3 *Burst Pressure*—Determine the burst pressure in accordance with the procedure in Test Method D1599.

9.6 *Sustained Pressure Test:*

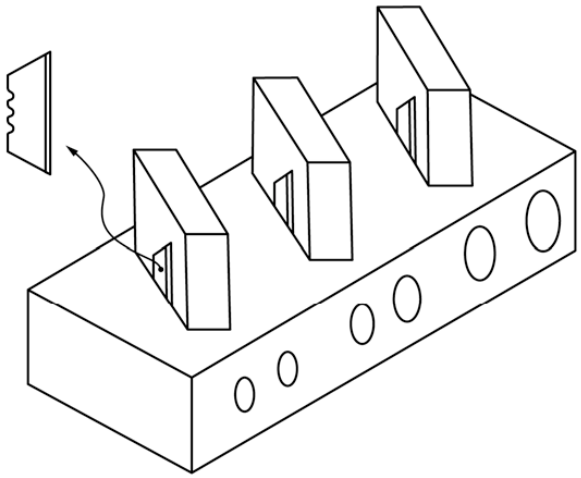


FIG. 2 Spiral Cutter for the Delamination Test

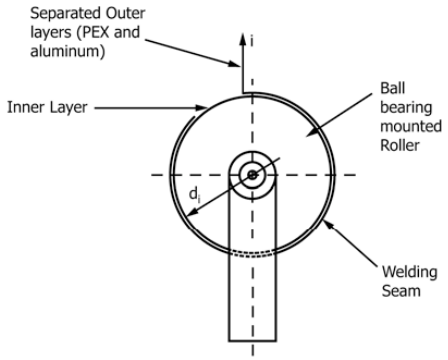


FIG. 3 Setup for Separation Test

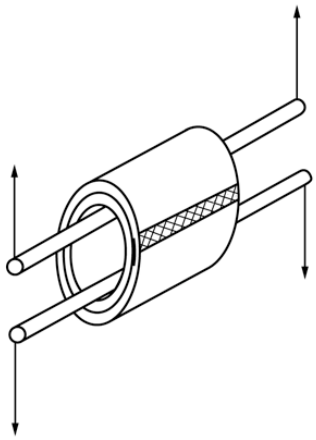


FIG. 4 Schematic Presentation of the Pipe Ring Test Showing the Aluminum Weld at 90° to the Tensile Axis

9.6.1 *Samples*—Each test sample of PEX-AL-PEX pipe shall have a minimum length between end closures of at least ten times the average outside diameter, but not less than 250 mm (10 in.). Seal specimens at both ends with the appropriate fittings and fill the samples for testing with water.

9.6.2 *Test Procedures*—Test the samples in a temperature controlled water bath or in air, in accordance with Test Method D1598. A test temperature of 82 ± 2°C (180 ± 3.6°F) is specified. For each pipe size test six samples. For testing in a water bath, condition the test samples for at least 2 h in the water bath at the test temperature prior to pressurization For testing in air, condition the samples for at least 4 h in air at the test temperature prior to pressurization. Maintain the pressure at the pressure given in Table 5 for the duration of the test.

9.6.3 *Failure*—Any continuous loss of pressure of the test sample shall constitute failure of the test. Failure of one of the six is cause for retest of six additional samples under identical conditions. Failure of one of six of the retested samples below the minimum specified lifetime constitutes failure of the test.

9.7 *Gel Content Determination:*

9.7.1 *Sample Preparation*—Condition the PEX-AL-PEX pipe in a water bath for a minimum of 24 h at a minimum temperature of 80°C (176°F) prior to testing to ensure full crosslinking of the resin. Before taking samples for gel content evaluation, put pipe in an air-circulating oven at 120°C (248°F) for 20 min. Using a lathe, remove 0.1-mm (0.004-in.) thick strands from the outside layer, and 0.2-mm (0.008-in.) thick strands from the inside layer, long enough to obtain a 0.3-g sample for testing. Care should be taken not to cut into the adhesive layer, as it will effect the test results. (See Note 3.)

9.7.2 *Test Method*—Test the sample from the inner and outer surface separately and in accordance with Sections 12 and 13 of Test Methods D2765, Test Method A.

NOTE 3—Including the adhesive in the test specimen will lower the gel content resulting in a false reading.

10. Quality Assurance

10.1 *Quality Assurance*—When the product is marked with this designation, ASTM F1281, the manufacturer affirms that the product was manufactured, inspected, sampled, and tested in accordance with this specification and has been found to meet the requirements of this specification. When specified in the purchase order or contract, a report of the test results shall be furnished.

11. Marking

11.1 *Quality of Marking*—The marking shall be applied to the pipe in such a manner that it remains legible (easily read) after installation.

11.2 Markings on the tubing shall include the following, spaced at intervals of not more than 1.5 m (5 ft):

11.2.1 Nominal tubing size (for example, 1216),

11.2.2 The material designation "PEX-AL-PEX,"

11.2.3 Pressure rating for water and temperature for which the pressure rating is valid,

11.2.4 ASTM designation F1281, with which the tubing complies, and

11.2.5 Manufacturer's name (or trademark) and production code.

11.2.6 Tubing intended for the transport of potable water shall also include the seal or mark of the laboratory making the evaluation and the number of the standard used for the evaluation.

NOTE 4—Manufacturers using the seal or mark of a laboratory must obtain prior authorization from the laboratory concerned.

12. Keywords

12.1 composite; crosslinked PE; PEX-AL-PEX; pipe; pressure

SUPPLEMENTARY REQUIREMENTS

GOVERNMENT/MILITARY PROCUREMENT

These requirements apply *only* to Federal/Military procurement, not domestic sales or transfers.

S1. *Responsibility for Inspection*—Unless otherwise specified in the contract or purchase order, the producer is responsible for the performance of all inspection and test requirements specified herein. The producer may use his own or any other suitable facilities for the performance of the inspection and test requirements specified herein, unless disapproved by the purchaser. The purchaser shall have the right to perform any of the inspections and tests set forth in this specification where such inspections are deemed necessary to ensure that material conforms to prescribed requirements.

NOTE S1.1—In U. S. Federal Government contracts, the contractor is responsible for inspection.

S2. *Packaging and Marking for U. S. Government Procurement:*

S2.1 *Packaging*—Unless otherwise specified in the contract, the material shall be packaged in accordance with the supplier's standard practice in a manner ensuring arrival at destination in a satisfactory condition and that will be acceptable to the carrier at lowest rates. Containers and packaging shall comply with Uniform Freight Classification rules or National Motor Freight Classification rules.

S2.2 *Marking*—Marking for shipment shall be in accordance with Fed. Std. No. 123 for civil agencies and MIL-STD-129 for military agencies.

NOTE S1.2—The inclusion of U. S. Federal Government procurement requirements should not be construed as an indication that the U. S. Government uses or endorses the products described in this specification.

POTABLE WATER REQUIREMENT

This requirement applies whenever a Regulatory Authority or user calls for product to be used to convey or be in contact with potable water.

S3. Products intended for contact with potable water shall be evaluated, tested and certified for conformance with ANSI/NSF Standard No. 61 or the health effects portion of NSF Standard No. 14 by an acceptable certifying organization when required by the regulatory authority having jurisdiction.

CHLORINE RESISTANCE EVALUATION

The following supplemental requirements shall apply to any product intended to be used in a water system which utilizes residual free chlorine as a disinfecting agent.

S4. *Evaluation Methodology*—Multi-layer (composite) piping shall be tested and evaluated in accordance with S5 for multi-layer products using PEX materials that were tested in a solid-wall form.

S5. *Procedure for Using Data from Solid-wall PEX Testing*—The 95 % lower confidence limit of the multi-layer piping product minimum estimated failure time shall be at least 50 years when evaluated in accordance with S5.1–S5.3 using conditions of 0.55 MPa (80 psig) internal pressure, 25 % use at 60°C (140°F) and 75 % use at 23°C (73°F).

S5.1 *PEX Material Test*—The PEX material shall be tested in accordance with Test Method F2023 using solid-wall pipe samples.

S5.1.1 The test fluid shall be prepared in accordance with 9.1.1 of F2023.

S5.1.2 The regression analysis shall be performed in accordance with, and comply with the requirements of Section 13 Calculation, F2023.

S5.2 *Application to Multi-layer Construction*—Testing of the multi-layer product shall be conducted as specified in S5.2.1–S5.2.7.

S5.2.1 Determine the sizes of pipe for testing. Two sizes are required, such that one size has the inner-layer dimension ratio ($ILDR = OD_{inner\ layer} / t_{inner\ layer}$) in the lowest 25 % of the range of inner layer DR's and the other size has an ILDR in the upper 25 % of the range.

S5.2.2 Initiate testing of one specimen of each of the sizes determined in S5.2.1 at the highest temperature/pressure (for example, 115°C/60 psi) condition used for the solid wall. This is condition ML1.

S5.2.3 Initiate testing of one specimen at the same temperature, but a higher stress level (for example, 115°C/80 psi). This is condition ML2. The specimen shall be the thinnest inner-layer product of the two sizes.

S5.2.4 Initiate testing of one specimen at the same stress level and next lowest temperature used for the original solid-wall testing (for example, 105°C/80 psi). This is condition ML3. The specimen shall be the heavier inner-layer wall thickness product of the two sizes.

S5.2.5 Calculate the expected fail times (EFT) for each size being tested at each condition in accordance with S5.3.

S5.2.6 Two methods of evaluation are available for the multi-layer finished product testing. The pipe specimens tested at conditions ML1, ML2 and ML3 shall meet the requirements of S5.2.6.1 or S5.2.6.2.

S5.2.6.1 For this method, continue testing each specimen to 150 % of EFT for each condition. Failure of any specimen prior to 150 % of EFT shall constitute a failure of this test.

S5.2.6.2 For this alternate method, continue the testing of each specimen until each specimen has the following times are achieved:

(1) ML1 – 100 % of EFT
(2) ML2 – 150 % of EFT
(3) ML3 – 50 % of EFT

Failure of any specimens prior to the EFT at each test condition shall constitute a failure of this test.

S5.2.6.2.1 Examine each of the ML3 specimens to determine the amount of crack propagation through the inner wall at the location with the heaviest signs of cracking. Cracks propagating completely through the inner wall in these specimens shall be considered a failure of this test.

S5.2.6.2.2 To aid in determination of the crack propagation at the inner wall, the ML3 (50 % fail time, heaviest wall) specimen is cut longitudinally and examined microscopically. Regions exhibiting the most severe cracking and oxidation of the inner layer are then sectioned laterally. This lateral cut is examined microscopically to determine if brittle cracks have reached the aluminum layer. If the inner layer is sufficiently embrittled such that the specimen cannot be sectioned for examination, it shall be considered a failure of this test.

S5.3 *Calculation of Expected Fail Times for Multi-layer Construction*—The expected fail times used for testing the multi-layer products shall be determined in accordance with S5.3.1–S5.3.3.

S5.3.1 *Known Quantities and Symbols*— The following values must be known for each multi-layer construction in order to complete the calculations:

Tubing OD, mm
Outer PEX layer thickness, t_{opex}, mm
Aluminum thickness, t_{AL}, mm
Inner PEX layer thickness, t_{ipex}, mm
PEX tensile modulus, E_{pex}, MPa

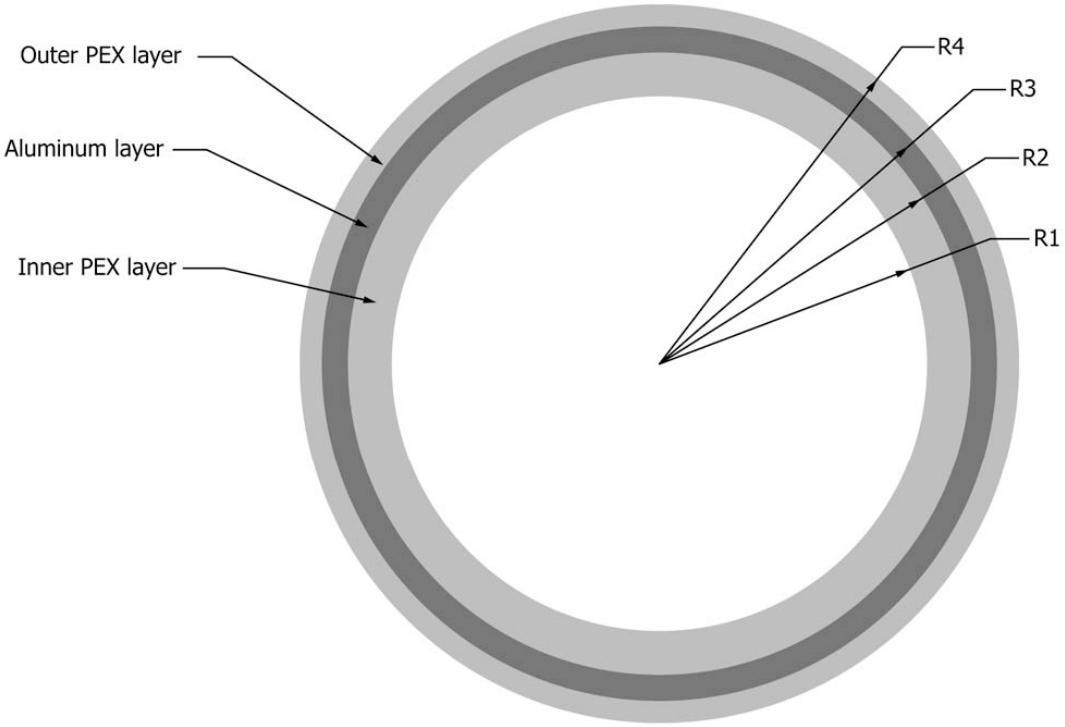


FIG. S1.1 Multi-layer Construction and Definition of Different Radii

Aluminum tensile modulus, E_{AL}, MPa
Adhesive layer thickness, mm
Internal pressure, P, MPa
Temperature, T, K
Coefficients for stress-rupture equation of solid PEX, C1, C2, C4

S5.3.2 *Preliminary Calculations*—Determine the various radii and dimension ratio as follows:

R4 = (tubing OD) / 2

R3 = R4 – (outer PEX layer thickness + outer adhesive thickness)

R2 = R3 – aluminum layer thickness

R1 = R2 – (inner PEX layer thickness + inner adhesive thickness)

Dimension ratio of aluminum, $DR_{AL} = 2 \cdot R3 / t_{AL}$

S5.3.3 *Procedure*—Determine the estimated fail time of the inner layer in accordance with S5.3.3.1–S5.3.3.5.

S5.3.3.1 Calculate the circumferential strain in the aluminum layer based on internal pressure. Assume that the stress is sufficiently low that the aluminum behaves linearly.

Hoop stress in aluminum layer:

$$\sigma_{AL} = \frac{P}{2}\left(DR_{AL} - 1\right) \tag{1}$$

Circumferential strain in aluminum layer:

$$\varepsilon_{AL} = \frac{\sigma_{AL}}{E_{AL}} \tag{2}$$

S5.3.3.2 Assume the strain in the inner PEX layer is the same as the strain in the aluminum layer. Use this strain to calculate stress in the PEX layer.

NOTE 7—This assumes small, linear strains in the PEX. This will be a reasonable assumption with the aluminum reinforcing layer, provided the aluminum is still in the linear region.

Stress at inner PEX layer:

$$\sigma_{PEX} = \left(\varepsilon_{AL}\right)\left(E_{PEX}\right) \tag{3}$$

S5.3.3.3 Calculate the estimated fail time based on this stress and the temperature of interest (that is, test temperature or end-use temperature).

