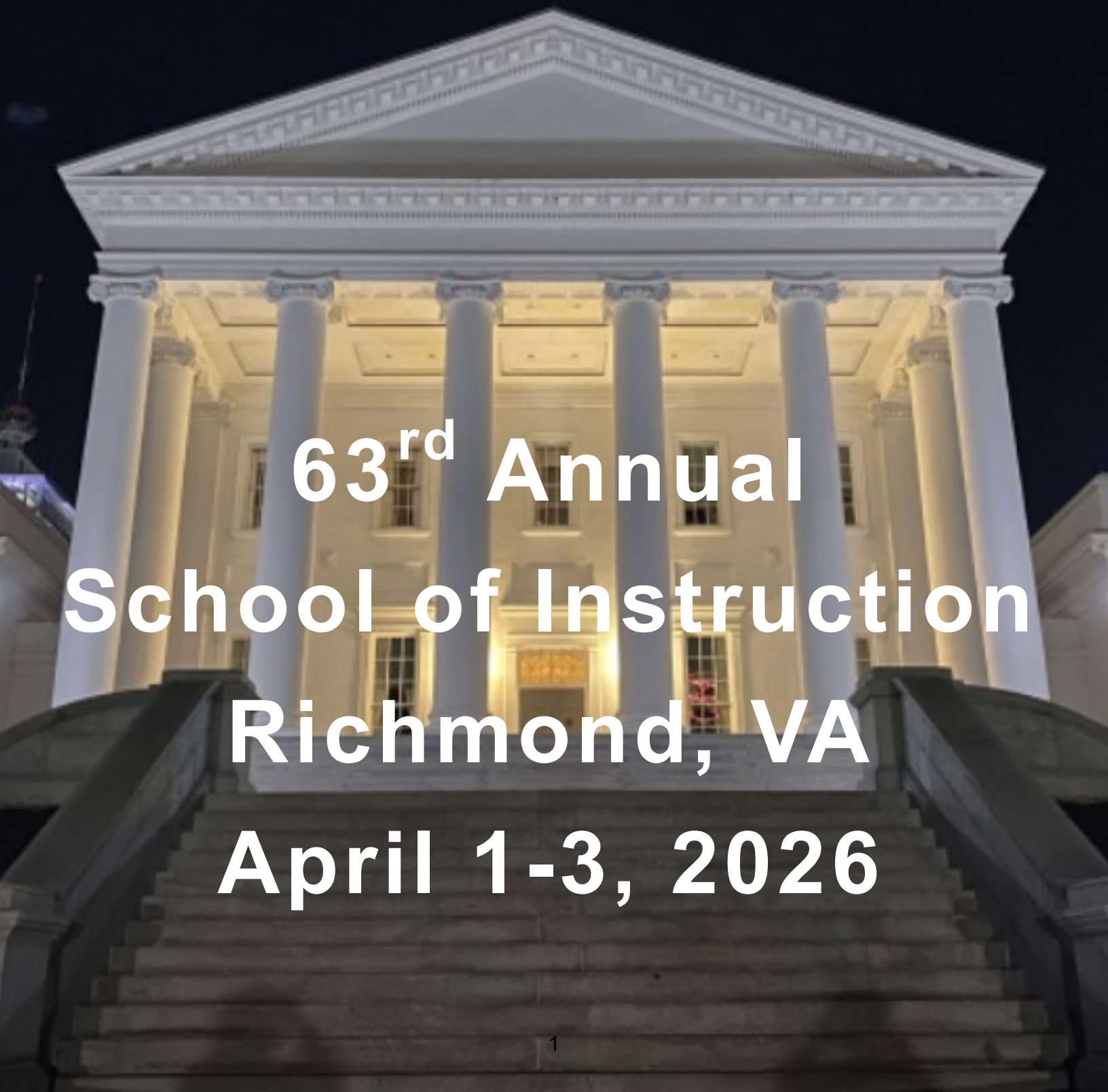
VPMIA

Virginia Plumbing & Mechanical Inspectors Association



63rd Annual School of Instruction

Richmond, VA

April 1-3, 2026

ICC INTERNATIONAL CODE COUNCIL®

Advance your code knowledge and career

Count on the technical expertise of the Code Council, your premier provider of construction codes and standards

1 FULL-SERVICE SHOP

- **Prep for exams** with Study Companions and FlashCards
- **Learn new requirements fast** with Significant Changes guides
- Gain **expert insight** with the Code & Commentary series
- Download **FREE CodeNotes™** quick-reference tools for CSST gas piping, Manual J, worker safety, solar water heating systems and more

2 EARN CEUS

ICC Training delivers high quality training and an extensive course list covering a variety of codes and standards. Choose from **in-person, online live and online self-paced**. Browse our Credential of Learning Achievements (CLA).

3 GET CERTIFIED FROM HOME

The Code Council offers **the most credible, fair and reliable** examination program. PRONTO, a remote proctored testing system, allows candidates to test from any secure location with highspeed internet access or at one of over 500+ test centers.

1-888-ICC-SAFE (422-7233) | www.iccsafe.org

25-24769

Welcome to VPMIA's 63rd School of Instruction

Table of contents

President's Message

It has been my privilege and honor to serve as the president of the Virginia Plumbing and Mechanical Inspectors Association (VPMIA) this past year. Our organization plays a vital role in protecting the health, safety and welfare of the citizens of Virginia.

The importance of this association goes far beyond inspections alone – it's a place where professionals come together to share knowledge, stay informed on code changes, and support one another in an ever-involving industry. Through training opportunities, meetings and open dialogue, we continue to strengthen not only our individual expertise, but also the quality of code enforcement.

Equally important is the sense of community and support that this association fosters. The relationships we build within VPMIA allow us to learn from one another, mentor the next generation of inspectors and work together.

Just as important is our involvement in the code development process. The knowledge and experience brought from the field help shape the plumbing and mechanical codes that guide construction today and influence how buildings will be designed and built in the future.

I encourage each of you to stay involved, attend our events, and continue sharing your expertise with fellow members. Your participation is what keeps this organization strong.

Thank you for your dedication to our profession and for being a part of the Virginia Plumbing and Mechanical Inspectors Association.

Respectfully,

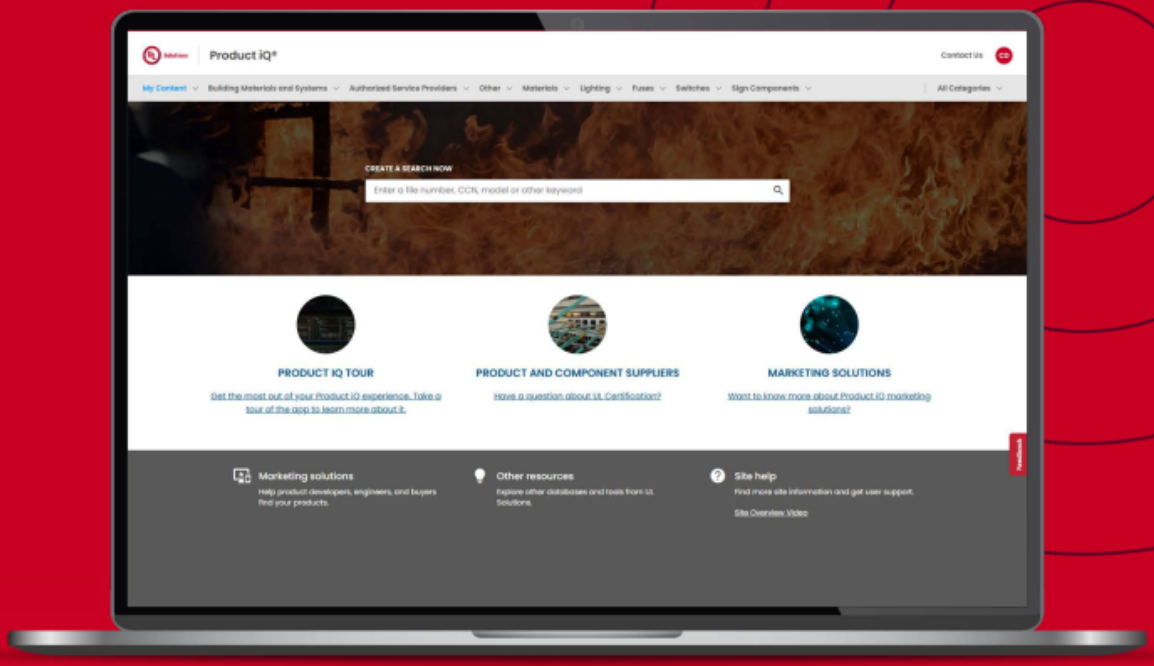
Peter Kapitan

President, VPMIA

UL Product iQ®

The place for UL certification information

Create a FREE Product iQ account
today at **UL.com/PiQ**



Search for alternative products you can trust

Locate UL Solutions guide information

Verify UL Certification of a product or component

UL Solutions

Safety. Science. Transformation.™

2026 VPMIA SCHOOL OF INSTRUCTION AGENDA

Wednesday April 1, 2026

7:00am-8:00am Breakfast
7:30am - 8:00am Registration/Sign in
8:00am - 9:30am Class
UL Mechanical Code Insights from the Fire Lab – Answering FAQ (Mechanical)
9:30am - 10:00 am Break
10:00am - 11:30pm Class
UL Mechanical Code Insights from the Fire Lab – Answering FAQ (Mechanical)
11:30pm - 12:00pm
Report from Nominating Committee Nomination of 2025/2026 officers
12:00pm - 1:00pm Lunch
1:00pm - 2:30pm Class
Captive Aire Type I Hoods & Suppression (Mechanical)
2:30pm - 3:00pm Break
3:00pm - 4:30pm Class
Captive Aire Type I Hoods & Suppression (Mechanical)
4:30pm - 5:30pm General Membership Meeting
5:30pm - 6:00pm President's Welcome
6:00pm - 7:30 pm Dinner

