

CSI - Ohio

The Common Sense Initiative

Business Impact Analysis

Agency Name: Ohio Board of Building Standards

Regulation/Package Title: Ohio Plumbing Code Amendments

Rule Number(s): 4101:3-3-01

Date: June 15, 2016

Rule Type:

New

Amended

5-Year Review

Rescinded

The Common Sense Initiative was established by Executive Order 2011-01K and placed within the Office of the Lieutenant Governor. Under the CSI Initiative, agencies should balance the critical objectives of all regulations with the costs of compliance by the regulated parties. Agencies should promote transparency, consistency, predictability, and flexibility in regulatory activities. Agencies should prioritize compliance over punishment, and to that end, should utilize plain language in the development of regulations.

Regulatory Intent

1. Please briefly describe the draft regulation in plain language.

Please include the key provisions of the regulation as well as any proposed amendments.

The Ohio Board of Building Standards (Board) proposes to amend Ohio Administrative Code (OAC) Rules as follows:

4101:3-3-01 to further clarify plastic pipe testing procedure including allowing alternative testing methods consistent with manufacturer recommendations.

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2. Please list the Ohio statute authorizing the Agency to adopt this regulation.

Revised Code § 3781.10: <http://codes.ohio.gov/orc/3781.10>

Revised Code § 3781.11: <http://codes.ohio.gov/orc/3781.11>

3. Does the regulation implement a federal requirement? Is the proposed regulation being adopted or amended to enable the state to obtain or maintain approval to administer and enforce a federal law or to participate in a federal program?

If yes, please briefly explain the source and substance of the federal requirement.

No.

4. If the regulation includes provisions not specifically required by the federal government, please explain the rationale for exceeding the federal requirement.

Not applicable.

5. What is the public purpose for this regulation (i.e., why does the Agency feel that there needs to be any regulation in this area at all)?

Revised Code § 3781.10 directs the Board to “formulate and adopt rules governing the erection, construction, repair, alteration and maintenance of all buildings specified in section 3781.06 of the Revised Code...” Additionally, Revised Code 3781.06 provides:

Any building that may be used as a place of resort, assembly, education, entertainment, lodging, dwelling, trade, manufacture, repair, storage, traffic, or occupancy by the public, any residential building, and all other buildings or parts and appurtenances of those buildings erected within this state, shall be so constructed, erected, equipped, and maintained that they shall be safe and sanitary for their intended use and occupancy.

This statute defines safe and sanitary as follows:

“Safe,” with respect to a building, means it is free from danger or hazard to the life, safety, health, or welfare of persons occupying or frequenting it, or of the public and from danger of settlement, movement, disintegration, or collapse, whether such danger arises from the methods or materials of its construction or from equipment installed therein, for the purpose of lighting, heating, the transmission or utilization of electric current, or from its location or otherwise.

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“Sanitary,” with respect to a building, means it is free from danger or hazard to the health of persons occupying or frequenting it or to that of the public, if such danger arises from the method or materials of its construction or from any equipment installed therein, for the purpose of lighting, heating, ventilating, or plumbing.

The Ohio Building Code sets forth the construction standards for nonresidential buildings in the State of Ohio to ensure that they are safe and sanitary. Additionally, Revised Code § 3781.01 provides that local governments may not adopt regulations that that conflict with the Board’s rules to facilitate the uniform application of the standards.

Revised Code 3781.11 lists conditions that rules of the Board must address, including:

- (1) For nonresidential buildings, provide uniform minimum standards and requirements, and for residential buildings, provide standards and requirements that are uniform throughout the state, for construction and construction materials, including construction of industrialized units, to make residential and nonresidential buildings safe and sanitary as defined in section 3781.06 of the Revised Code;
- (2) Formulate such standards and requirements, so far as may be practicable, in terms of performance objectives, so as to make adequate performance for the use intended the test of acceptability;
- (3) Permit, to the fullest extent feasible, the use of materials and technical methods, devices, and improvements, including the use of industrialized units which tend to reduce the cost of construction and erection without affecting minimum requirements for the health, safety, and security of the occupants or users of buildings or industrialized units and without preferential treatment of types or classes of materials or products or methods of construction;
- (4) Encourage, so far as may be practicable, the standardization of construction practices, methods, equipment, material, and techniques, including methods employed to produce industrialized units;

6. How will the Agency measure the success of this regulation in terms of outputs and/or outcomes?

The enforcement of these rules will be implemented by certified township, city, and county building departments, and local health districts. Rule 4101:1-1-01 lays out the administrative procedures certified building departments must follow to implement the substantive requirements of these rules to determine compliance. These provisions require a builder or

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owner to make application to a building department to obtain an approval to build (permit). As part of this application the owner must submit sufficient information and/or construction documents for the building official/plans examiner to determine whether the proposed work complies with the code. After the builder or owner obtains the approval (permit), construction may commence and the building department inspectors will inspect the construction to ensure that the work conforms with the original approval. Rule 4101:1-1-01 § 105.2 provides that in the absence of fraud or a serious safety or sanitation hazard, any non-residential structure built in accordance with approved plans shall be conclusively presumed to comply with these rules. The Board requires that certified nonresidential building departments submit an annual yearly operational report which lists the following information: current employees and their certifications, total number of permits issued during the year for each type of occupancy, total number of inspections made, the total value of construction, and the total number of appeals of the code requested by a builder or owner during the year.

Development of the Regulation

7. Please list the stakeholders included by the Agency in the development or initial review of the draft regulation.

If applicable, please include the date and medium by which the stakeholders were initially contacted.

Continuing law in 4101:3-3-01 was previously reviewed by the Common Sense Initiative (CSI) Office. On October 31, 2012, January 9, 2014, and September 15, 2015, the CSI Office issued memoranda making no recommendation regarding Rule 4101:3-13-01 and concluded that the Board should proceed with formal rule filing with the Joint Committee on Agency Rule Review.

The proposed revision to OPC § 312 included in this package is the result of the Board's Code Committee and Board Staff working closely with the plumbing industry and plumbing inspectors to develop language that would recognize alternative testing methods to water if permitted by the manufacturer. On January 1, 2016, Amendments Group 90 adopted by the Board in 2015 went into effect which limited the testing of plastic pipe to water. This rule package did allow for an exception for testing with air if permitted by the manufacturer. The Board adopted these amendments due to safety hazards associated with air testing. Testing with air pressure on plastic if done improperly is hazardous. There is a risk of explosion if too much air pressure is applied. Water testing is safer and more accurate. This is consistent with IPC '09, '12 and '15 codes as well as many manufacturers of plastic pipe installation requirements. However, after working with stakeholders the rules as modified in this package still would permit air testing of plastic pipe if the manufacturer permits that method

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of testing. This still give owner options if air testing is preferred method for testing, then they would need to use pipe where the manufacturer permits air testing. The Board stated the following in its BIA for OPC changes in Amendments Group 90:

Testing with air pressure on plastic if done improperly is hazardous. There is a risk of explosion if too much air pressure is applied. Water testing is safer and more accurate. This is consistent with IPC '09, '12 and '15 codes as well as many manufacturers of plastic pipe installation requirements. However, after working with stakeholders the rules as modified in this package still would permit air testing of plastic pipe if the manufacturer permits that method of testing. This still give owner options if air testing is preferred method for testing, then they would need to use pipe where the manufacturer permits air testing.

However, following the effective date of these changes, the plumbing industry submitted comments, petitions, and correspondence to the Board explaining that the rule change had a costly impact. As a result, the Board's Code Committee began to work with the plumbing industry and plumbing inspectors to further modify Section 312 to address these concerns but also maintain required rough/final plumbing system tests. The Board received code change petitions from the following individuals/organizations:

Plumbing-Heating-Cooling Contractors of Ohio
James A. Richardson, Jr
Ohio Association of Plumbing Inspectors
Copies of the code change petitions are attached.

The Board received correspondence from the following individuals/organizations:

Ohio Association of Plumbing Engineers, Southwest Chapter
Mechanical Contractors Association of Ohio
PVC/CPVC vinyl piping product manufacturers
Jack Soma
David Dexter, PE
Whitewater Township Trustees
Russell Hammel
Portage County Combined General Health District
Richland County Public Health
Cleveland Plumbing Industries
Allen County Public Health
Public Health – Dayton & Montgomery County
Licking County Health Department
Delaware General Health District
Warren County Combined Health District

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Clermont County Public Health

Hamilton County Public Health

Copy of correspondence received is attached.

8. What input was provided by the stakeholders, and how did that input affect the draft regulation being proposed by the Agency?

The development of the proposed changes included in this rule package is directly in response to comments and concerns raised by plumbing contractors regarding the difficulty and cost of water-only testing of plastic pipe after adoption of Amendments Group 90. At its first meeting in 2016, the Board's Code Committee began work with representatives from the Cleveland Plumbing Industries (CPI) and Plumbing-Heating-Cooling Contractors of Ohio (PHCC) to develop proposed revision to OPC § 312 while still addressing safety concerns and limitations set on the use of plastic piping by manufacturers. Primarily, the plumbing industry was concerned with the rough-in plumbing test. To address their concerns, the following language was developed and is incorporated in the rule package:

312.2.3 Alternative drainage and vent rough-in test. *When permitted by the manufacturer of the piping, fittings, and solvent cement (if part of the plumbing system), an alternative method of testing the drainage and vent system, such as compressed gas or vacuum, may be permitted to meet the drainage and vent rough-in test requirements of this code as long as the test is conducted strictly in accordance with the requirements published in the manufacturer's installation instructions.*

This proposed language allows additional alternative testing methods for the rough-in test and was supported by CPI and PHCC.

Through the course of developing the rough-in test language, earlier draft of the rules eliminated the requirement for the final test. This change too was supported by CPI and PHCC, but when distributed to the plumbing inspectors, the Ohio Association of Plumbing Inspectors (OAPI) and Health Districts submitted letters opposing the final test removal.

At its meeting on May 19, 2016, the Board's Code Committee worked with representatives from CPI, PHCC, OAPI, and Health Districts to develop the following language to reinstate final test requirement which is incorporated in the rule package:

312.4 Drainage and vent final test. *After the plumbing fixtures have been set and their traps filled with water, the entire drainage system shall be subjected to one of the following final tests as prescribed by the building official:*

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312.4.1 Visual and operational final test. *All plumbing fixtures shall be operated and a visual inspection of accessible piping and joints shall be performed to determine that there are no visible leaks.*

312.4.2 Drainage and vent final test. *The final test of the completed drainage and vent systems shall be made, after the fixtures are connected, as follows:*

- 1. Close all stack openings;*
- 2. A manometer tube shall be placed through a trap seal to the system side and water shall be added to a fixture until an equivalent of at least 1 in. water column (248.8 Pa) is read on the manometer gauge or water-can. Water may be added to a water closet bowl or trap tailpiece extension until the water level is at least one inch higher than the original trap seal;*
- 3. Maintain the initial water column for fifteen (15) minutes;*
- 4. The system shall then be separated at a trap seal, AAV, or other means as directed by the plumbing inspector for verification that the entire system is interconnected.*

312.4.3 Alternative drainage and vent final test. *Any other testing method equal to the 1 in. water column. Except as provided for in Section 312.4.2, compressed or stored air may not be used unless otherwise permitted by the manufacturer of piping, fittings, and solvent cement (if part of the plumbing system).*

This proposed language retains final test but allows additional alternative testing methods for the final test and was supported by CPI, PHCC, OAPI, and Health Districts represented at the meeting. Plastic Piping manufacturers were also represented at the May 19, 2016 meeting, and contributed to the development of this language.

9. What scientific data was used to develop the rule or the measurable outcomes of the rule? How does this data support the regulation being proposed?

Continuing law is based on is the 2009 International Plumbing Code (IPC) promulgated and amended by the International Code Council (ICC). The model codes developed by ICC are updated every three years through a process that incorporates petitioning, public hearings and voting by ICC members. The ICC Committees that oversaw the development of the different provisions 2009 IPC included building and fire code officials, architects, engineers, contractors, and representatives from the National Association of Home Builders, Underwriters Laboratories, and other professional organizations.

When a petition to amend the model code is submitted, the proponent of the change must submit the proposed language of the amendment, the reason for the amendment including scientific data when applicable, and the cost impact of the amendment. All submitted petitions are then published prior to initial code development hearings on the petitions.

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Interested persons may review the proposed changes and attend the code development hearing and provide comments. A report then is published on the public hearings for review and then final action is taken on the proposed changes at final action hearings. All successful changes are incorporated into the next edition of the model code.

Upon publication the Board's code committee reviews each substantive change included in the newest edition of the code and determines whether to recommend the change to the Board for adoption. The Board last fully updated the Ohio Plumbing Code on November 1, 2011.

The proposed amendments are Ohio-specific language developed with stakeholders to address the cost impact of rules that went into effect on January 1, 2016 to recognize additional testing methods for rough-in and final tests of plastic piping.

10. What alternative regulations (or specific provisions within the regulation) did the Agency consider, and why did it determine that these alternatives were not appropriate? If none, why didn't the Agency consider regulatory alternatives?

See Questions 7 & 8.

11. Did the Agency specifically consider a performance-based regulation? Please explain.

Performance-based regulations define the required outcome, but don't dictate the process the regulated stakeholders must use to achieve compliance.

Continuing law permits a registered design professional's alternative engineered design to be a compliance alternative method to the prescriptive requirements of the code. Section 106.5 of the Ohio Building Code permits a registered design professional to submit sufficient technical data to substantiate that performance of the proposed alternative engineered design meets the intent of the code. Additionally, section 107.4.3 provides that when construction documents have been prepared by an Ohio registered design professional conforming to the requirements of the rules of the Board pertaining to design loads, stresses, strength, and stability and other requirements involving technical analysis, the documents need only be examined to the extent necessary to determine conformity with other requirements of the rules of the Board.

The proposed amendments are Ohio-specific language developed with stakeholders to address the cost impact of rules that went into effect on January 1, 2016 to recognize additional testing methods for rough-in and final tests of plastic piping. Testing of building systems are inherently prescriptive, therefore performance-based methods were not considered.

12. What measures did the Agency take to ensure that this regulation does not duplicate an existing Ohio regulation?

Editorial changes are routinely made to the rules to provide consistency with the Ohio Revised Code and other Board and agencies' rules. Additionally, RC § 3781.10 gives the Board sole authority to adopt rules which regulate the erection, construction, repair, alteration, and maintenance of all buildings or classes of buildings specified RC § 3781.06 including residential and non-residential buildings. This authority includes the adoption of standards for plumbing systems.

13. Please describe the Agency's plan for implementation of the regulation, including any measures to ensure that the regulation is applied consistently and predictably for the regulated community.

For these rules to be enforced by a local government, its building department must be certified by the Board. The Board also certifies the personnel who work within these departments to ensure only qualified personnel are enforcing the Board's rules. Certified personnel must complete continuing education to maintain their certifications and continue to be authorized to enforce these rules. The Board has authority to suspend or revoke certifications for failure to properly enforce the rules. Also, the Board has a staff member dedicated to responding to complaints by persons affected by the Board rules. This program helps promote consistent and predictable application of the Board rules.

Adverse Impact to Business

14. Provide a summary of the estimated cost of compliance with the rule. Specifically, please do the following:

a. Identify the scope of the impacted business community;

Limitation on air testing for plastic pipe. However, these proposed rules are intended to address the cost impact of rules that went into effect on January 1, 2016 to recognize additional testing methods for rough-in and final tests of plastic piping.

b. Identify the nature of the adverse impact (e.g., license fees, fines, employer time for compliance); and

Difficulty performing water tests under certain circumstances (e.g. during winter or when no water is available yet on site).

c. Quantify the expected adverse impact from the regulation.

The adverse impact can be quantified in terms of dollars, hours to comply, or other factors; and may be estimated for the entire regulated population or for a

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“representative business.” Please include the source for your information/estimated impact.