Fail time of inner layer:

$$\mathrm{Log}(f) = C1 + \frac{C2}{T} + \frac{C4}{T}\cdot\mathrm{Log}\left(\sigma_{PEX}\right) \tag{4}$$

S5.3.3.4 Adjust the expected fail time based on the ratio of the inner layer thickness to the original solid-wall test sample thickness.

Adjusted inner layer fail time:

$$f = f\,\frac{\left(\text{inner layer thickness}\right)}{\left(\text{solid} - \text{wall thickness}\right)} \tag{5}$$

S5.3.3.5 This adjusted inner layer fail time is the expected fail time (EFT) for use in S5.2, Application to Multi-layer Construction.

S5.3.3.6 Calculate the 95 % lower confidence limit for the multi-layer product at an internal pressure of 5.5 MPa (80 psig) and temperature of 60°C (140°F) using Eq 6 and the pipe dimensions that result in the maximum inner layer hoop stress within the product range. Designate this result as LCL_{60}. Repeat this calculation using an internal pressure of 5.5 MPa (80 psig) and temperature of 23°C (73°F). Designate this as LCL_{23}.

95 % LCL of the expected time to failure for multi-layer product at 60°C (see ISO 9080 or a statistics text for details):

$$\mathrm{Log}(f) = C1 + \frac{C2}{T} + \frac{C4}{T}\cdot\mathrm{Log}\left(\sigma_{80}\right) - \left(t\right)\left(s\right)\left[\frac{1}{n} + X_o^T\left(X^T X\right)^{-1} X_o\right]^{1/2} \tag{6}$$

S5.3.3.7 Calculate the Miner's Rule extrapolated time using the LCL values (LCL_{60} and LCL_{23}) from S5.3.3.6 in Eq 7. Eq 7 assumes the product is operated at 23°C for 75 % of the time, and 60°C for 25 % of the time, both at an internal pressure of 80 psig.

Miner's Rule calculation for extrapolated time to failure:

$$\text{Extrapolated time (h)} = \frac{100}{\frac{25}{LCL_{60}} + \frac{75}{LCL_{23}}} \tag{7}$$

ANNEXES

(Mandatory Information)

A1. CONNECTORS

A1.1 Connectors shall be made from brass or any other material found to be suitable for the service conditions.

A1.2 The connectors shall be designed so that a seal is effected on the internal wall surface of the pipe so that the medium contained in the pipe is precluded from coming into contact with the cut end of the pipe.

A1.3 Connectors not made from brass shall be capable of meeting the short term pipe test requirements listed in 6.5 and 6.6 of this specification and the long-term hydrostatic capabilities of the pipe at elevated temperatures listed in Appendix X1.

A2. PERFORMANCE REQUIREMENTS OF CONNECTORS

A2.1 *General*—All performance testing of connectors shall be performed on assemblies of connectors and PEX/AL/PEX pipe meeting the requirements of this specification. Assembly of test specimens shall be in accordance with Appendix X3. Use separate sets of assemblies for each performance test requirement.

NOTE A2.1—Fittings manufactured in compliance with Specification F1974 meet all of the performance requirements provided in this Annex.

A2.2 *Hydrostatic Burst*—Assemblies shall meet the minimum hydrostatic burst requirements shown in Table A2.1 when tested in accordance with 9.5, except that the test temperature shall be 180°F (82.2°C).

A2.3 *Hydrostatic Sustained Pressure Strength*—Pipe and connector assemblies shall not separate or leak when tested in accordance with A2.6.2.

A2.4 *Thermocycling*—Assemblies shall not leak or separate when thermocycled 1000 cycles between the temperatures of 60°F (15.6°C) and 180°F (82.2°C) in accordance with A2.6.3.

A2.5 *Excessive Temperature–Pressure Capability*:

A2.5.1 *General*—In the event of a water heating system malfunction assemblies shall have adequate strength to accommodate short-term conditions, 48 h or 210 ± 4°F (99 ± 2°C) and 150 psi (1034 kPa) until repairs can be made.

A2.5.2 *Excessive Temperature Hydrostatic Sustained Pressure*—Assemblies shall not leak or separate when tested in accordance with A2.6.4.

A2.6 *Test Methods*:

A2.6.1 Sampling and Conditioning shall be done in accordance with Section 8.

A2.6.2 *Hydrostatic Sustained Pressure:*

A2.6.2.1 Perform the test on at least six assemblies in accordance with Test Method D1598, except for the following:

(1) The test temperature shall be at 180 ± 4°F (82.2 ± 2°C),

(2) Test pressure shall be 320 psi (2 205 kPa),

(3) The external test environment shall be air or water, and

(4) The specimens shall be filled with water at a temperature of at least 120°F (49°C).

TABLE A2.1 Minimum Hydrostatic Burst Strength Requirements for Connector and PEX/AL/PEX Pipe Assemblies

Nominal Pipe Size, mm (in.)		Minimum Burst Pressures	
		psi at 180°F	kPa at 82.2°C
1216	(½)	580	(4000)
1620	(⅝)	550	(3800)
2025	(¾)	465	(3200)
2026	(⅞)	465	(3200)
2532	(1)	465	(3200)
3240	1 (1¼)	362	(2500)
4150	1 (1½)	333	(2300)
5163	(2)	295	(2000)
6075	2 (½)	295	(2000)

A2.6.2.2 Leakage or separation at any joint tested at less than 1000 h at the sustained pressure shall constitute failure in this test.

A2.6.3 *Thermocycling:*

A2.6.3.1 *Summary of Test Method*—This test method describes a pass-fail test for thermally cycling assemblies comprised of insert connector and pipe over a critical temperature range for a selected number of cycles while subjected to an internal pressure. The test provides a measure of resistance to failure due to the combined effects of differential thermal expansion and creep of connections intended for use up to and including 180°F (82.2°C).

A2.6.3.2 *Apparatus*—A compressed air or nitrogen pressure source capable of maintaining an internal pressure of 100 ± 10 psi (690 ± 69 kPa) on the specimens is required. A dip test apparatus capable of automatically immersing test samples at prescribed intervals in temperature controlled water baths capable of providing continuous water temperatures of 60 ± 4°F (15.6 ± 2°C) and 180 ± 4°F (82.2 ± 2°C) is required.

A2.6.3.3 *Specimen Preparation*—Six assemblies of the type of connector to be tested shall be prepared. The connectors with suitable lengths of pipe meeting the requirements of the applicable standard shall be assembled and attached to a common manifold. Assemble strictly according to the instructions of the connector manufacturer. Close the specimen assembly with any suitable end closures that allow "free end" mounting and will not leak under the thermocycling conditions, and connect the specimen assembly to the pressure source.

A2.6.3.4 *Procedure*—Correction to correspond with 100 ± 10 psi (690) ± 69 kPa), immerse in 60 ± 4°F (15.6 ± 2°C) water, and check for leaks. Eliminate all leaks before the thermocycling test is started. With the specimen assembly pressurized to 100 ± 10 psi (690 ± 69 kPa), thermally cycle it between 60 ± 4°F (15.6 ± 2°C) and 180 ± 4°F (82.2 ± 2°C) by means of immersion in water using the following test cycle (see Note A2.2):

Water immersion at 180°F (82.2°C)	2 min minimum
Air immersion at ambient	2 min maximum
Water immersion at 60°F (15.6°C)	2 min minimum
Air immersion at ambient	2 min maximum

NOTE A2.2—If the test must be interrupted before completion, samples are to be kept at room temperature until the test is restarted.

(1) Upon completion of 1000 cycles, immerse the specimen assembly again in 60°F (15.6 ± 2°C) water, and check for leaks. Any evidence of leakage at the connectors or separation of the connectors from the pipe constitutes failure.

(2) If no failures are evident, the specimen assembly shall immediately be tested for joint integrity (hydrostatic burst) at 73°F (23°C) in accordance with Test Method D1599. Leakage or separation during the hydrostatic burst test of any of the joints in the assembly at less than the pressure shown in Table A2.1 shall constitute failure of this test.

A2.6.3.5 *Interpretation of Results*—Failure of any one of six specimens in the assembly shall constitute failure of this test.

A2.6.4 *Excessive Temperature and Pressure Capability:*

A2.6.4.1 Test six assemblies in accordance with Test Method D1598, except the following:

(1) The test temperature shall be 210 ± 4°F (99 ± 2°C),

(2) The test pressure shall be 150 psi (1 034 kPa),

(3) The external test environment shall be air,

(4) The specimens shall be filled with water at a temperature of at least 120°F (49°C).

A2.6.4.2 Leakage or separation at any joint tested at less than 720 h at the test pressure shall constitute failure in this test.

A2.7 Product Marking of Connectors:

A2.7.1 *Quality Assurance*—When the connector or connector packing is marked with the ASTM Designation F1281, the manufacturer affirms that the product was manufactured, inspected, sampled, and tested in accordance with this specification and has been found to meet the requirements of this specification.

A2.7.2 *Quality of Marking*—The marking shall be applied to the connectors in such a manner that it remains legible after installation and inspection.

A2.7.3 *Content of Marking:*

A2.7.3.1 Marking on connectors shall include:

(1) Manufacturer's name or trademark, or some other identifying mark, and

(2) F1281 or F1281/2, the standard designation.

A2.7.3.2 Marking on packaging shall include:

(1) Manufacturer's name,

(2) Connector size, and

(3) "ASTM F1281".

A2.7.3.3 Marking on crimp rings shall include the code letters, PAP.

APPENDIXES

(Nonmandatory Information)

X1. PRESSURE RATING

X1.1 The hydrostatic design basis-pressures for water recommended by the Plastic Pipe Institute are used to pressure rate the PEX-AL-PEX composite pipe covered by this specification. These design basis-pressures are 2.76 MPa (400 psi) at 23°C (73.4°F), 2.21 MPa (320 psi) at 60°C (140°F) and 1.72 MPa (250 psi) at 83°C (180°F). These hydrostatic design basis-pressures apply only to pipe meeting all of the requirements of this specification.

X1.2 The PEX-AL-PEX composite pipe meeting the requirements of this specification shall be pressure rated for maximum water pressures of 1.38 MPa (200 psi) at 23°C (73.4°F), 1.10 MPa (160 psi) at 60°C (140°F) or 0.86 MPa (125 psi) at 83°C (180°F), or a combination thereof.

X2. STORAGE

X2.1 *Outside Storage*—Pipe should be stored on a flat surface and supported in a manner that will prevent distortion.

X3. JOINING

X3.1 Cut the pipe square to the proper length.

X3.2 Select the proper size tool (if required) for pipe preparation/joining. Only use tools specific to the design of the connector system.

X3.3 Assemble and complete the joint in accordance with the manufacturer's instructions specific to the type of connectors being used.

SUMMARY OF CHANGES

Committee F17 has identified the location of selected changes to this standard since the last issue (F1281–11) that may impact the use of this standard.

(1) Removed dimensions from "Nominal Pipe Size" in Table 1, Table 2, Table 3, Table 4, and Table 5 corrected values for NPS.

(2) Added inner PEX layer to 6.2.3 and 9.2 to be consistent with Table 2.

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Fuel Gas

4

P10502

Date Submitted	02/15/2022	**Section**	404.3	**Proponent**	William Chapin
Chapter	4	**Affects HVHZ**	No	**Attachments**	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

Summary of Modification

PEX-AL-PEX has been used for gas distribution for over 15 years under numerous ISO, EU, and Australian standards. ASTM F1281 includes allowance for use with gases that are compatible with the pipe and fittings.

Rationale

Includes similar language used for CSST systems. Please place as 404.3, renumbering remaining sections.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

Impact to building and property owners relative to cost of compliance with code

None

Impact to industry relative to the cost of compliance with code

May reduce cost with material and labor savings

Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Use of this system will reduce workplace injuries compared with other systems listed in this code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Provides an equivalent system to those systems currently in the code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

Does not degrade the effectiveness of the code.

404.3 PEX-AL-PEX PEX-AL-PEX piping systems shall be installed in the accordance with the terms of their approval, the conditions of listing, the manufacturer's instructions and this code.

Renumber remaining sections.

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Fuel Gas

5

P10506

Date Submitted	02/15/2022	**Section**	404.5	**Proponent**	William Chapin
Chapter	4	**Affects HVHZ**	No	**Attachments**	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

Summary of Modification

PEX-AL-PEX has been used for gas distribution for over 15 years under numerous ISO, EU, and Australian standards. ASTM F1281 includes allowance for use with gases that are compatible with the pipe and fittings.

Rationale

Adds requirements for the fittings for the PEX-AL-PEX systems be listed for the application.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code
None
Impact to building and property owners relative to cost of compliance with code
None
Impact to industry relative to the cost of compliance with code
May reduce cost with material and labor savings
Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public
Use of this system will reduce workplace injuries compared with other systems listed in this code.
Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction
Provides an equivalent system to those systems currently in the code.
Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities
Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.
Does not degrade the effectiveness of the code

Does not degrade the effectiveness of the code.

404.5 Fittings in concealed locations. Fittings installed in concealed locations shall be limited to the following types:

1. Threaded elbows, tees, and couplings, plugs and caps.

2. Brazed fittings.

3. Welded fittings.

4. Fittings listed to ANSI LC-1/CSA 6.26 or ANSI LC-4.

5. Fittings listed to be used with PEX-AL-PEX piping systems.

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Fuel Gas

6

P10508

Date Submitted	02/15/2022	**Section**	404.17.1	**Proponent**	William Chapin
Chapter	4	**Affects HVHZ**	No	**Attachments**	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

Summary of Modification

PEX-AL-PEX has been used for gas distribution for over 15 years under numerous ISO, EU, and Australian standards. ASTM F1281 includes allowance for use with gases that are compatible with the pipe and fittings.

Rationale

This added exception makes it clear that PEX-AL-PEX is not a "plastic pipe" as generically defined in the code and should be installed in accordance with the section that prescribes the use of PEX-AL-PEX composite pipe.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code
None
Impact to building and property owners relative to cost of compliance with code
None
Impact to industry relative to the cost of compliance with code
May reduce cost with material and labor savings.
Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public
Use of this system will reduce workplace injuries compared with other systems listed in this code.
Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction
Provides an equivalent system to those systems currently in the code.
Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities
Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

Does not degrade the effectiveness of the code.

404.17.1 Limitations. Plastic pipe shall be installed outdoors underground only. Plastic pipe shall not be used within or under any building or slab or be operated at pressures greater than 100 psig (689 kPa) for natural gas or 30 psig (207 kPa) for LP-gas.

Exceptions:

1. PEX-AL-PEX composite piping systems when installed in accordance with section 403.6.
2. Plastic pipe shall be permitted to terminate above ground outside of buildings where installed in premanufactured anodeless risers or service head adapter risers that are installed in accordance with the manufacturer's instructions.
3. Plastic pipe shall be permitted to terminate with a wall head adapter within buildings where the plastic pipe is inserted in a *piping* material for fuel gas use in building.
4. Plastic pipe shall be permitted under outdoor patio, walkway and driveway slabs provided that the burial depth complies with Section 404.12.

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Fuel Gas

7

P10511

Date Submitted	02/15/2022	**Section**	415.1	**Proponent**	William Chapin
Chapter	4	**Affects HVHZ**	No	**Attachments**	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

Summary of Modification

Defined hanger spacing for PEX-AL-PEX

Rationale

Like CSST, PEX-AL-PEX is lighter, more flexible, and has specific requirements to allow for normal expansion and contraction. Therefore, the manufacturer should specify the spacing requirements based on their pipe design.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

Impact to building and property owners relative to cost of compliance with code

None

Impact to industry relative to the cost of compliance with code

None

Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

None

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Provides instruction for proper installation.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

Does not degrade the effectiveness of the code.