Thursday April 2, 2026

7:00am-8:00am Breakfast
7:30am - 8:00am Registration/Sign in
8:00 am - 9:30 am
ICC class 2024 Code Updates (Plumbing)
9:30 am -10:00 am Break
10:00am - 11:30am
ICC class 2024 Code Updates (Plumbing)
11:30 - 12:00 Visit Sponsor Tables
12:00 pm - 1:00 pm Lunch
1:00 pm - 2:30 pm
ICC class 2024 Code Updates (Plumbing)
2:30pm - 3:00pm Break
3:00 pm - 4:30 pm
ICC class 2024 Code Updates (Plumbing)
5:00pm - 6:00pm Reception
6:00pm - 8:00pm Banquet
Awards/Officer Installation

Friday April 3, 2026

7:00am – 8:00 am Breakfast Buffet
7:30am - 8:00am Registration/Sign in
8:30am - 10:00am Class
Fuel fired Equipment – The final touches for proper installations (Fuel Gas)
10:00am - 10:30am Break
10:30am - 12:00pm Class
Fuel fired Equipment – The final touches for proper installations (Fuel Gas)

Proud partners with VPMIA

The JOYCE AGENCY

ABOUT THE JOYCE AGENCY

Founded in 1982 by Skipper Joyce, The Joyce Agency is a manufacturers' representative firm within the plumbing and HVAC industry. Headquartered in Chantilly, Virginia, with an additional satellite office in Newport News, Virginia, the agency proudly represents over 30 manufacturers across a five-state territory, including Washington, D.C. Our operations are structured into five specialized divisions - plumbing, specifications, specialty accounts, hydronics, and the Manufacturers Service Group (MSG) - ensuring seamless synergy and delivering optimal solutions tailored to our customers' needs.

OUR MANUFACTURERS

AMES Fire & Waterworks · BEMIS · BLÜCHER · Bradford White Water Heaters · Charlotte Pipe and Foundry Company · DAB Water•Technology · DURAVIT

Eemax evolving hot water · Electro Industries · FEBCO · FRANKE · Guardian · hansgrohe · JM

JOSAM A WATTS Brand · LAARS Heating Systems Company · LEAK DEFENSE A WATTS Brand · Meditrac · Milwaukee · mti · Mueller Streamline Co.

Native Trails · Oasis · Oatey · POWERS A WATTS Brand · ReVent Ventilation Fans · Safe-T-Cover · Schier

Sloan Water Connects Us · TracPipe · WATTS · WATTS Drainage

PLUMBING TECHNICAL SERVICES

MCWANE

AB&I FOUNDRY

DURA PIPE

TYLER PIPE & COUPLING

Introducing the next generation of dual-coated pipe for aggressive DWV applications.

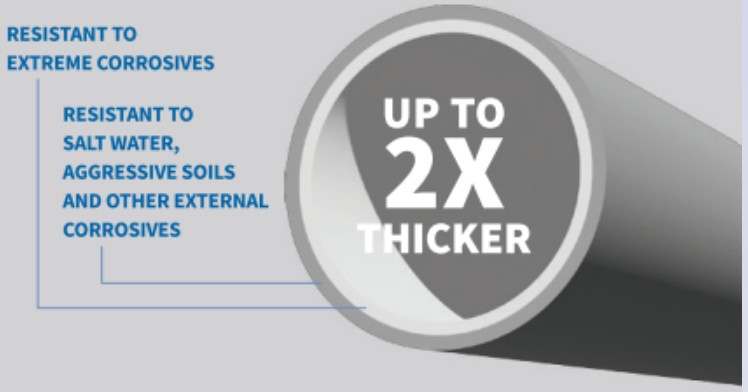
In the wild, weakness doesn't get a second chance. And the same goes for your DWV system. One corroded pipe can bring an entire operation to its knees. That's why DuRa Pipe™ is the right choice for aggressive applications.

What makes DuRa Pipe™ different?

Our full line of DuRa Pipe starts with our same high strength, U.S.-made cast iron trusted for generations. Then, we apply our enhanced epoxy coating, taking the system beyond standard cast iron performance with dual coatings inside and out. Specifically designed for nvironments exposed to corrosive substances, DuRa's dual coating is built to fend off both internal and external threats.

Superior performance. Fierce protection.

DuRa Pipe combines the optimal flow and excellent corrosion resistance of plastic pipe with cast iron's strength, sound attenuation, non-smoke and non-flammability needed for plenum applications. Making it tougher. Smarter. And more resilient.



Dual coated for zero worry.

DuRa Pipe features dual coating technology that provides interior and exterior protection specialized for unique environments. Purpose selected. Purpose driven. Purpose proven.

Ideal applications:

- Commercial kitchens • Hospitals & medical offices
- Casinos • Soda fountains • Seasonal occupancy buildings
- Any area exposed to chemicals with pH range of 2 to 12

Want more information? Contact one of ourTechnical Services Regional Managers at

www.abifoundry.com
www.tylerpipe.com
www.mcwaneplumbingtechservices.com

2025 VPMIA OFFICERS

President..... ……...Peter Kapitan
Vice President..... ……...Joshua Rolfe
Secretary..... ……...Chris Hickey
Treasurer……...TJ Reed
Executive Secretary……Chris Martin
Immediate Past President…...Frederick Crowell II
District 1 Director . ……...TJ Reed
District 2 Director . ……...James LaPrade
District 3 Director . ……...Brian Petty
District 4 Director . ……...Christoper Larson

2025 VPMIA COMMITTEES

Advertising/Yearbook…James Anjam - Chair
Auditing……Joshua Rolfe - Chair
Award……Tom Clark - Chair
By Laws……..Skip Harper - Chair
Certification/Education...Anthony McMahan - Chair
Chris Hickey
Brian Petty
Finance……...TJ Reed
Information Technology..Skip Harper - Chairs

Legislative……Ron Clements - Chair
Membership……...Chris Martin - Chair
Chris Hickey
Bane Compton
Brian Petty
Nominating……Frederick Crowell II- Chair
PMG Code Committee….Dennis Hart - Chair
Richard Grace—Vice Chair

Time & Place/
School of Instruction……Pat Carter

BCAAC (Ad Hoc)……Vacant

Building Safety Month
(Ad Hoc)……Tom Clark - Chair

VA Code Education Conference
(VCEC) (Ad Hoc)……Anthony McMahan - Chair
Thomas Clark

VBCOA Liaison (Ad Hoc)..David Beahm
ICC……...Avi Smith-Rose
Region 7 ICC Liaison……..Ron Clements
Joshua Rolf
DHCD……...Jeff Brown
DPOR Liaison……Jerry Heinline

RMI

Research Marketing and Innovations

OUR VENDORS

zurn ELKAY WATER SOLUTIONS

CHARLOTTE PIPE AND FOUNDRY COMPANY

WHITLAM The Industry Standard for Over 100 Years

AquaSHIELD PROTECTIVE ENCLOSURES

STERN-WILLIAMS

PEDROLLO

GroovJoint

HOMESTEAD VALVE

NIAGARA

BK RESOURCES

Just manufacturing by zurn ELKAY

Jomar

LZS8WSAP

The perfect solution for nearly every application, our units have all the great features of our original line with added ingenuity

Z100F FLO FORCE

Unique dome and gravel guard design increase open area to maximize water while limiting debris.

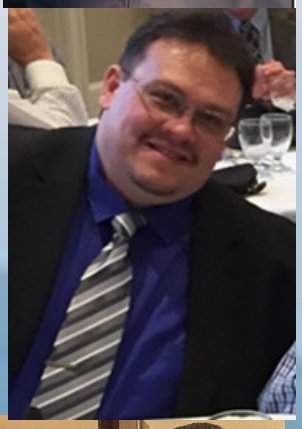
CHARLOTTE EDGE HP IRON

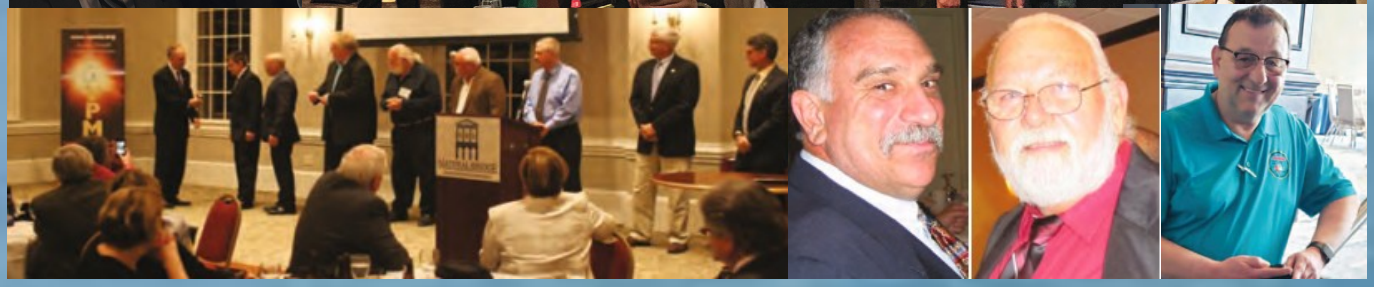
The high performance pipe and fittings are specially coated for applications that may need enhanced protection, like hospitals, commercial kitchens and casinos.

