

VPMIA

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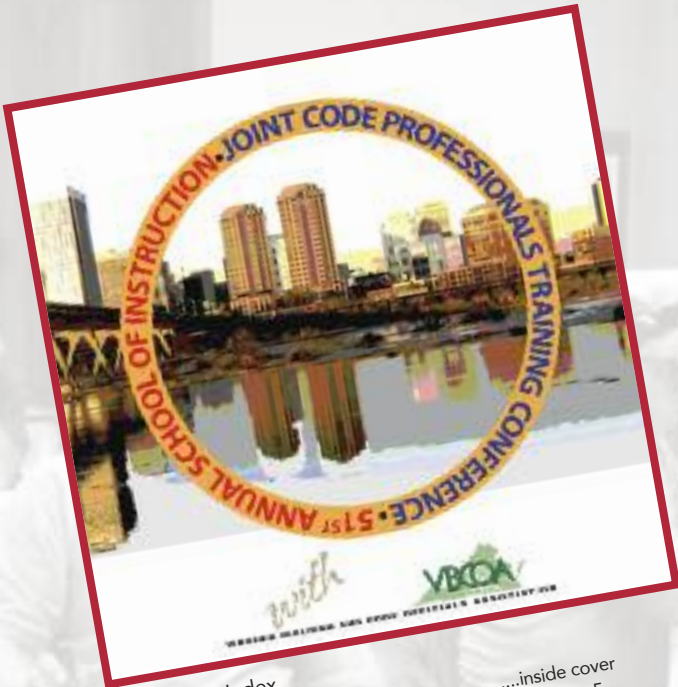
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The 51st Annual School of Instruction

and **Joint Code Officials Training Conference** with VBCOA

April 2 - 4, 2014
Richmond, Virginia



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President's Corner



It has been a distinct honor and a great privilege to serve you as President of VPMIA and I believe we have been successful once again in promoting the Association's goals and objectives through the hard work and good deeds of our members. I would like to take this opportunity to thank the members of VPMIA who, through their selfless acts, have kept us focused on the most important goal which is to promote and protect the health, safety and welfare of all Virginia citizens.

Our continued participation in the code development process, at both the state and national level, stands out as one of the most important contributions we can make to the nation, the citizens of the Commonwealth and ultimately, to each other. Thanks to VPMIA's longstanding scholarship program, which is bolstered by the generous support of the good folks from DHCD, we continue to remain actively involved in the code development process. However, we should always challenge ourselves to become more highly involved by volunteering to serve on those ICC committees which seek hard working and knowledgeable code enforcement professionals who are willing and able to serve.

We must also acknowledge the great work of VPMIA's committees. Our committees are the lifeblood of this organization and although the challenges each committee may face vary from year to year, I would like to express my sincere gratitude to this year's Advertising/Yearbook Committee, Bylaws Committee, Certification/Education/Training Committee, Joint Conference Committee, PMG Code Change Committee, and School of Instruction Committee for the many outstanding accomplishments you have achieved this year. Your hard work is the key to our organization's continued success

and VPMIA thanks you all for the outstanding efforts you have put forth on behalf of the Association.

As we look ahead to the future, I encourage all members of VPMIA, and most especially our newest members, to become more involved in the Association's affairs. If you have not taken advantage of the many opportunities to serve on a VPMIA committee, do yourself a favor and speak with one of our committee chairs. Should you decide to offer your assistance, you will soon realize the sense of accomplishment gained by participating in the important work that will ensure the Association's future success.

In closing, I would like to express my sincere thanks to VPMIA's Board of Directors for your support throughout my year as president. Please know that I will always recall this time as one when I grew to understand the true meaning of teamwork and the great accomplishments which may be realized when everyone in the group is dedicated to giving of themselves to advance a common purpose. When I first became president of VPMIA last April, a year in office seemed like a very long time but now I realize just how quickly that time has passed and it has been the passage of time which has taught me to appreciate the dedicated and loyal members of VPMIA even more.

Respectfully yours,

A handwritten signature in blue ink that reads "Paul M. Rimel III". The signature is written in a cursive style with a prominent "P" and "R".

Paul M. Rimel III, President
VPMIA
2013-2014

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VPMIA 51st Annual School of Instruction and Joint Conference of Virginia Code Officials with VBCOA