415.1 Interval of support. Piping shall be supported and intervals not exceeding the spacing specified in Table 415.1. Spacing of supports for CSST and PEX-AL-PEX shall be in accordance with the ~~CSST~~ manufacturer's instructions.

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Fuel Gas

8

P9995

Date Submitted	02/01/2022	**Section**	.6	**Proponent**	T Stafford
Chapter	3004	**Affects HVHZ**	No	**Attachments**	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

Summary of Modification

This modification is one of a series of modifications that delete the seismic and snow requirements from the code. In accordance with Exception 2 to Section 101.2 of the FBCB, seismic and snow requirements are not to be utilized or enforced in the State of Florida.

Rationale

This modification is the culmination of a project funded by the Florida Building Commission through Building a Safer Florida (BASF) that the deletes the seismic and snow provisions from the Florida Building Codes. In accordance with Exception 2 to Section 101.2 of the Florida Building Code, Building, the seismic and snow provisions are exempted from the scope of the Florida Building Codes. Exception 2 to Section 101.2 states the following: "2. Code requirements that address snow loads and earthquake protection are pervasive; they are left in place but shall not be utilized or enforced because Florida has no snow load or earthquake threat." These modifications clarify and simplify the code by deleting requirements that do not apply in the State of Florida.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entities relative to enforcement of the code.

Impact to building and property owners relative to cost of compliance with code

No impact to building and property owners relative to cost of compliance with the code.

Impact to industry relative to the cost of compliance with code

No impact to industry relative to the cost of compliance with the code.

Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Clarifies and simplifies the code by deleting requirements that do not apply in the State of Florida.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Improves the code by deleting requirements that do not apply in the State of Florida.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

This proposal does not degrade the effectiveness of the code.

APPENDIX D – RECOMMENDED PROCEDURE FOR SAFETY INSPECTION OF AN EXISTING APPLIANCE INSTALLATION (IFGS)

Revises as follows:

Appendix D, Section D.6, Item (3)d –

d. Reserved. ~~OFF. Where required by the local building code in earthquake prone locations, inspect that the water heater is secured to the wall studs in two locations (high and low) using appropriate metal~~

~~strapping and bolts.~~

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Plumbing

9

P9983

Date Submitted	01/29/2022	**Section**	202	**Proponent**	David Porter
Chapter	2	**Affects HVHZ**	No	**Attachments**	**Yes**
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language Yes**

Related Modifications

Summary of Modification

A definition is needed for the term "service sink." It is only mentioned in Table 403.1 but is not defined as to its function or sink type. Can it be a laundry tub, a bar sink, a food prep sink, a kitchen sink, a lavatory, etc."

Rationale

The term is not currently defined as to what it can be, should be, or should not be. A plumbing plans reviewer can disallow any type of sink at will being a service sink because it is not defined for building departments and design professionals to all know what the intend of a "service sink" is. The State of Washington health department defines a "service sink" as: Service sink means a plumbing fixture of adequate size and proper design for filling and emptying mop buckets

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

Impact to building and property owners relative to cost of compliance with code

None

Impact to industry relative to the cost of compliance with code

None

Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Clarifies what can be used and not used to fulfill the requirements to provide "service sinks" for certain occupancies.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Clarifies what can be used and not used to fulfill the requirements to provide "service sinks" for certain occupancies.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not.

Does not degrade the effectiveness of the code

Does nots.

Alternate Language

1st Comment Period History

P9983-A2

Proponent David Porter **Submitted** 3/16/2022 9:14:35 AM **Attachments** Yes

Rationale:

The definition is less ambiguous if some minimum size is a part of the definition. It could be argued that a small bar sink should be allowed as the "service sink" if is not used for anything other than the cleaning of a building. However, that is a bogus argument because the sink is not large enough to fill or empty a mop bucket or to rinse out a mop.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None

Impact to building and property owners relative to cost of compliance with code

None

Impact to industry relative to the cost of compliance with code

None

Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes. Cuts out another ambiguity in the Code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not.

Does not degrade the effectiveness of the code

Does not.

1st Comment Period History

P9983-A1

Proponent Gary Kozan **Submitted** 3/10/2022 11:54:00 AM **Attachments** Yes

Rationale:

A definition of SERVICE SINK is necessary for the FBC-Plumbing. This alternate language is the precise language that was approved during the current I-Code cycle. This is how it will appear in the 2024 IPC. The TAC should consider adopting this alternate language to maintain consistency with the IPC.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

no cost impact to local entities

Impact to building and property owners relative to cost of compliance with code

no cost impact to building and property owners

Impact to industry relative to the cost of compliance with code

no cost impact to industry

Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Adds a needed definition that is consistent with the IPC

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Clarifies service sink requirements

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate against materials, products, or methods

Does not degrade the effectiveness of the code

Enhances the effectiveness of the code by adding a new definition

SERVICE SINK. A sink, **sized for a mop bucket**, exclusively intended to be used for facilitating the cleaning of a building or tenant space.

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

SERVICE SINK. A sink that can be used to load and dump buckets of wash water and to ring out mops. It can have other uses but it cannot be a sink used for other purposes such as a hand sink, bar sink, kitchen sink, lavatory, food prep sink.

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.

International Plumbing Code

2021 Group A - Report of the Committee Action Hearing Results

P1-21

Committee Action: **Disapproved**

Committee Reason: The Committee was not opposed to the principle and concept. However, the presentation and format leaves a lot to be desired. No one is going to know how to use the right column of the new table because it refers to the system that seems to be addressing building sewer, building drains and stacks. This is a new concept that is not intuitive and code users are not going to understand it. A number of other problems such as 1) the definition half-bath has a misplaced phrase "including or excluding a bidet," (should be after "group of fixtures" 2) new table refers to greater than 1.6 gpf water closets (1.6 gpf exceeds code limitation), 3) the entire new table depends 100% on a footnote in the table, 4) the first sentence of the footnote addresses "guest rooms, patient rooms, and single user bathrooms in other buildings" in the context of individual dwelling units (confusing applications) 4) the table title of the right column speaks to 3 or greater water closets (does the table not apply dwelling units with 2 water closets?) and the last sentence of the footnote indicates that the values apply to the system (no definition of what that means). The resultant effect of this table will be some reduction of the size of piping and that might have unknown consequences to overall system venting. (8-6)

P1-21

P2-21

Committee Action: **Disapproved**

Committee Reason: The Committee is not opposed to the proposal in principle. However, the definition should say that a body spray is not a showerhead or a hand held shower. The Table can be read that a body spray at 2.5gpm and a showerhead at 2.5 gpm can be flowing simultaneously. The proponent is encouraged to bring it back in public comment with some of these items cleaned up. (12-2)

P2-21

P3-21

Committee Action: **As Submitted**

Committee Reason: This definition needs to be aligned with what is in the ISPSC. (13-1)

P3-21

P4-21

Committee Action: **As Modified**

Committee Modification:

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

Committee Reason: For the Modification: The term "general purpose" was removed as it is much too broad, allowing nearly any "sink" to serve as a service sink. That is not the intent.

For the proposal As Modified: This subject has been an issue in the code for a long time and needs addressed. Note that definition indicates exclusively intended (not exclusively "used" which would limit a service sink from being used to also capture A/C condensate as a secondary function.) (1-3)

P4-21

P5-21 Part I

Committee Action: **As Modified**

Committee Modification:

FAMILY OR ASSISTED-USE TOILET FACILITY. A room separate from other toilet facilities intended to be used by ~~either~~ all persons regardless of sex, families and those needing assisted care having; an independent entrance,not more~~less~~ than one adult-height water closet, not more than one adult-height lavatory, and is permitted to have ~~no more than~~ one urinal, one child height water closet and one child height lavatory.
FAMILY OR ASSISTED-USE BATHING ROOM. A room separate from other bathing rooms intended to be used by ~~either~~ all persons regardless of sex, families and those needing assisted care having; an independent entrance, ~~no less~~ not more than one shower or bathtub, not more than one adult-height water closet and one adult-height lavatory, and is permitted to have ~~no more than~~ one urinal, one child height water closet and one child height lavatory.

Committee Reason: For the modification: Provides more clarity and makes the terminology more consistent with other code callouts. (12-2)
For the proposal As Modified: The Committee agrees with the published reason statement. (8-6)

P5-21 Part I

P5-21 Part II

Committee Action: **Disapproved**

Committee Reason: The requirements for plumbing fixtures are in the IPC and the family/assisted use toilet and bathing rooms in IBC Section 1109, so this information does not need to be in a definition. (Vote: 13-1)

P5-21 Part II

P6-21 Part I

Committee Action: **As Submitted**

Committee Reason: The Committee agreed with the published reason statement. (14-0)

P6-21 Part I

P6-21 Part II

Committee Action: **As Modified**

Committee Modification:

P2603.2.1 Protection against physical damage.
In concealed locations, where piping, other than cast-iron or galvanized steel, is installed through holes or notches in studs, joists, rafters or similar

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Plumbing

10

P10127

Date Submitted	02/08/2022	**Section**	202	**Proponent**	Brad Schiffer
Chapter	2	**Affects HVHZ**	No	**Attachments**	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

Summary of Modification

Provides definition for Universal Changing Station.

Rationale

Provides definition of Universal Changing Station.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code
Adds clarity .
Impact to building and property owners relative to cost of compliance with code
Adds clarity .
Impact to industry relative to the cost of compliance with code
Adds clarity .
Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public
Adds clarity .
Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction
Adds clarity .
Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities
Adds clarity .
Does not degrade the effectiveness of the code
Adds clarity .

Universal Changing Station. A Universal adult changing station contains a changing table, large enough to accommodate an adult-sized person, that is within a family assisted-toilet facilities in proximity to sanitary facilities, such as lavatories, water closets and trash disposal.

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Plumbing

11

P9876

Date Submitted	01/24/2022	**Section**	312.6	**Proponent**	Gary Kozan
Chapter	3	**Affects HVHZ**	No	**Attachments**	**Yes**
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

Residential P2503.4 - Mod #9877

Summary of Modification

Restores the previous Florida amendment that simplifies the testing of outside building sewers

Rationale

This modification restores the actual code language that appeared in the first four editions of the FBC (see attached). Most Florida-specific changes were unceremoniously sunsetted in the fifth edition, and this change was never reinstated. Testing outside building sewers with a 5-foot head is unnecessary and time consuming. It requires plugging off or otherwise isolating both ends of the sewer to achieve the head test. If a test ball were to leak, water could overflow into the building and cause extensive damage. Sewers can be adequately tested by simply filling them with water to their highest point. This new code language is precisely as it appears in the Uniform Plumbing Code (see attached). It allows the sewer line to remain safely connected to the drainage system during testing.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No fiscal impact to local entities

Impact to building and property owners relative to cost of compliance with code

No fiscal impact to building and property owners

Impact to industry relative to the cost of compliance with code

No fiscal impact to industry

Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Restores a better method of testing outside building sewers

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Provides for a less expensive, user-friendly method of testing outside building sewers

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate against any materials, products, methods, or systems of construction

Does not degrade the effectiveness of the code

Does not degrade the effectiveness of the code

312.6 Gravity sewer test.

Gravity sewer tests shall consist of plugging the end of the building sewer at the point of connection with the public sewer, ~~filling the building sewer with water, testing with not less than a 5-foot (1524 mm) head of water~~ completely filling the building sewer with water from the lowest to the highest point thereof, and maintaining such pressure for fifteen minutes. The building sewer shall be water tight at all points.

to the satisfaction of the Authority
n.

l space for a building sewer where
transfer of ownership, or change of
violation of other requirements, has
lished to the satisfaction of the
ng Jurisdiction. The instrument
tion shall constitute an agreement
ty Having Jurisdiction and shall
how that the areas so joined or used
d as a unit during the time they are
agreement shall be recorded in the
ty Recorder as part of the conditions
aid properties, and shall be binding
rs, and assigns to such properties. A
ument recording such proceedings
the Authority Having Jurisdiction.

Sewers and Sewage Disposal

se) Sewer. An abandoned building
thereof, shall be plugged or capped
er within 5 feet (1524 mm) of the

s into a drainage or vent system,
o which plumbing fixtures are prop-
h constitute vent terminals, must be
or capped in an approved manner
ials.

eptic Tanks, and Seepage Pits.
, and seepage pit that has been aban-
ontinued otherwise from further use,
soil pipe from a plumbing fixture is
the sewage removed therefrom and
ith earth, sand, gravel, concrete, or
L

nment of private sewage disposal
ng the large underground areas of
ngerous practice. The possibility of
hildren, getting into or falling into
s is reason enough to fill them, but
ealth hazards due to the continued
nd mold. Therefore, they must be
thin 30 days of abandonment (see

p cover or arch over the cesspool,
pit shall be removed before filling,
extend above the top of the vertical
lls or above the level of the outlet
has been called and the cesspool,
pit has been inspected. After such
, septic tank, or seepage pit shall be
top of the ground.

No person owning or controlling a
seepage pit on the premises of such

person or in that portion of a public street, alley, or other public property abutting such premises, shall fail, refuse, or neglect to comply with the provisions of this section or upon receipt of notice so to comply from the Authority Having Jurisdiction.

722.5 Disposal Facilities. Where disposal facilities are abandoned consequent to connecting premises with the public sewer, the permittee making the connection shall fill abandoned facilities in accordance with the Authority Having Jurisdiction within 30 days from the time of connecting to the public sewer.

723.0 Building Sewer Test.

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

Building sewers are tested by plugging the end of the building sewer at its point of connection with the public sewer or private sewage disposal system. The building sewer is then completely filled with water from the lowest point to the highest point (see **Figure 723.1a**). There is no requirement for any specific head pressure. An air-pressure test may be used in lieu of the water test, except on plastic DWV piping systems due to safety issues. See **Figure 723.1b** of a lethal plastic shard exploding from a compressed air test on plastic pipe. The requirements for using air as testing media are found in Section 712.3.

See **Learning Link http://bit.ly/2WcsIjP** about testing plastic DWV systems with air.

FIGURE 723.1B
PLASTIC SHARD FROM COMPRESSED AI

A building sewer can be tested by capping or plugging the sewer pipe at the property line and filling the pipe with water to the connection at A to the building drain, or leaving the building drain connected to the building sewer and filling both systems to the flood level rim of the lower fixture B.

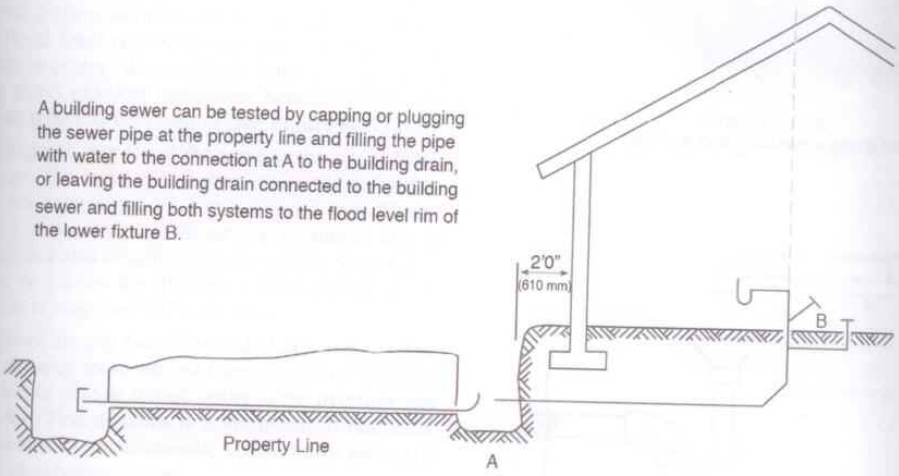


FIGURE 723.1A
BUILDING SEWER TEST

Proposed Modification to the Base Code for Inclusion in the Florida Building Code

Date: January 13, 1999

Proponent: Fla. Assn. Of Plumbing Heating Cooling Contractors
Address: PO Box 947599
Maitland, FL 32794
Contact Person: Gary Kozan
Phone: 561-732-3176

Item#: P-003 - Revised
Action:
Mtg 1
Mtg 2

AS, AM, AP, D, W

A separate submittal is required for each code section.