REACH US AT: (804) 643-7355 /(804) 643-7380
RMISALES@RMISQUARED.COM
RMISQUARED.COM

VPMIA Past Presidents

CHARLES E. MANNION 1963
PAUL C. KING 1964
GORDON I. DAMERON 1965
D. PAUL JACK 1966
FRANK B. BOSMA 1967
U. EARL ALLEN 1968
HARRY CONTE 1969
JAMES B. JONES 1970
L. W. FURMAN 1971
GEORGE H. WILLIAMS 1972
W. T. DRAKE 1973
BENJAMIN BIANCO 1974
J. L. SHIFFLETT 1975
HOMER O. DENNIS 1976
JULIAN E. MEREDITH 1977
EDWARD T. PARSONS 1978
EDWARD J. BALDWIN, JR. 1979
HENRY A. RODÉS 1980
RUDOLF SCHROECK 1981
JESSE R. HURT 1982
CHARLES DEDIAN 1983
KENNETH R. SNYDER, SR. 1984
LAWRENCE J. NUCKOLS 1985
JOHN W. THURSTON 1986*
WILLIAM F. HINES 1987
LESLIE A. COURTNEY 1988
JIMMY A. ENGLISH 1989
DOUGLAS L. STOVER 1990
ROBERT M. BROOME 1991
PAUL D. HOSTETLER 1992
DENNIS W. McNAUGHTON 1993
JOHN S. TRENARY 1994
MICHAEL D. REDIFER 1995/1996
KATHLEEN T. DYE 1997
HASSEL DeSHAZO 1998
ROY N. McFARLAND, JR. 1999/2000
CLEATIS DYE, JR. 2001
CHARLES GERBER 2002
GUY TOMBERLIN 2003/2004
GEARY SHOWMAN 2005
MICHAEL THUOT 2006
JOHN SEAY 2007
DENNIS MARTINELLI 2008
JOHN MILLS 2009
WAYNE KUSHNER 2010
ROBERT ADKINS 2011
BANE COMPTON 2012
RON BLADEN 2013
PAUL RIMEL 2014
SKIP HARPER 2015/2016
RICHARD GRACE 2016
DUSTIN MCLEHANEY 2017
JAMES ANJAM 2018
TOM CLARK 2019/2020
ELLIS MCKINNEY 2021
ANTHONY MCMAHAN 2022
DENNIS HART 2023
FREDERICK CROWELL II 2024



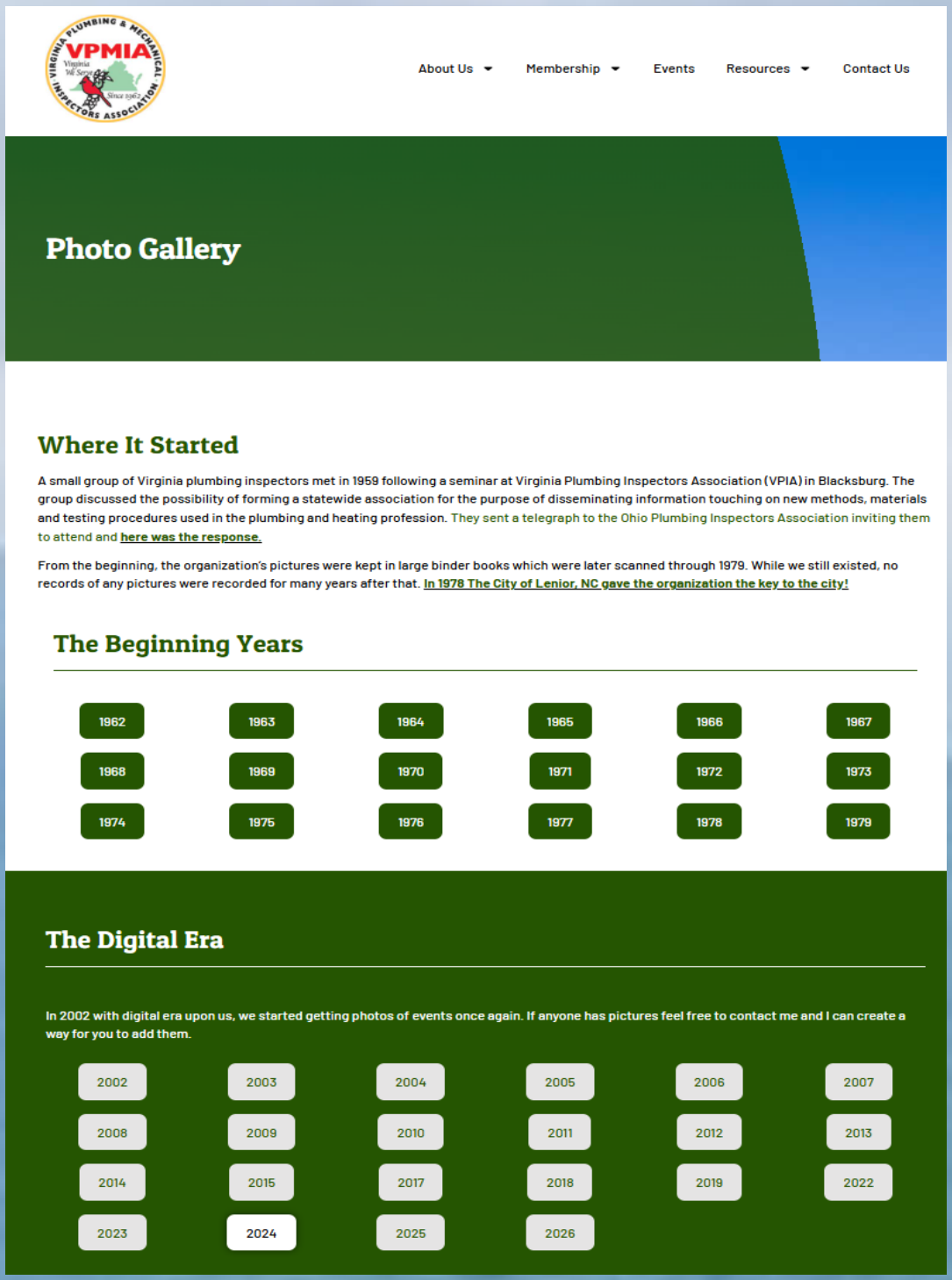



THE IRON-CLAD TRUTH:
WHEN THE WEIGHT OF THE WORLD IS ON YOU,
CISPI IS WITH YOU.
When it comes to underground installation, American-made cast iron soil pipe and fittings are made to the highest standards and verified by the CISPI mark of quality. Installation is simpler, with minimal inspection concerns, greater durability and up to 10x higher crush loads than comparable PVC, which requires complex installation due to being a flexible material. Need guidance? Trust CISPI to give you the iron-clad truth.
VISIT: WWW.CISPI.ORG/IRONCLADTRUTH
CISPI
THE IRON-CLAD TRUTH.

VPMIA Photo Gallery

VPMIA website has photo gallery Click here to see the page

If you have a google account you can upload photos from this event here.



WHERE CAN A RANGE HOOD HELP YOU SAVE LIVES?

Learn more about how the Denlar hood operates, see real-world applications, and understand which models and configurations match your type of facility.

VIEW USE CASES

Denlar offers the *ONLY* fail-safe, fully engineered & integrated UL300A compliant Range Hood and ClockBox system on the market!

DENLAR
FIRE PROTECTION
PRE-ENGINEERED RANGE HOODS

HVAC System Installation and Inspection Support Checklists

Two checklists created to help support the safe installation and inspection of HVAC systems containing A2L refrigerants.

These checklists are not intended to be a substitute for the manufacturer's installation instructions, engineering design documents or the locally adopted codes. Rather, these checklists are to be used as educational tools and to assist installers and inspectors in navigating the detailed information found in those official documents. All code interpretations and installations are subject to approval by the Building Code Official or Authority Having Jurisdiction (AHJ) responsible for determining compliance with the applicable codes.

Both checklists are based on product features, markings and instructions that are specified by UL 60335-2-40, the Standard for Household and Similar Electrical Appliances – Safety – Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers (4th Edition), as well as the relevant model codes.

International Residential Code (IRC-2024) checklist

The first checklist covers installations per the *International Residential Code* (IRC-2024). The IRC primarily relies on the product certification in accordance with UL 60335-2-40 along with the manufacturer's installation instructions.

International Mechanical Code (IMC-2024) checklist

The second checklist addresses installations per the *International Mechanical Code* (IMC-2024) or *Uniform Mechanical Code* (UMC-2024), both of which require certification in accordance with UL 60335-2-40 as well as installation per ASHRAE 15-2022 *Safety Standard for Refrigeration Systems*.

This checklist addresses typical applications and does not address scenarios such as machinery rooms, data centers or refrigeration.

Continue

A2L HVAC System Installation Checklist – International Residential Code (IRC-2024)[1]

Notes	Description	Comments
	Integral Refrigerant Detection System (RDS)	
2	Is integral RDS required to be installed? (see manufacturer's installation instructions)	
	Is the correct part number RDS installed? (RDS may be shipped separately)	
3	Are sensors in the correct location? (may change based on air handler orientation)	
	Is RDS wiring connected per manufacturer's wiring diagram?	
	Room Size / Charge Limits	
2	For ducted systems (no zoning system) – Is total room area connected by duct system greater than minimum room size requirement?	
2	For ducted systems (with zoning system) – Is either: • Smallest zone greater than minimum room size requirement or • Zoning system configured to open all zones if RDS detects a leak?	
4	For non-ducted systems (room units or wall-hung units): Is room size greater than minimum room size requirement?	
5	Refrigerant charge less than 34.5 lbs per independent system?	
	Internal Sources of Ignition	
	Field installed auxiliary electric heaters – Is heater kit model identified on nameplate?	
	All electrical components inside enclosure shown on manufacturer's wiring diagram?	
	Duct-mounted Sources of Ignition	
6	Identified by equipment manufacturer's instructions? (e.g., electrostatic air cleaners, UV-C devices)	
6	No electric heating elements, open flames or devices switching electrical loads greater than 2.5kVA?	
7	Potential duct mounted ignition sources interlocked with airflow (minimum 200 ft/min. face velocity) or de-energized if RDS detects leak?	
	Additional Mitigation Controls	
8	Does the manufacturer specify installation of Safety Shutoff Valves?	
	Refrigerant Piping	
9, 10	Installed and protected per manufacturer's instructions?	
9, 10	Pressure and leak tested per manufacturer's instructions?	
	Press-connect fittings certified for use with A2L refrigerants?	
	Markings, Instructions, and Signage	
11	Refrigerant type and field adjusted charge recorded on unit label?	
11	Contact information for responsible company that installed system?	
12	Installation instructions, service manuals and product literature available for inspection?	