Water testing take approximately 3 times as much time to perform than air testing. Also, if water needs to be brought to the site, the cost of shipping is approximately \$300 per truck load. However, these proposed rules are intended to address this cost impact to recognize additional testing methods for rough-in and final tests of plastic piping.

15. Why did the Agency determine that the regulatory intent justifies the adverse impact to the regulated business community?

Testing with air pressure on plastic if done improperly is hazardous. There is a risk of explosion if too much air pressure is applied. Water testing is safer and more accurate. This is consistent with IPC '09, '12 and '15 codes as well as many manufacturers of plastic pipe installation requirements. However, these proposed rules are intended to address the cost impact of rules that went into effect on January 1, 2016 to recognize additional testing methods for rough-in and final tests of plastic piping.

Regulatory Flexibility

16. Does the regulation provide any exemptions or alternative means of compliance for small businesses? Please explain.

The rules do not have special exemptions or alternative means of compliance specifically for small business. The Ohio Building Code (OBC) requires a building official to issue an adjudication order to an owner when the design or construction of a building does not comply with the OBC. The adjudication order must comply with Revised Code Chapter 119 and give the owner an opportunity to appeal. This mechanism is often utilized by an owner voluntarily to obtain a variance from the requirements. Variance requests are heard by either the Ohio Board of Building Appeals or a certified local board of building appeals.

Also, the OBC permits alternative engineered designs prepared by a registered design professional to not strictly comply with the prescriptive requirements of the rules. To obtain approvals based on alternative engineered designs, the design professional must submit sufficient technical information to demonstrate that the performance meets the intent of the rules.

17. How will the agency apply Ohio Revised Code section 119.14 (waiver of fines and penalties for paperwork violations and first-time offenders) into implementation of the regulation?

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Revised Code § 3781.102 does not authorize the Board to set the fees and/or penalties assessed by local certified residential building departments in connection with the enforcement of these rules. Compliance with the rules is accomplished through construction conforming to the certificate of plan approval (permit). Therefore, there are no potential paperwork violations of these rules.

18. What resources are available to assist small businesses with compliance of the regulation?

The Board's technical staff spends approximately 25% of their time responding to questions on the building codes and educating design professionals, contractors, the public, and code officials of the intent of the Board's rules assisting all parties in compliance.



OHIO BOARD OF BUILDING STANDARDS

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 REYNOLDSBURG, OHIO 43068-9009
 (614) 644-2613 fax; (614) 644-3147
 www.com.state.oh.us/odoc/dic/dicbbs.htm

For BBS use:
Petition #: <u>15-20</u>
Date Recv'd: <u>12-16-15</u>

APPLICATION/PETITION FOR RULE CHANGE

Submitter: Rocco Fana, Jr. Plumbing-Heating-Cooling Contractors of Ohio
(Contact Name) (Organization/Company)

Address: 8226 Stoney Brook Dr.
Chagrin Falls OH 44023
(City) (State) (Zip)

Telephone Number 800-686-7422 Fax Number 216-393-0095

Date: December 15, 2015 E-mail Address: rocco@phccohio.org

Section: Ohio Plumbing Code 312.2, 312.3 and 312.4

Proposed Change in Proper Format (attach additional sheets if necessary):

Add 1" vacuum test to the test procedures for Plumbing Code 312.2, 312.3 and 312.4 since future code editions do not allow air for these tests due the restrictions placed on the of air in test by pipe manufacturers

The use of vacuum does not violate the pipe manufacturers installation procedures

A 1" vacuum test is an inexpensive solution to 5# air test as is stated in our current code and the water only in future codes

Use the same "vacuum test" for all 3 mandatory tests on the final test 1" vacuum would be perfect due to the 2" minimum trap seal being required

RECEIVED

DEC 16 2015

BOARD OF BUILDING STANDARDS

Make Sure the Following Information is Submitted:		
Submitter:	Name of contact person, organization, address, fax, phone	Check-off
Sponsor:	Organization sponsoring or requesting the rule change (if any)	
Rule Title:	Title of rule change	
Purpose/Objective:	Reason or technical justification for the proposed rule change	
Formatted Rule Language	Language formatted: strikethrough or underline	
Completed Application:	12 Copies of application and documentation	

Notes: 1. To encourage uniformity among states using model codes, it is recommended that the submitter first submit any code change directly to ICC and participate in the national model code development process.
 2. Use a separate form for each code change proposal.



The Best Source of Information for Users of Plastic Piping Systems



Our Industry

Products

- ABS
- CPVC
- PE
- PEX
- PVC

Industrial (TI/PS)

- Fittings
- Fire Sprinklers
- Solvent Cements & Primers

Uses

Sustainability

- Greenbuilding Systems
- Greenbuilding Inages
- Life Cycle Inventory
- Green Building Report
- Standards & Codes
- Publications
- Industry Info

Industry Links

3rd Party Certification

PPFA PUBLICATIONS

PLASTIC PIPE AND FITTINGS ASSOCIATION POLICY ON TESTING PLASTIC PIPE AND FITTINGS INSTALLATIONS WITH COMPRESSED GAS

Compressed air or any other compressed gases should not be used for pressure testing plastic plumbing systems.

EXCEPTIONS:

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

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

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

(and)

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

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

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

News

- Silver-Line Plastics™ Certifies Another Facility to PPFA's SM-CAP
- Lasco Fittings is the First Fittings Producer to be Certified to PPFA's SM-CAP
- U.S. Green Building Council and the American Chemistry Council to Work Together to Advance LEED
- Silver-Line Plastics™ First to be Certified to PPFA's SM-CAP
- Building and Construction Industry Leaders Announce Formation of the American High-Performance Buildings Coalition



**North American
Pipe Corporation**

North American Pipe Corporation, a Westlake Chemical company
2801 Post Oak Blvd., Suite 600 ■ Houston, Texas 77056
Tel 713.840.7473 ■ Fax 713.552.0087

April 28, 2015

Acceptance Pressure Testing of ASTM F891 DWV Pipe

To Whom It May Concern

As North American Pipe Corporation's ASTM F891 DWV pipe is used for non-pressure applications, low pressure air testing is permissible in addition to standard water testing. See the attached tech brief from the PVC Pipe Association. The air testing pressure must be limited to 9 psig. The applicable standard is ASTM F1417, *Standard Practice for Installation Acceptance of Plastic Non-pressure Sewer Lines Using Low-Pressure Air*.

It is important to note that other standards and codes may apply to your project that may require water for testing DWV piping systems.

Sincerely,

Digitally signed by Jason A.
Volpe, P.E.

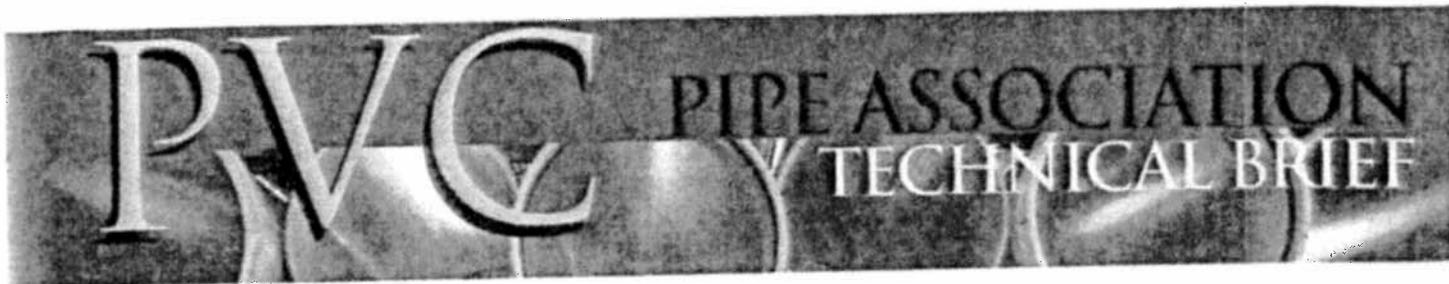
Date: 2015-04-28 13:38-04:00

Jason A. Volpe, P.E. | Technical Services Engineer

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North American Pipe Corporation, a Westlake Chemical company

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AIR TESTING OF INSTALLED PVC PIPELINES

GRAVITY SEWER PIPE

Air testing is often performed on sewer pipelines to ensure the integrity of installed materials and to verify that correct construction methods have been used. Prior to testing, all connections and service laterals should be plugged and adequately braced to resist test pressures.

The document most often specified for air testing is ASTM F1417 "Standard Test Method for Installation Acceptance of Plastic Gravity Sewer Lines Using Low-Pressure Air." In sections 5.2 and 6.1.4, F1417 specifies an upper limit for test pressure by requiring a pressure regulator set to a maximum of 9 psig.

- **Safety Considerations**

Although 9 psi is considered low-pressure testing, there are still significant forces involved. For example, end plugs on a 24-inch ASTM F679 sewer pipe pressurized to 9 psi must be braced to resist an end thrust of about 3,900 pounds. If a plug were to let go, rapid expansion of compressed air could push it out of the pipe forcefully and create a rush of air – risking injury for anyone in the manhole structure. Safety dictates that personnel should not be in a manhole during pressure testing.

PRESSURE PIPE

Water pipe is pressure tested for the same reasons as gravity pipe, but the pressures are much higher. Typically, project specifications allow test pressure to be as high as the pressure class of the pipe. Using 24-inch DR21 Pressure Class 200 AWWA C905 pipe as an example, the end thrust would be about 86,000 pounds (more than 20 times as high as the sewer-pipe force described above).

- **Test PVC Pressure Pipe With Water Only**

The compressible nature of air means that extremely high potential energy is stored in the pipe during high-pressure air testing. According to the *Handbook of PE Pipe*, any failure in the piping system would have dangerous consequences, since the energy released (compared to testing with water) would be much greater, more forceful, and of longer duration.

Even when water is used, it is important that all air be expelled from the pipeline during filling and again before pressure testing. Automatic air-release valves are recommended. See *Uni-Bell Technical Brief*, "Air Valves: A Cost-Effective Way to Enhance Pressure-Pipe Performance."

- **Air-Pressure Testing of Installed PVC Pressure Pipe is Expressly Prohibited for Reasons of Safety**

Because it is sometimes difficult to obtain water due to site conditions, the question of air testing is sometimes raised. For safety reasons, the PVC Pipe Association is adamant that PVC pressure pipe be tested with water only and that **UNDER NO CIRCUMSTANCES SHOULD AIR TESTING BE PERFORMED ON PRESSURE PIPE**. See Uni-Bell's *Handbook of PVC Pipe* and "Installation Guide for PVC Pressure Pipe."

References: ASTM standards F679 and F1417; AWWA standard C905; *Handbook of PE Pipe*; *Handbook of PVC Pipe*; and "Air Valves: A Cost-Effective Way to Enhance Pressure-Pipe Performance," *Uni-Bell Technical Brief*

TESTING AND INSPECTION

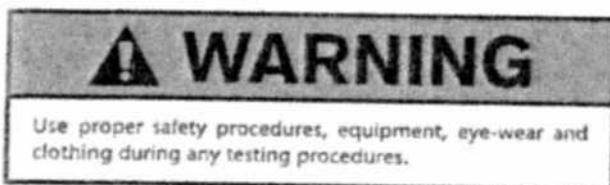
Cast Iron Installation

It is important to test all cast iron piping installations for leaks after the roughing-in has been completed. Before testing, the installer should notify the inspector of the local administrative authority having jurisdiction over plumbing installations. Leave concealed work uncovered until the required tests are performed and the system receives approval.



Various procedures are used to test installed cast iron soil pipe and fitting systems. They include the use of water (hydrostatic), smoke, and peppermint.

For testing purposes, the system should be properly restrained at all bends, changes of direction, and ends of runs.

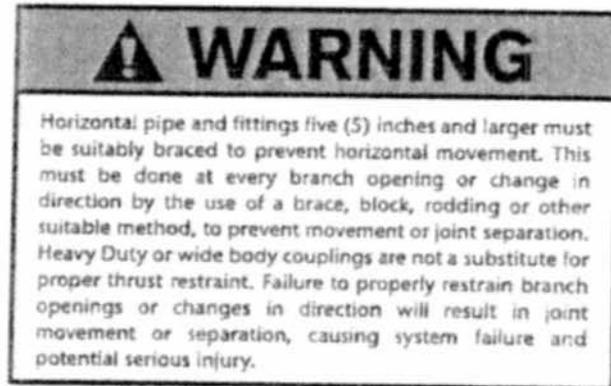


Note: In all installations, installers should be aware of local conditions, codes and regulations. Comply with all local codes, regulations, manufacturers' instructions and architect/engineer specifications.

Water or Hydrostatic Testing

This is the most common type of test used to test a completed cast iron soil pipe installation, and it is the test most often recommended by plumbing codes. Its purpose is to check the installation for leaks and to correct these prior to putting the system into service. Use the following steps to perform a water test:

1. Since visual inspection of the system is required, conduct this test prior to enclosing above-ground installations, or backfilling below-ground installations.
2. Isolate each floor or section being tested by inserting plugs into the test tees in the stacks.
3. Plug or cap all other openings with test plugs or test caps.



4. Fill the system with water at its highest point. Do this slowly to allow any trapped air to escape as the water level rises. Note: Failure to remove entrapped air may cause faulty test results, so be sure all entrapped air has been removed to obtain reliable test results.
5. As water fills a vertical pipe, it creates hydrostatic pressure. This pressure increases as the height of the water in the vertical pipe increases. Charlotte Pipe recommends water testing with ten feet of hydrostatic pressure (4.3 pounds per square inch).
6. After filling the stack to ten feet of head, visually inspect the section you are testing for any leaks around its joints.
7. In hubless systems, leaks can often be traced to hubless couplings that were not tightened properly to the recommended torque. In these cases, correctly tightening the couplings should eliminate the leak.
8. If leaks are detected in hub and spigot systems, disassemble the joints and check to determine if the correct installation procedures were used.
9. Water test each portion of the system for 15 minutes. This is sufficient time for any problems to be detected.
10. After a successful test, drain the system and prepare the next section for testing.

SECTION 312 TESTS AND INSPECTIONS

312.1 Required tests. The *owner or owner's representative* shall *cause* the applicable tests prescribed in Sections 312.2 through 312.11 *to be made* to determine compliance with the provisions of this code. *Reasonable* advance notice *shall be given* to the *building official* when the plumbing work is ready for

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tests. *The owner or owner's representative shall keep records of the tests and shall submit such records to the building official upon request.*

312.1.1 Test gauges. Gauges used for testing shall be as follows:

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

312.1.2 Test media. All plumbing system piping shall be tested with water or by vacuum (pull) test as approved by the manufacturer

Exception: Plumbing system piping is permitted to be tested with air or another compressed gas only when specifically allowed by the manufacturer of the proposed piping and when tested in accordance with the pressure limitations and conditions prescribed by that manufacturer.

312.2 Drainage and vent water test. A water test shall be applied to the drainage system either in its entirety or in sections. If applied to the entire system, all openings in the piping shall be tightly closed, except the highest opening, and the system shall be filled with water to the point of overflow. If the system is tested in sections, each opening shall be tightly plugged except the highest openings of the section under test, and each section shall be filled with water, but no section shall be tested with less than a 10-foot (3048 mm) head of water. In testing successive sections, at least the upper 10 feet (3048 mm) of the next preceding section shall be tested so that no joint or pipe in the building, except the uppermost 10 feet (3048 mm) of the system, shall have been submitted to a test of less than a 10-foot (3048 mm) head of water. This pressure shall be held for at least 15 minutes. The system shall then be tight at all points.

312.3 Drainage and vent air test. An air test shall be made by forcing air into the system until there is a uniform gauge pressure of 5 psi (34.5 kPa) or sufficient to balance a 10-inch (254 mm) column of mercury. This pressure shall be held for a test period of at least 15 minutes. Any adjustments to the test pressure required because of changes in ambient temperature or the seating of gaskets shall be made prior to the beginning of the test period.