Code1997 Standard (International) Plumbing Code Section: 312.6

CHECK ONE:

ξRevise section to read as follows:
9Delete section without substitution:
9Add new section to read as follows:
9Delete section and substitute the following:

Provide rewritten code section here and on attached sheet(s) if required: Sheet 1 of 1

Proposal: (~~Line through material to be deleted~~ Underline material to be added)

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

Rationale:

Testing outside building sewers with a 10-foot head is unnecessary and time consuming. It requires plugging off both ends of the sewer in order to achieve the 10-foot head. If a test ball were to leak, water could overflow into the building and cause extensive damage.

Sewers can be adequately tested by simply filling them with water to their highest point. This new language is taken from the 1997 Uniform Plumbing Code. This change is user-friendly and less expensive to perform, and would still achieve the desired result of uncovering leaks in the system.

Note: This revised version, which retains the phrase "and maintaining such pressure for 15 minutes" was agreed upon by the Plumbing Work Group in January, and subsequently Approved As Modified by the group.

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Plumbing

12

P10000

Date Submitted	02/01/2022	**Section**	308.2	**Proponent**	T Stafford
Chapter	3	**Affects HVHZ**	No	**Attachments**	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

Summary of Modification

This modification is one of a series of modifications that delete the seismic and snow requirements from the code. In accordance with Exception 2 to Section 101.2 of the FBCB, seismic and snow requirements are not to be utilized or enforced in the State of Florida.

Rationale

This modification is the culmination of a project funded by the Florida Building Commission through Building a Safer Florida (BASF) that the deletes the seismic and snow provisions from the Florida Building Codes. In accordance with Exception 2 to Section 101.2 of the Florida Building Code, Building, the seismic and snow provisions are exempted from the scope of the Florida Building Codes. Exception 2 to Section 101.2 states the following: "2. Code requirements that address snow loads and earthquake protection are pervasive; they are left in place but shall not be utilized or enforced because Florida has no snow load or earthquake threat." These modifications clarify and simplify the code by deleting requirements that do not apply in the State of Florida.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entities relative to enforcement of the code.

Impact to building and property owners relative to cost of compliance with code

No impact to building and property owners relative to cost of compliance with the code.

Impact to industry relative to the cost of compliance with code

No impact to industry relative to the cost of compliance with the code.

Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Clarifies and simplifies the code by deleting requirements that do not apply in the State of Florida.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Improves the code by deleting requirements that do not apply in the State of Florida.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

This proposal does not degrade the effectiveness of the code.

Revise as follows:

308.2 Piping seismic supports. Reserved. ~~Where earthquake loads are applicable in accordance with the building code, plumbing piping supports, anchorage, and bracing shall be designed and installed for seismic forces in accordance with Chapter 16 the *Florida Building Code, Building*.~~

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Plumbing

13

P9873

Date Submitted	01/24/2022	**Section**	419.5	**Proponent**	Gary Kozan
Chapter	4	**Affects HVHZ**	No	**Attachments**	**Yes**
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

Summary of Modification

Updates to the correct standards for water-temperature limiting devices

Rationale

This Mod #8678 was previously denied because it had been classified as overlapping with the current FBC-Plumbing section. This proposal is only intended to update to the correct standard, and will in no way affect the other current requirements of the section.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code
No fiscal impact to local entity
Impact to building and property owners relative to cost of compliance with code
No fiscal impact to building and property owners
Impact to industry relative to the cost of compliance with code
No fiscal impact to industry
Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public
Provides the most current standard
Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction
Strengthens the code by referencing the correct standard
Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities
Does not discriminate against materials, products, methods, or systems of construction
Does not degrade the effectiveness of the code

Improves the effectiveness of the code

419.5 Water for public hand-washing facilities

Cold or tempered water shall be delivered from lavatories and group wash fixtures located in public toilet facilities provided for customers, patrons and visitors. Tempered water shall be delivered through an approved water-temperature limiting device that conforms to ~~ASSE 1070 or CSA B125.3.~~ ASSE 1070/ASME A112.1070/CSA B125.70.

P8678 Rationale

Code Change No: P57-18

Original Proposal

Section(s): 419.5

Proponents: William Chapin, Professional Code Consulting, LLC, representing Professional Code Consulting, LLC (bill@profcc.us)

2018 International Plumbing Code

Revise as follows:

419.5 Tempered water for public hand-washing facilities. Tempered water shall be delivered from lavatories and group wash fixtures located in public toilet facilities provided for customers, patrons and visitors. Tempered water shall be delivered through an approved water-temperature limiting device that conforms to ASSE 1070/ASME A112.1070/CSA B125.70 ~~or CSA B125.3~~.

Reason: In June of 2017, the CSA B125 Committee completed the project that removed the automatic compensating valve requirements from CSA B125.3. The reason for this was the publication of harmonized ASSE 1070/ASME A112.1070/CSA B125.70 standard.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Proposal only removes a referenced standard from the code section.

Public Hearing Results

Committee Action: **Approved as Submitted**

Committee Reason: The Committee agreed with the published reason statement. (Vote:14-0)

Assembly Action: **None**

Final Hearing Results

P57-18 **AS**

P9873Rationale

P8678/P57-18

65

Date Submitted 2/9/2021	**Section** 419.5	**Proponent** Mo Madani	
Chapter 4	**Affects HVHZ** Yes	**Attachments** Yes	
TAC Recommendation Pending Review			
Commission Action Pending Review		**Staff Classification** Overlap	

Comments

General Comments Yes

Related Modifications

Original text of this mod is not consistent with that of the 2020 FBC-P.

Summary of Modification

Removes the standard CSA B125.3

Rationale

In June of 2017, the CSA B125 Committee completed the project that removed the automatic compensating valve requirements from CSA B125.3. The reason for this was the publication of harmonized ASSE 1070/ASME A112.1070/CSA B125.70 standard.

Comment Period History

P8678-G1

Proponent Gary Kozan **Submitted** 6/7/2021 **Attachments** No

Comment:

Overlap with current FBC-P Section 419.5, which permits the use of "cold or" tempered water, not just tempered water.

P8678 Text Modification

Approved as submitted (AS)

Revise as follows:

419.5 Tempered water for public hand-washing facilities. Tempered water shall be delivered from lavatories and group wash fixtures located in public toilet facilities provided for customers, patrons and visitors. Tempered water shall be delivered through an approved water-temperature limiting device that conforms to ASSE 1070/ASME A112.1070/CSA B125.70 ~~or CSA B125.3~~.

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Plumbing

14

P10062

Date Submitted	02/01/2022	**Section**	403.3.6	**Proponent**	John Woestman
Chapter	4	**Affects HVHZ**	Yes	**Attachments**	**Yes**
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

Summary of Modification

This proposal adds an exception which permits locking of egress doors of multiple occupant toilet ?rooms by authorized personnel. The proposed revisions are similar to existing requirements for ?door locking in the Florida Building Code, Building, Section 1010.1.4.4. ?

Rationale

This proposal adds an exception which permits locking of egress doors of multiple occupant toilet rooms by authorized personnel. The proposed revisions are very similar to existing requirements for door locking in the Florida Building Code, Building, Section 1010.1.4.4. This proposal is based on ICC IPC proposal P35-21 approved as modified by public comment 1 for the 2024 IPC. The current Florida Building Code, Plumbing, requires the egress door of a multiple occupant toilet room to not be lockable from inside the toilet room. For many occupancies, that's appropriate. However, considering active shooter situations in K-12 schools, for example, there's a real concern that ?teachers with their students would not have a safe refuge from a shooter in a multi-occupant toilet room if the toilet room door cannot be lockable from inside the room. Picture a kindergarten teacher leading the class to the cafeteria when shots ring out, and the multi-occupant toilet room is the nearest potential place of refuge and safety. This proposal provides appropriate requirements via the proposed exception to 403.3.6 for building owners that wish to provide the ability for authorized personnel to lock the door from the inside of a multi-occupant toilet room. This proposed option is not limited to K-12 schools as the ability for authorized personnel to lock the door from inside of a toilet room may be desired in other occupancies. Please see the uploaded support file for additional details.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Should be minimal enforcement requirements as the proposed revisions are consistent with current requirements for locking doors in the Florida Building Code, Building.

Impact to building and property owners relative to cost of compliance with code

Will not increase the cost of construction. The exception is "shall be permitted" and non-mandatory. Of course, if building owners choose to install locks on egress doors from multiple occupant toilet rooms, a cost would be incurred.

Impact to industry relative to the cost of compliance with code

Will not increase the cost of construction. The exception is “shall be permitted” and non-mandatory. Of course, if building owners choose to install locks on egress doors from multiple occupant toilet rooms, a cost would be incurred.

Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes. Helps address needs of building owners regarding preparing for violent events.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes. Strengthens the code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate.

Does not degrade the effectiveness of the code

Does not.

Revise as follows:

403.3.6 Door locking.

Where a toilet 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 rooms.

Exception: The egress door of a multiple occupant toilet room shall be permitted to be lockable from inside the room where all the following criteria are met:

1. The egress door shall be lockable from the inside of the room only by authorized personnel by the use of a key or other approved means.
2. The egress door shall be readily openable from inside the toilet room in accordance with *Florida Building Code, Building*, Section 1010.1.9.
3. The egress door shall be capable of being unlocked from outside the room with a key or other approved means.

2023 Florida Building Code, Plumbing, BHMA Proposal RE Door Locking, ICC IPC Proposal P35-21 AMPC1
John Woestman, Feb. 1, 2022

ICC IPC proposal P35-21 approved as modified by public comment 1 for the 2024 IPC.

Revise as follows:

403.3.6 Door locking.
Where a toilet 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 rooms.

Exception: The egress door of a multiple occupant toilet room shall be permitted to be lockable from inside the room where all the following criteria are met:

1. The egress door shall be lockable from the inside of the room only by authorized personnel by the use of a key or other approved means.
2. The egress door shall be readily openable from inside the toilet room in accordance with *Florida Building Code, Building*, Section 1010.1.9.
3. The egress door shall be capable of being unlocked from outside the room with a key or other approved means.

Reason (edited from ICC IPC proposal P35-21 AMPC1):

This proposal adds an exception which permits locking of egress doors of multiple occupant toilet rooms by authorized personnel. The proposed revisions are very similar to existing requirements for door locking in the Florida Building Code, Building, Section 1010.1.4.4.

The current Florida Building Code, Plumbing, requires the egress door of a multiple occupant toilet room to not be lockable from inside the toilet room. For many occupancies, that's appropriate.

However, considering active shooter situations in K-12 schools, for example, there's a real concern that teachers with their students would not have a safe refuge from a shooter in a multi-occupant toilet room if the toilet room door cannot be lockable from inside the room. Picture a kindergarten teacher leading the class to the cafeteria when shots ring out, and the multi-occupant toilet room is the nearest potential place of refuge and safety.

This proposal provides appropriate requirements via the proposed exception to 403.3.6 for building owners that wish to provide the ability for authorized personnel to lock the door from the inside of a multi-occupant toilet room. This proposed option is not limited to K-12 schools as the ability for authorized personnel to lock the door from inside of a toilet room may be desired in other occupancies.

The criteria for permitting the egress door of a multi-occupant toilet room to be lockable from inside the room includes:

1. Requiring the use of a key, or other approved means, to lock the door from the inside.
    a. This restricts the ability to lock the door from the inside to only those authorized to do so. In a K-12 school, that could be teachers, administrators, and custodians. The provision for "other approved means" would permit, for example, electronic remote locking of doors for a building-wide lockdown.
2. Item 2, requiring the egress door to be openable from inside the toilet room in accordance with Florida Building Code, Building, Section 1010.1.9 – which is a current requirement for egress doors – is repeated here to stress the importance. Section 1010.1.9 and subsections requires egress doors to be openable with a single motion, and without the use of a key or special knowledge or effort, and includes requirements for hardware height, locks and latches, etc.

   a. Door hardware is readily available from multiple manufacturers that is lockable from inside the room only by authorized personnel (by a key, etc.), and unlockable by anybody inside the room without using a key, tool, special knowledge or effort.
3. Requiring the door to the multi-occupant toilet room to be unlockable from outside of the room by a key or other approved means ensures authorized personnel have the ability to gain access to the toilet room, should that need arise.
   a. This requirement is consistent with current requirements in the Florida Building Code, Building, for Group E and Group B occupancies for locks permitted on classrooms, offices, and other occupied rooms per Section 1010.1.4.4.

Cost Impact:
Will not increase the cost of construction.

The exception is “shall be permitted” and non-mandatory. Of course, if building owners choose to install locks on egress doors from multiple occupant toilet rooms, a cost would be incurred.

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Plumbing

15

P10125

Date Submitted	02/08/2022	**Section**	403.2.1.1	**Proponent**	Brad Schiffer
Chapter	4	**Affects HVHZ**	No	**Attachments**	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

Definition of Universal Changing Station

Summary of Modification

Establish standards for universal adult changing tables.

Rationale

Without such facilities, severely disabled people who cannot use toilets because of their disability suffer from severe isolation because they and their caregivers must return home to be changed. This lack of access has a profound impact not only on the person with a disability, but on their caregivers who are often their immediate family members. Normal activities outside the home such as shopping, entertainment, and travel must be curtailed because of a lack of safe and sanitary places to change. On occasion, caregivers report they have no option other than to change the adults for whom they care on restroom floors. Aside from the obvious sanitation concerns which is far from minimal, this practice raises serious questions about how we as a community afford people with significant disabilities a measure of human dignity and protect their right to privacy. This facility can be used by people of all ages and size for self-care.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Provides standards if a Universal Changing Table is being provided.

Impact to building and property owners relative to cost of compliance with code

If an owner provides a Universal Changing Table there will be area increases .

Impact to industry relative to the cost of compliance with code

If an owner provides a Universal Changing Table there will be additional work.

Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Providing a Universal Changing Table has substantial increase in the HSW for the general public .

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This will improves the Code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate.

Does not degrade the effectiveness of the code

Enhances the effectiveness of the Code for the general public .

403.2.1.1 Universal Changing Station. Where provided Adult Changing Stations must have adequate space for a wheelchair to maneuver; be equipped with a powered, height adjustable adult changing table, a waste receptacle, a toilet, a lavatory, a soap dispenser, and a paper towel dispenser; and comply with The Florida Building Code 7th Edition Accessibility standards.

403.2.1.1.1 Adult changing table. The powered, height adjustable adult changing table in the universal changing place must

1. Be able to lower to a height of 17 inches and raise to height of 34 inches.

2. 2. Be at least 25 inches wide by 70 inches in length.

3. Support up to at least 350 pounds.

4. Have a changing surface comprised of a non-porous and durable material.

5. Side rails shall be provided for safety.

403.2.1.1.2 Signage. The entrance to each universal changing station in the family restroom facility must have accessible signage indicating the location of the changing station, and, if the building or venue has a central directory, the owner must ensure that the central directory indicates the location of the universal changing station.

-

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Plumbing

16

P10210

Date Submitted	02/11/2022	**Section**	403.1	**Proponent**	Dallas Thiesen
Chapter	4	**Affects HVHZ**	No	**Attachments**	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

Summary of Modification

Allows for indoor and outdoor pools to be treated the same for purposes of sanitary fixture counts.