Notes

1. The International Residential Code (IRC-2024) M1411.2 requires HVAC appliances containing A2L refrigerants be certified to UL 60335-2-40 and installed in accordance with the manufacturer's installation instructions. This checklist is based on the most typical instructions required by UL 60335-2-40. Always refer to the instructions provided with the system. The IRC also specifies installation per the locally adopted electrical and fuel gas codes.
2. RDS and minimum room sizes are typically required for HVAC appliances with over an approximate 2-pound charge for nonfixed factory-sealed equipment or an approximate 4-pound charge for other types of equipment.
3. A2L refrigerants are heavier than air. Sensors will typically be located near the bottom of the enclosure below the evaporator coil.
4. Mounting height typically measured from bottom of wall hung unit. For wall hung units, minimum room size requirement may change based on mounting height. Rooms on the same floor can be considered if there is a connecting passageway that is a permanent opening, extending to floor that is intended for people to walk thorough.
5. IRC M1411.6
6. IRC M1411.4
7. Typical values based on UL 60335-2-40 requirements.
8. Most typical for units with multiple indoor evaporator coils. Installation may be optional to reduce releasable charge and minimum room size requirements.
9. IRC M1411.7, M1411.13, M1411.14
10. For best practices, refer to ASHRAE 15.2
11. IRC M1411.5
12. IRC M1411.3

Rev: 03/2025
2339557

A2L HVAC System Installation Checklist – International Mechanical Code (IMC-2024), Uniform Mechanical Code (UMC-2024)[1,2]

Notes	Description	Comments
	Engineering System Design	
3	Is system design per requirements of ASHRAE 15 and selected mechanical code?	
	Leak Detection: Integral Refrigerant Detection System (RDS) / Non-Integral Refrigerant Leak Detection	
4	Is integral RDS required to be installed? (see manufacturer's installation instructions)	
	Is the correct part number RDS installed? (RDS may be shipped separately)	
5	Are sensors in correct location? (may change based on air handler orientation)	
6	Is RDS wiring connected per manufacturer's wiring diagram and design?	
	Does design require refrigerant leak detection in the occupied space, non-occupied spaces, or piping shaft?	
	Room Size / Effective Dispersal Volume Charge (EDVC) / Charge Limits	
4,7,8,9	Is the effective volume into which refrigerant may leak or be dispersed adequate for the releasable charge in each space based on the minimum room size requirements of the product certification and/or the EDVC calculation per the design?	
	Internal Sources of Ignition	
	Field installed auxiliary electric heaters – Is heater kit model identified on nameplate?	
	All electrical components inside enclosure shown on manufacturer's wiring diagram?	
	Duct-mounted Sources of Ignition	
	Identified by equipment manufacturer's instructions? (e.g., electrostatic air cleaners, UV-C devices)	
10	No open flames or unclassified electrical devices in ductwork?	
10	No hot surfaces exceeding 1290°F unless interlocked with airflow with minimum 200 ft/min. face velocity?	
	Additional Mitigation Controls	
11	Does the manufacturer and design specify installation of Safety Shutoff Valves?	
	Does the manufacturer and design specify installation of pumpdown controllers?	
	Does the design specify mechanical ventilation?	
	Additional Installation and Inspection Considerations	
12	Pressure-limiting devices/Relief Valves/Discharge Piping per manufacturer's instructions and design? Clearances maintained from pressure relief discharge to building openings and intakes?	
13	Stop Valves per manufacturer's instructions and design?	
14	Code-specific requirements for equipment not in a machinery room: IMC only: Do rooms containing more than 6.6 pounds of refrigerant, meet restrictions on hot surfaces and open flames? UMC only: Do rooms containing condensing units meet ventilation requirements?	
15	Maintenance and inspection plan in place for critical systems?	
	Refrigerant Piping	
16	Piping materials, joints, and connections as specified? Press-connect fittings certified for use with A2L refrigerants?	
17	Piping not in prohibited locations? Piping and penetrations protected as specified?	
18	Shaft enclosures and ventilation as specified?	
19	Piping pressure and vacuum tested as specified?	
20	Pipe identification: "WARNING – Risk of Fire. Flammable Refrigerant"?	
	Markings, Instructions, and Signage	
21	Refrigerant type, field adjusted charge, lubricant and field test pressure recorded on unit signage?	
21	Name and address for responsible company that installed system?	
	Installation instructions, service manuals and product literature available for inspection?	

Rev: 03/2025

Continue

Notes

1. This checklist covers typical HVAC applications. It does not include machinery rooms, ITE applications or refrigeration This checklist is not intended to be a substitute for the manufacturer's installation instructions, engineering design documents or the locally adopted codes. The intent of these checklists is to be used as educational tools and assist installers and inspectors in navigating the detailed information found in those official documents.
2. The International Mechanical Code (IMC-2024) 1101.2 and Uniform Mechanical Code (UMC-2024) 1104.6.2.2 require HVAC appliances containing A2L refrigerants be certified in accordance with UL 60335-2-40 and installed in accordance with the manufacturer's installation instructions. This checklist is based on the most typical instructions required by UL 60335-2-40. Always refer to the instructions provided with the system. These mechanical codes also specify installation per the locally adopted electrical and fuel gas codes.
3. IMC 1101.1.1 and UMC 1102.1 require system design per ASHRAE 15-2022 as modified and supplemented by the adopted mechanical code.
4. RDS and minimum room sizes are typically required for HVAC appliances with over an approximate 2-pound charge for nonfixed factory-sealed equipment, or an approximate 4-pound charge for other types of equipment.
5. A2L refrigerants are heavier than air. Sensors will typically be located near the bottom of the enclosure below the evaporator coil.
6. ASHRAE 15 7.6.2.5 and UMC 1104.6.2.4 specify mitigation actions upon leak detection by RDS.
7. IMC Section 1104, UMC Section 1104, ASHRAE 15 Section 7, see Figure 7-1
8. ASHRAE 15 EDVC calculations are based on occupancy classification (e.g., commercial, institutional), system location (e.g., outdoors, in public corridors and lobbies) and system configuration and mitigations. If the EDVC exceeds the releasable charge for the Effective Dispersal Volume, the system charge is not in compliance and additional mitigation, or a machinery room may be required.
9. Minimum room size markings per product certification to UL 60335-2-40 provide requirements for basic installations using conservative assumptions. Engineering design using EDVC calculations per ASHRAE 15 can account for more complex installations and actual site conditions. In some cases (e.g., charges 6.6. lbs. or less) ASHRAE 15 does not apply restrictions, but in these cases requirements of the product certification still apply.
10. ASHRAE 15 7.6.3 and UMC 1104.6.3. Duct Heaters certified to UL 1996 with hot spot temperatures less than 1290°F shall be so marked.
11. ASHRAE 15 7.3.4.3, 7.3.4.4. Most typical for units with multiple indoor evaporator coils. Installation may be optional to reduce releasable charge and minimum room size requirements.
12. UMC Sections 1111-1112, ASHRAE 15 9.4-9.9 If pressure relief devices are provided as part of certified systems, they correlate with the pressure coordination requirements of ASHRAE 15 9.9.1.
13. IMC 1109.6, UMC Section 1110, ASHRAE 15 9.10, 9.11
14. IMC 1104.3.4, UMC 1105.5
15. IMC Section 1111, UMC Section 1118, ASHRAE 15 10.5, International Fire Code (IFC-2024) Section 608, NFPA 1-2024 Fire Code Chapter 53.
16. IMC Sections 1107-1108, UMC Section 1109, ASHRAE 15 9.12.5
17. IMC Section 1109, UMC Section 1109, ASHRAE 15 9.12
18. 18) IMC 1109.2.5, 1109.3.2, UMC 1109.3, ASHRAE 15 9.12.1.5
19. IMC Section 1110, UMC Section 1116, ASHRAE 15 9.13. Certificate of test required over 55 lbs.
20. IMC 1109.2.7, ASHRAE 15 9.12.1.8
21. ASHRAE 15 10.1.1

For more information related to these products or their certifications, please contact:

Chris Mobley, UL Solutions lead regulatory engineer, Chris.Mobley@UL.com

Contact UL Solutions

Email: ULRegulatoryServices@ul.com

VIRGINIA 2021 CODE COMPLIANT INSTALL

2021 VIRGINIA Energy Code Commercial & Residential

Air Barrier: New Penetration Sealing Requirement

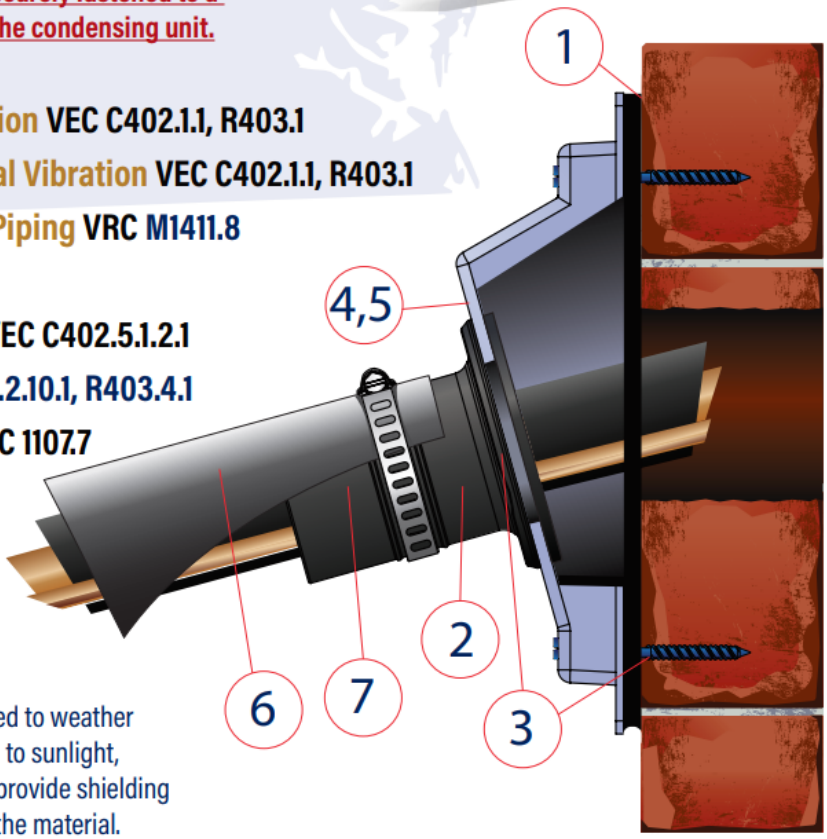
C402.5.1.1, R402.4.1.1 - Penetrations of the air barrier shall be caulked, gasketed or otherwise sealed in a manner compatible with the construction materials and location.
Sealing shall allow for expansion, contraction, and mechanical vibration.