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312.4 Drainage and vent final test. The final test of the completed drainage and vent systems shall be *made by air test after the fixtures are connected, with or without smoke or peppermint as follows:*

1. *Close all stack openings;*
2. *Apply air pressure to the entire drainage and vent system or to sections thereof equivalent to at least 1 in. water column (248.8 Pa);*
3. *Maintain this pressure starting fifteen (15) minutes before beginning inspection;*
4. *Indicate the system to be air-tight at all points.*

312.5 Water supply system test. Upon completion of a section of or the entire water supply system, the system, or portion completed, shall be tested and proved tight under a water pressure not less than *10 percent in excess of the working pressure under which the system is to be used;* or, for piping systems other than plastic, by an air test of not less than 50 psi (344 kPa). This pressure shall be held for at least 15 minutes. The water utilized for tests shall be obtained from a potable source of supply. The required tests shall be performed in accordance with this section and Section *108.8 of the building code.*

312.6 Gravity sewer test. *Deleted.*

312.7 Forced sewer test. *Deleted.*

312.8 Storm drainage system test. Storm drain systems within a building shall be tested by water or air in accordance with Section 312.2 or 312.3.

312.9 Shower liner test. Where shower floors and receptors are made water-tight by the application of materials required by Section 417.5.2, the completed liner installation shall be tested. The pipe from the shower drain shall be plugged water tight for the test. The floor and receptor area shall be filled with potable water to a depth of not less than 2 inches (51 mm) measured at the threshold. Where a threshold of at least 2 inches (51 mm) high does not exist, a temporary threshold shall be constructed to retain the test water in the lined floor or receptor area to a level not less than 2 inches (51 mm) deep measured at the threshold. The water shall be retained for a test period of not less than 15 minutes, and there shall not be evidence of leakage. ***Exception:*** *The shower liner test is not required for one-, two-, or three-family dwellings unless required by the shower liner manufacturer's installation instructions.*

312.10 Inspection and testing of isolation backflow prevention assemblies devices required by this code. Inspection and testing shall comply with Sections 312.10.1 and 312.10.2. *Inspection and testing requirements for containment backflow prevention devices required by the water supplier shall be in accordance with rule 3745-95-06 of the Administrative Code and enforced by the water supplier.*

312.10.1 Inspections. Annual inspections shall be made of all backflow prevention assemblies and air gaps to determine whether they are operable.

312.10.2 Testing. Reduced pressure principle backflow preventer assemblies, double check-valve assemblies, pressure vacuum breaker assemblies, reduced pressure detector fire protection backflow prevention assemblies, double check detector fire protection backflow prevention assemblies, hose connection backflow preventers, and spillproof vacuum breakers shall be tested at the time of installation, immediately after repairs or relocation and at least annually. The testing procedure shall be performed in accordance with one of the following standards:

ASSE 5013, ASSE 5015, ASSE 5020, ASSE 5047, ASSE 5048, ASSE 5052, ASSE 5056, CSA B64.10 or CSA B64.10.1.

312.11 Operational testing of low pressure cut-off device, low suction throttling valves, and variable speed suction limiting controls. *Although enforcement of this section is outside the scope of the plumbing code, it is important for owners to note that rule 3745-95-07 of the Administrative Code requires that the owner certify to the supplier of water that their low pressure cut-off devices, low suction throttling valves, and variable speed suction limiting controls are maintained in proper working order. Enforcement of this requirement and the referenced rule is the responsibility of the water supplier. See Section 606.5.5 of this code for additional information.*

312.12 Inspections. *No part of any plumbing or drainage system shall be covered until it has been inspected, tested, and approved, except as provided in this section.*

Failure of the inspector to inspect the work within four days, exclusive of Saturdays, Sundays, and legal holidays, after the work is ready for inspection, allows the work to proceed.

APPLICATION FOR RULE CHANGE

BOARD OF BUILDING STANDARDS

6606 Tussing Road, P.O. Box 4009
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(614) 644-2613
bbs@ohio.gov



www.com.state.oh.us/dico/bbs/default.aspx

Pursuant to section 3781.12 of the Revised Code and rules adopted by the Board of Building Standards, application is herewith submitted to adopt, amend, or annul a rule adopted by the Board pursuant to section 3718.10 of the Revised Code.

For BBS use:	
Petition #:	16-01
Date Recv'd:	

Submitter: James A. Richardson Jr.
(Contact Name) (Organization/Company)

Address: 4807 Grove Pointe Dr.
(Include Room Number, Suite, etc.)

Groveport OH 43125
(City) (State) (Zip)

Telephone Number: 614-774-4855 Fax Number: _____

Date: _____ E-mail Address: _____

Code Section: 312.1, 312.4.2, 312.2, 312.2.1, 312.2.2, 312.4, 312.5
and 312.9

General Explanation of Proposed Change (attach additional sheets if necessary):

The purpose of this proposal is to address industry concerns with the current adopted rules regarding testing procedures.

Information on Submittal (attach additional sheets if necessary):	
1. Sponsor:	<p style="text-align: center;">Organization sponsoring or requesting the rule change (if any)</p>
2. Rule Title:	<p style="text-align: center;">312 Testing Title of rule change</p>
3. Purpose/ Objective:	<p style="text-align: center;">Address SAFETY concerns over air testing.</p> <p style="text-align: center;">Technical justification for the proposed rule change</p>
4. Formatted Rule Language	<p style="text-align: center;">See pages submitted with this form.</p> <p style="text-align: center;">Language formatted: strikethrough or underline per criteria above</p>
5. Notes:	<ol style="list-style-type: none"> 1. To encourage uniformity among states using model codes, it is recommended that the submitter first submit any code change directly to ICC and participate in the national model code development process. 2. Please provide a copy of application and documentation. 3. Use a separate form for each code change proposal.

Proposed Sections 312.1, 312.1.2 (delete), 312.2, 312.2.1, 312.2.2, 312.4, 312.5 and 312.9

312.1 Required tests. The owner or owner's representative shall cause the applicable tests prescribed in Sections 312.2 through 312.11 to be made to determine compliance with the provisions of this code. Reasonable advance notice shall be given to the building official when the plumbing work is ready for tests. All tests shall be performed in the presence of the plumbing inspector.

Exception: Where the Authority Having Jurisdiction (AHJ) has established an alternative test certification process for pre-concealment or rough-in tests, those tests may be certified according to the process establish by the AHJ to show compliance with the required tests.

The owner or owner's representative shall keep records of the tests and shall submit such records to the plumbing inspector for documentation during the required inspection.

~~**312.1.2 Test media.** All plumbing system piping shall be tested with water.~~

~~**Exception:** Plumbing system piping is permitted to be tested with air or another compressed gas only when specifically allowed by the manufacturer of the proposed piping and when tested in accordance with the pressure limitations and conditions prescribed by that manufacturer.~~

312.2 Drainage and vent rough-in test. Drainage and vent piping and fittings shall be tested prior to the installation of the plumbing fixtures and prior to the installation of wall and ceiling coverings to verify the integrity of the system in accordance with one of the following methods prescribed in Section 312.2.1 or 312.2.2,;

Exception: Plumbing system piping and fittings are permitted to be tested as prescribed in Sections 312.2 to 312.8 with air, another compressed gas, vacuum, or other media or method only when the manufacturer of the proposed piping, fittings and solvent cement (if applicable) allows the alternative method of testing. Where this code does not address or prescribe an alternative test method, an alternative test method prescribed by the manufacturer of the piping. Fittings or solvent cement in the published manufacturer's installation instructions will be acceptable as meeting the requirements of this code.

312.2.1 Drainage and vent water test. A water test shall be applied to the drainage system either in its entirety or in sections. If applied to the entire system, all openings in the piping shall be tightly closed, except the highest opening, and the system shall be filled with water to the point of overflow. If the system is tested in sections, each opening shall be tightly plugged except the highest openings of the section under test, and each section shall be filled with water, but no section shall be tested with less than a 10-foot (3048 mm) head of water. In testing successive sections, at least the upper 10 feet (3048 mm) of the next preceding section shall be tested so that no joint or pipe in the building, except the uppermost 10 feet

(3048 mm) of the system, shall have been submitted to a test of less than a 10-foot (3048 mm) head of water. This pressure shall be held for at least 15 minutes. The system shall then be tight at all points.

312.2.2 Drainage and vent air test. An air test shall be made by forcing air into the system until there is a uniform gauge pressure of 5 psi (34.5 kPa) or sufficient to balance a 10-inch (254 mm) column of mercury. This pressure shall be held for a test period of at least 15 minutes. Any adjustments to the test pressure required because of changes in ambient temperature or the seating of gaskets shall be made prior to the beginning of the test period. **ALL DRAINAGE AND VENT TESTS SHALL BE PERFORMED WITH TEST EQUIPMENT WHICH INCLUDES A RELIEF VALVE SET AT NO HIGHER THAN 7.5 PSIG. ALL COMPRESSED AIR USED FOR TESTING SHALL BE BY AN OIL-FREE COMPRESSOR**

312.4 Drainage and vent final test. The final test of the completed drainage and vent systems shall be ~~made by air test after the fixtures are connected, with or without smoke or peppermint~~ as follows:

1. Close all stack openings;
2. ~~Apply air pressure to the entire drainage and vent system or to sections thereof equivalent to at least 1 in. water column (248.8 Pa);~~
2. A manometer tube shall be placed through a trap seal to the system side and water shall be added to a fixture until an equivalent to at least 1 in. water column (248.8 Pa) is read on the manometer gauge or water can be added to a water closet bowl until the water level is at least one inch higher than the original trap seal;
3. Maintain this pressure starting fifteen (15) minutes before beginning inspection;
4. Indicate the system to be air-tight at all points.
5. The system shall then be separated at a trap seal, AAV, or other means as directed by the plumbing inspector for verification the entire system is interconnected and has been subjected to the test.

312.5 Water supply system test. Upon completion of a section of or the entire water supply system, the system, or portion completed, shall be tested and proved tight under a water pressure not less than 10 percent in excess of the working pressure under which the system is to be used; or by an air test of not less than 50 psi (344 kPa). This pressure shall be held for at least 15 minutes. The water utilized for tests shall be obtained from a potable source of supply. The required tests shall be performed in accordance with this section and Section 108.8 of the building code. **ALL WATER SUPPLY SYSTEM TESTS PERFORMED WITH AIR SHALL BE PERFORMED WITH TEST EQUIPMENT WHICH INCLUDES A RELIEF VALVE SET AT NO HIGHER THAN 60 PSI. ALL COMPRESSED AIR USED FOR TESTING SHALL BE BY AN OIL-FREE COMPRESSOR**

312.9 Shower liner test. Where shower floors and receptors are made water-tight by the application of materials required by Section 417.5.2, the completed liner installation shall be tested. The pipe from the shower drain shall be plugged water tight for the test. The floor and receptor area shall be filled with potable water to a depth of not less than 2 inches (51 mm) measured at the threshold. Where a threshold of at least 2 inches (51 mm) high does not exist, a temporary threshold shall be constructed to retain the test water in the lined floor or receptor area to a level not less than 2 inches (51 mm) deep measured at the threshold. The water shall be retained for a test period of not less than 15 minutes, and there shall not be evidence of leakage.

~~Exception: The shower liner test is not required for one, two, or three family dwellings unless required by the shower liner manufacturer's installation instructions.~~

APPLICATION FOR RULE CHANGE



BOARD OF BUILDING STANDARDS

6606 Tussing Road, P.O. Box 4009
Reynoldsburg, Ohio 43068-9009
(614) 644-2613
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www.com.state.oh.us/dico/bbs/default.aspx

Pursuant to section 3781.12 of the Revised Code and rules adopted by the Board of Building Standards, application is herewith submitted to adopt, amend, or annul a rule adopted by the Board pursuant to section 3718.10 of the Revised Code.

For BBS use:	
Petition #:	<u>16-02</u>
Date Recv'd:	_____

Submitter:	<u>Mike Rudey</u> <small>(Contact Name)</small>	<u>Ohio Association of Plumbing Inspectors</u> <small>(Organization/Company)</small>	
Address:	<u>P.O. Box 201</u> <small>(Include Room Number, Suite, etc.)</small>		
	<u>West Chester</u> <small>(City)</small>	<u>OH</u> <small>(State)</small>	<u>45071</u> <small>(Zip)</small>
Telephone Number:	<u>(419) 354-9190</u>	Fax Number:	_____
Date:	<u>03/24/2016</u>	E-mail Address:	<u>mrudev@co.wood.oh.us</u>

Code Section: OPC 312.4

General Explanation of Proposed Change (attach additional sheets if necessary):

This submittal is backed by the OAPI. Through all of the years of experience in construction and inspections the OAPI Board is requesting this language to be added in place of the recent OBBS draft for section 312.4. The OAPI Board had no objections to the rest of the draft proposal from OBBS.

Information on Submittal (attach additional sheets if necessary):	
1. Sponsor:	Ohio Association of Plumbing Inspectors Organization sponsoring or requesting the rule change (if any)
2. Rule Title:	<u>312.4 Drainage and vent final test.</u>
3. Purpose/ Objective:	Maintain the long standing practice of testing the complete sanitary drain and vent system. Often this is the most critical test during the construction process as it reveals problems which may have been caused by other trades and not reported to the plumbing contractor. The final test provides a safeguard for the consumer who has paid for a complete leak free system. This proposed change specifies how to apply the test in two different ways.
4. Formatted Rule Language	<p>312.4 Drainage and vent final test. <i>After the plumbing fixtures have been set and their traps filled with water, the entire drainage system shall be submitted to a visual and operational final test of sufficient detail to determine that the system is watertight.</i></p> <p>312.4 Drainage and vent final test. The final test of the completed drainage and vent systems shall be made after the fixtures are connected, as follows:</p> <ol style="list-style-type: none"> 1. Close all stack openings and the cleanout between the building drain and the building sewer; 2. A manometer tube shall be placed through a trap seal to the system side and water shall be added to a fixture until an equivalent to at least 1 in. water column (248.8 Pa) is read on the manometer gauge or water can be added to a water closet bowl until the water level is at least one inch higher than the original trap seal; 3. Maintain this test level starting fifteen (15) minutes before beginning the inspection; 4. Indicate the system to be tight at all points. 5. The system shall then be separated at a trap seal, AAV, or other means as directed by the plumbing inspector for verification the entire system is interconnected and has been subjected to the test.
5. Notes:	<ol style="list-style-type: none"> 1. To encourage uniformity among states using model codes, it is recommended that the submitter first submit any code change directly to ICC and participate in the national model code development process. 2. Please provide a copy of application and documentation. 3. Use a separate form for each code change proposal.

APPLICATION FOR RULE CHANGE



BOARD OF BUILDING STANDARDS

6606 Tussing Road, P.O. Box 4009

Reynoldsburg, Ohio 43068-9009

(614) 644-2613

bbs@ohio.gov

www.com.state.oh.us/dico/bbs/default.aspx

Pursuant to section 3781.12 of the Revised Code and rules adopted by the Board of Building Standards, application is herewith submitted to adopt, amend, or annul a rule adopted by the Board pursuant to section 3718.10 of the Revised Code.

For BBS use:	
Petition #:	16-03
Date Recv'd:	

Submitter: Mike Rudey OAPI
(Contact Name) (Organization/Company)

Address: PO Box 201
(Include Room Number, Suite, etc.)
West Chester, Ohio 45071
(City) (State) (Zip)

Telephone Number: 419-354-9190 Fax Number: _____

Date: 05/12/2016 E-mail Address: mrudey@co.wood.oh.us

Code Section: 312.1 through 312.3

General Explanation of Proposed Change (attach additional sheets if necessary):

Revised code language for clarification and added the vacuum testing procedures for rough-in acceptance tests.