Rationale

Table 403.1 of the Florida Building Code, Plumbing specifies the fixture count for indoor swimming pools but the results seem high because the deck area is counted at one occupant per only 15 sf, while the 454.1.6.1/Plumbing ignores deck area up to 3x pool area. Indoor pools should be struck from the table. Indoor and outdoor pools should be treated the same for the purposes of restroom counts.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None, simplifies code requirements. Treats indoor and outdoor pools the same for purposes of sanitary fixture counts.

Impact to building and property owners relative to cost of compliance with code

None, simplifies code requirements. Treats indoor and outdoor pools the same for purposes of sanitary fixture counts.

Impact to industry relative to the cost of compliance with code

None, simplifies code requirements. Treats indoor and outdoor pools the same for purposes of sanitary fixture counts.

Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Restrooms that are easily accessible from the swimming pool area are an important part of maintaining a sanitary swimming environment.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

None, simplifies code requirements. Treats indoor and outdoor pools the same for purposes of sanitary fixture counts.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not specify particular materials, products, methods, or systems of construction.

Does not degrade the effectiveness of the code

None, simplifies code requirements. Treats indoor and outdoor pools the same for purposes of sanitary fixture counts.

403.1 (FBC, Plumbing)

[8th row, 3rd column of table 403.1] Coliseums, arenas, skating rinks, ~~pools~~and tennis courts for indoor sporting events and activities

…

[notes at end of Table 403.1] f. The required number and type of plumbing fixtures for indoor andoutdoor public swimming pools shall be in accordance with Section 403.6.

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Plumbing

17

P10211

Date Submitted	02/11/2022	**Section**	403.6	**Proponent**	Dallas Thiesen
Chapter	4	**Affects HVHZ**	No	**Attachments**	**Yes**
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

Building 454.1.6.1Sanitary facilities

Summary of Modification

Simples required sanitary fixture calculations and creates a more gradual increase in required fixtures as the swimming pool size increases.

Rationale

Reference to unisex restrooms is outdated; single user restrooms are already allowed to contribute to minimum fixture requirements per 403.1.2 of this Code. For all other restrooms, urinals are optional per 424.2 of this Code, that should apply to outdoor pools as well. Reference to bathing load is confusing, requires separate calculation. The thresholds here are harsh. There is no reason that going from 2,500 to 2,501 square feet should cause four additional women's water closets to be required. Each threshold should be a single fixture.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None, simplifies code requirements.

Impact to building and property owners relative to cost of compliance with code

None, simplifies code requirements.

Impact to industry relative to the cost of compliance with code

None, simplifies code requirements.

Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Bather access to restrooms is important to maintaining a safe and sanitary swimming environment.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Improves effectiveness of the code by simplifying and clarifying requirements.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not specify particular materials, products, methods, or systems of construction.

Does not degrade the effectiveness of the code

Improves effectiveness of the code by simplifying and clarifying requirements.

403.6 Sanitary facilities for public swimming pools. ~~**Swimming pools with a bathing load of 20 persons or less may utilize a unisex restroom. Pools with bathing loads of 40 persons or less may utilize two unisex restrooms or meet the requirement of Table 403.6. Unisex r**~~**Restrooms** ~~**shall meet all the requirements for materials, drainage and signage as indicated in Sections 454.1.6.1.1 through 454.1.6.1.4 of the *Florida Building Code, Building*. Each**~~ **shall include a water closet, a diaper change table,** ~~**a urinal,**~~**and a lavatory. Diaper changing Tables are not required at restrooms where all pools served are restricted to adult use only.** ~~**Pools with a bathing load larger than 40 persons shall provide separate sanitary facilities labeled for each sex.**~~ **The entry doors of all restrooms shall be located within a 200-foot (60 960 mm) walking distance of the nearest water's edge of each pool served by the facilities.**

Exception: Where a swimming pool serves only a designated group of residential dwelling units including hotel rooms and not the general public, poolside sanitary facilities are not required if all living units are within a 200-foot horizontal radius of the nearest water's edge, are not over three stories in height unless serviced by an elevator, and are each equipped with private sanitary facilities.

TABLE 403.6 PUBLIC SWIMMING POOL—REQUIRED FIXTURES COUNT PER SQUARE FOOT OF POOL SURFACE

~~SIZE[a] (square feet)~~	MEN'S RESTROOMS			WOMEN'S RESTROOMS	
	~~Urinals~~	WC	Lavatory	WC	Lavatory
~~0 - 2500 sq ft~~	~~1~~	1 per 2,500 for first 10,000, 1 per	1 per 5,000 for first 10,000, 1 per 10,000 for	1 per 1,250 for first 10,000, 1 per 2,500 for	1 per 5000 for first 10,000, 1 per 10,000 for

		5,000 for remainder exceeding 10,000	remainder exceeding 10,000	remainder exceeding 10,000	remainder exceeding 10,000
~~2501 - 5000 sq ft~~	~~2~~	~~1~~	~~1~~	~~5~~	~~1~~
~~5001 - 7500 sq ft~~	~~2~~	~~2~~	~~2~~	~~6~~	~~2~~
~~7501 - 10,000 sq ft~~	~~3~~	~~2~~	~~3~~	~~8~~	~~3~~

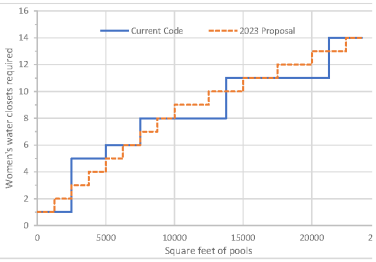
For SI: 1 square foot = 0.0929 m^2.

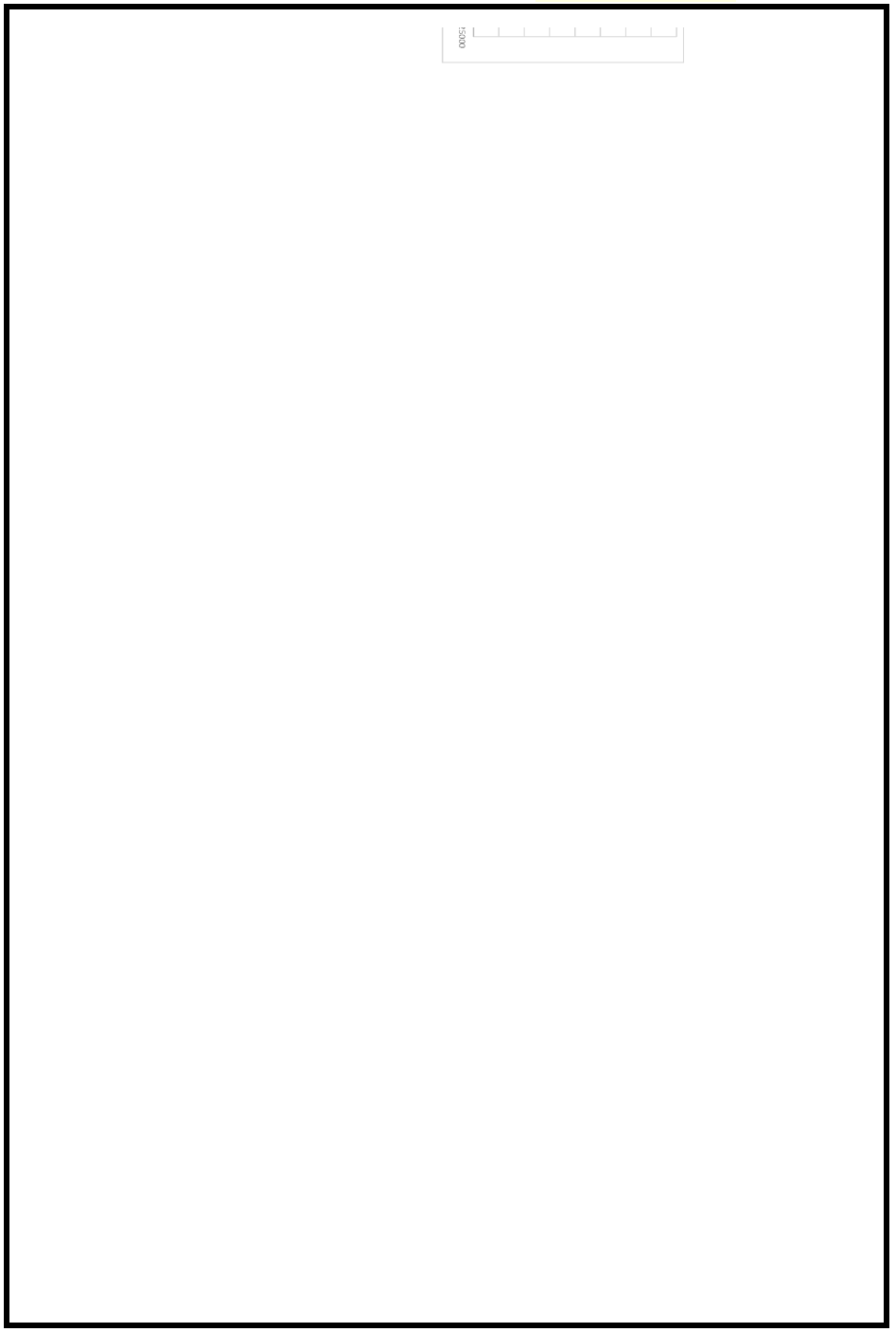
~~**a. Square footage of interactive water features (IWFs) is required to be included when calculating the "size of pool" for the purposes of determining the type and number of fixtures for the sanitary facilities. For those facilities with an IWF in addition to the pool, causing the combined pool size square footage to exceed the threshold required category fixture count, a unisex restroom may be installed to satisfy the fixture requirement for every additional 1,250 square feet or fraction thereof. The interactive water feature flow for one unisex restroom shall not exceed 100 gpm, nor shall the bathing load exceed 20 patrons.**~~

403.6.1 Required fixtures.

Fixtures shall be provided as indicated on Table 403.6. The fixture count of Table 403.6 is deemed to be adequate for the pool and pool deck area that is up to three times the area of the pool surface provided. ~~An additional set of fixtures shall be provided in the men's restroom for every 7,500 square feet or major fraction thereof for pools greater than 10,000 square feet. Women's restrooms shall have a ratio of three to two water closets provided for women as the combined total of water closets and urinals provided for men. Lavatory counts shall be equal.~~

	2020 Florida						occupants/sf occupants/sf 2500	5000	1250	5000	men	women
	Urinal	Men's WC	Men's WC + Urinals	Men's Lavatory	Women's WC	Women's Lavatory	Men's WC + Urinals	Men's Lavatory	Women's WC	Women's Lavatory	2023 Proposal - Florida now	2023 Proposal - Florida now
1	1	1	2	1	1	1	1	1	1	1	-1	0
1250	1	1	2	1	1	1	1	1	1	1		
1251	1	1	2	1	1	1	1	1	2	1		
2500	1	1	2	1	1	1	1	1	2	1		
2501	2	1	3	1	5	1	2	1	3	1	-1	
3750	2	1	3	1	5	1	2	1	3	1		
3751	2	1	3	1	5	1	2	1	4	1		
5000	2	1	3	1	5	1	2	1	4	1		
5001	2	2	4	2	6	2	3	2	5	2		
6250	2	2	4	2	6	2	3	2	5	2		
6251	2	2	4	2	6	2	3	2	6	2		
7500	2	2	4	2	6	2	3	2	6	2		
7501	3	2	5	3	8	3	4	2	7	2		
8750	3	2	5	3	8	3	4	2	7	2		
8751	3	2	5	3	8	3	4	2	8	2		
10000	3	2	5	3	8	3	4	2	8	2		
10001	3	2	5	3	8	3	5	3	9	3		
12500	3	2	5	3	8	3	5	3	9	3	0	
12501	3	2	5	3	8	3	5	3	10	3		
13749	3	2	5	3	8	3	5	3	10	3	0	2
13750	4	3	7	4	11	4	5	3	10	3	-2	-1
15000	4	3	7	4	11	4	5	3	10	3		
15001	4	3	7	4	11	4	6	3	11	3		
17500	4	3	7	4	11	4	6	3	11	3		
17501	4	3	7	4	11	4	6	3	12	3		
20000	4	3	7	4	11	4	6	3	12	3		
20001	4	3	7	4	11	4	7	4	13	4		
21249	4	3	7	4	11	4	7	4	13	4		
21250	5	4	9	5	14	5	7	4	13	4		
22500	5	4	9	5	14	5	7	4	13	4		
22501	5	4	9	5	14	5	7	4	14	4	-2	0
23610	5	4	9	5	14	5	7	4	14	4	-2	0
23640	5	4	9	5	14	5	7	4	14	4	-2	0
2031 Amer	7916	3	2	5	3	8	3	4	2	7	2	
2044	6867	2	2	4	2	6	2	3	2	6	2	
Marilla Par	14640	4	3	7	4	11	4	5	3	10	3	





TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Plumbing

18

P10001

Date Submitted	02/01/2022	**Section**	502.4	**Proponent**	T Stafford
Chapter	5	**Affects HVHZ**	No	**Attachments**	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

Summary of Modification

This modification is one of a series of modifications that delete the seismic and snow requirements from the code. In accordance with Exception 2 to Section 101.2 of the FBCB, seismic and snow requirements are not to be utilized or enforced in the State of Florida.

Rationale

This modification is the culmination of a project funded by the Florida Building Commission through Building a Safer Florida (BASF) that the deletes the seismic and snow provisions from the Florida Building Codes. In accordance with Exception 2 to Section 101.2 of the Florida Building Code, Building, the seismic and snow provisions are exempted from the scope of the Florida Building Codes. Exception 2 to Section 101.2 states the following: "2. Code requirements that address snow loads and earthquake protection are pervasive; they are left in place but shall not be utilized or enforced because Florida has no snow load or earthquake threat." These modifications clarify and simplify the code by deleting requirements that do not apply in the State of Florida.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entities relative to enforcement of the code.

Impact to building and property owners relative to cost of compliance with code

No impact to building and property owners relative to cost of compliance with the code.

Impact to industry relative to the cost of compliance with code

No impact to industry relative to the cost of compliance with the code.

Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Clarifies and simplifies the code by deleting requirements that do not apply in the State of Florida.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Improves the code by deleting requirements that do not apply in the State of Florida.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

This proposal does not degrade the effectiveness of the code.

Revise as follows:

502.4 Seismic supports. Reserved. ~~Where earthquake loads are applicable in accordance with the *Florida Building Code, Building*, water heater supports shall be designed and installed for the seismic forces in accordance with the *Florida Building Code, Building*.~~

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Plumbing

19

P10380

Date Submitted	02/14/2022	**Section**	608.18	**Proponent**	Danielle Jessup
Chapter	6	**Affects HVHZ**	No	**Attachments**	**Yes**
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

Chapter 2: Section 202 - General Definitions

Summary of Modification

We respectively request that Section 608.18 of the Plumbing Code be removed as Plumbers do not have the authority to complete water well construction as stated under Chapter 373 Part III of the Florida Statues.

Rationale

The current Florida Plumbing Code section 608.18 (Protection of Individual Water Supplies) explains the process of construction of a Water Well. Under Florida Statue 373 Part III (Regulation of Wells), defines Water Well Contractor as a person who is responsible for the construction, repair, or abandonment of a water well and who is licensed under this part to engage in the business of construction, repair, or abandonment of water wells. The Florida Department of Environmental Protection is responsible for the administration of Chapter 373, including the regulations of setbacks from sanitary hazards, construction methods, and the permitting and well completion reports as Wells are considered Waters of the State. We respectively request that Section 608.18 of the Plumbing Code be removed as Plumbers do not have the authority to complete water well construction as stated under Chapter 373 Part III of the Florida Statues. • 373.302 Legislative findings. —The Legislature recognizes that the practice of constructing, repairing, and abandoning water wells, if conducted by incompetent contractors, is potentially threatening to the health of the public and to the environment. The Legislature finds that a threat to the public and the environment exists if water resources become contaminated as a result of wells drilled by incompetent or dishonest contractors, and that to prevent contamination, it is necessary to regulate the construction, repair, and abandonment of wells, and the persons and businesses responsible therefor.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Zero impact as the Florida Department of Environmental Protection and Water Management Districts enforce Water Well Contractors.