2021 VIRGINIA Residential Code

Support of Refrigerant Piping.

M1411.8 Refrigerant piping and tubing shall be securely fastened to a permanent support withing 6 feet (1829mm) of the condensing unit.

1. Gasket Allows Expansion & Contraction **VEC C402.1.1, R403.1**
2. Sleeve Isolates Pipe from Mechanical Vibration **VEC C402.1.1, R403.1**
3. Permanent Support for Refrigerant Piping **VRC M1411.8**
4. Rodentproofing **VBC Appendix F**
5. ASTM E2178 Air Barrier Permeance **VEC C402.5.1.2.1**
6. Pipe Insulation Protection **VEC C403.2.10.1, R403.4.1**
7. Removable for Visual Inspection **VMC 1107.7**



2021 VIRGINIA Energy Code

Piping Insulation Protection

IECC C403.2.10.1, R403.4.1 : Piping insulation exposed to weather shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, wind and shall provide shielding from solar radiation that can cause degradation of the material.
Adhesive tape shall not be permitted.

Removable & Reusable to comply with mechanical code visual inspection of refrigerant pipe joints requirement

EFLEXGUARD™
HVAC Insulation Protectors

10 YEAR WARRANTY

25 Years of
Superior Protection

MADE IN USA

AIREX TITANOUTLET™

ASTM 283 for Air Leakage,
ASTM E331 for Water Penetration

AIREX
Manufacturing Inc.

www.airexmfg.com

(760)343-2277

...and these connections can be good for you.

www.vpmia.org

Your resource for trade news, information on upcoming events, membership and registration forms, archives, and current membership data.

Schools of Instruction —

DHCD-approved classes, trade-based lectures on current hot topics, opportunities to network with other code officials and industry representatives.

Membership benefits —

Reduced-cost education, a voice in international plumbing, mechanical, and fuel gas code changes, and being part of a respected, Virginia group with a commitment to excellence.

Leadership opportunities —

Become a certified instructor; serve on a Committee, or as an Officer or Board member.

Connect with VPMIA today.

Get your tools now. You can download the membership application from www.vpmia.org.

TracPipe CounterStrike
Flexible Gas Piping by OmegaFlex

Leading Supplier

for Natural Gas and Propane

Safety • Ease • Innovation • Performance

Omega Flex, Inc. has led the piping industry with its high-quality construction and commitment to exceed the industry's product and safety standards. The flexibility and long lengths of CounterStrike® CSST make it perfect for remodel and repair work. It can be pulled like wire, which minimizes the need to remove and replace walls, while at the same time potentially reducing both construction cost and shortening lead times. Omega Flex currently has over 100 patents registered worldwide and is a product and engineering driven company committed to meeting our customers' performance requirements.

For more information on CounterStrike® CSST, visit our website at tracpipe.com

OmegaFlex®

Omega Flex, Inc.
451 Creamery Way
Exton, PA 19341
1-800-671-8622
ISO 9001 Registered Company
FGP-759 Rev 1223

Article I. - Name, Seal, Address, and Fiscal Year.

Section 1. The name of this organization shall be the Virginia Plumbing and Mechanical Inspectors Association, herein referred to as the Association.

Section 2. The seal shall be approved by the Board of Directors, herein referred to as the Board.

Section 3. The address shall be that of the Executive Secretary, unless otherwise approved by the Board.

Section 4. The fiscal year for the organization shall be May 1 through April 30.

Article II. - Mission and Objectives

Section 1. The Association's mission shall be to promote and protect the health, safety and welfare of all Virginia citizens and of all others who may live, work, play and visit within the Commonwealth.

Section 2. The objectives of the Association shall be to:

A. Promote uniform application of the Virginia Uniform Statewide Building Code.

B. Actively participate in plumbing, mechanical and fuel gas code development at state and national levels.

C. Provide opportunities for professional development by sponsoring or conducting training seminars.

D. Partner with organizations that share the Association's mission and objectives.

E. Encourage unity among code officials, governmental agencies and the private sector.

F. Recognize members who make contributions that further the Association's mission and objectives.

G. Maintain an organizational environment which promotes professionalism, mutual respect, mentoring, leadership and the pursuit of common goals.

Article III. – Membership.

Section 1. Categories of Membership.

A. Active Membership shall be open to governmental employees actively engaged in plumbing, mechanical and fuel gas code enforcement as prescribed in the Virginia Uniform Statewide Building Code.

B. Associate Members shall be non-governmental employees interested or engaged in the building industry.

C. Lifetime Membership is open to Active and Associate members in good standing who have made significant contributions that advanced or supported the Association's mission.

D. Honorary Membership is open to individuals who are not currently members, but who have made significant contributions that advanced or supported the Association's mission.

E. Retired membership is open to Active or Associate members who have retired.

F. Student Membership is open to students actively engaged in the study of engineering, building design/construction and plumbing/mechanical apprenticeship/technical programs.

Section 2. Membership shall be granted as follows:

A. Application for Active, Associate, Retired and Student membership shall be submitted to the Executive Secretary on the Association's membership application form. Each application shall be reviewed, approved or disapproved by the Executive Secretary.

B. Honorary and special-offer type memberships shall be approved by the Board.

C. Lifetime membership nomination forms shall be submitted to the Awards Committee Chair. The Awards Committee shall review and select the recipients.

Section 3. Dues.

A. Active, Associate, Retired and Student members shall pay dues and such dues shall cover the period from January 1 through December 31 of each year. Dues remitted after December 31 shall only cover the period until December 31 of the current year. Members whose dues are current shall be considered in good standing.

B. Lifetime and Honorary members shall not be required to remit dues.

C. Dues shall be established by the Board and listed on the Association's membership application form.

D. Where any Active, Associate, Retired or Student member does not remit dues for two (2) consecutive years, the membership shall have expired and the member's name shall be removed from the roster. Expired memberships may be renewed in accordance with Article III. Section 2.A.

Section 4. Membership Meeting Voting.

A. Only Active members in good standing shall have the right to vote.

B. All members shall have the right to make and second motions and to participate in discussion of any motion before the membership.

Section 5. Conduct.

A. All members shall be committed to the Association's mission and shall conduct themselves in accordance with the Association's Code of Ethics.

Article IV. - Officers and Duties.

Section 1. Officers shall be Active members in good standing and comprised of a President, Vice President, Secretary and Treasurer.

Section 2. Officers shall be elected and installed at the Annual School of Instruction, herein referred to as the SOI.

Section 3. Officer's terms shall be one year and officers shall serve no more than two (2) consecutive terms in the same office. The terms of the Officers shall begin at the close of the SOI and end at the close of the SOI the following year.

Article V – Districts and Directors

Section 1. District Directors shall be Active members in good standing and shall be comprised of one (1) director from each of the Association's four (4) districts as follows:

District I: Shall be the area, including all cities and towns that lie therein, created by

Continue

the counties of Augusta, Arlington, Clark, Culpeper, Fairfax, Fauquier, Frederick, Greene, Highland, Loudoun, Madison, Orange, Page, Prince William, Rappahannock, Rockingham, Shenandoah, Spotsylvania, Stafford, and Warren.

District II: Shall be the area, including all cities and towns that lie therein, created by the counties of Alleghany, Amherst, Appomattox, Bath, Bedford, Bland, Botetourt, Buchanan, Campbell, Carroll, Craig, Dickenson, Floyd, Franklin, Giles, Grayson, Henry, Lee, Montgomery, Patrick, Pittsylvania, Pulaski, Roanoke, Rockbridge, Russell, Scott, Smyth, Tazewell, Washington, Wise, and Wythe.

District III: Shall be the area, including all cities and towns that lie therein, created by the counties of Albemarle, Amelia, Brunswick, Buckingham, Caroline, Charlotte, Chesterfield, Cumberland, Dinwiddie, Fluvanna, Goochland, Greensville, Halifax, Hanover, Henrico, King George, Louisa, Lunenburg, Mecklenburg, Nelson, Nottoway, Powhatan, Prince Edward, Prince George, Surry and Sussex.

District IV: Shall be the area, including all cities and towns that lie therein, created by the counties of Accomack, Charles City, Essex, Gloucester, Isle of Wight, James City, King and Queen, King William, Lancaster, Mathews, Middlesex, New Kent, Northampton, Northumberland, Richmond, Southampton, Suffolk, Westmoreland, and York.

Section 2. District Directors shall be elected and installed at the SOI. The terms of District Directors shall begin at the close of the SOI and end at the close of the SOI the following year

Article VI – Board of Directors and Duties.

Section 1. A Board of Directors is hereby established to manage the policies, business, property and affairs of the Association.

Section 2. Voting members of the Board shall be Active members in good standing and comprised of the Officers, District Directors, Immediate Past President, Executive Secretary and Chair of each standing committee.