This will help to promote uniformity in enforcement

Information on Submittal (attach additional sheets if necessary):	
1. Sponsor:	<p>Please see accompanying document for proposed changes.</p> <p style="text-align: center;">Organization sponsoring or requesting the rule change (if any)</p>
2. Rule Title:	<p>Please see accompanying document for proposed changes.</p> <p style="text-align: center;">Title of rule change</p>
3. Purpose/ Objective:	<p>Please see accompanying document for proposed changes.</p> <p style="text-align: center;">Technical justification for the proposed rule change</p>
4. Formatted Rule Language	<p>Please see accompanying document for proposed changes.</p> <p style="text-align: center;">Language formatted: strikethrough or underline per criteria above</p>
5. Notes:	<ol style="list-style-type: none"> 1. To encourage uniformity among states using model codes, it is recommended that the submitter first submit any code change directly to ICC and participate in the national model code development process. 2. Please provide a copy of application and documentation. 3. Use a separate form for each code change proposal.

Current Language

SECTION 312 TESTS AND INSPECTIONS

~~312.1 Required tests. The owner or owner's representative shall cause the applicable tests prescribed in Sections 312.2 through 312.11 to be made to determine compliance with the provisions of this code. Reasonable advance notice shall be given to the building official when the plumbing work is ready for tests. The owner or owner's representative shall keep records of the tests and shall submit such records to the building official upon request.~~

~~312.1.1 Test gauges. Gauges used for testing shall be as follows:~~

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

~~312.1.2 Test media. All plumbing system piping shall be tested with water.~~

~~Exception: Plumbing system piping is permitted to be tested with air or another compressed gas only when specifically allowed by the manufacturer of the proposed piping and when tested in accordance with the pressure limitations and conditions prescribed by that manufacturer.~~

~~312.2 Drainage and vent water test. A water test shall be applied to the drainage system either in its entirety or in sections. If applied to the entire system, all openings in the piping shall be tightly closed, except the highest opening, and the system shall be filled with water to the point of overflow. If the system is tested in sections, each opening shall be tightly plugged except the highest openings of the section under test, and each section shall be filled with water, but no section shall be tested with less than a 10-foot (3048 mm) head of water. In testing successive sections, at least the upper 10 feet (3048 mm) of the next preceding section shall be tested so that no joint or pipe in the building, except the uppermost 10 feet (3048 mm) of the system, shall have been submitted to a test of less than a 10-foot (3048 mm) head of water. This pressure shall be held for at least 15 minutes. The system shall then be tight at all points.~~

~~312.3 Drainage and vent air test. All air test shall be made by forcing air into the system until there is a uniform gauge pressure of 5 psi (34.5 kPa) or sufficient to balance a 10-inch (254 mm) column of mercury. This pressure shall be held for a test period of at least 15 minutes. Any adjustments to the test pressure required because of changes in ambient temperature or the seating of gaskets shall be made prior to the beginning of the test period.~~

Proposed New Language

312.1 Required tests. *The owner or owner's representative shall cause the applicable tests and inspections prescribed in Sections 312.2 through 312.11 to be performed to determine that the work will withstand the prescribed test without leakage and to demonstrate the integrity of the device or assembly. In accordance with OBC Section 108.8, reasonable advanced notice shall be given to the building official when the plumbing work is ready for tests. The building official may require that the tests be conducted in the presence of the building official or certified plumbing inspector. The owner or owner's representative shall keep records of the tests and inspections and shall submit such records to the building official upon request.*

312.1.1 New, altered, extended or repaired systems. *New plumbing systems and parts of existing systems that have been altered, extended, or repaired shall be tested as prescribed herein to disclose leaks and defects, except that testing is not required in the following cases:*

- 1. In any case that does not include addition to, replacement, alteration or relocation of any water supply, drainage or vent piping.*
- 2. In any case where plumbing equipment is set up temporarily for exhibition purposes.*

312.1.2 Equipment, material, power and labor for tests. *Equipment, material, power and labor necessary for testing a plumbing system or part thereof shall be furnished by the owner or the owner's representative. Required tests shall be conducted by and at the expense of the owner or the owner's representative.*

312.1.3 Test gauges. *Gauges used for testing shall be as follows:*

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

312.1.2 Drainage Rough-In and Final Tests – *All materials for drainage and vent piping must comply with the applicable listed standards. It must also be permissible for the materials to be tested with any of the referenced testing methods in section 312.2, 312.3 and 312.4.*

Exception: *alternative testing methods may be acceptable as specified by the manufacturer and approved by the Building/Plumbing Official.*

312.2 Drainage and vent rough-in test. *Drainage and vent piping and fittings shall be tested prior to the installation of the plumbing fixtures and prior to the installation of wall and ceiling coverings to verify the integrity of the system in accordance with one of the following methods prescribed in Section 312.2.1 or 312.2.2,:*

312.2.1 Drainage and vent rough-in water test. *A water test shall be applied to the drainage system either in its entirety or in sections. If applied to the entire system, all openings in the piping shall be tightly closed, except the highest opening, and the system shall be filled with water to the point of overflow. If the system is tested in sections, each opening shall be tightly plugged except the highest openings of the section under test, and each section shall be filled with water, but no section shall be tested with less than a 10-foot (3048 mm) head of water. In testing successive sections, at least the upper 10 feet (3048 mm) of the next preceding section shall be tested so that no joint or pipe in the building, except the uppermost 10 feet*

(3048 mm) of the system, shall have been submitted to a test of less than a 10-foot (3048 mm) head of water. This pressure shall be held for at least 15 minutes. The system shall then be tight at all points.

312.3 Drainage and vent *rough-in* vacuum test. A vacuum test shall be performed by sealing off all drainage/vent piping systems entirely or in sections. All openings in the piping system shall be tightly closed except for one for testing location. Connect the test manometer (u-tube) and vacuum source to the testing opening. Initiate the vacuum source until a 1 inch differential is established, close test valve and maintain the 1 inch water column for 15 minutes.

APPLICATION FOR RULE CHANGE



BOARD OF BUILDING STANDARDS

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bbs@ohio.gov
www.com.state.oh.us/dico/bbs/default.aspx

Pursuant to section 3781.12 of the Revised Code and rules adopted by the Board of Building Standards, application is herewith submitted to adopt, amend, or annul a rule adopted by the Board pursuant to section 3718.10 of the Revised Code.

For BBS use:	
Petition #:	16-04
Date Recv'd:	

Submitter:	<u>Mike Rudey</u>	<u>OAPI</u>
	<small>(Contact Name)</small>	<small>(Organization/Company)</small>
Address:	<u>PO Box 201</u>	
	<small>(Include Room Number, Suite, etc.)</small>	
	<u>West Chester,</u>	<u>Ohio</u>
	<small>(City)</small>	<small>(State)</small>
		<u>45071</u>
		<small>(Zip)</small>
Telephone Number:	<u>419-354-9190</u>	Fax Number: <u>419-373-6786</u>
Date:	<u>05/012/2016</u>	E-mail Address: <u>mrudey@co.wood.oh.us</u>
Code Section:	<u>2011 Ohio Plumbing Code section (312.4) Final Testing Procedures</u>	
General Explanation of Proposed Change (attach additional sheets if necessary):		
<p>Health Department / Building Department plumbing inspectors experience DWV system installations to be non-compliant / cannot meet the testing requirements as prescribed by OPC section 312.4 on an average of 1 out of every 3 systems. Problems: screws in vents stacks, fittings not connected properly, holes bored through drain lines, due to closet shelving, cabinets, mirror installations etc.... It is the responsibility of Ohio Code Officials to provide the public with structures that are safe and sanitary for occupancy. OBC 101.3.</p>		

Information on Submittal (attach additional sheets if necessary):	
1. Sponsor:	<p>Association of Ohio Health Commission in Support</p> <p style="text-align: center;">Organization sponsoring or requesting the rule change (if any)</p>
2. Rule Title:	<p>Please see accompanying document for proposed changes.</p> <p style="text-align: center;">Title of rule change</p>
3. Purpose/ Objective:	<p>Please see accompanying document for proposed changes.</p> <p style="text-align: center;">Technical justification for the proposed rule change</p>
4. Formatted Rule Language	<p>Please see accompanying document for proposed changes.</p> <p style="text-align: center;">Language formatted: strikethrough or underline per criteria above</p>
5. Notes:	<ol style="list-style-type: none"> 1. To encourage uniformity among states using model codes, it is recommended that the submitter first submit any code change directly to ICC and participate in the national model code development process. 2. Please provide a copy of application and documentation. 3. Use a separate form for each code change proposal.

Current Language

~~312.4 Drainage and vent final test. The final test of the completed drainage and vent systems shall be made by air test after the fixtures are connected, with or without smoke or pepper mint as follows:~~

- ~~1. Close all stack openings;~~
- ~~2. Apply air pressure to the entire drainage and vent system or to sections thereof equivalent to at least 1 inch water column (248.8 Pa);~~
- ~~3. Maintain this pressure starting fifteen (15) minutes before beginning inspection;~~
- ~~4. Indicate the system to be air tight at all points.~~

Proposed New Language

312.4 Drainage and vent final test. The final test of the completed drainage and vent systems shall be made after the fixtures are connected as follows:

1. Close all stack openings;
2. A manometer tube shall be placed through a trap seal to the system side and water shall be added to a fixture until an equivalent to at least 1 in. water column (248.8 Pa) is read on the manometer gauge or water can be added to a water closet bowl trap tailpiece extension until the water level is at least one inch higher than the original trap seal;
3. Maintain the 1 in. water column for fifteen (15) minutes before beginning inspection;
4. Indicate the system to be water-tight at all points.
5. The system shall then be separated at a trap seal, AAV, or other means as directed by the plumbing inspector for verification the entire system is interconnected and has been subjected to the test.

Exceptions: other testing methods may be accepted that are equal to the 1 in. water column as approved by the Building/Plumbing Official

March 21, 2016



Board of Building Standards Code Committee Members
c/o Regina Hanshaw, Executive Secretary
Ohio Board of Building Standards
P.O. Box 4009
6606 Tussing Rd
Reynoldsburg, OH 43068

PREVENT. PROMOTE. PROTECT.

*Timothy I. Ingram
Health Commissioner*

*250 William Howard Taft Road, 2nd Floor
Cincinnati, OH 45219*

*Phone 513.946.7800
Fax 513.946.7890*

hamiltoncountyhealth.org

RE: BBS Code Committee review of Ohio Plumbing Code Section 312.4

Dear Board of Building Standards Code Committee Members,

As a local health department, Hamilton County Public Health is charged with protecting the health and safety of residents in the county we serve – in this case, nearly a half-million people in 46 political jurisdictions. I am writing to share my concern with the proposed new language for the Ohio Plumbing Code Section 312.4: ***Drainage and vent final test.*** *After the plumbing fixtures have been set and their traps filled with water, the entire drainage system shall be submitted to a visual and operational final test of sufficient detail to determine that the system is watertight.*

In past years, new construction codes have required pressure testing on plumbing final installations. The proposed code allows for a visual inspection as a final test for plumbing. **This change places our residents at risk – not only for their health, but also for potentially costly repairs – from plumbing fixtures that either leak or cannot stand up to pressure from water and/or sewer gas. These undetected water and sewer gas leaks can cause dangerous black mold and pose health risks to the people living in the home.**

Through standard pressure testing, our plumbing inspectors often find leaks in sewage and vent pipes. Small leaks from nail holes, which often go undetected without pressure testing, allow sewage and sewer gas to accumulate behind finished walls. **This inexpensive test prevents potential health risks from sewage and sewer gas leaks.**

While I understand that the new code is written for commercial applications, we are responsible for the health and safety of the inhabitants of commercial buildings as they work and conduct business in Hamilton County. **I ask that the requirement for a final air test remain in the Ohio Plumbing Code.** I would be happy to make available members of my staff to consult on code changes while providing a field perspective from the group ultimately responsible for implementing code changes and monitoring code compliance.

Thank you for your consideration.

Sincerely,

A handwritten signature in black ink that reads 'Timothy I. Ingram'.

Timothy Ingram
Health Commissioner



Clermont County Public Health

Prevent. Promote. Protect.

March 23, 2016

Board of Building Standards Code Committee Members
c/o Regina Hanshaw, Executive Secretary
Ohio Board of Building Standards
P.O. Box 4009
6606 Tussing Rd
Reynoldsburg, OH 43068

RE: BBS Code Committee review of Ohio Plumbing Code Section 312.4

Dear Board of Building Standards Code Committee Members,

I am writing to you concerning the proposed changes to the Ohio Plumbing Code Section 312.4.

~~**312.4 Drainage and vent final test.** The final test of the completed drainage and vent systems shall be made by air test after the fixtures are connected, with or without smoke or peppermint as follows:~~

- ~~1. Close all stack openings;~~
- ~~2. Apply air pressure to the entire drainage and vent system or to sections thereof equivalent to at least 1 in. water column (248.8 Pa);~~
- ~~3. Maintain this pressure starting fifteen (15) minutes before beginning inspection;~~
- ~~4. Indicate the system to be air tight at all points.~~

312.4 Drainage and vent final test. *After the plumbing fixtures have been set and their traps filled with water, the entire drainage system shall be submitted to a visual and operational final test of sufficient detail to determine that the system is watertight.*

Upon reviewing the code changes for 312.4, our concern with this modification is that without a final test upon the drainage, waste, and vent plumbing system the potential for a leak in the system would allow sewer gas, moisture, and/or sewage to collect inside the building causing potential illnesses and/or structural damage to the building.

Currently a final plumbing test for our jurisdiction and Ohio involves a final inspection including a visualization of the completed plumbing system and a monitored fifteen minute test of the drainage, waste, and vent system by elevating one inch of water column through the use of a monometer or bowl test. One inch of water column equates to 0.036 psig of pressure on the plumbing system. This pressure is so minute that it will not break a two inch water seal on a fixture trap, or breach a wax ring seal on a water closet. This test is to insure that the drainage, waste, and vent piping system is tight from leaks from incorrect installation or damage to the plumbing system during the course of construction.

As a Public Health agency our concern is the health of all people, not only our county but the State of Ohio and beyond. Our inspectors also concern themselves not only of the people's health but of the structural integrity of the building during the course and completion of construction.

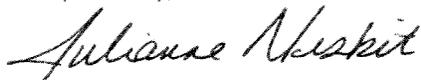
We would also point out that the International Code Council/International Plumbing Code commentary states the following:

312.4 Drainage and vent final test. The final test of the completed drainage and vent systems shall be visual and in sufficient detail to determine compliance with the provisions of this code. Where a smoke test is utilized, it shall be made by filling all traps with water and then introducing into the entire system a pungent, thick smoke produced by one or more smoke machines. When the smoke appears at *stack* openings on the roof, the *stack* openings shall be closed and a pressure equivalent to a 1-inch water column (248.8 Pa) shall be held for a test period of not less than 15 minutes.

In conclusion we believe that a final plumbing test in conjunction of the final plumbing inspection is essential in protecting the health and safety of our residents and those who work and have use of our buildings we allow occupancy of.

Thank you for consideration of our comments.

Respectfully,

A handwritten signature in cursive script that reads "Julianne Nesbit".

Julianne Nesbit
Health Commissioner



WARREN COUNTY COMBINED HEALTH DISTRICT

416 South East Street • Lebanon, Ohio 45036

Duane Stansbury, R.S., M.P.H.
HEALTH COMMISSIONER

Scott R. Swope, D.O.
MEDICAL DIRECTOR



Public Health
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March 25, 2016

Board of Building Standards Code Committee Members
c/o Regina Hanshaw, Executive Secretary
Ohio Board of Building Standards
P.O. Box 4009
6606 Tussing Rd
Reynoldsburg, OH 43068

RE: Review of Ohio Plumbing Code Section 312.4

Dear Board of Building Standards Code Committee Members:

The Warren County Health District has a primary responsibility to protect the health and wellbeing of the residents in the county. I am writing to you to voice my concern with the proposed new language for the Ohio Plumbing Code Section 312.4: Drainage and vent final test. After the plumbing fixtures have been set and their traps filled with water, the entire drainage system shall be submitted to a visual and operational final test of sufficient detail to determine that the system is watertight.