Impact to building and property owners relative to cost of compliance with code

Zero impact as Chapter 373 regulates Water Well Contractors.

Impact to industry relative to the cost of compliance with code

Zero.

Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Chapter 373.323 has higher standard over water well construction regulation and is regulated by the Florida Department of Environmental Protection.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Chapter 373.323 has higher standard over water well construction regulation and is regulated by the Florida Department of Environmental Protection.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Chapter 373.323 was created in the mid-1970's and set the standard for Water Well Contractors and Water Well Construction throughout the State of Florida under the regulation of the FL Department of Environmental Protection as waters of the state.

Does not degrade the effectiveness of the code

Current code is in conflict with Chapter 373 of the F.S.

608.18Protection of individual water supplies.
An individual water supply shall be located and constructed so as to be safeguarded against contamination in accordance with Sections 608.18.1 through 608.18.8.

608.18.1Well locations.
A potable ground water source or pump suction line shall not be located closer to potential sources of contamination than the distances shown in Table 608.18.1. In the event the underlying rock structure is limestone or fragmented shale, the local or state health department shall be consulted on well site location. The distances in Table 608.18.1 constitute minimum separation and shall be increased in areas of creviced rock or limestone, or where the direction of movement of the ground water is from sources of contamination toward the well.

TABLE 608.18.1
DISTANCE FROM CONTAMINATION TO PRIVATE WATER SUPPLIES AND PUMP SUCTION LINES

SOURCE OF CONTAMINATION	DISTANCE (feet)
Barnyard	100
Farm site	25
Pasture	100
Pumphouse floor drain of cast iron draining to ground surface	2
Seepage pits	50
Septic tank	25
Sewer	10
Subsurface disposal fields	50
Subsurface pits	50

For SI: 1 foot = 304.8 mm.

608.18.2Elevation.
Well sites shall be positively drained and shall be at higher elevations than potential sources of contamination.

608.18.3Depth.
Private potable well supplies shall not be developed from a water table less than 10 feet (3048 mm) below the ground surface.

608.18.4Water-tight casings.
Each well shall be provided with a water-tight casing extending to not less than 10 feet (3048 mm) below the ground surface. Casings shall extend not less than 6 inches (152 mm) above the well platform. Casings shall be large enough to permit installation of a separate drop pipe. Casings shall be sealed at the bottom in an impermeable stratum or extend several feet into the water-bearing stratum.

608.18.5Drilled or driven well casings.
Drilled or driven well casings shall be of steel or other approved material. Where drilled wells extend into a rock formation, the well casing shall extend to and set firmly in the formation. The annular space between the earth and the outside of the casing shall be filled with cement grout to a depth of not less than 10 feet (3048 mm) below the ground surface. In an instance of casing to rock installation, the grout shall extend to the rock surface.

608.18.6Dug or bored well casings.
Dug or bored well casings shall be of water-tight concrete, tile or galvanized or corrugated metal pipe extending to not less than 10 feet (3048 mm) below the ground surface. Where the water table is more than 10 feet (3048 mm) below the ground surface, the water-tight casing shall extend below the table surface. Well casings for dug wells or bored wells constructed with sections of concrete, tile or galvanized or corrugated metal pipe shall be surrounded by 6 inches (152 mm) of grout poured into the hole between the outside of the casing and the ground and extending not less than 10 feet (3048 mm) below the ground surface.

608.18.7Cover.
Potable water wells shall be equipped with an overlapping water-tight cover at the top of the well casing or pipe sleeve such that contaminated water or other substances are prevented from entering the well through the annular opening at the top of the well casing, wall or pipe sleeve. Covers shall extend downward not less than 2 inches (51 mm) over the

~~outside of the well casing or wall. A dug well cover shall be provided with a pipe sleeve permitting the withdrawal of the pump suction pipe, cylinder or jet body without disturbing the cover. Where pump sections or discharge pipes enter or leave a well through the side of the casing, the circle of contact shall be water tight.~~

~~**608.18.8Drainage.**~~
~~Potable water wells and springs shall be constructed such that surface drainage will be diverted away from the well or spring.~~

608.18Protection of individual water supplies.

An individual water supply shall be located and constructed so as to be safeguarded against contamination in accordance with Sections 608.18.1 through 608.18.8.

608.18.1Well locations.

A potable ground water source or pump suction line shall not be located closer to potential sources of contamination than the distances shown in Table 608.18.1. In the event the underlying rock structure is limestone or fragmented shale, the local or state health department shall be consulted on well site location. The distances in Table 608.18.1 constitute minimum separation and shall be increased in areas of creviced rock or limestone, or where the direction of movement of the ground water is from sources of contamination toward the well.

TABLE 608.18.1

DISTANCE FROM CONTAMINATION TO PRIVATE WATER SUPPLIES AND PUMP SUCTION LINES

SOURCE OF CONTAMINATION	DISTANCE (feet)
Barnyard	100
Farm silo	25
Pasture	100
Pumphouse floor drain of cast iron drainingto ground surface	2
Seepage pits	50
Septic tank	25
Sewer	10
Subsurface disposal fields	50
Subsurface pits	50

For SI: 1 foot = 304.8 mm.

608.18.2Elevation.

Well sites shall be positively drained and shall be at higher elevations than potential sources of contamination.

608.18.3Depth.

Private potable well supplies shall not be developed from a water table less than 10 feet (3048 mm) below the ground surface.

608.18.4Water tight casings.

Each well shall be provided with a water tight casing extending to not less than 10 feet (3048 mm) below the ground surface. Casings shall extend not less than 6 inches (152 mm) above the well platform. Casings shall be large enough to permit installation of a separate drop pipe. Casings shall be sealed at the bottom in an impermeable stratum or extend several feet into the water-bearing stratum.

608.18.5Drilled or driven well casings.

Drilled or driven well casings shall be of steel or other *approved* material. Where drilled wells extend into a rock formation, the well casing shall extend to and set firmly in the formation. The annular space between the earth and the outside of the casing shall be filled with cement grout to a depth of not less than 10 feet (3048 mm) below the ground surface. In an instance of casing to rock installation, the grout shall extend to the rock surface.

608.18.6Dug or bored well casings.

Dug or bored well casings shall be of water tight concrete, tile or galvanized or corrugated metal pipe extending to not less than 10 feet (3048 mm) below the ground surface. Where the water table is more than 10 feet (3048 mm) below the ground surface, the water tight casing shall extend below the table surface. Well casings for dug wells or bored wells constructed with sections of concrete, tile or galvanized or corrugated metal pipe shall be surrounded by 6 inches (152 mm) of grout poured into the hole between the outside of the casing and the ground and extending not less than 10 feet (3048 mm) below the ground surface.

608.18.7Cover.

Potable water wells shall be equipped with an overlapping water tight cover at the top of the well casing or pipe sleeve such that contaminated water or other substances are prevented from entering the well through the annular opening at the top of the well casing, wall or pipe sleeve. Covers shall extend downward not less than 2 inches (51 mm) over the outside of the well casing or wall. A dug well cover shall be provided with a pipe sleeve permitting the withdrawal of the pump suction pipe, cylinder or jet body without disturbing the cover. Where pump sections or discharge pipes enter or leave a well through the side of the casing, the circle of contact shall be water tight.

608.18.8Drainage.

Potable water wells and springs shall be constructed such that surface drainage will be diverted away from the well or spring.

P10380Rationale

Rational

The current Florida Plumbing Code section 608.18 (Protection of Individual Water Supplies) explains the process of construction of a Water Well. Under Florida Statue 373 Part III (Regulation of Wells), defines Water Well Contractor as a person who is responsible for the construction, repair, or abandonment of a water well and who is licensed under this part to engage in the business of construction, repair, or abandonment of water wells. The Florida Department of Environmental Protection is responsible for the administration of Chapter 373, including the regulations of setbacks from sanitary hazards, construction methods, and the permitting and well completion reports as Wells are considered Waters of the State. We respectively request that Section 608.18 of the Plumbing Code be removed as Plumbers do not have the authority to complete water well construction as stated under Chapter 373 Part III of the Florida Statues.

- *373.302 Legislative findings. —The Legislature recognizes that the practice of constructing, repairing, and abandoning water wells, if conducted by incompetent contractors, is potentially threatening to the health of the public and to the environment. The Legislature finds that a threat to the public and the environment exists if water resources become contaminated as a result of wells drilled by incompetent or dishonest contractors, and that to prevent contamination, it is necessary to regulate the construction, repair, and abandonment of wells, and the persons and businesses responsible therefor.*

Page: 1

Mod_10380_Rationale_Rational.pdf

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Plumbing

20

P9874

Date Submitted	01/24/2022	**Section**	000	**Proponent**	Gary Kozan
Chapter	14	**Affects HVHZ**	No	**Attachments**	**Yes**
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

#9875 - Same criteria as FBC-Residential Section 3009 - need similar code change for consistency

Summary of Modification

Even though the full of text of Chapter 14 has been previously reserved, this proposed TITLE CHANGE ONLY better identifies the intended content of this chapter, consistent with the ICC

Rationale

This mod P8847 was previously disapproved by the Plumbing TAC due to overlapping with the current FBC-Plumbing. Since the contents of the entire Chapter 14 have been - and continue to be - reserved, we are requesting a TITLE CHANGE ONLY in order to better describe the intended contents of the chapter, and to maintain closeness to the IPC

Fiscal Impact Statement

Impact to local entity relative to enforcement of code
No fiscal impact to local entities
Impact to building and property owners relative to cost of compliance with code
No fiscal impact to building and property owners
Impact to industry relative to the cost of compliance with code
No fiscal impact to industry
Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public
Helps maintain a connection to the IPC
Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction
Identifies the Chapter 14 title in clearer terms

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate against materials, products, methods, or systems of construction

Does not degrade the effectiveness of the code

Does not degrade the effectiveness of the code

CHAPTER 14

SUBSURFACE ~~LANDSCAPE IRRIGATION~~ GRAYWATER SOIL ABSORPTION SYSTEMS

RESERVED

P8847/P133-18 Part I

101

Date Submitted 2/11/2021	**Section** 1401.1	**Proponent** Mo Madani	
Chapter 14	**Affects HVHZ** Yes	**Attachments** Yes	
TAC Recommendation Pending Review			
Commission Action Pending Review		**Staff Classification** Overlap	

Comments

General Comments No

Related Modifications

Chapter 14, 1401.1, 1401.2, 1401.3, 1401.4, 1401.5, 1401.6, 1402.1, 1402.3, TABLE 1402.3, 1403.1

Chapter 14 of the 2020 FBC - Plumbing is Reserved

Summary of Modification

The proposed changes only better identify the name of the chapter and do not include any technical changes Chapter 14 of the 2020 FBC - Plumbing is Reserved

Rationale

The proposed changes better identifies the content of the chapter from irrigation systems to soil absorption systems. The technical requirements can remain as written.

While gray water is a good source of water for maintaining plants, the provisions in this section do not adequately describe the technical aspects for use in an irrigation system. The technical requirements are addressing the soil's ability to absorb water and percolate into the soil. There are no requirements mentioned about considering the needs of plants which is an essential part of an irrigation system.

When gray water is to be used for irrigation, then chapters that are in the International Green Construction Code include better technical requirements for irrigation systems and those should be followed.

P8847 Text Modification

Approved as submitted (AS)

Revise as follows:

SECTION 14
SUBSURFACE ~~LANDSCAPE IRRIGATION~~ GRAY WATER SOIL ABSORPTION SYSTEMS

1401.1 Scope. The provisions of this chapter shall govern the materials, design, construction and installation of subsurface ~~landscape irrigation~~ graywater soil absorption systems connected to nonpotable water from on-site water reuse systems.

1401.2 Materials. Above-ground drain, waste and vent piping for subsurface ~~landscape irrigation~~ graywater soil absorption systems shall conform to one of the standards listed in Table 702.1. Subsurface ~~landscape irrigation~~graywater soil absorption systems, underground building drainage and vent pipe shall conform to one of the standards listed in Table 702.2.

1401.3 Tests. Drain, waste and vent piping for subsurface ~~landscape irrigation~~ graywater soil absorption systems shall be tested in accordance with Section 312.

1401.4 Inspections. Subsurface ~~landscape irrigation~~ graywater soil absorption systems shall be inspected in accordance with Section 107.

1401.5 Disinfection. Disinfection shall not be required for on-site nonpotable water reuse for subsurface ~~landscape irrigation~~ graywater soil absorption systems.

1401.6 Coloring. On-site nonpotable water reuse for subsurface ~~landscape irrigation~~ graywater soil absorption systems shall not be required to be dyed.

1402.1 Sizing. The system shall be sized in accordance with the sum of the output of all water sources connected to the subsurface ~~irrigation~~ gray water soil absorption system. Where gray water collection piping is connected to subsurface landscape irrigation systems, gray water output shall be calculated according to the gallons-per-day-per-occupant number based on the type of fixtures connected. The gray water discharge shall be calculated by the following equation:

Page: 1

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_8847_TextOfModification_1.png

P9874Rationale

Mod_9874_Rationale_P8847.pdf Page: 2

$C = A \times B$ **(Equation 14-1)**

where:

A = Number of occupants:
Residential-Number of occupants shall be determined by the actual number of occupants, but not less than two occupants for one bedroom and one occupant for each additional bedroom.
Commercial-Number of occupants shall be determined by the International Building Code.
B = Estimated flow demands for each occupant:
Residential-25 gallons per day (94.6 lpd) per occupant for showers, bathtubs and lavatories and 15 gallons per day (56.7 lpd) per occupant for clothes washers or laundry trays.
Commercial-Based on type of fixture or water use records minus the discharge of fixtures other than those discharging gray water.
C = Estimated gray water discharge based on the total number of occupants.

Revise as follows:

1402.3 Subsurface ~~landscape irrigation~~ graywater soil absorption site location. The surface grade of all soil absorption systems shall be located at a point lower than the surface grade of any water well or reservoir on the same or adjoining lot. Where this is not possible, the site shall be located so surface water drainage from the site is not directed toward a well or reservoir. The soil absorption system shall be located with a minimum horizontal distance between various elements as indicated in Table 1402.3. Private sewage disposal systems in compacted areas, such as parking lots and driveways, are prohibited. Surface water shall be diverted away from any soil absorption site on the same or neighboring lots.

TABLE 1402.3
LOCATION OF SUBSURFACE ~~IRRIGATION~~ GRAYWATER SOIL ABSORPTION SYSTEM

ELEMENT	MINIMUM HORIZONTAL DISTANCE	
	Storage tank (feet)	Absorption field (feet)
Buildings	5	2
Lot line adjoining private property	5	5
Water wells	50	100
Streams and lakes	50	50
Seepage pits	5	5
Septic tanks	0	5
Water service	5	5
Public water main	10	10

For SI: 1 foot = 304.8 mm.

1403.1 Installation. Absorption systems shall be installed in accordance with Sections 1403.1.1 through 1403.1.5 ~~to provide landscape irrigation without surfacing of water.~~

Code Change No: P133-18 Part I

Original Proposal

Section(s): Chapter 14, 1401.1, 1401.2, 1401.3, 1401.4, 1401.5, 1401.6, 1402.1, 1402.3, TABLE 1402.3, 1403.1

Proponents: Brent Mecham, Irrigation Association, representing Irrigation Association (brentmecham@irrigation.org)

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

2018 International Plumbing Code

Revise as follows:

SECTION 14
SUBSURFACE ~~LANDSCAPE IRRIGATION~~ GRAY WATER SOIL ABSORPTION SYSTEMS

1401.1 Scope. The provisions of this chapter shall govern the materials, design, construction and installation of subsurface ~~landscape irrigation~~ graywater soil absorption systems connected to nonpotable water from on-site water reuse systems.