Section 3. Non-voting, ex-officio members of the Board shall be as follows:

A. Any Association member from Virginia serving on the International Code Council Board of Directors.

B. The VPMIA representative currently serving on the Executive Council of the International Code Council Region VII.

C. The Deputy Director or his or her representative of the Division of Building and Fire Regulation at the Virginia Department of Housing and Community Development.

D. The President, or his or her representative of the Virginia Building and Code Officials Association, Virginia Fire Prevention Association, and Virginia Chapter of the International Association of Electrical Inspectors.

E. Any member of the Association, or of the Virginia Building and Code Officials Association serving as a representative on the Board for Contractors of the Virginia Department of Professional and Occupational Regulation.

ection 4. The Board shall appoint an Executive Secretary for a maximum term of five (5) years, or as otherwise approved by the Board.

ection 5. The Board shall require the Treasurer to be bonded. The amount, timeframe and terms of the bond shall be approved by the Board. The Association shall pay the bond premium and any other costs associated with the bond.

ection 6. The Board shall appoint members to fill unexpired terms or vacancies on the Board within forty five days.

ection 7. An executive session of the Board shall be conducted at the request of any member of the board, when approved by a two-thirds majority of the Board's voting members present. Only voting members of the Board and those individuals deemed necessary by the President to the purpose of the meeting are permitted to attend the executive session.

ection 8. The Board is hereby authorized to conduct business through electronic messaging, teleconference or other remote participation methods provided the quorum and voting requirements specified herein are observed. A minimum of three (3) business days notice shall be provided by the President or their designated representative prior to the meeting.

ction 9. Board members shall, upon receipt of draft Board and Membership meeting minutes, review such minutes and advise the Secretary of any suggested modifications within five (5) business days.

ction 10. Duties and responsibilities of each Board member shall be as described in the Board of Directors Job Description Policy, approved by the Board.

Article VII – Committees

ction 1. The standing committees are: Advertising/Yearbook, Auditing, Awards, Bylaws, Certification/Education, Finance, Legislative, Nominating, Plumbing /Mechanical /Fuel Gas, SOI, Time/Place, Membership and Information Technology.

ction 2. Standing Committee chairs shall be appointed by the President, unless otherwise specified in this article, within 30 days following the close of the SOI. Members of the committees shall be appointed by the chair unless otherwise specified in this article.

ction 3. The following standing committees shall be comprised of a minimum of three (3) members including the chair:

A. Advertising and Yearbook

B. Auditing

1. The Treasurer shall not serve on this committee.

C. Awards

D. By-Laws

E. Certification and Education

F. Finance

1. The Treasurer shall serve as the chair.

G. Information Technology

1. The webmaster shall serve as the chair.

H. Membership

Continue

1. The Executive Secretary shall serve as the chair.

I. Nominating

1. The Immediate Past President shall serve as the chair.

J. Plumbing/Mechanical/Fuel Gas.

K. Time and Place.

L. School of Instruction

1. The Executive Secretary shall serve on this committee.

2. The chair of the time and place committee shall serve on this committee Section 4. Legislative Committee shall be comprised of the committee chair and any member willing to serve.

Section 5. Special Ad Hoc committees shall be appointed by the President when deemed necessary by the President or the Board. The committee shall be comprised of a minimum of three (3) members and shall operate at the discretion of the Board. The committee chair will not have Board voting rights.

Article VIII – Meetings

Section 1. A minimum of two (2) membership meetings shall be held per year.

Section 2. First Membership Meeting shall be held at a time, date and location approved by the Board. The meeting shall be for the purpose of receiving reports from the Officers, District Directors, committees and for any other business that may arise. A minimum of fifteen (15) Active members present shall constitute a quorum.

Section 3. The SOI shall be held at a time, date and location approved by the Board. The date and location shall be approved a minimum of one (1) year in advance of the SOI. The SOI shall be for the purpose of conducting the Second Membership Meeting, providing educational programs, electing Officers, District Directors, receiving reports from Officers, District Directors, committees and for any other business that may arise. A minimum of fifteen (15) Active members present shall constitute a quorum.

Section 4. Meetings of the Board shall be held on the call of the President, but not less than three (3) times each year. A majority of the Board's voting members shall constitute a quorum.

Section 5. Special membership or Board meetings may be called by the President or the Board of Directors. Official notice of the meeting shall be sent by mail or electronically to the members a minimum of fourteen (14) days prior to the date thereof. The purpose of the meeting is to conduct business of the Association. A minimum of fifteen (15) active members present constitute a quorum for a special membership meeting or a majority of the Boards voting members for a Board meeting. Special meetings may be conducted using electronic messaging or teleconference.

Article IX – Parliamentary Authority

The current edition of *Robert's Rules of Order Newly Revised* is the Associations final Authority on all questions of procedure and parliamentary law not covered by the Constitution and By-laws nor by any special rules of order adopted by the Association.

Article X – Amendment of Bylaws

These bylaws may be amended during any membership meeting by a two-thirds majority of Active members present and voting, provided such amendment has been submitted in writing by any member to the Bylaws Chair not less than thirty (30) days in advance of a Board meeting for review and recommendation; and further provided such amendment has been posted on the Association's website not less than thirty (30) days prior to the membership meeting.

Article XI- Code of Ethics

We the members of the Association acknowledge that our profession has a direct and vital impact on the quality of life of all Virginia citizens and of all others who may live, work, play, and visit within the Commonwealth. *We the members* are therefore dedicated to the highest standards of professionalism, integrity, and competence, and we do pledge to adhere to the following principles of ethical behavior:

- Recognize that the health, safety, and welfare of the public are our top priorities and acknowledge that the primary function of government is to serve the best interests of the people.
- Consider our profession a distinct opportunity to serve society.
- Demonstrate honesty, integrity, and uniformity in the discharge of our duties.
- Treat all persons with courtesy and respect.
- Conduct ourselves in a manner which creates and maintains respect for the Association and the industry it represents.
- Refuse to leverage our positions to secure advantage or favor for ourselves, our family, or friends.
- Refrain from representing private interests in any business or affairs of the Association.
- Remain loyal to the Virginia Plumbing and Mechanical Inspectors Association and pursue its mission and objectives in a manner consistent with the public good.

* Bylaws were completely rewritten and adopted on July 25, 2014
** Bylaws were amended on 07/26/2024 to include fiscal year

BOWERS

PROUD TO SUPPORT THE VPMIA

ABOUT US

Founded in 1984, Bowers is the leading Mechanical Contractor in the DMV. Our mission us to provide quality mechanical, plumbing and general construction services .

MARKETS SERVED

Mission Critical

Base Building

Commercial Service

Healthcare

Service Construction

W.E. BOWERS & ASSOCIATES, INC.

12401 Kiln Ct.
Beltsville MD, 20705
#301-419-2488
www.webowers.com

PO Box 6005
10405 Dow Gil Rd
Ashland, VA 23005

Phone: (804) 798-2600
Fax: (804) 798-1356
ottosales.com

Manufacturers Representatives

Proudly Serving Virginia, District of Columbia, Maryland, South West Virginia, Southern Delaware, North Carolina

Acudor
Access Doors
acudor.com

Advance Tabco - Commercial Stainless Steel Sinks, Tables and Accessories
advancetabco.com/plumbingzone

Allied - Medical Gas Products: Outlets, Valves, Alarms and Manifolds
alliedmedicalllc.com

Amico - Medical Gas Products: Outlets, Valves, Alarms, Manifolds, Compressors, Vacuum Systems
amico.com

Aqua Treatment Services - Packaged Rainwater & UV Disinfection, Water Treatment, Softeners
aquat.com

CCI Piping Systems
Mechanical Seals and Wall Sleeves
ccipipe.com/products/wrap-it-link

Chromalox
Heat Trace Cable and Controls
chromalox.com

Ecovie - Commercial Grey Water Recycling, Rainwater Collection, Storm Water Management
ecoviewater.com

Evac - Vacuum Plumbing Systems
Fresh Water Generation
evac.com

Goss Equipment - Oxy-Fuel, Air Acetylene, Air Propane, Air Propylene and Nitrogen Equipment
gossonline.com

Hydrotek International
Sensor Faucets and Flush Valves
hydrotekintl.com

Intewa - NSF 350 Listed Grey Water Systems, Hydraulic Jump Pre-Filters for Rainwater Harvesting
intewa.com/en/home

Judo
Automatic, Self-Cleaning Water Filtration Systems
judo.eu/en-ca/products

Kemper Water Control Systems - Innovative Systems for Protection of Potable Water Quality
kemperwatercontrol.com

Leonard Valve Company
Temperature Control Valves
leonardvalve.com

Mifab - Specification Drainage, Trench Drains, Interceptors, Light Commercial Drainage
mifab.com

North Star Water Treatment Systems - Commercial/ Residential Water Softeners and Treatment Systems
northstarwater.com

QuantumFlo - Domestic Water Booster Pumps Intelligent Controls, Custom Rainwater Systems
quantumflo.com

Town & Country Plastics - Laboratory Products, Acid Neutralization/Dilution Tanks and Lab Sinks
townandcountryplastics.com

T-Drill
Mechanically Formed Copper, Stainless Steel Tee's
t-drill.com

Willoughby Industries - Ligature Resistant Fixtures, Security Products and Electronic Water Management
willoughby-ind.com

Wiseman - Industrial Chemicals for Plumbing, Heating, Drainage, Building, Janitorial and Bathroom Industries
wisemanind.com

VPMIA's Foundation

Vision Statement

VPMIA members are committed to providing code development leadership and continuous training that results in uniform application of the codes. We look for opportunities to partner with all who are impacted and strive to develop and deliver codes and standards that result in health, safety, and welfare protection for the public.

Mission

VPMIA is an association of code professionals dedicated to promotion of uniform enforcement and development of the codes throughout the Commonwealth to assure the health, safety, and welfare of its citizens and any one who may live, work, or visit the state of Virginia. The pursuit of this endeavor is achieved through close, open, and equal working relationships with design professionals, builders, contractors, material manufacturer's and others involved in the construction industry. VPMIA supports the ICC, its goals and mission.