Through standard pressure testing, our plumbing inspectors often find leaks in sewage and vent pipes. Small leaks from nail holes or cracks in fittings and pipe that can occur when installing cabinets and fixtures, can go undetected without pressure testing, allow sewage and sewer gas to accumulate behind finished walls. This inexpensive test prevents potential health risks from sewage and sewer gas leaks.

We recently found these very issues in a new apartment building in our county. The plumbing passed both rough inspections, but when we came back to do the very final air pressure test you are proposing to eliminate the plumbing system failed. After investigating the problem, the plumber found numerous areas with cracked and broken fittings that had occurred after the second rough inspection. But since these pipes and fittings were behind drywall and cabinets, we would never have found the problems with a visual/ operational test. Who knows how long families could have lived in these apartments mold and moisture appeared through the walls, resulting in a much more expensive fix. But more importantly, it exposed these families to an unhealthy living environment leading to potential serious health issues.

I ask that the requirement for a final air test remain in the Ohio Plumbing Code. Please do not hesitate to call me if you need any additional information. I can be reached by phone at (513) 695-1566.

Sincerely,

Duane Stansbury, R.S., M.P.H.
Health Commissioner

513-695-1220 513-925-1220 513-261-1220 937-425-1220

Fax: 513-695-2941

www.co.warren.oh.us/health



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www.delawarehealth.org

Shelia L. Hiddleson, RN, MS
Health Commissioner

March 25, 2016

Board of Building Standards Code Committee Members
c/o Regina Hanshaw, Executive Secretary
Ohio Board of Building Standards
P.O. Box 4009
6606 Tussing Rd
Reynoldsburg, OH 43068

RE: BBS Code Committee review of Ohio Plumbing Code Section 312.4

Dear Board of Building Standards Code Committee Members,

As a local health department, Delaware General Health District is charged with protecting the health and safety of residents in the county we serve – in this case, over 180,000 people in 24 political jurisdictions. I am writing to share my concern with the proposed new language for the Ohio Plumbing Code Section 312.4: Drainage and vent final test. After the plumbing fixtures have been set and their traps filled with water, the entire drainage system shall be submitted to a visual and operational final test of sufficient detail to determine that the system is watertight.

In past years, new construction codes have required pressure testing on plumbing final installations. The proposed code allows for a visual inspection as a final test for plumbing. This change places our residents at risk – not only for their health, but also for potentially costly repairs – from plumbing fixtures that either leak or cannot stand up to pressure from water and/or sewer gas. These undetected water and sewer gas leaks can cause dangerous black mold and pose health risks to the people living in the home.

Through standard pressure testing, our plumbing inspectors often find leaks in sewage and vent pipes. Small leaks from nail holes, which often go undetected without pressure testing, allow sewage and sewer gas to accumulate behind finished walls. This inexpensive test prevents potential health risks from sewage and sewer gas leaks. While I understand that the new code is written for commercial applications, we are responsible for the health and safety of the inhabitants of commercial buildings as they work and conduct business in Delaware County. I ask that the requirement for a final air test remain in the Ohio Plumbing Code. I would be happy to make available members of my staff to consult on code changes while providing a field perspective from the group ultimately responsible for implementing code changes and monitoring code compliance. My staff have brainstormed some possible solutions that we also would be happy to share.

Sincerely,

Shelia L. Hiddleson, RN, MS
Health Commissioner

“Healthy People, Healthy Habits, Healthy Communities”
Environmental Health * Plumbing * Keep Delaware County Beautiful
Vital Statistics * Clinic Services * Health and Safety Education * WIC

R. Joseph Ebel, R.S., M.S., M.B.A.
Health Commissioner



(740)349-6535
(740)349-6474 WIC
(740)349-6475 Environmental
(740)349-6476 Nursing
(740)349-6510 FAX
www.lickingcohealth.org

Licking County Health Department

675 Price Road

Newark, OH 43055

March 29, 2016

Regina Hanshaw
Executive Secretary
Ohio Board of Building Standards
P.O. Box 4009
6606 Tussing Road
Reynoldsburg, Ohio 43068

Ms. Henshaw,

The purpose of my letter is to express my concern regarding the proposed changes to the Ohio Plumbing Code regarding the removal of the requirement for a pressure test during a final plumbing inspection.

Our department enforces the Ohio Plumbing Code in both Licking and Perry Counties, and this proposed change will place the residents we serve in danger of incurring costly repairs and potential health concerns related to the intrusion of water and sewer gas as a result of compromised plumbing system. Standard pressure testing of a plumbing system allows our staff to identify small leaks as a result of a nail or other small intrusion. Without these tests, the leaks will go undetected and cause significant concerns for homeowners and contractors when they are discovered after a construction project is complete.

While I understand there are safety concerns with conducting a pressure test on a plumbing system, a properly licensed plumber or a properly trained homeowner should be able to easily and safely conduct these tests for final inspections. This has been an accepted industry practice for many years, and removing this requirement will limit our ability to properly inspect plumbing systems in structures. It will also put homeowners, business owners and their investments at risk from water damage and the intrusion of sewer gas into their buildings, which will ultimately cause health concerns for the inhabitants of the buildings.

On behalf of our department, I am asking that the requirement for a final pressure test remain unchanged in the Ohio Plumbing Code.

If you would like to speak about this in more detail, please do not hesitate to contact me at 740-349-6535.

Sincerely,

Handwritten signature of R. Joseph Ebel, R.S., MS, MBA.

R. Joseph Ebel, RS, MS, MBA
Health Commissioner

Cc: The Honorable Jay Hottinger, State Senator
The Honorable Scott Ryan, State Representative
The Honorable Bill Hayes, State Representative



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Public Health - Dayton & Montgomery County

117 South Main Street • Reibold Building
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March 28, 2016

Board of Building Standards Code Committee Members
c/o Regina Hanshaw, Executive Secretary
Ohio Board of Building Standards
P.O. Box 4009
6606 Tussing Rd
Reynoldsburg, OH 43068

Re: BBS Code Committee review of Ohio Plumbing Code Section 312.4

Dear Board of Building Standards Code Committee Members,

As a local health department, Public Health – Dayton & Montgomery County is charged with protecting the health and safety of residents in the county we serve. I am writing to share my concern with the proposed new language for the Ohio Plumbing Code Section 312.4: **Drainage and vent final test**. After the plumbing fixtures have been set and their traps filled with water, the entire drainage system shall be submitted to a visual and operational final test of sufficient detail to determine that the system is watertight.

In past years, the Ohio plumbing codes have required pressure testing on plumbing final installations of at least 1” water column which calculates to only ounces to the plumbing system. The proposed code allows for a visual inspection as a final test for plumbing. **This change places our residents at risk – not only for their health, but also for potentially costly repairs – from plumbing fixtures that either leak or cannot stand up to pressure from water and/or sewer gas. These undetected water and sewer gas leaks can cause dangerous black mold and sewer gas odors within the premise.**

Through standard pressure testing, our plumbing inspectors often find leaks in sewage and vent pipes. For example, small leaks from nail holes, cracked pipes and wax seals that leak on water closets which often go undetected without pressure testing, allow sewage and sewer gas to accumulate behind finished walls. **This inexpensive test prevents potential health risks from sewage and sewer gas leaks.**

While I understand that the new code is written for commercial and residential applications, we are responsible for the health and safety of inhabitants of both commercial and residential as they work, live and conduct business in Montgomery County. **I ask that the requirement for a final air test remain in the Ohio Plumbing Code.** I would be happy to make available members of my staff to consult on code changes while providing a field perspective from the group ultimately responsible for implementing code changes and monitoring code compliance.

Thank you for your consideration.

Sincerely,

Jeffrey Cooper
Health Commissioner



ALLEN COUNTY
PUBLIC HEALTH

March 28, 2016

www.allencountypublichealth.org

Allen County Combined Health District

RECEIVED

MAR 31 2016

BOARD OF BUILDING STANDARDS

Board of Building Standards Code Committee Members
c/o Regina Hanshaw, Executive Secretary
Ohio Board of Building Standards
P.O. Box 4009
6606 Tussing Rd.
Reynoldsburg, OH 43068

RE: BBS Code committee review of Ohio Plumbing Code Section 312.4

Dear Board of Building Standards Code Committee Members,

As a local health department, Allen County Public Health is charged with protecting the health and safety of residents in the county we serve – in this case, over 100,000 people. We are writing to share a concern with the proposed new language for the Ohio Plumbing Code Section 312.4: **Drainage and vent final test**. After the plumbing fixtures have been set and their traps filled with water, the entire drainage system shall be submitted to a visual and operational final test of sufficient detail to determine that the system is watertight.

In past years, new construction codes have required pressure testing on plumbing final installations. The proposed code allows for a visual inspection as a final test for plumbing. **This change places our residents at risk – not only for their health, but also for potentially costly repairs – from plumbing fixtures that either leak or cannot stand up to pressure from water and/or sewer gas. These undetected water and sewer gas leaks can cause dangerous black mold and pose health risks to the people living in the home.**

Through standard pressure testing, our plumbing inspectors often find leaks in sewage and vent pipes. Small leaks from nail holes, which often go undetected without pressure testing, allow sewage and sewer gas to accumulate behind finished walls. **This inexpensive test prevents potential health risks from sewage and sewer gas leaks.**

While it is understood that the new code is written for commercial applications, we are responsible for the health and safety of the inhabitants of commercial buildings as they work and conduct business in Allen County. **We ask that the requirement for a final air test remain the Ohio Plumbing code.**

Thanks you for your consideration.

Sincerely,



Bill Kelly
Director
Environmental Health Division

Sincerely,



Don Hartman
Chief Plumbing Inspector
Allen County, Ohio



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Richland Public Health

555 Lexington Ave., Mansfield, OH 44907

419-774-4500 • www.richlandhealth.org

March 31, 2016

Board of Building Standards Code Committee Members
c/o Regina Hanshaw, Executive Secretary
Ohio Board of Building Standards
P.O. Box 4009
6606 Tussing Road
Reynoldsburg, Ohio 43068

RE: BBS Code Committee review of Ohio Plumbing Code 312.4

Dear Board of Building Standards Code Committee Members,

Please accept these comments on behalf of Richland Public Health Environmental Health Division as we share our concern with the proposed new language for the Ohio Plumbing Code Section 312.4

PROPOSED RULE

312.4 Drainage and Vent Final Test: *After the plumbing fixtures have been set and their traps filled with water, the entire drainage system shall be submitted to a visual and operational final test of sufficient detail to determine that system is watertight.*

RATIONALE

Once the plumber installs the underground piping, the rough-in above ground piping for the drain, waste and venting systems, and water distribution piping, the system is now exposed for all other trade persons. On occasion the piping is damaged by the other trades without knowledge provided to the plumbers. If a final air test is not required then the piping could leak waste water and sewage into the building thus causing numerous potential health hazards.

As a licensed plumber and a certified plumbing inspector with over 40 years of experience, I feel that I have an obligation to make sure that the integrity of the plumbing system is upheld to protect the public health.

Frank Brykalski
Chief Building Inspector

Joe Harrod
Director of Environmental Health

cc: Martin Tremmel
AOHC – Association of Ohio Health Commissioners

PORTAGE COUNTY COMBINED GENERAL HEALTH DISTRICT



705 Oakwood Street
Suite 208
Ravenna, Ohio 44266

Phone: 330-296-9919
Fax: 330-297-3597
E-mail: pchd@portageco.com

Joseph J. Diorio, MPH, MS, RS
Health Commissioner

Web: www.co.portage.oh.us/dept/healthdepartment

April 1, 2016

Board of Building Standards Code Committee Members
c/o Regina Hanshaw, Executive Secretary
Ohio Board of Building Standards
P. O. Box 4009
6609 Tussing Road
Reynoldsburg, Ohio 43068

RE: Interested Party Comments
Proposed Changes to Ohio Plumbing Code
Section 312 Test and Inspections

Dear Board of Building Standards Committee Members:

Listed below are interested party comments submitted on behalf of Portage County Combined General Health District concerning the Ohio Board of Building Standards proposed changes to Ohio Plumbing Code Section 312 *Vents and Inspections*. As a local health district, we are charged with protecting the health and safety of our residents which includes enforcement of the Ohio Plumbing Code. The opportunity to comment is appreciated.

Comments to Section 312.4 "Drainage and final vent test".

The proposed language states:

"After the plumbing fixtures have been set and their traps filled with water, the entire drainage system shall be submitted to a visual and operational final test of sufficient detail to determine that the system is watertight."

Please note, this provision removes the requirement for the final pressurized test required after construction is completed. The lack of this test prevents a comprehensive pressurization of the plumbing. The lack of final pressurization of the plumbing prevents the ability to ensure that no damage has occurred to the piping as the wall coverings were built and fixtures attached to the walls and floors.

If nails or screws are driven into pipes or joints are crushed and broken, there is no means to conduct "a visual and operational final test to determine the system is water tight". Small leaks from nail holes go undetected without pressure testing. These leaks could take significant amounts of time to detect and cause huge amounts of damage to the interior of the structure before detection. Leaks in either water or sewer pipes can: cause mold growth including harmful stachybotrys (black) on interior walls; disintegrate

Page Two
Ohio Plumbing Code Section 312
April 1, 2016

wood and drywall; and damage insulation. Leaking sewer pipes can allow sewer gas intrusion to the building.

We believe this language to be detrimental and places our residents at risk for both health, safety, and potential increased costs from undetected leaks. We hold forth that the portion of the language "of sufficient detail" necessitates the pressurized test.

Therefore, we recommend the requirements for pressurized testing and that the original language be reinstated with the following modification:

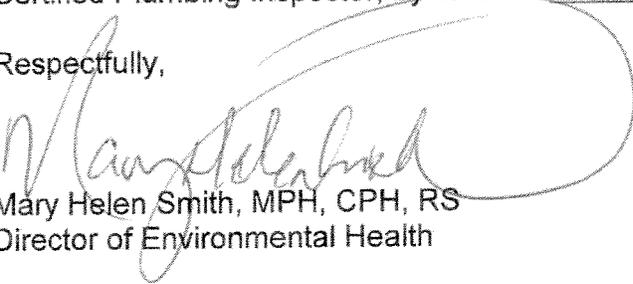
Section 312.4 (original) *The final test of the completed drainage and vent systems shall be made by air test after the fixtures are connected, ~~with or without smoke or peppermint~~, as follows:*

1. *Close all stack openings;*
2. *Apply air pressure to the entire drainage and vent system or to sections thereof equivalent to at least 1 in. water column (248.8 Pa);*
3. *Maintain this pressure starting fifteen (15) minutes before beginning inspection;*
4. *Indicate the system to be air tight at all points.*

This is an inexpensive test in comparison to the health risks, damage, and remediation necessary from undetected leak.

Should you have any questions, concerns or desire clarification of any comment listed above, please feel free to contact me at the letterhead address, by email at mhsmith@portageco.com or by phone at (330) 296-9919 ext. 106 or Dan Robinson, Certified Plumbing Inspector, by email at drobenson@portageco.com or extension 104.

Respectfully,



Mary Helen Smith, MPH, CPH, RS
Director of Environmental Health



Whitewater Township Trustees



April 21, 2016

Board of Building Standards Code Committee Members
c/o Regina Hanshaw, Executive Secretary
Ohio Board of Building Standards
P.O. Box 4009
6606 Tussing Rd
Reynoldsburg, OH 43068

RE: BBS Code Committee review of Ohio Plumbing Code Section 312.4

Dear Board of Building Standards Code Committee Members,

The Whitewater Township Board of Trustee's met at the Regularly Scheduled Township Meeting on Monday April 18, 2016 and spent considerable time reviewing the proposed change to the Ohio Plumbing Code Section 312.4: ***Drainage and vent final test***. After considerable discussion the Board of Trustee's passed the attached Resolution 2016-11, **A Resolution Supporting Hamilton County Public Health's Position in Opposition Of The Proposed Change In The Language For The Ohio Plumbing Code Section 312.4: Drainage And Vent Final Test.**

The Board unanimously passed the Resolution in support of the Hamilton County Public Health Position opposing the proposed change. We urge you to not make any changes to the referenced code.