1401.2 Materials. Above-ground drain, waste and vent piping for subsurface ~~landscape irrigation~~ graywater soil absorption systems shall conform to one of the standards listed in Table 702.1. Subsurface ~~landscape irrigation~~ graywater soil absorption systems, underground building drainage and vent pipe shall conform to one of the standards listed in Table 702.2.

1401.3 Tests. Drain, waste and vent piping for subsurface ~~landscape irrigation~~ graywater soil absorption systems shall be tested in accordance with Section 312.

1401.4 Inspections. Subsurface ~~landscape irrigation~~ graywater soil absorption systems shall be inspected in accordance with Section 107.

1401.5 Disinfection. Disinfection shall not be required for on-site nonpotable water reuse for subsurface ~~landscape irrigation~~ graywater soil absorption systems.

1401.6 Coloring. On-site nonpotable water reuse for subsurface ~~landscape irrigation~~ graywater soil absorption systems shall not be required to be dyed.

1402.1 Sizing. The system shall be sized in accordance with the sum of the output of all water sources connected to the subsurface ~~irrigation~~ gray water soil absorption system. Where gray water collection piping is connected to subsurface landscape irrigation systems, gray water output shall be calculated according to the gallons-per-day-per-occupant number based on the type of fixtures connected. The gray water discharge shall be calculated by the following equation:

$C = A \times B$ **(Equation 14-1)**

where:

A = Number of occupants:
Residential-Number of occupants shall be determined by the actual number of occupants, but not less than two occupants for one bedroom and one occupant for each additional bedroom.
Commercial-Number of occupants shall be determined by the International Building Code.
B = Estimated flow demands for each occupant:
Residential-25 gallons per day (94.6 lpd) per occupant for showers, bathtubs and lavatories and 15 gallons per day (56.7 lpd) per occupant for clothes washers or laundry trays.
Commercial-Based on type of fixture or water use records minus the discharge of fixtures other than those discharging gray water.
C = Estimated gray water discharge based on the total number of occupants.

Revise as follows:

1402.3 Subsurface ~~landscape irrigation~~ graywater soil absorption site location. The surface grade of all soil absorption systems shall be located at a point lower than the surface grade of any water well or reservoir on the same or adjoining lot. Where this is not possible, the site shall be located so surface water drainage from the site is not directed toward a well or reservoir. The soil absorption system shall be located with a minimum horizontal distance between various elements as indicated in Table 1402.3. Private sewage disposal systems in compacted areas, such as parking lots and driveways, are prohibited. Surface water shall be diverted away from any soil absorption site on the same or neighboring lots.

TABLE 1402.3
LOCATION OF SUBSURFACE ~~IRRIGATION~~ GRAYWATER SOIL ABSORPTION SYSTEM

ELEMENT	MINIMUM HORIZONTAL DISTANCE	
	Storage tank (feet)	Absorption field (feet)
Buildings	5	2
Lot line adjoining private property	5	5
Water wells	50	100
Streams and lakes	50	50
Seepage pits	5	5
Septic tanks	0	5
Water service	5	5
Public water main	10	10

For SI: 1 foot = 304.8 mm.

1403.1 Installation. Absorption systems shall be installed in accordance with Sections 1403.1.1 through 1403.1.5 ~~to provide landscape irrigation without surfacing of water.~~

Reason: The proposed changes better identifies the content of the chapter from irrigation systems to soil absorption systems. The technical requirements can remain as written.

While gray water is a good source of water for maintaining plants, the provisions in this section do not adequately describe the technical aspects for use in an irrigation system. The technical requirements are addressing the soil's ability to absorb water and percolate into the soil. There are no requirements mentioned about considering the needs of plants which is an essential part of an irrigation system.

When gray water is to be used for irrigation, then chapters that are in the International Green Construction Code include better technical requirements for irrigation systems and those should be followed.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The proposed changes only better identify the name of the chapter and do not include any technical changes that would affect construction costs.

Public Hearing Results

Committee Action: Approved as Submitted

Committee Reason: The Committee agreed with the published reason statement. (Vote:14-0)

Assembly Action: None

Final Hearing Results

P133-18 Part I	AS

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Residential

21

P10027

Date Submitted	02/01/2022	**Section**	2404.8	**Proponent**	T Stafford
Chapter	24	**Affects HVHZ**	No	**Attachments**	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

Summary of Modification

This modification is one of a series of modifications that delete the seismic and snow requirements from the code. In accordance with Exception 2 to Section 101.2 of the FBCB, seismic and snow requirements are not to be utilized or enforced in the State of Florida.

Rationale

This modification is the culmination of a project funded by the Florida Building Commission through Building a Safer Florida (BASF) that the deletes the seismic and snow provisions from the Florida Building Codes. In accordance with Exception 2 to Section 101.2 of the Florida Building Code, Building, the seismic and snow provisions are exempted from the scope of the Florida Building Codes. Exception 2 to Section 101.2 states the following: "2. Code requirements that address snow loads and earthquake protection are pervasive; they are left in place but shall not be utilized or enforced because Florida has no snow load or earthquake threat." These modifications clarify and simplify the code by deleting requirements that do not apply in the State of Florida.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entities relative to enforcement of the code.

Impact to building and property owners relative to cost of compliance with code

No impact to building and property owners relative to cost of compliance with the code.

Impact to industry relative to the cost of compliance with code

No impact to industry relative to the cost of compliance with the code.

Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Clarifies and simplifies the code by deleting requirements that do not apply in the State of Florida.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Improves the code by deleting requirements that do not apply in the State of Florida.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

This proposal does not degrade the effectiveness of the code.

Delete section in its entirety and show as Reserved:

G2404.8 (301.12) Seismic resistance. Reserved. ~~When earthquake loads are applicable in accordance with this code, the supports shall be designed and installed for the seismic forces in accordance with this code.~~

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Residential

22

P9877

Date Submitted	01/24/2022	**Section**	2503.4	**Proponent**	Gary Kozan
Chapter	25	**Affects HVHZ**	No	**Attachments**	**Yes**
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

Plumbing Section 312.6 - Mod #9876

Summary of Modification

Restores the previous Florida amendment that simplifies the testing of outside building sewers

Rationale

This modification restores the actual code language that appeared in the first four editions of the FBC (see attached). Most Florida-specific changes were unceremoniously sunsetted in the fifth edition, and this change was never reinstated. Testing outside building sewers with a 5-foot head test is unnecessary and time consuming. It requires plugging off or otherwise isolating both ends of the sewer to achieve the head test. If a test ball were to leak, water could overflow into the building and cause extensive damage. Sewers can be adequately tested by simply filling them with water to their highest point. This new code language is precisely as it appears in the Uniform Plumbing Code (see attached). It allows the sewer line to remain safely connected to the drainage system during testing.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code
No fiscal impact to local entities
Impact to building and property owners relative to cost of compliance with code
No fiscal impact to building and property owners
Impact to industry relative to the cost of compliance with code
No fiscal impact to industry
Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public
Rstores a better method of testing outside building sewers

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Provides for a less expensive, user-friendly method of testing outside sewers

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate against any material,s products, methods, or systems of construction

Does not degrade the effectiveness of the code

Does not degrade the effectiveness of the code

P2503.4 Building sewer testing.

The building sewer shall be tested by insertion of a test plug at the point of connection with the public sewer, ~~filling the building sewer with water and pressurizing the sewer to not less than a 5-foot (3048 mm) head of water.~~ completely filling the building sewer with water from the lowest to the highest point thereof. The test pressure shall not decrease during a period of not less than 15 minutes. The building sewer shall be water tight at all points.

A forced sewer test shall consist of pressurizing the piping to a pressure of 5 psi (34.5 kPa) greater than the pump rating and maintaining such pressure for not less than 15 minutes. The forced sewer shall be water tight at all points.

to the satisfaction of the Authority
n.

l space for a building sewer where
transfer of ownership, or change of
violation of other requirements, has
lished to the satisfaction of the
ng Jurisdiction. The instrument
tion shall constitute an agreement
ty Having Jurisdiction and shall
how that the areas so joined or used
d as a unit during the time they are
agreement shall be recorded in the
ty Recorder as part of the conditions
aid properties, and shall be binding
rs, and assigns to such properties. A
ument recording such proceedings
the Authority Having Jurisdiction.

Sewers and Sewage Disposal

se) Sewer. An abandoned building
thereof, shall be plugged or capped
er within 5 feet (1524 mm) of the

s into a drainage or vent system,
o which plumbing fixtures are prop-
h constitute vent terminals, must be
or capped in an approved manner
ials.

eptic Tanks, and Seepage Pits.
, and seepage pit that has been aban-
ontinued otherwise from further use,
soil pipe from a plumbing fixture is
the sewage removed therefrom and
ith earth, sand, gravel, concrete, or
L

nment of private sewage disposal
ng the large underground areas of
ngerous practice. The possibility of
hildren, getting into or falling into
s is reason enough to fill them, but
ealth hazards due to the continued
nd mold. Therefore, they must be
thin 30 days of abandonment (see

p cover or arch over the cesspool,
pit shall be removed before filling,
extend above the top of the vertical
lls or above the level of the outlet
has been called and the cesspool,
pit has been inspected. After such
, septic tank, or seepage pit shall be
top of the ground.

No person owning or controlling a
seepage pit on the premises of such

person or in that portion of a public street, alley, or other public property abutting such premises, shall fail, refuse, or neglect to comply with the provisions of this section or upon receipt of notice so to comply from the Authority Having Jurisdiction.

722.5 Disposal Facilities. Where disposal facilities are abandoned consequent to connecting premises with the public sewer, the permittee making the connection shall fill abandoned facilities in accordance with the Authority Having Jurisdiction within 30 days from the time of connecting to the public sewer.

723.0 Building Sewer Test.

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

Building sewers are tested by plugging the end of the building sewer at its point of connection with the public sewer or private sewage disposal system. The building sewer is then completely filled with water from the lowest point to the highest point (see **Figure 723.1a**). There is no requirement for any specific head pressure. An air-pressure test may be used in lieu of the water test, except on plastic DWV piping systems due to safety issues. See **Figure 723.1b** of a lethal plastic shard exploding from a compressed air test on plastic pipe. The requirements for using air as testing media are found in Section 712.3.

See **Learning Link http://bit.ly/2WcsIjP** about testing plastic DWV systems with air.

FIGURE 723.1B
PLASTIC SHARD FROM COMPRESSED AI

A building sewer can be tested by capping or plugging the sewer pipe at the property line and filling the pipe with water to the connection at A to the building drain, or leaving the building drain connected to the building sewer and filling both systems to the flood level rim of the lower fixture B.

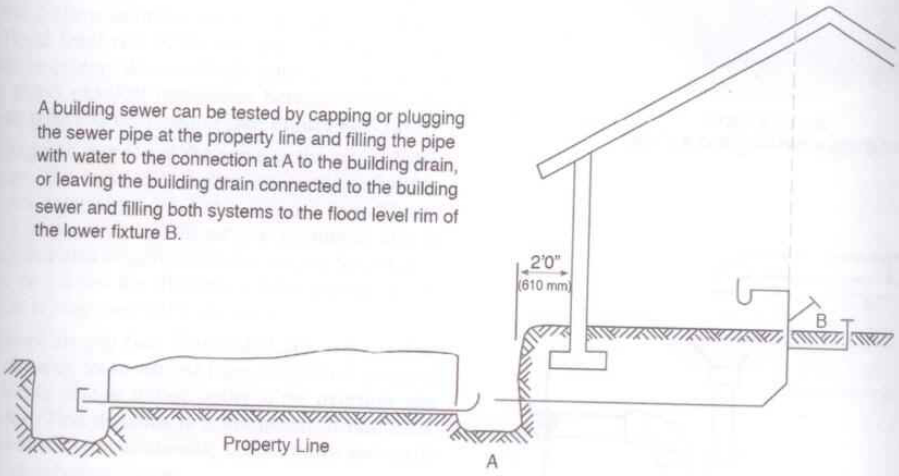


FIGURE 723.1A
BUILDING SEWER TEST

Proposed Modification to the Base Code for Inclusion in the Florida Building Code

Date: January 13, 1999

Proponent: Fla. Assn. Of Plumbing Heating Cooling Contractors
Address: PO Box 947599
Maitland, FL 32794
Contact Person: Gary Kozan
Phone: 561-732-3176

Item#: P-003 - Revised
Action:
Mtg 1
Mtg 2

AS, AM, AP, D, W

A separate submittal is required for each code section.

Code1997 Standard (International) Plumbing Code Section: 312.6

CHECK ONE:

ξRevise section to read as follows:
9Delete section without substitution:
9Add new section to read as follows:
9Delete section and substitute the following:

Provide rewritten code section here and on attached sheet(s) if required: Sheet 1 of 1

Proposal: (~~Line through material to be deleted~~ Underline material to be added)

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

Rationale:

Testing outside building sewers with a 10-foot head is unnecessary and time consuming. It requires plugging off both ends of the sewer in order to achieve the 10-foot head. If a test ball were to leak, water could overflow into the building and cause extensive damage.

Sewers can be adequately tested by simply filling them with water to their highest point. This new language is taken from the 1997 Uniform Plumbing Code. This change is user-friendly and less expensive to perform, and would still achieve the desired result of uncovering leaks in the system.

Note: This revised version, which retains the phrase "and maintaining such pressure for 15 minutes" was agreed upon by the Plumbing Work Group in January, and subsequently Approved As Modified by the group.

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Residential

23

P10028

Date Submitted	02/01/2022	**Section**	2801.8	**Proponent**	T Stafford
Chapter	28	**Affects HVHZ**	No	**Attachments**	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

Summary of Modification

This modification is one of a series of modifications that delete the seismic and snow requirements from the code. In accordance with Exception 2 to Section 101.2 of the FBCB, seismic and snow requirements are not to be utilized or enforced in the State of Florida.

Rationale

This modification is the culmination of a project funded by the Florida Building Commission through Building a Safer Florida (BASF) that the deletes the seismic and snow provisions from the Florida Building Codes. In accordance with Exception 2 to Section 101.2 of the Florida Building Code, Building, the seismic and snow provisions are exempted from the scope of the Florida Building Codes. Exception 2 to Section 101.2 states the following: "2. Code requirements that address snow loads and earthquake protection are pervasive; they are left in place but shall not be utilized or enforced because Florida has no snow load or earthquake threat." These modifications clarify and simplify the code by deleting requirements that do not apply in the State of Florida.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entities relative to enforcement of the code.

Impact to building and property owners relative to cost of compliance with code

No impact to building and property owners relative to cost of compliance with the code.

Impact to industry relative to the cost of compliance with code

No impact to industry relative to the cost of compliance with the code.

Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Clarifies and simplifies the code by deleting requirements that do not apply in the State of Florida.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Improves the code by deleting requirements that do not apply in the State of Florida.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

This proposal does not degrade the effectiveness of the code.