Strategic Plan Mission

VPMIA's strategic plan is to advance our mission through training in order to promote better understanding of the benefits and efficiency of using model codes. The association promotes teamwork, while embracing fairness and respect to all involved parties, always maintaining open communications in every aspect to those who participate in the process.

VPMIA's Strategic Plan

GOAL # 1

Enhance and increase communications of VPMIA with the public
(Communications)
Initiative action:

- Actively promote a positive image of code enforcement's role in the community.
- Advertisements in trade, industry, state DHCD, and community publications.
- Commitment to code development to achieve the superior level of health, safety, and welfare for our citizens.

GOAL # 2

Increase and expand education
(Training –Communications)
Initiative action:

- Encourage increased participation from all interested parties who interact with any and all aspects of code enforcement.
- Increase awareness of the educational benefits of the association.
- Promote credentialing programs provided by the state DHCD.

GOAL # 3

Uphold the highest levels of professionalism
(Leadership – Professionalism)
Initiative action:

- Instill and promote leadership values.
- Always display integrity.
- Adherence to code of ethics.
- Share knowledge at all levels.
- Maintain and promote certifications.
- Respect others.

GOAL # 4

Promote relationships with industry and related professional organizations
(Cooperation)
Initiative action:

- Participate in the code development process.
- Encourage cooperative working relationships with construction-industry professionals.
- Become involved as active or associate members to other professional organizations such as VBCOA, ICC, IAEI, and PMPV.
- Solicit speakers and provide speakers for these organizations to enhance communication.
- Continue to actively participate in DHCD towards uniform application and development of the model building codes and standards.

GOAL # 5

Broaden and expand VPMIA Membership (Membership)
Initiative action:

- Develop information package of the organization benefits.
- Provide more member services.
- Develop a more wide spread advertisement program for membership, including associate members.

GOAL # 6

Continue leadership and participation in code development process
(Leadership – Code Development)
Initiative action:

- Enhance and develop strategies for participation in International Code Council Code developmental process.
- Encourage participation on state and national committees.
- Provide financial support towards member participation in these activities.

GOAL # 7

Promote the adoption of the International Code Council family of model codes (Communications – Training)
Initiative action:

- Provide analysis and impact of benefits for industry, where necessary.
- Provide training for code enforcement officials and industry.
- Interact with DHCD to provide uniform enforcement of model codes.

GOAL # 8

Ensuring financial viability of VPMIA
Initiative action:

- Align financial resources to organizational outcomes.
- Achieve goal objectives.
- Operate within budgeted plan.

DuRa™ Pipe

DURAPIPE™

THE RELIABLE CHOICE

Epoxy Coated Cast Iron Soil Pipe & Fittings for Aggressive Applications

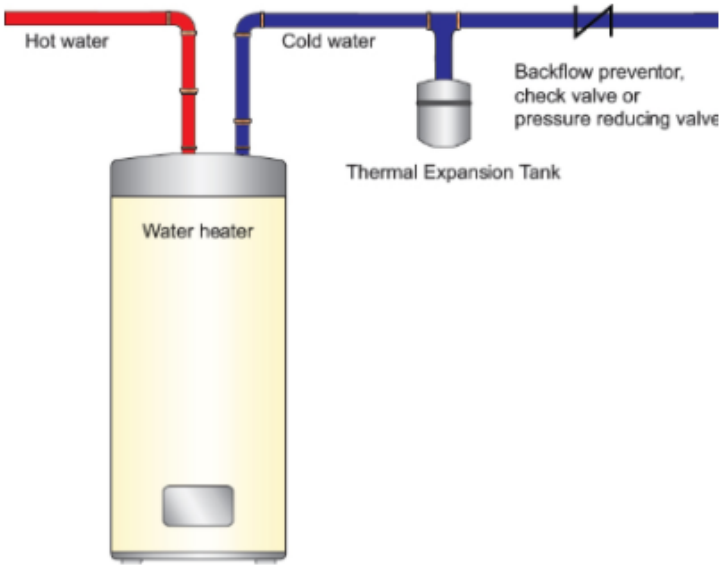
AB&I Foundry · anaco-husky · TYLER · McWane Plumbing Technical Services

Water Heater Sizing and Location: Code vs. Practicality

This article explores the intersection of code requirements and practical realities, offering insights for inspectors, installers and designers alike.

Water heaters are indispensable to any building plumbing system, yet their sizing and placement are often misunderstood or undervalued. While the International Plumbing Code® (IPC®) offers clear guidance on installation and performance expectations, real-world conditions frequently challenge strict compliance.

This article explores the intersection of code requirements and practical realities, offering insights for inspectors, installers and designers alike.



Water Heater Sizing: Balancing Draw and Recovery

The IPC does not mandate a specific method for sizing water heaters. Instead, it places the responsibility on the plumbing system designer to select equipment that meets the building's operational demands.

For storage-type water heaters, performance during peak demand is defined by two interrelated characteristics: draw capacity and recovery rate.

- **Draw capacity** is the initial volume of useful hot water available before outlet temperature declines due to incoming cold-water mixing. Because cold water enters at the bottom and gradually blends with the stored hot water, a tank cannot deliver its full nominal volume at the thermostat setpoint. For example, a 50-gallon storage heater typically delivers about 40 gallons of hot water before outlet temperature drops below a usable value.
- **Recovery rate** is the volume of cold water the heat source can reheat to the thermostat "cut-out" temperature within one hour, determined by the heater's input rating (e.g., wattage or BTU/hr) and the required temperature rise.

Continue

These two metrics combine to form the First-Hour Rating (FHR), a Department of Energy (DOE) performance measure representing the approximate amount of hot water a storage water heater can supply during the first hour of peak demand. Historically, FHR was estimated using the relationship:

FHR ≈ (0.85 × tank capacity) + recovery

For example, for an electric storage heater with a 40-gallon tank and a 4,500-watt element, approximately 34 gallons are available as draw (40 × 0.85), and the heater can recover roughly 20 gallons in one hour, yielding a First-Hour Rating of approximately 54 gallons.

Although traditional rules of thumb, such as using a 40- or 50-gallon unit for typical three-bedroom residences, remain common practice, the modern EnergyGuide label provides standardized DOE-tested FHR values that enable designers and consumers to size water heaters more accurately and compare models consistently. Current DOE test procedures (revised in 2015) also align FHR reporting with the Uniform Energy Factor (UEF) framework, meaning older, pre-2015 FHR values are not directly comparable to those appearing on today's EnergyGuide labels.

Proper sizing ensures:

- Reliable hot water during peak use
- Energy efficiency by avoiding oversizing
- Fewer callbacks and greater user satisfaction

Designers should consult manufacturer specifications, DOE ratings, and building usage patterns to select appropriately sized units.

Location Requirements: Accessibility and Safety

IPC Section 501.4 mandates that water heaters be installed in locations that allow for observation, maintenance, service and replacement. Key considerations include:

- **Minimum clearances** for access
- **30" x 30" working space** in front of the control side
- **Prohibited locations**, such as storage closets or bedrooms without sealed enclosures
- **Elevation requirements** in garages (typically 18" above the floor for units with ignition sources, unless listed as Flammable Vapor Ignition Resistant)

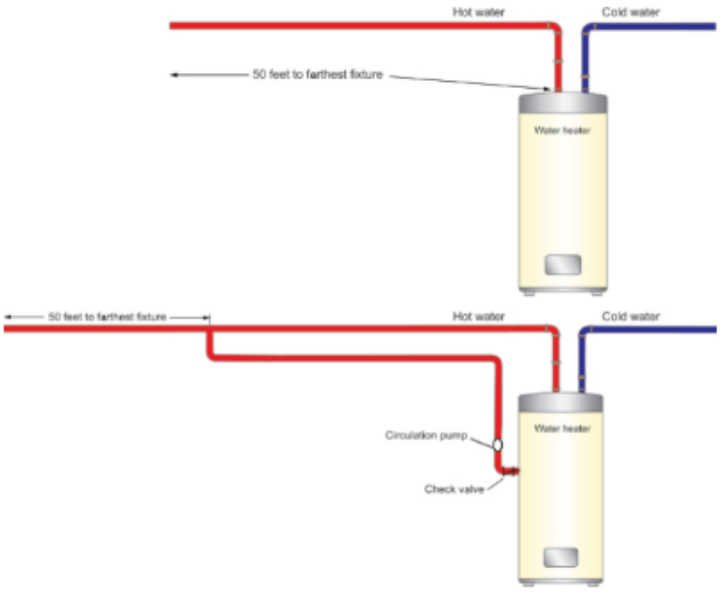
Installers should also plan for future maintenance, especially in multi-family or commercial settings.

Energy Efficiency: Why Placement Matters

Water heater location significantly impacts energy use, heat loss and system longevity:

- Units in unconditioned spaces (e.g., garages, basements) lose heat more rapidly.
- Long pipe runs increase wait times and water waste.
- The IPC limits hot and tempered water piping to 50 feet; the International Residential Code® (IRC®) allows 100 feet, while the International Energy Conservation Code® (IECC®) imposes stricter limits (as low as four feet for two-inch piping and larger).

Best practice: Install water heaters in conditioned, insulated spaces near high-demand fixtures to reduce energy use and improve performance.