Regards,

James Brett

Fiscal Officer, Whitewater Township

RECEIVED

APR 27 2016

BOARD OF BUILDING STANDARDS



Whitewater Township Trustees



BOARD OF TRUSTEES
WHITEWATER TOWNSHIP, HAMILTON COUNTY, OHIO

RESOLUTION #2016-11

A Resolution Supporting Hamilton County Public Health's Position in Opposition Of The Proposed Change In The Language For The Ohio Plumbing Code Section 312.4: Drainage And Vent Final Test.

The Board of Trustees of Whitewater Township, Hamilton County, Ohio met in regular session on the 18th day of April 2016, at the Community Center in Whitewater Township with the following members present:

Hubert Brown
Doug King
Lawanda Corman

Doug King moved for the adoption of the following resolution:

Whereas, Hamilton County Public Health is charged with protecting the health and safety of residents in the county we serve – in this case, nearly a half-million people in 46 political jurisdictions.

Whereas, the proposed new language for the Ohio Plumbing Code Section 312.4: Drainage and vent final test. "After the plumbing fixtures have been set and their traps filled with water, the entire drainage system shall be submitted to a visual and operational final test of sufficient detail to determine that the system is watertight.ursuant to Ohio Revised Code section 505.87",

Whereas, In past years, new construction codes have required pressure testing on plumbing final installations. The proposed code allows for a visual inspection as a final test for plumbing. This change places our residents at risk – not only for their health, but also for potentially costly repairs – from plumbing fixtures that either leak or cannot stand up to pressure from water and/or sewer gas. The Board of Whitewater Township recognizes that these undetected water and sewer gas leaks can cause dangerous black mold and pose health risks to the people living in the home.



Whitewater Township Trustees



Now, Therefore, Be It Resolved by the Board of Trustees of Whitewater Township, Hamilton County, Ohio, that:

The Whitewater Township Board of Trustees, hereby request that the proposed language change not be placed in effect for the protection of the residents of Whitewater Township, Hamilton County, and the State of Ohio

Lawanda Corman seconded the motion, and the roll was called on the question of its adoption. The vote was as follows:

Adopted: April 18, 2016

Hubert Brown
Trustee: Hubert Brown, President

Lawanda Corman
Trustee: Lawanda Corman, Vice President

Attest:
James L. Brett
Fiscal Officer: James L. Brett

Doug King
Trustee: Doug King

+GF+



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May 17, 2016

Regina Hanshaw,
Executive Secretary,
Ohio Board of Building Standards
6606 Tussing Road,
Reynoldsburg, OH 43068

RE: Section 312.3, Ohio Plumbing Code – Air testing of rigid PVC and CPVC thermoplastic piping products used in Pressure and DWV plumbing applications.

The undersigned of this letter represent manufacturers of PVC and CPVC vinyl piping products, used in DWV and pressure water distribution plumbing systems used in the state of Ohio.

We are writing to advise you of a life safety matter related to **Section 312.3, Ohio Plumbing Code**. The wording adopted indirectly allows contractors to test PVC and CPVC piping systems with compressed air (pneumatic testing).

312.1.2 Test media. All plumbing system piping shall be tested with water.

Exception: Plumbing system piping is permitted to be tested with air or another compressed gas only when specifically allowed by the manufacturer of the proposed piping and when tested in accordance with the pressure limitations and conditions prescribed by that manufacturer.

Section 312.3, Ohio Plumbing Code - Current

The industry has concerns that this code revision fails to acknowledge the dangers associated with compressed air testing of plastic piping products that are not designed or intended for use with compressed gas or air. Based on our experience with the products in question, we know that testing these products with compressed air may endanger the life of the installer, inspector, and anyone in the vicinity of the system being tested.

The Plastic Pipe and Fittings Association (PPFA) is a North American trade association comprised of member companies that manufacture plastic piping, fittings and solvent cements for plumbing and related applications, or supply raw materials, ingredients or machinery for the manufacturing process. The PPFA website, states the following:

“PVC piping systems should not be used to store and/or convey compressed air or other gases. PVC piping systems should not be tested with compressed air or other gases either.”

<http://www.ppfahome.org/pvc/index.aspx>

Charlotte Pipe and Foundry Co., 2109 Randolph Road, Charlotte, NC 28207, Tel: 1-704-348-6500
Georg Fischer Harvel, LLC., Sloane Drive, Little, Rock, AR Tel: 1-501-490-7247
Weld-On Technical Services, Hillsborough, NC, Tel: 1-800-935-5915
NIBCO INC., 1516 Middlebury Street Elkhart, IN 46516-4740, Tel: 1-574-295-3484
IPEX, USA LLC. 1425 North Service Road e, Oakville, ON L6H1A7 Tel: 1-289-881-0120
Mueller Industries, Inc., 8285 Tournament Dr., Suite 150, Memphis, TN 38125, Ph: 901-753-3200
LASCO Fittings, Inc., 414 Morgan Street, Brownsville, TN 38012, Ph: 731-772-3180
Oatey SCS Co. 4700 W.160th Street, Cleveland, Ohio 44135, Ph: 216-267-7100

+GF+



LASCO Fittings, Inc.

CHARLOTTE PIPE AND FOUNDRY COMPANY

IPEX

NIBCO AHEAD OF THE FLOW

Cont'd... Page 2

We believe this issue is serious and should be addressed immediately. We hereby request you amend the Ohio Plumbing Code to state the following:

312.1.2 Test media. All plumbing system piping shall be tested with water.

Prior to this test, a preliminary vacuum test can be conducted. A vacuum joint integrity test is normally done by drawing a vacuum on the system and trapping the vacuum within the system. A leak is indicated if the trapped vacuum rises toward atmospheric pressure. Smoke generators have been used to determine the piping location where smoke is drawn into the piping.

WARNING

- NEVER CONVEY COMPRESSED AIR OR GASES IN PVC AND CPVC VINYL PIPING PRODUCTS USED IN DWV AND WATER SERVICE ANDS DISTRIBUTION PLUMBING.
- NEVER TEST PVC AND CPVC VINYL PIPING PRODUCTS USED IN DWV AND WATER SERVICE ANDS DISTRIBUTION PLUMBING WITH COMPRESSED AIR, GAS, OR AIR OVER WATER BOOSTERS.
- FAILURE TO FOLLOW THIS WARNING COULD RESULT IN EXPLOSIVE FAILURES AND LEAD TO LIFE-THREATENING INJURIES AND SEVERE PROPERTY DAMAGE.

Section 312.3, Ohio Plumbing Code - Proposed

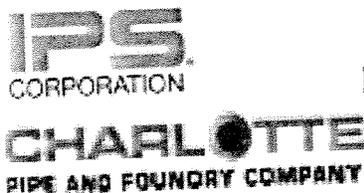
A preliminary vacuum leak test is a safe and an effective way to determine whether or not there is a leak anywhere in the system.

If you have any questions please contact Patrick Fedor at 800-463-9572. I will coordinate a joint response.

Gary Sample,
 Director of Product Management,
George Fischer Harvel LLC.
 William (Bill) Morris,
 Vice President,
Charlotte Pipe and Foundry Co.
 Terry R. McPherson,
 Vice President,
Weld-On Technical Services
 Patrick Fedor,
 Applications Engineering Manager,
IPEX USA LLC.

David Goodling,
 Vice President,
NIBCO INC.
 Jack Treas,
 Vice President and GM,
Mueller Streamline Co.
 John F. Higdon, PE
 Vice President,
LASCO Fittings, Inc
 Scott Jackson,
 Vice President,
Oatey SCS Co.

Charlotte Pipe and Foundry Co., 2109 Randolph Road, Charlotte, NC 28207, Tel: 1-704-348-6500
 Georg Fischer Harvel, LLC., Sloane Drive, Little, Rock, AR Tel: 1-501-490-7247
 Weld-On Technical Services, Hillsborough, NC, Tel: 1-800-935-5915
 NIBCO INC., 1516 Middlebury Street Elkhart, IN 46516-4740, Tel: 1-574-295-3484
 IPEX, USA LLC. 1425 North Service Road e, Oakville, ON L6H1A7 Tel: 1-289-881-0120
 Mueller Industries, Inc., 8285 Tournament Dr., Suite 150, Memphis, TN 38125, Ph: 901-753-3200
 LASCO Fittings, Inc., 414 Morgan Street, Brownsville, TN 38012, Ph: 731-772-3180
 Oatey SCS Co. 4700 W.160th Street, Cleveland, Ohio 44135, Ph: 216-267-7100



March 2, 2016

Regina Hanshaw,
Executive Secretary,
Ohio Board of Building Standards
6606 Tussing Road,
Reynoldsburg, OH 43068

RE: Section 312.3, Ohio Plumbing Code – Air testing of rigid PVC and CPVC thermoplastic piping products used in Pressure and DWV plumbing applications.

The undersigned of this letter represent manufacturers of PVC and CPVC vinyl piping products, used in DWV and pressure water distribution plumbing systems used in the state of Ohio.

We are writing to advise you of a life safety matter related to **Section 312.3, Ohio Plumbing Code**. The wording adopted indirectly allows contractors to test PVC and CPVC piping systems with compressed air (pneumatic testing).

*312.1.2 Test media. All plumbing system piping shall be tested with water.
Exception: Plumbing system piping is permitted to be tested with air or another compressed gas only when specifically allowed by the manufacturer of the proposed piping and when tested in accordance with the pressure limitations and conditions prescribed by that manufacturer.*

Section 312.3, Ohio Plumbing Code - Current

The industry has concerns that this code revision fails to acknowledge the dangers associated with compressed air testing of plastic piping products that are not designed or intended for use with compressed gas or air. Based on our experience with the products in question, we know that testing these products with compressed air may endanger the life of the installer, inspector, and anyone in the vicinity of the system being tested.

The Plastic Pipe and Fittings Association (PPFA) is a North American trade association comprised of member companies that manufacture plastic piping, fittings and solvent cements for plumbing and related applications, or supply raw materials, ingredients or machinery for the manufacturing process. The PPFA website, states the following:

“PVC piping systems should not be used to store and/or convey compressed air or other gases. PVC piping systems should not be tested with compressed air or other gases either.”
<http://www.ppfahome.org/pvc/index.aspx>

Cont'd...

- Charlotte Pipe and Foundry Co., 2109 Randolph Road, Charlotte, NC 28207, Tel: 1-704-348-6500
- Georg Fischer Harvel, LLC., Sloane Drive, Little, Rock, AR Tel: 1-501-490-7247
- Weld-On Technical Services, Hillsborough, NC, Tel: 1-800-935-5915
- NIBCO INC., 1516 Middlebury Street Elkhart, IN 46516-4740, Tel: 1-574-295-3484
- IPEX, USA LLC. 1425 North Service Road e, Oakville, ON L6H1A7 Tel: 1-289-881-0120
- Mueller Industries, Inc., 8285 Tournament Dr., Suite 150, Memphis, TN 38125, Ph: 901-753-3200



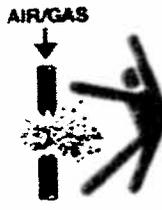
February 22, 2016
 Regina Hanshaw,
 Page 2

We believe this issue is serious and should be addressed immediately. We hereby request you amend the Ohio Plumbing Code to state the following:

312.1.2 Test media. All plumbing system piping shall be tested with water. Prior to this test, a preliminary vacuum test can be conducted. A vacuum joint integrity test is normally done by drawing a vacuum on the system and trapping the vacuum within the system. A leak is indicated if the trapped vacuum rises toward atmospheric pressure. Smoke generators have been used to determine the piping location where smoke is drawn into the piping.

! WARNING

- NEVER CONVEY COMPRESSED AIR OR GASES IN PVC AND CPVC VINYL PIPING PRODUCTS USED IN DWV AND WATER SERVICE ANDS DISTRIBUTION PLUMBING.
- NEVER TEST PVC AND CPVC VINYL PIPING PRODUCTS USED IN DWV AND WATER SERVICE ANDS DISTRIBUTION PLUMBING WITH COMPRESSED AIR, GAS, OR AIR OVER WATER BOOSTERS.
- FAILURE TO FOLLOW THIS WARNING COULD RESULT IN EXPLOSIVE FAILURES AND LEAD TO LIFE-THREATENING INJURIES AND SEVERE PROPERTY DAMAGE.



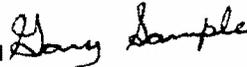
Section 312.3, Ohio Plumbing Code - Proposed

A preliminary vacuum leak test is a safe and an effective way to determine whether or not there is a leak anywhere in the system.

If you have any questions please contact Patrick Fedor at 1-800-463-9572. I will coordinate a joint response.

Sincerely,

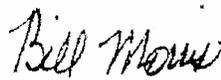
Gary Sample,
 Director of Product Management
 George Fischer Harvel LLC



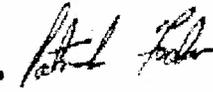
Jack Treas,
 Vice President and GM,
 Mueller Streamline Co.



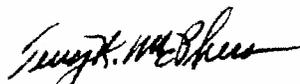
William (Bill) Morris,
 Vice President,
 Charlotte Pipe and Foundry Co.



Patrick Fedor,
 Engineering Manager,
 IPEX USA LLC.



Terry R. McPherson,
 Vice President,
 Weld-On Technical Services



David Goodling,
 Vice President,
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 Mueller Industries, Inc., 8285 Tournament Dr., Suite 150, Memphis, TN 38125, Ph: 901-753-3200

Hanshaw, Regina

From: twanner@mapic.org
Sent: Thursday, March 31, 2016 1:26 PM
To: Hanshaw, Regina; Rocco Fana, Jr (rocco@phccohio.org); Soma, Jack; 'mrudey@co.wood.oh.us'; steve.regoli@com.state.oh.us; Ohler, Debbie
Cc: Richardson, James A.; smann@mapic.org; krolland@mapic.org; jimroddyjr@nopinc.com; Scott Wallenstein; Bill Armstrong; Jason Shank; John Marotta; jdenk@denkassoc.com; Terry McCafferty
Subject: Plumbing Code Testing Section

Hi Regina,

CPI has carefully reviewed the rewrite of the Plumbing Code Testing Section 312. We found that the document is consistent with the testimony we gave at the BBS Code Committee meeting on Thursday, March 3, 2016. I spoke to Rocco Fana from PHCC and Bill Armstrong from Plumbers Local 55 and they also agree that the changes you sent us in a March 10 email are acceptable. There is one minor addition that was called to our attention, and therefore we suggest you add "(2)" after the word "dual" in the last line of Section 312.2.2.

Otherwise, CPI, PHCC and Plumbers Local 55 are in agreement with the revised Section 312 document you sent to us on March 10, 2016.

Thanks.

Tom

Thomas Wanner
Mechanical and Plumbing Industry Council
950 Keynote Circle #40
Cleveland, Ohio 44131
twanner@mapic.org
216-459-0770 Office
216-459-1342 Fax
216-870-8885 Cell

From: Regina.Hanshaw@com.state.oh.us [mailto:Regina.Hanshaw@com.state.oh.us]
Sent: Thursday, March 10, 2016 11:41 AM
To: Rocco Fana, Jr (rocco@phccohio.org); twanner@mapic.org; Jack.Soma@com.state.oh.us; 'mrudey@co.wood.oh.us'
Cc: Richardson, James A.
Subject: FW: Plumbing Code Testing Section

Attached please find the latest draft of revised OPC Section 312 modified based on discussions at last week's Code Committee meeting. If your organizations have any further comments on this draft, please forward them to me by April 1, 2016, so the Committee has time to review them before its next meeting scheduled for April 7 @ 1:00 PM.