Delete section in its entirety:

~~**P2801.8 Water heater seismic bracing.** In Seismic Design Categories D_0, D_1 and D_2 and townhouses in Seismic Design Category C, water heaters shall be anchored or strapped in the upper one-third and in the lower one-third of the appliance to resist a horizontal force equal to one-third of the operating weight of the water heater, acting in any horizontal direction, or in accordance with the appliance manufacturer's recommendations.~~

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Residential

24

P9875

Date Submitted	01/24/2022	**Section**	3009	**Proponent**	Gary Kozan
Chapter	30	**Affects HVHZ**	No	**Attachments**	**Yes**
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

#9874 - Same criteria as FBC-Plumbing Chapter 14 - need similar code change for consistency

Summary of Modification

Even though the full text of Section 3009 has been previously reserved, this proposed TITLE CHANGE ONLY better identifies the intended content of the section

Rationale

This mod P8862 was previously disapproved by the Plumbing TAC due to overlapping with the current FBC-Residential. Since the contents of the entire Section P3009 have been - and continue to be - reserved, we are requesting a TITLE CHANGE ONLY in order to better describe the intended contents of the section, and to maintain closeness to the IRC.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code
No fiscal impact to local entities
Impact to building and property owners relative to cost of compliance with code
No fiscal impact to building and property owners
Impact to industry relative to the cost of compliance with code
No fiscal impact to industry
Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public
Helps maintain a connection to the IRC
Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction
Identifies Section P3009 in clearer terms

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate against materials, products, methods, or systems of construction

Does not degrade the effectiveness of the code

Does not degrade the effectiveness of the code

SECTION P3009

SUBSURFACE ~~LANDSCAPE IRRIGATION~~ GRAYWATER SOIL ABSORPTION SYSTEMS

RESERVED

P9875Rationale

P8862/P133-18 Part II

136

Date Submitted	2/11/2021	**Section**	3009	**Proponent**	Mo Madani
Chapter	30	**Affects HVHZ**	Yes	**Attachments**	Yes
TAC Recommendation	Pending Review				
Commission Action	Pending Review			**Staff Classification**	Overlap

Comments

General Comments Yes

Related Modifications

P3009, P3009.1, P3009.2, P3009.3, P3009.4, P3009.5, P3009.6, P3009.7, P3009.9, TABLE P3009.9, P3009.10

Section P3009 of the 2020 FBC - Residential is reserved.

Summary of Modification

The proposed changes better identifies the content of the chapter from irrigation systems to soil absorption systems. The technical requirements can remain as written.

Rationale

The proposed changes better identifies the content of the chapter from irrigation systems to soil absorption systems. The technical requirements can remain as written.

While gray water is a good source of water for maintaining plants, the provisions in this section do not adequately describe the technical aspects for use in an irrigation system. The technical requirements are addressing the soil's ability to absorb water and percolate into the soil. There are no requirements mentioned about considering the needs of plants which is an essential part of an irrigation system.

When gray water is to be used for irrigation, then chapters that are in the International Green Construction Code include better technical requirements for irrigation systems and those should be followed.

Comment Period History

P8862-G1

Proponent Joseph Belcher **Submitted** 6/29/2021 **Attachments** No

Comment:

The Florida Home Builders Association (FHBA) requests denial of this code change. The section deals with gray water and is marked Reserved in the FBC-R because Florida Department of Health rules governs gray water.

P8862 Text Modification

Approved as submitted (AS)

Revise as follows:

SECTION P3009
SUBSURFACE LANDSCAPE ~~IRRIGATION~~ GRAY WATER SOIL ABSORPTION SYSTEMS

P3009.1 Scope. The provisions of this section shall govern the materials, design, construction and installation of subsurface ~~landscape irrigation~~ gray water soil absorption systems connected to nonpotable water from on-site water reuse systems.

P3009.2 Materials. Above-ground drain, waste and vent piping for subsurface ~~landscape irrigation~~ gray water soil absorption systems shall conform to one of the standards indicated in Table P3002.1(1). Subsurface landscape ~~irrigation~~gray water soil absorption, underground building drainage and vent pipe shall conform to one of the standards indicated in Table P3002.1(2).

P3009.3 Tests. Drain, waste and vent piping for subsurface ~~landscape irrigation~~ gray water soil absorption systems shall be tested in accordance with Section P2503.

P3009.4 Inspections. Subsurface ~~landscape irrigation~~ gray water soil absorption systems shall be inspected in accordance with Section R109.

P3009.5 Disinfection. Disinfection shall not be required for on-site nonpotable reuse water for subsurface landscape irrigation gray water soil absorption systems.

P3009.6 Coloring. On-site nonpotable reuse water used for subsurface ~~landscape irrigation~~ gray water soil absorption systems shall not be required to be dyed.

P3009.7 Sizing. The system shall be sized in accordance with the sum of the output of all water sources connected to the subsurface ~~irrigation system~~. gray water soil absorption system. Where gray-water collection piping is connected to subsurface landscape gray water soil absorption irrigation systems, gray-water output shall be calculated according to the gallons-per-day-per-occupant (liters per day per occupant) number based on the type of fixtures connected. The gray- water discharge shall be calculated by the following equation:

Page: 1

$C = A \times B$ **(Equation 30-1)**

where:

A = Number of occupants:
Number of occupants shall be determined by the actual number of occupants, but not less than two occupants for one bedroom and one occupant for each additional bedroom.

B = Estimated flow demands for each occupant:
25 gallons (94.6 L) per day per occupant for showers, bathtubs and lavatories and 15 gallons (56.7 L) per day per occupant for clothes washers or laundry trays.

C = Estimated gray-water discharge based on the total number of occupants.

P3009.9 Subsurface landscape irrigation gray water soil absorption system site location. The surface grade of soil absorption systems shall be located at a point lower than the surface grade of any water well or reservoir on the same or adjoining lot. Where this is not possible, the site shall be located so surface water drainage from the site is not directed toward a well or reservoir. The soil absorption system shall be located with a minimum horizontal distance between various elements as indicated in Table P3009.9. Private sewage disposal systems in compacted areas, such as parking lots and driveways, are prohibited. Surface water shall be diverted away from any soil absorption site on the same or neighboring lots.

TABLE P3009.9
LOCATION OF SUBSURFACE ~~IRRIGATION~~ GRAY WATER SOIL ABSORPTION SYSTEM

ELEMENT	MINIMUM HORIZONTAL DISTANCE	
	STORAGE TANK (feet)	~~IRRIGATION DISPOSAL~~ ABSORPTION FIELD (feet)
Buildings	5	2
Lot line adjoining private property	5	5
Water wells	50	100
Streams and lakes	50	50
Seepage pits	5	5
Septic tanks	0	5
Water service	5	5
Public water main	10	10

For SI: 1 foot = 304.8 mm.

P3009.10 Installation. Absorption systems shall be installed in accordance with Sections P3009.10.1 through P3009.11 ~~to provide landscape irrigation without surfacing of water.~~

Code Change No: P133-18 Part II

Original Proposal

Section(s): P3009, P3009.1, P3009.2, P3009.3, P3009.4, P3009.5, P3009.6, P3009.7, P3009.9, TABLE P3009.9, P3009.10

Proponents: Brent Mecham, Irrigation Association, representing Irrigation Association (brentmecham@irrigation.org)

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

2018 International Residential Code

Revise as follows:

~~SECTION~~ P3009
SUBSURFACE ~~LANDSCAPE IRRIGATION~~ GRAY WATER SOIL ABSORPTION SYSTEMS

P3009.1 Scope. The provisions of this section shall govern the materials, design, construction and installation of subsurface ~~landscape irrigation~~ gray water soil absorption systems connected to nonpotable water from on-site water reuse systems.

P3009.2 Materials. Above-ground drain, waste and vent piping for subsurface ~~landscape irrigation~~ gray water soil absorption systems shall conform to one of the standards indicated in Table P3002.1(1). Subsurface ~~landscape irrigation~~ gray water soil absorption, underground building drainage and vent pipe shall conform to one of the standards indicated in Table P3002.1(2).

P3009.3 Tests. Drain, waste and vent piping for subsurface ~~landscape irrigation~~ gray water soil absorption systems shall be tested in accordance with Section P2503.

P3009.4 Inspections. Subsurface ~~landscape irrigation~~ gray water soil absorption systems shall be inspected in accordance with Section R109.

P3009.5 Disinfection. Disinfection shall not be required for on-site nonpotable reuse water for subsurface ~~landscape irrigation~~ gray water soil absorption systems.

P3009.6 Coloring. On-site nonpotable reuse water used for subsurface ~~landscape irrigation~~ gray water soil absorption systems shall not be required to be dyed.

P3009.7 Sizing. The system shall be sized in accordance with the sum of the output of all water sources connected to the subsurface ~~irrigation system.~~ gray water soil absorption system. Where gray-water collection piping is connected to subsurface ~~landscape~~ gray water soil absorption irrigation systems, gray-water output shall be calculated according to the gallons-per-day-per-occupant (liters per day per occupant) number based on the type of fixtures connected. The gray- water discharge shall be calculated by the following equation:

$C = A \times B$ **(Equation 30-1)**

where:

A = Number of occupants:
Number of occupants shall be determined by the actual number of occupants, but not less than two occupants for one bedroom and one occupant for each additional bedroom.

B = Estimated flow demands for each occupant:
25 gallons (94.6 L) per day per occupant for showers, bathtubs and lavatories and 15 gallons (56.7 L) per day per occupant for clothes washers or laundry trays.

C = Estimated gray-water discharge based on the total number of occupants.

P3009.9 Subsurface ~~landscape irrigation~~ gray water soil absorption system site location. The surface grade of soil absorption systems shall be located at a point lower than the surface grade of any water well or reservoir on the same or adjoining lot. Where this is not possible, the site shall be located so surface water drainage from the site is not directed toward a well or reservoir. The soil absorption system shall be located with a minimum horizontal distance between various elements as indicated in Table P3009.9. Private sewage disposal systems in compacted areas, such as parking lots and driveways, are prohibited. Surface water shall be diverted away from any soil absorption site on the same or neighboring lots.

TABLE P3009.9
LOCATION OF SUBSURFACE ~~IRRIGATION~~ GRAY WATER SOIL ABSORPTION SYSTEM

ELEMENT	MINIMUM HORIZONTAL DISTANCE	
	STORAGE TANK (feet)	~~IRRIGATION DISPOSAL~~ ABSORPTION FIELD (feet)
Buildings	5	2
Lot line adjoining private property	5	5
Water wells	50	100
Streams and lakes	50	50
Seepage pits	5	5
Septic tanks	0	5
Water service	5	5
Public water main	10	10

For SI: 1 foot = 304.8 mm.

P3009.10 Installation. Absorption systems shall be installed in accordance with Sections P3009.10.1 through P3009.11 ~~to provide landscape irrigation without surfacing of water.~~

Reason: The proposed changes better identifies the content of the chapter from irrigation systems to soil absorption systems. The technical requirements can remain as written.

While gray water is a good source of water for maintaining plants, the provisions in this section do not adequately describe the technical aspects for use in an irrigation system. The technical requirements are addressing the soil's ability to absorb water and percolate into the soil. There are no requirements mentioned about considering the needs of plants which is an essential part of an irrigation system.

When gray water is to be used for irrigation, then chapters that are in the International Green Construction Code include better technical requirements for irrigation systems and those should be followed.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The proposed changes only better identify the name of the chapter and do not include any technical changes that would affect construction costs.

P8862 Rationale

Public Hearing Results

Committee Action: Approved as Submitted

Committee Reason: The Committee agreed with the published reason statement. (Vote 10-0)

Assembly Action: None

Final Hearing Results

P133-18 Part II AS

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Residential

25

P10029

Date Submitted	02/01/2022	**Section**	3103.1.1...3103.1.3	**Proponent**	T Stafford
Chapter	31	**Affects HVHZ**	No	**Attachments**	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

Summary of Modification

This modification is one of a series of modifications that delete the seismic and snow requirements from the code. In accordance with Exception 2 to Section 101.2 of the FBCB, seismic and snow requirements are not to be utilized or enforced in the State of Florida.

Rationale

This modification is the culmination of a project funded by the Florida Building Commission through Building a Safer Florida (BASF) that the deletes the seismic and snow provisions from the Florida Building Codes. In accordance with Exception 2 to Section 101.2 of the Florida Building Code, Building, the seismic and snow provisions are exempted from the scope of the Florida Building Codes. Exception 2 to Section 101.2 states the following: "2. Code requirements that address snow loads and earthquake protection are pervasive; they are left in place but shall not be utilized or enforced because Florida has no snow load or earthquake threat." These modifications clarify and simplify the code by deleting requirements that do not apply in the State of Florida.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entities relative to enforcement of the code.

Impact to building and property owners relative to cost of compliance with code

No impact to building and property owners relative to cost of compliance with the code.

Impact to industry relative to the cost of compliance with code

No impact to industry relative to the cost of compliance with the code.

Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Clarifies and simplifies the code by deleting requirements that do not apply in the State of Florida.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Improves the code by deleting requirements that do not apply in the State of Florida.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

This proposal does not degrade the effectiveness of the code.

Revise as follows:

P3103.1.1 Roof extension. Open vent pipes that extend through a roof and that do not meet the conditions of Section P3103.1.2 or Section P3103.1.3 shall terminate not less than 6 inches (150 mm) above the roof ~~or 6 inches (150 mm) above the anticipated snow accumulation, whichever is greater~~.

Revise as follows:

P3103.1.3 Roof extension covered. Where an open vent pipe terminates above a sloped roof and is covered by either a roof-mounted panel such as a solar collector or photovoltaic panel mounted over the vent opening, or by a roof element such as an architectural feature or a decorative shroud, the vent pipe shall terminate not less than 2 inches (51 mm) above the roof surface. Such roof elements shall be designed to prevent the adverse effects of ~~snow accumulation and~~ wind on the function of the vent. The placement of a panel over a vent pipe and the design of a roof element covering the vent pipe shall provide for an open area for the vent pipe to the outdoors that is not less than the area of the pipe, as calculated from the inside diameter of the pipe. Such vent terminals shall be protected by a method that prevents birds and rodents from entering or blocking the vent pipe opening.

TAC: Plumbing

Total Mods for **Plumbing** in **Pending Review : 26**

Total Mods for report: 26

Sub Code: Residential

26

P10030

Date Submitted	02/01/2022	**Section**	.6	**Proponent**	T Stafford
Chapter	3304	**Affects HVHZ**	No	**Attachments**	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

Comments

General Comments No **Alternate Language No**

Related Modifications

Summary of Modification

This modification is one of a series of modifications that delete the seismic and snow requirements from the code. In accordance with Exception 2 to Section 101.2 of the FBCB, seismic and snow requirements are not to be utilized or enforced in the State of Florida.

Rationale

This modification is the culmination of a project funded by the Florida Building Commission through Building a Safer Florida (BASF) that the deletes the seismic and snow provisions from the Florida Building Codes. In accordance with Exception 2 to Section 101.2 of the Florida Building Code, Building, the seismic and snow provisions are exempted from the scope of the Florida Building Codes. Exception 2 to Section 101.2 states the following: "2. Code requirements that address snow loads and earthquake protection are pervasive; they are left in place but shall not be utilized or enforced because Florida has no snow load or earthquake threat." These modifications clarify and simplify the code by deleting requirements that do not apply in the State of Florida.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entities relative to enforcement of the code.

Impact to building and property owners relative to cost of compliance with code

No impact to building and property owners relative to cost of compliance with the code.

Impact to industry relative to the cost of compliance with code

No impact to industry relative to the cost of compliance with the code.

Impact to small business relative to the cost of compliance with code

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Clarifies and simplifies the code by deleting requirements that do not apply in the State of Florida.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Improves the code by deleting requirements that do not apply in the State of Florida.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

This proposal does not degrade the effectiveness of the code.

Revises as follows:

Appendix D, Section D.6, Item (3)d –

d. Reserved. ~~OFF. Where required by the local building code in earthquake prone locations, inspect that the water heater is secured to the wall studs in two locations (high and low) using appropriate metal~~

~~strapping and bolts.~~