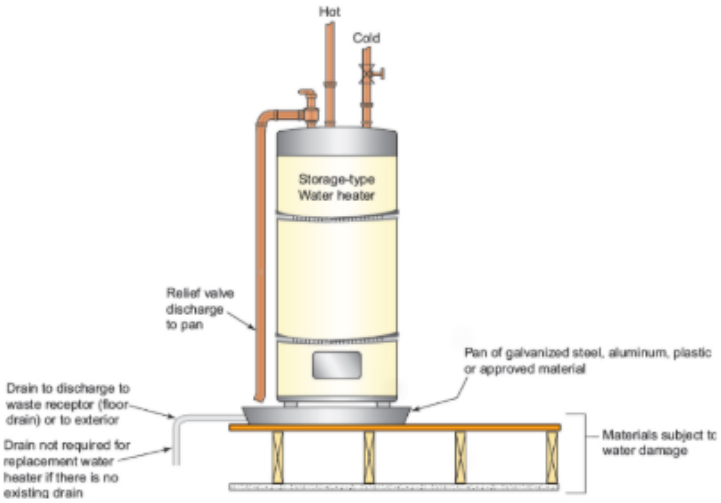


Inspections: Common Pitfalls

Inspectors frequently encounter:

- Improper venting or vent materials
- Inadequate access clearance
- Oversized electrical breakers
- Missing sediment traps on gas lines
- Loose or missing seismic strapping
- Missing catch pans in damage-prone areas
- Incorrect catch pan drain terminations
- Unsupported expansion tanks
- Improper or missing TPR discharge piping

Each of these issues reflects a failure to meet code requirements and can lead to hazardous conditions, reduced efficiency, failed inspections and costly remediation.



Continue

Code vs. Practicality: Bridging the Gap

While the IPC provides a solid framework, successful installations require thoughtful application:

- **Designers** must consider usage patterns, climate and layout.
- **Installers** should anticipate inspection criteria and future serviceability.
- **Inspectors** must balance code enforcement with practical feasibility.

Final Thoughts

Water heater sizing and placement are not just code checkboxes; they are foundational to the safety, efficiency and reliability of a building plumbing system. Proper sizing ensures consistent hot water delivery and energy savings, while strategic placement supports accessibility and long-term performance.

The IPC sets the standard, but it's up to professionals to apply both technical expertise and practical judgment. By understanding draw capacity, recovery rate, location requirements and common inspection pitfalls, designers, installers and inspectors can work together to deliver systems that are not only code-compliant but also safe, efficient and built to last.

To access any of ICC's PMG-related resources, click here. To subscribe to the PMG newsletter, click here.

ABOUT THE AUTHOR

Mark Fasel is a director, PMG technical resources for the International Code Council, where he serves as a subject matter expert to the plumbing, mechanical, fuel gas, swimming pool and spa codes.

HOPKINS | LACY
A BRANCH COMPANY

WE'RE YOUR METAL FABRICATOR

WE SPECIALIZE IN ALL TYPES OF COMMERCIAL METAL FABRICATION AND PREFABRICATION, FROM CUSTOM HVAC DUCT TO MECHANICAL & PLUMBING PIPING TO SPECIALTY AND CUSTOM METAL WORKS.

CAPABILITIES

- FULL COIL LINE
- SQUARE DUCT
- VULCAN WATERJET INSULATION CUTTING
- DUST-FREE PIPING AND STEEL MANUFACTURING AREAS
- MISCELLANEOUS METALS
- CUSTOM METAL WORK
- PNEUMATIC CUTTING
- ORBITAL WELDING
- WELDING (ALL TYPES OF COMMERCIAL WIRE, STEEL, ALUMINUM)
- IN-HOUSE ENGINEERING & BIM

SERVING THE MID-ATLANTIC

CONTACT: CHAD BUCK · 540-797-8356 · CHAD.BUCK@GJHOPKINS.COM

Product Certification Marks for Firestop Systems

Learn more about differences in how the UL Mark may appear based on region, country and other specific attributes.

UL Solutions provides testing, inspection and certification (TIC) services globally. UL Marks appear differently for products certified to different countries or schemes.

Due to the variation of the UL Mark on firestopping products, questions often surface, including:

- What do those Marks look like?
- In accordance with which standard or standards are they delivered?
- What are the differences between them?
- Which Mark applies to which market?

Continue reading below for answers to these questions.

Life safety products and systems for the built environment

UL Solutions provides TIC services for many critical life safety products. Life safety products are the various devices, materials and compounds collectively referred to as fire containment, fire detection and fire suppression products. Fire containment includes firestop products and systems, which are used to restore the fire resistance ratings of fire walls, fire barriers, and fire partitions and horizontal assemblies (floor-ceiling assemblies) to protect penetrations or joints as required by model building codes. Firestopping materials are made, sold and used globally with often unique compliance requirements for each market. These requirements have driven demand for market-specific certification marks to show products are certified, listed or classified to the appropriate standards for the location where they will be used.

Continue

North America

In the United States, UL Solutions offers customers the option to use the legacy UL Mark or the enhanced and smart UL Mark and badge system.

Legacy UL Marks, Enhanced Mark, optional smart Mark and badge

The standalone legacy UL Mark can be accompanied by a “C” or a “C” and a “US” to indicate compliance with just Canadian or Canadian and American standards, respectively. The enhanced Mark uses modular artwork that can include attributes like safety, two-digit country codes, and the product’s file or certification number. If any of these UL Marks are applied to a product, this indicates the product is under the UL Solutions U.S. Safety Certification Scheme and is only tested and certified to standards specified in their certification documentation available on UL Product iQ®. The product’s certification is accompanied by a UL Solutions-issued test report to the UL Solutions Follow-up Services Program which assess continued compliance. This means the product meets the common definition of “listed and labeled” as cited in various installation standards and building codes.

Continue

Proud to support the VPMIA

434-295-1177
Charlottesville, Virginia

webrown.com

In Canada, compliance with Canadian National Standards such as CAN/ULC-S115 for fire-stopping products is demonstrated by one of three options. There are two legacy Marks used for the Canadian market — the ULC Mark, which features “ULC” in a circle with the word “Listed,” or the legacy UL Mark shown above complemented by the letters “C” or “C” and “US.” The “C” indicates the product has been certified to comply with the applicable Canadian Standard. The combination of “C” and “US” indicates a product has been certified to comply with both U.S. and Canadian requirements.

The enhanced UL Mark can be used interchangeably with the legacy Marks. This Mark may include attributes such as “safety” or “sûreté “with U.S. and CA country codes and the product’s file number, all embedded in the Mark artwork. Enhanced UL Marks can also be made “smart” with the inclusion of an optional QR code that opens a certification page featuring additional information about the certified product. Enhanced UL Marks, like legacy Marks, are also accompanied by a UL Solutions-issued test report to the UL Solutions Follow-Up Services Program.

Europe

The UL-EU Certification Program provides an optional, third-party certification for products that have been found in compliance with an appropriate European standard or European Assessment Document (EAD), such as EN 1366-3 and EAD 350454-00-1104 for firestopping. The legacy Mark for this service features “UL” in a circle with the letters “EU” below or the UL Enhanced Mark with “EU” included as a country code either alone or alongside others. When the product is placed onto the European Economic Area (EEA) market, the customer must complete all steps required by the European Union (EU) regulations for building products. Test reports, classifications and surveillance of factory production control must be undertaken by EU-based entities with the correct accreditations/notifications. UL Solutions then layers on additional quality and follow-up service requirements to provide customers with an optional third-party certification program intended for markets where third-party certification is required. A UL-EU certification must not be used as a substitute for a European Technical Assessment (ETA) within the EEA.

Continue

Different test standards, different requirements

While the intent of all the aforementioned firestop test standards is the same — to evaluate the ability of the firestop materials to restore the fire ratings of fire-resistive walls and floors once penetrations or joints are installed — there are some key differences between them. Below is a partial summary of notable differences.

UL 1479, the Standard for Fire Tests of Penetration Firestops, and, in some instances, UL 2079, the Standard for Tests for Fire Resistance of Building Joint Systems, require the assembly to be subjected to a hose stream test, whereas ULC S115 considers the hose stream test optional, and EN 1366-3 and EN 1366-4 do not require it.

UL 1479, UL 2079, EAD 350454-00-1104 and EAD 350141-00-1106 require intumescent firestop materials to be subjected and evaluated against aging and high-humidity exposures, whereas ULC S115 does not.

For the F rating (UL 1479, UL 2079, ULC S115) and the integrity rating (EN 1366-3, EN 1366-4), the North American standards do not allow any flaming, whereas the European standards do not allow continuous flaming for a period of time greater than 10 seconds. However, the European standards are conducted with significantly higher furnace chamber pressure, which may result in heightened flaming or hot gases passing through the firestop, and a cotton waste pad is also used when such an event occurs.

Due to these differences in testing requirements, successfully testing a product to one standard does not provide certification of compliance with the other standards.

Look for the proper UL Mark

A UL Certified product bearing the UL Mark without the correct accompanying region identifier does not indicate compliance with United States or Canadian standards, just as a North American UL Mark does not indicate compliance with a European test standard. Those products that comply with multiple standards or are being sold in multiple markets may have multiple regions indicated as part of the enhanced UL Mark itself or the certification label, which includes the certification Mark and other important information.

Continue

A UL Mark will be accepted in Canada if it has specific Canadian indicators, like “CA” on the enhanced Mark, “C” on the legacy Mark or the ULC Mark or the “CAN” modifiers for the label. Inversely, the cUL, ULC or UL enhanced Marks only featuring the “CA” country code would not be accepted within the United States, as it implies testing and certification to Canadian standards only.

Summary

It is crucial that the proper product is selected to align with the correct standard and accompanying certification Mark to meet the specifications and requirements issued for a specific project. The presence of a UL certification Mark does not grant equivalency for a material, as there are differences in test standards and code requirements as you move to different countries or regions.

Design professionals and code authorities should consult the Product iQ online search directory, to associate the certification indicated on the product label with the test standards and marking information provided in the published guide cards. The manufacturer’s technical services staff can also be a resource to help specify firestop systems for specific building applications that are Listed and would meet a building code, standard or local country requirement, as they may have different options available.

Registration for Product iQ is complimentary, or you can search using an abridged version of the site without registering. For additional information or technical guidance from UL Solutions, email ulregulatoryservices@ul.com.

Authors:

Kevin Hyland – Principal Engineer, Fire Resistance and Containment, Built Environment

Matthew Schumann – Industry Manager Building Materials, Built Environment; Distinguished Member of Technical Staff, William Henry Merrill Society