Thanks,

Regina



TRUSTEES:

REID GEILER, Chairman.
(Cincinnati)

JIM PRIMOZIC, Vice Chairman
(Cleveland)

MIKE BUDD
(Dayton)

TIM FARBER
(Columbus)

JOE FRIEDMAN
(Canton)

SAM HALKER
(Lima)

HOWARD KRISHER
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KEITH WILLKOMM
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CONSULTANTS:

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JOSH SANDERS
STAN DOBROWSKI
Cafee, Halter, Griswold LLP

May 18, 2016

Ohio Board of Building Standards
6606 Tussing Road
Reynoldsburg, OH 43068

OBBS Code Committee:

The Mechanical Contractors Association of Ohio is concerned with the direction of recent discussions regarding the banning of air tests on non-pressurized pipe in Ohio. We are supportive of the efforts being made by the Cleveland Plumbing Industry to reach a practical compromise on behalf the industry.

MCA of Ohio supports the following:

- Recognition that air is an acceptable testing mechanism where the use of water is impractical or unfeasible
- Allowance of air pre-tests up to 7.5 psi with the use of dual pressure relief valves
- Elimination of the mandate for a final test
- Use of the recently updated International Plumbing Code language regarding visual tests

Ohio should take a common-sense approach to testing that utilizes current technology and gives the industry and the inspectors charged with code enforcement the flexibility to employ the appropriate use of air, water, and visual testing based on the specific nature of the project.

Sincerely,
Valerie P. Dahlberg
Executive Director

Hanshaw, Regina

From: Russell Hammel <Russ@scplumb.com>
Sent: Friday, April 01, 2016 10:25 AM
To: Hanshaw, Regina
Cc: drobinson@portageco.com
Subject: 312 Code Change Comments

Hello Regina Hanshaw,

I was told by Portage Co. inspector this is where I could put in my two cents on current code changes coming about. Below is my comments on section 312 of proposed code changes.

Possible changes to code section on testing. The gauges that are specified are very expensive gauges in the \$300.00 range per gauge. These gauges to get abused and need replaced often. I do not believe this grade of gauge is commonly used for this purpose or required to achieve required results. I do believe that there does need to be a standard for the gauges or on an extreme end, one will have someone using a 1000 psi gauge to test 5# and that just does not work.

Proposed change

Gauge Section 312.1.3 Requirements for test pressure test gauges.

1. Minimum dial size of 2.5"
2. Gauge Total Range is not to exceed 3 times the pressure being tested.
3. Test gauge must be sized so the test pressure is in the middle 1/2 of the gauge dial.
4. Gauge must be proven to be in working order at inspector's request. (needle moves freely)
5. Alternative gauges such as digital gauges, computer logs, or Kuhlman Testers may be used will plumbing inspector's prior approval.

I believe this would cover all testing.

For example 5# air test would require a gauge with 2.5" face and maximum range of 15# psi. Requiring it to be in the middle 1/2 keeps the test pressure in the most accurate area of the gauge and also with reasonable care should prevent pegging of gauge, causing damage to it.

Examples:

- 10 PSI gauge, test range is 3.3 PSI to 7.5 PSI. (Low end changed from 2.5 to 3.3 due to #2 above.)
- 15PSI gauge, test range is 5 PSI to 11.25PSI. (Low end changed from 3.75 to 5 due to #2 above.)
- 100 PSI gauge, test range is 33 PSI to 75 PSI. (Low end changed from 25 to 33 due to #2 above.)
- 150 PSI gauge, test range is 50 PSI to 112 PSI. (Low end changed from 37.5 to 50 due to #2 above.)
- 160 PSI gauge, test range is 53 PSI to 120 PSI. (Low end changed from 40 to 53.3 due to #2 above.)

Section 312.2.2 "Testing shall be done with a dual pressure relief valve rated at 7.5 psig."

I was looking rather quickly for such of a valve the dual is just requiring two of them and I believe one should be sufficient along with a proper gauge, we are not having someone off the street do this this is to be done by a plumbing professional.

Secondly finding an air relief with 7.5 PSI set is an issue, they make adjustable units, but it think that requiring one with a factory non-adjustable relief is important. I believe one will be purchasing a steam relief for this purpose, which could be good as I believe it has a larger relief capacity than a typical air relief, which could be more important than the dual issue. I do not know a lot about the low pressure steam reliefs but they are available in 6 and 8 PIS ratings in McMaster Carr. I would suggest that details on the relief be nailed down better, as someone could have a rather large compressor blowing into the system and the relief may not handle the capacity. CFM ratings or diameter side of relief, or BTU steam rating needs considered the fill port could be limited to ¼" which could help the sizing on the relief valve.

Thank you for your consideration,

Russ Hammel

Russell Hammel
Silver Creek Plumbing Company
330-527-4819
Russ@scplumb.com



Department of Commerce

Division of Industrial Compliance

John R. Kasich, Governor

Jacqueline T. Williams, Director

May 11, 2016

Board of Building Standards
Code Committee

Members of the Board

My name is Jack Soma, Plumbing Section Chief, Division of Industrial Compliance, Building Code Compliance for the State of Ohio.

First of all, I would like to apologize for not being there to offer this statement personally

I'm on Vacation!

The issue that I would like to bring before the Board is ongoing saga of testing of Plumbing Systems, Ohio Plumbing Code 312.2-3-4

I would like the Board to consider to cancelling the proposed code (312.2-3-4) changes and leave it as adopted in November 1, 2011

The verbiage for Water or Air and Final Air testing is already in place and needed not to be changed.

The exclusion of Air Testing is already prohibited by certain Pipe Manufacturers, which is not case for all. For some Manufacturers do permit Air Testing

Ohio Plumbing Code: 301.7 **Conflicts.**

In instances where conflicts occur between this code and the manufacturer's installation instructions, the more restrictive provisions shall apply.

If a Design Professional or Installing Contractor wishes to test with Air, then their option is to specify or install a piping system that allows Air to be used. It is their choice.

The State of Michigan and Kentucky permit the use of Air and a majority of their Plumbing Systems are tested with Air.

Their Inspectors observe the Pipe Manufacturers requirements for testing with Air and follow testing procedures per the Manufacturers Installation Requirements

If a Pipe Manufacturer wishes to sell their piping systems for use in Ohio.

Then they should design their products with the capacity and safeguards to comply with the requirements of their customers.

In the Automotive Industry cars are built to the Standards required, NOT lower the Standard to meet the car.

I feel it would be in best interest of all (Health Commissioners, Trade Organizations, Contractor Organizations and Inspectors) to leave section 312 alone.

Best Regards
Jack Soma
Plumbing Section Chie

FOSDICK & HILMER, INC.
CONSULTING ENGINEERS
525 VINE STREET, SUITE 1100
CINCINNATI, OHIO 45202
513-241-5640
FAX 513-241-3659

PRINCIPALS:
J.W. PRETZ, P.E.
J.R. GRUBBS, P.E.
R.W. SAUNDERS LEED AP

May 6, 2016

Code Committee
Ohio Board of Building Standards
6606 Tussing Rd.
P.O. Box 4009
Reynoldsburg, OH 43068-9009

Re: OPC (Ohio Plumbing Code) 312

Dear Committee:

I am writing in support of the OAPI (Ohio Association of Plumbing Inspectors) application for rule change to the OPC (Ohio Plumbing Code) Section 312.

In support of their application, I offer the review and comments herein. In the interest of brevity, I shall confine my comments specifically to the Sections below. My comments are in underline italics for the ease of understanding.

312.1.2 Drainage Rough-In and Final Tests – All materials for drainage and vent piping must comply with the applicable listed standards. It must also be permissible for the materials to be tested with any of the referenced testing methods in section 312.2, 312.3 and 312.4 or the materials are not sufficient for use in the State of Ohio.

(This may be pushing the limits somewhat, as other sections of the code, addressing materials, will likely be in conflict. While I agree with the thought, I suspect that the issue of manufacturers' installation instructions needs to be addressed as a separate issue.)

*OPC Sections 303.2 and 705 as well as Tables 702.1, 712.2 and 702.4 addresses the standards and procedures for drainage and vent piping materials, installation and test procedures. However, per OPC 303.2, manufacturer's testing procedures are permitted **provided** they meet or exceed OPC requirements. It is essential that this not be circumvented within the context of the code. Should a manufacturer be unwilling to allow its product(s) to be tested to a code-mandated standard, do their products need to be approved for installation in this or any state? I think not.*

312.1.5 Reinspection and testing. *Where any work or installation does not pass any initial test or inspection, the necessary corrections shall be made to comply with this code and the installation shall be reinspected to verify compliance.*

(This is an administrative matter with the Department responsible for enforcement. I do not believe this is something appropriate to be within code. It is also, generally understood, a permit has a limited number of inspections. Any additional inspections have an associated cost.)

I am uncertain as to why this is being included within the OPC. It has always been practice and my understanding that the contractor cannot proceed without having obtained the AHJ's "Approved" inspection report for that portion of the work.

312.2 Drainage, waste and vent rough-in test. Drainage, waste and vent piping and fittings shall be tested prior to the installation of the plumbing fixtures and prior to the installation of wall and ceiling coverings to verify the integrity of the system in accordance with one of the following methods prescribed in Section 312.2.1 or 312.2.2,:

(This is a "Means & Methods" issue, not relevant to Code. While I understand the reason, it is the contractors' responsibility to be prepared by pretesting before wasting an inspectional trip. If a contractor wastes an inspectional trip, then they must be responsible for the associated costs.)

I believe this is already covered administrative Sections, Definitions and Section 312.2.

312.2.1 Drainage, waste and vent rough-in water test. A water test shall be applied to the drainage system either in its entirety or in sections. If applied to the entire system, all openings in the piping shall be tightly closed, except the highest opening, and the system shall be filled with water to the point of overflow. If the system is tested in sections, each opening shall be tightly plugged except the highest openings of the section under test, and each section shall be filled with water, but no section shall be tested with less than a 10-foot (3048 mm) head of water. In testing successive sections, at least the upper 10 feet (3048 mm) of the next preceding section shall be tested so that no joint or pipe in the building, except the uppermost 10 feet (3048 mm) of the system, shall have been submitted to a test of less than a 10-foot (3048 mm) head of water. This pressure shall be held for at least 15 minutes. The system shall then be tight at all points.

312.2.2 Drainage, waste and vent rough-in air test. An air test shall be made by forcing air into the system until there is a uniform gauge pressure of 5 psi (34.5 kPa) or sufficient to balance a 10-inch (254 mm) column of mercury. This pressure shall be held for a test period of at least 15 minutes. Any adjustments to the test pressure required because of changes in ambient temperature or the seating of gaskets shall be made prior to the beginning of the test period. *Testing shall be done with a dual pressure relief valve rated for 7.5 psig.*

(This is where everyone must be cautious. As code officials', we should not allow testing that does not have sufficient, documented support. It is well known that some materials are brittle, such as cast iron and polymers such as PVC. It is understood that such materials, should a failure occur under air pressure, may result in serious injury from propelled shrapnel. As code officials and design professionals, we cannot be part of any procedure that might put

public health, safety or welfare at risk. As for a rough-in, it is in the contractors' economic best interests to assure their installed system is tight. However, from an inspectional/code perspective, a rough-in inspection should be directed to see that the work is installed in accordance with the "Approved" set of documents in a code compliant manner. Should the contractor not test their system, they do so at their own financial risk. As the AHJ (Authority Having Jurisdiction), we do not need to see or witness such a test. A final, operational test will determine if the system meets the standard of protecting public health, safety and welfare. Plumbing systems, by code and practice, operate under a maximum of a 4" trap seal (deep seal traps). Hence, the final low pressure air test will demonstrate that the system is tight under the normally anticipated operational air pressure of a 1" water column (2" trap seal) [0.036 psig].

312.3 Not used.

312.4 Drainage, waste and vent final test. The final test of the completed drainage, waste and vent systems shall be made after the all fixtures are connected. The entire system shall be subjected to a low pressure air test of the systems operational design of a 1" of water column for a 15-minutes period. ~~as follows:-~~

- ~~1. Close all stack openings;~~
- ~~2. A manometer tube shall be placed through a trap seal to the system side and water shall be added to a fixture until an equivalent to at least 1 in. water column (248.8 Pa) is read on the manometer gauge or water can be added to a water closet bowl trap tailpiece extension until the water level is at least one inch higher than the original trap seal;~~
- ~~3. Maintain this pressure starting fifteen (15) minutes before beginning inspection;~~
- ~~4. Indicate the system to be air tight at all points.~~
- ~~5. The system shall then be separated at a trap seal, AAV, or other means as directed by the plumbing inspector for verification the entire system is interconnected and has been subjected to the test.~~

As the code should not be used as an instructional manual, this description is more "Means & Methods." It is and has been a standard industry practice, understood by trained and qualified skilled craft persons.

312.5 Water supply system test. Upon completion of a section of or the entire water supply system, the system, or portion completed, shall be tested to verify the integrity of the system in accordance with one of the following methods prescribed in Sections 312.5.1 or 312.5.2:

312.5.1 Water supply working pressure test. A hydrostatic water pressure test ~~at~~ of at least 1.25 times the design working pressure under which the system is to be used, but no less than 50 PSI, shall be performed to prove the system watertight. This pressure shall be held for at least 15 minutes. The water utilized for tests shall be obtained from a potable source of supply.

312.5.2 Water supply air test. An air test of not less than 50 psi (344 kPa) shall be performed to prove the system air-tight. This pressure shall be held for at least 15 minutes.

This is a potential problem as air acts as a propellant (it is a compressible fluid/gas), should there be a material failure. Air testing is very much material dependent, so the type of test must be driven by accepted practices and manufacturers' installation instructions'. Unless the system and its materials are normally used within a compressed fluid/gas system, the use of an air test must be considered as a potential risk to public health, safety and welfare.

312.6 Gravity sewer test. Deleted.

312.7 Forced sewer test. Deleted.

312.8 Storm drainage system test. Storm drain systems within a building shall be tested in accordance with Section 312.2.

312.9 Shower liner test. Where shower floors and receptors are made water-tight by the application of materials required by Section 417.5.2, the completed liner installation shall be tested. The pipe from the shower drain shall be plugged water tight for the test. The floor and receptor area shall be filled with potable water to a depth of not less than 2 inches (51 mm) measured at the threshold. Where a threshold of at least 2 inches (51 mm) high does not exist, a temporary threshold shall be constructed to retain the test water in the lined floor or receptor area to a level not less than 2 inches (51 mm) deep measured at the threshold. The water shall be retained for a test period of not less than 15 minutes, and there shall not be evidence of leakage.

Exception: *The shower liner test is not required for one-, two-, or three-family dwellings unless required by the shower liner manufacturer's installation instructions.*

(Does this imply that the health, safety and welfare of those within such properties is less of a concern than other structures. It is the responsibility of the AHJ and BBS to protect ALL of the State's residents, not just those outside of such dwelling units. Should an installation be defective, who is responsible? The State is not providing the protection its citizens deserve or expect. Should a failure occur the Owner will have limited recourse, as the defect will not manifest itself until after the contractors' warranty period, in most cases. In my view, this is not in the best interest of the State's citizens'; it is simply a cost saving to the contractors' that the buyer will never see.

312.10 Inspection and testing of isolation backflow prevention devices required by this code.

Inspection and testing of isolation backflow prevention devices shall comply with Sections 312.10.1 and 312.10.2. *Inspection and testing requirements for containment backflow prevention devices required by the water supplier shall be in accordance with rule 3745-95-06 of the Administrative Code and enforced by the water supplier.*

312.10.1 Inspections. *The owner shall maintain all backflow prevention assemblies and air gaps in good working condition. Annual inspections shall be made of all backflow prevention assemblies and air gaps to determine whether they are operable.*

312.10.2 Testing. *Reduced pressure principle, double check, pressure vacuum breaker, reduced pressure detector fire protection, double check detector fire protection, and spill-resistant vacuum breaker backflow prevention assemblies and hose connection backflow preventers shall be tested at the time of installation, immediately after repairs or relocation and at least annually.*

The testing procedure shall be performed in accordance with one of the following standards: ASSE 5013 for reduced pressure principle and reduced pressure principle fire protection backflow prevention assemblies, ASSE 5015 for double check and double check fire protection backflow prevention assemblies, ASSE 5020 for pressure vacuum breaker assemblies, ASSE 5047 for reduced pressure detector fire protection backflow prevention assemblies, ASSE 5048 for double check detector fire protection backflow prevention assemblies, ASSE 5052 for hose connection backflow preventers, ASSE 5056 for spill resistant vacuum breaker assemblies, CSA B64.10 or CSA B64.10.1.

312.11 Operational testing of low pressure cut-off device, low suction throttling valves, and variable speed suction limiting controls. *Although enforcement of this section is outside the scope of the plumbing code, it is important for owners to note that rule [3745-95-07](#) of the Administrative Code requires that the owner certify to the supplier of water that their low pressure cut-off devices, low suction throttling valves, and variable speed suction limiting controls are maintained in proper working order. Enforcement of this requirement and the referenced rule is the responsibility of the water supplier. See Section 606.5.5 of this code for additional information.*

312.12 Inspections. *No part of any plumbing or drainage system shall be covered until it has been inspected, tested, and approved, except as provided in this section.*

This is administrative and not appropriate in this Section of the code, it belongs in the Chapter 1 of the OBC (Ohio Building Code). The OPC is not independent of the other Sections of the Ohio Code, regardless of how contractor's may view their corner of the world.

Failure of the inspector to inspect the work within four days, exclusive of Saturdays, Sundays, and legal holidays, after the work is ready for inspection, allows the work to proceed.

This is important to good practices within the profession, but again it is administrative and belongs in Chapter 1 of the OBC.

The Board of Building Standard, as the State's developer of codes, is responsible to protect the public health, safety and welfare above all other considerations. The citizens of Ohio expect and frankly desire, that team of; design professionals, contractors and inspectional

Code Committee, Ohio Board of Building Standards
May 6, 2016
Page 6 of 6

authorities hold those interests above any cost or profit motive that some may have. That is not to say that costs should not be considered, but they must remain second to protecting the public's good.

Very truly yours,
Fosdick & Hilmer, Inc.

David D. Dexter, PE

David D. Dexter, F.NSPE, F.ASPE, CPD, CPI, CPE
Registered Professional Engineer
Mechanical, Plumbing, Fire Protection & Forensics



Affiliate Societies Council
American Society of Plumbing Engineers
Southwestern Ohio Chapter
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Chapters are not authorized to speak for the Society

June 15, 2016

Code Committee
Ohio Board of Building Standards
6606 Tussing Road
PO Box 4009
Reynoldsburg, OH 43068-9009

Re: OPC (Ohio Plumbing Code) 312.4

Dear Sirs:

It has come to the attention of the Southwestern Ohio Chapter of the American Society of Plumbing Engineers (SWO ASPE) that the Ohio Association of Plumbing Inspectors (OAPI) has filed an application for a rule change to the OPC (Ohio Plumbing Code) Section 312.4.

In support for this application, I wish to offer review and comments herein. In the interest of brevity, I shall confine my comments specifically to the Sections below. For ease of understanding, my comments appear in *italics*.

312.1.2 Drainage Rough-In and Final Tests – All materials for drainage and vent piping must comply with the applicable listed standards. It must also be permissible for the materials to be tested with any of the referenced testing methods in section 312.2, 312.3 and 312.4 or the materials are not sufficient for use in the State of Ohio.

*OPC Sections 303.2 and 705 as well as Tables 702.1, 712.2 and 702.4 addresses the standards and procedures for drainage and vent piping materials, installation and test procedures. However, per OPC 303.2, manufacturer's testing procedures are permitted **provided** they meet or exceed OPC requirements. It is highly essential that this not be circumvented within the context of the code. Should a manufacturer be unwilling to allow its product(s) to be tested to a code-mandated standard, do their products need to be approved for installation in this state? I think not.*

312.1.5 Reinspection and testing. Where any work or installation does not pass any initial test or inspection, the necessary corrections shall be made to comply with this code and the installation shall be reinspected to verify compliance.

I am uncertain why this is being included within the OPC. It has been my understanding that the Contractor cannot move forward until they have been given the authority to do so by the AHJ for passing the requested inspection(s).

312.2 Drainage, waste and vent rough-in test. Drainage, waste and vent piping and fittings shall be tested prior to the installation of the plumbing fixtures and prior to the installation of wall

and ceiling coverings to verify the integrity of the system in accordance with one of the following methods prescribed in Section 312.2.1 or 312.2.2...

This is truly a Means & Methods issue that, realistically, is not relevant to this part of OPC. While I understand the rationale behind it, it is already covered in the Administrative Section, Definitions and Section 312.12.

312.2.2 Drainage, waste and vent rough-in air test. An air test shall be made by forcing air into the system until there is a uniform gauge pressure of 5 psi (34.5 kPa) or sufficient to balance a 10-inch (254 mm) column of mercury. This pressure shall be held for a test period of at least 15 minutes. Any adjustments to the test pressure required because of changes in ambient temperature or the seating of gaskets shall be made prior to the beginning of the test period. Testing shall be done with a dual pressure relief valve rated for 7.5 psig.

*Any material that can shatter (such as cast iron or polymers such as PVC) should **not** be tested using medium- or high-pressure air. Should a failure of the material occur, this becomes a legitimate concern for safety. Such failures resulting from the rupture of tested piping could result in serious or catastrophic injury.*

As code officials and design professionals, we cannot allow ourselves to be put in the position of being party to any procedure that might put public health, safety or welfare at risk. As for a rough-in test, certainly it is in the Contractors' economic best interests to assure their installed system is tight; should the Contractor not test the installed system, he does so at his own risk. However, from a code perspective, a rough-in inspection should be mandated to see that the work is installed in accordance with the "Approved" set of documents in a code-compliant manner.

The final test will determine if the system meets the standard of protecting public health, safety and welfare. The final, minimum low pressure air test is demonstrating that the system is tight under the normally anticipated operational air pressure of a 1" water column (2" trap seal) [0.036 psig].

312.4 Drainage, waste and vent final test. The final test of the completed drainage, waste and vent systems shall be made after the all fixtures are connected. The entire system shall be subjected to a low pressure air test of the systems operational design of a 1" of water column for a 15-minutes period as follows:

1. Close all stack openings;
2. A manometer tube shall be placed through a trap seal to the system side and water shall be added to a fixture until an equivalent to at least 1 in. water column (248.8 Pa) is read on the manometer gauge or water can be added to a water closet bowl trap tailpiece extension until the water level is at least one inch higher than the original trap seal;
3. Maintain this pressure starting fifteen (15) minutes before beginning inspection;
4. Indicate the system to be air-tight at all points.
5. The system shall then be separated at a trap seal, AAV, or other means as directed by the plumbing inspector for verification the entire system is interconnected and has been subjected to the test.

At first glance, this may seem like a Means and Methods issue. This is and has been a standard industry practice, understood by trained and qualified skilled tradesmen. However, the wording we previously had was not specific enough. It is easy to look at this as experienced craftsman or design professional (with the superior knowledge we are expected to possess). But in many cases, apprentices and homeowners are performing the work. Giving them the process in the beginning will allow things to go much smoother throughout the job.

312.5.2 Water supply air test. An air test of not less than 50 psi (344 kPa) shall be performed to prove the system air-tight. This pressure shall be held for at least 15 minutes.

While the concept of air testing can be material dependent, the type of test must be driven by the manufacturers' installation instructions or the test procedure as defined within the OPC, whichever is more stringent. Once again, if a manufacturer is not prepared to be tested by ANY of the listed methods, the material should not be allowed for use within this state.

312.9 Shower liner test. Where shower floors and receptors are made water-tight by the application of materials required by Section 417.5.2, the completed liner installation shall be tested. The pipe from the shower drain shall be plugged water tight for the test. The floor and receptor area shall be filled with potable water to a depth of not less than 2 inches (51 mm) measured at the threshold. Where a threshold of at least 2 inches (51 mm) high does not exist, a temporary threshold shall be constructed to retain the test water in the lined floor or receptor area to a level not less than 2 inches (51 mm) deep measured at the threshold. The water shall be retained for a test period of not less than 15 minutes, and there shall not be evidence of leakage.

Exception: The shower liner test is not required for one-, two-, or three-family dwellings unless required by the shower liner manufacturer's installation instructions.

*Once again, we have a classic case of dwellings being given an exception to the OPC. Just because we cross a jurisdictional boundary or enter a building of a different Use Group, the laws of physics do **not** change. It is the responsibility of code officials and design professionals to protect the safety and welfare of **all** of the State's residents, regardless of what structure they may occupy at any given moment. By placing costs above the public good, the State is effectively abdicating its responsibility to provide the protections its citizens deserve and expect.*

SWO ASPE is composed of plumbing engineers/designers, sales representatives and plumbing contractors/tradesmen. Each member is aware that we have a duty and obligation to not place the welfare and safety of any individual in harm's way. Simply stated, it is better to err on the side of caution than to take a step away from good practice and allow a potential damage or health issue to occur.

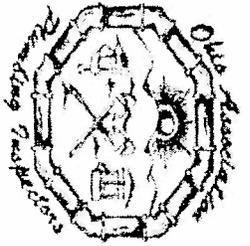
The above outlines the reasons for supporting the OAPI's application. Should there be questions or comments, I am prepared to discuss and provide professional knowledge to the discussions.

Sincerely yours,

Ronald K Bartley

Ronald K Bartley

PE, CPD, CPI/CPE
President, Southwestern Ohio Chapter
American Society of Plumbing Engineers



Ohio Association of Plumbing Inspectors
 P.O. Box 201
 West Chester, OH 45071
 President, Mike Rudey, Vice President, John Baumgartner,
 Secretary, Bryson Wakeley, Treasurer, David Hudson



To: The Ohio Board of Building Standards
 Attn. Code Committee

From: The Ohio Association of Plumbing Inspectors

Ref: Proposed changes to the 2011 OPC, the members of the OAPI, as signed below in this petition are requesting any action and/or ruling by the Board in reference to the 2011 Ohio Plumbing Code to be extended for 30 days or until the Boards next scheduled meeting, The OAPI Board and its members would like to have addition time to review the proposed changes in order to submit comments or changes.

Certification Number	First Name	Last Name	Signature	Jurisdiction
K005922	LISA	HUMBLE	<i>[Signature]</i>	HAMILTON COUNTY
K00453 883110	FRANK A.	BRYKALSKI SR	<i>[Signature]</i>	NICHOLAND PUBLIC AFFAIRS
K00339	EDWARD	DOETHLE	<i>[Signature]</i>	CITY OF WHEELERS
K0021366	DAVE	SIMONS	<i>[Signature]</i>	ERIC CO. HEALTH DEPT
K00571	Tom	SAAETH	<i>[Signature]</i>	MADISON/CLARK DISTRICT
K00593	JARIN	BRYAN WARE FUERTZ	<i>[Signature]</i>	OAPI.
K00604	ROBERT	WILLIAMS	<i>[Signature]</i>	ASHTABULA COUNTY
K00745	DAVE	McKEY	<i>[Signature]</i>	Butler County
K00967	BRYSON	WAKELEY	<i>[Signature]</i>	Washington Co Health Dept
K00497	Markus	MCAHUGH	<i>[Signature]</i>	OHIO
K00746-1090	Robert	NITSCHKE	<i>[Signature]</i>	CITY OF Kent
30779	Charles	MARZENFEL	<i>[Signature]</i>	Contractor

2796

Certification Number	First Name	Last Name	Signature	Jurisdiction
K00725	David	Baker	<i>David Baker</i>	CLATSOP CO HEALTH DEPT.
K00742	Robert	Keyis	<i>Robert Keyis</i>	MUSKOGEE COUNTY HEALTH DEPT.
K02014	Timothy	Miller	<i>Tim Miller</i>	MIAMI COUNTY HEALTH DEPT.
K00660/14922	Jerry	Puterbaugh	<i>Jerry Puterbaugh</i>	CITY OF KETTERING
K00251	John	Sparkley	<i>John Sparkley</i>	STARBUCKVILLE
K00975/16494	Steve	Frymber	<i>Steve Frymber</i>	CONTRACTOR
9108	David	McGlothlen	<i>David McGlothlen</i>	CITY OF FAIRBORN
K00709	Richard	Isvee	<i>Richard Isvee</i>	CHANGING HEALTH DIST
K00551	Edward	Bissler	<i>Edward Bissler</i>	ALLEN COUNTY HEALTH DEPT.
K00986	John	Lubonovic	<i>John Lubonovic</i>	MAHONING COUNTY
K00355	John	Deneo	<i>John Deneo</i>	PARSONS
#16765	FRED	DETRE W	<i>Fred Detre</i>	MADISONIA
K02016/5342	MIKE	REYNOLDS	<i>Mike Reynolds</i>	CITY OF ALBERTA
14573	MARTIN	SURELLA	<i>Martin Surella</i>	RETIRED
1454	MARTIN	SUROR	<i>Martin Suror</i>	CITY OF DUNDAS
738	DAVID	KAMINSKI	<i>David Kaminski</i>	CITY OF BRANFORD CT
589	EWELL	HANSON	<i>Ewell Hanson</i>	CITY OF AUSTIN
1887	GEORGE	SALAZAR	<i>George Salazar</i>	DIA
1823	Mario J	D. Franca	<i>Mario J. Franca</i>	SATEBAULT
2878	Neil	Robers	<i>Neil Robers</i>	Weymouth
1542	JOE	VERBIN	<i>Joe Verbin</i>	MEADOWS HEIGHTS
K00634	ERIC	HELMES	<i>Eric Helmes</i>	HOMER FINE LAG
#357/K00683	Harold	Fring's	<i>Harold Fring's</i>	OSHANA COUNTY BUILDING DEPT.
530	Thomas	KIRK	<i>Thomas Kirk</i>	CITY OF WILMINGTON
842/86206/27658	Robert	LENATTE	<i>Robert Lenatte</i>	CITY OF OREGON
179/K00519/30622	PAUL	RIEHTER	<i>Paul Riehter</i>	CITY OF BECON
14104	JOE	SPURLOCK	<i>Joe Spurlock</i>	CLATSOP COUNTY
1227	John	Rehms	<i>John Rehms</i>	CITY OF MASSILLON
K02024/661	ROGER	Huang	<i>Roger Huang</i>	STARBUCKVILLE

OSHANA COUNTY BUILDING DEPT.

Certification Number	First Name	Last Name	Signature	Jurisdiction
2166	Alex	Robinson		City of Adams
K00968	Steven	DiRea		Wood Co.
455	LIONEL	FITCH		CITY OF AURELIA/SERRA
2323	Tom	Zimmerman		CITY of Napoleon
K00948	C. DAVID	HUBBARD		CDH CONSULT SERVICE
685 1236 - K00914	James	Richardson		CITY OF Columbus
K02007	SEY	Abner		Warren County
K00664	WILLIAM	Doyle		WARREN COUNTY H.D.
K0096	CHARLES	RYAN		City of Dayton
K00629	EMERSON	MAW		WARREN COUNTY WOOD
470	ANDREW	Flan		CITY of Hamilton
K0069- PB5 2881	Steve	Ranker		Clinton, Highland, Fayette Counties
K00688/14026	MICHAEL	OPES		OHIO STATE
23837	ADOLPH	NUDEY		CLEVELAND
25029	DUCE	LAZAR		Cleveland
K00508	ELIE	LAZAR		Franklin County
K00732	GEN	FARMWALD		FRANKLIN COUNTY ABOVE MERTON
K00530	ROBERT	WEBER		Franklin County Health
K00703	WILLIAM	ELIOTT		
K00791/32309	TERREY	HUNTLEY		FRANKLIN County
K02017/5034	JOSHUA	SMELLEY		Port Clinton H.D.
1111 / K00511	CHRISTOPHER	RANDALL		Columbus Ohio
1111 / K0024	CHRISTOPHER	RANDALL		Columbus Ohio
685 # 4892	Tim	RICE		Columbus, Ohio