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SCHEDULE

WEDNESDAY, APRIL 2

7:00 am - 8:15 am	Registration
8:30 am - 11:30 am	<i>VBCOA Business Meeting @ Hilton Garden — adjacent to the Holiday Inn</i>
8:30 am - 11:30 am	Morning Training Class TRACKSAt the Holiday Inn
	#1 2012 Plumbing Code Change (DHCD)Dominion Room-1
	#2 2012 Mechanical/Fuel Gas Code Change (DHCD).....Dominion Room-2
	#3 2011 National Electric Code Change (DHCD).....Dominion Room-3
	#4 2012 Energy Conservation Code Change (DHCD).....Galanti-Harris Room
11:30 am - 11:45 am	<i>VPMIA General Membership Meeting (Part 1).....Dominion Room (1&2)</i>
11:30 am - 1:00 pm	<i>Lunch @ Hilton Garden — adjacent to the Holiday Inn</i>
1:00 pm - 4:00 pm	Afternoon Training Class TRACKSAt the Holiday Inn
	#1 2012 ICC Swimming Pool Code (Lee Clifton, Kris Bridges)Dominion Room-1
	#2 NSF International-Get the Lead Out (Chris Salazar).....Dominion Room-2
	#3 Residential Lifts (Kenny Hardee, James Coberly, Carl McDilda, Dale Powers).....Dominion Room-3
	#4 International Firestop CouncilGalanti-Harris Room
5:00 pm - 6:00 pm	<i>President's Welcome @ Hilton Garden — adjacent to the Holiday Inn</i>
6:00 pm - 8:00 pm	<i>Dinner @ Hilton Garden — adjacent to the Holiday Inn</i>

THURSDAY, APRIL 3

8:30 am - 11:30 am	Morning Training Class TRACKS.....At the Holiday Inn
	#1 2012 Residential Building Code Change (DHCD).....Dominion Room-1
	#2 2012 Commercial Building Code Change (DHCD).....Dominion Room-2
	#3 2011 National Electric Code Change Training (DHCD)Dominion Room-3
	#4 2012 Plumbing Code Change Training presented by (DHCD)Galanti-Harris Room
11:30 am - 1:00 pm	<i>Lunch @ Hilton Garden — adjacent to the Holiday Inn</i>
1:00 pm - 3:30 pm	Afternoon Training Class TRACKSAt the Holiday Inn
	#1 Highland Tank Company Emerging Green Water (Michael Gauthier).....Dominion Room-1
	#2 How Energy Codes Drive Technology in Hvac (Ryan Anderson).....Dominion Room-2
	#3 Generator Inspections (Haywood Kines, Casey Littlefield, John Hudgins).....Dominion Room-3
	#4 The Structures Group-Special Inspections (Michael Matthews, Mike Galli).....Galanti-Harris Room
1:00 pm - 4:00 pm	
6:30 pm - 10:00 pm	<i>VPMIA Reception/Awards Banquet @Holiday Inn</i>

FRIDAY, APRIL 4

7:30 am - 9:00 am	<i>Breakfast Buffet @ Hilton Garden — adjacent to the Holiday Inn</i>
9:00 am - 11:30 am	<i>VPMIA General Membership Meeting (Part 2) @ Hilton Garden</i>
8:30 am - 11:30 am	Morning Training Class TRACKS.....At the Holiday Inn
	#1 2012 Residential Building Code Change (DHCD)Dominion Room-1
	#2 2012 Commercial Building Code Change (DHCD).....Dominion Room-2
	#3 2012 Mechanical/Fuel Gas Code Change (DHCD).....Dominion Room-3
	#4 2012 Energy Conservation Code Change (DHCD).....Galanti-Harris Room
11:30 am - 1:00 pm	<i>Lunch @ Hilton Garden — adjacent to the Holiday Inn</i>
1:00 pm - 4:00 pm	Afternoon Training Class TRACKAt the Holiday Inn
	#1 DHCD Administrative Code Update TrainingDominion Room 1, 2, 3
4:00 pm	Conference ends

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The Washington Gas Energy Efficiency Program is offering substantial rebates on select natural gas products to homeowners and businesses in Virginia. Now you can enjoy all of the benefits of natural gas products while keeping some money in your pocket while you do. There are a limited number of rebates available only for a limited time—once they're gone, they're gone. Rebates are available for installations performed by licensed contractors through April 30, 2014.

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Code of Ethics

We the members of Virginia Plumbing and Mechanical Inspectors Association recognize that our work has a direct and vital impact on the quality of life for all people in the Commonwealth of Virginia, and we are dedicated to the highest standards of professionalism, integrity and competence. We therefore pledge to maintain and advance these ethical principles:

- Place the public safety and health above all other interests and recognize that the primary function of government is to service the best interests of all people.
- Consider my profession a distinct opportunity to serve society.
- Demonstrate integrity, honesty and fairness in the discharge of my duties by striving to achieve excellence in all matters of ethical conduct.
- Treat all persons courteously, equally and fairly.
- Conduct myself at all times in such a manner as to create and maintain respect for the Virginia Plumbing and Mechanical Inspectors Association and the industry it represents.
- Refuse to leverage my position to secure advantage of favor for myself, my family or my friends.
- Neither accept nor offer, any gift, favor or service that might tend to influence me in the discharge of my professional duties.
- Refrain from representing private interests in any business or technical affairs of this Association.
- Use every opportunity to improve public understanding of the Virginia Plumbing and Mechanical Inspectors Association and its important contribution to the Commonwealth of Virginia.
- Maintain loyalty to the Virginia Plumbing and Mechanical Inspectors Association, and pursue its objectives in ways that are consistent with the public interest.

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.

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.



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Thanks to the 30% federal tax credit, a flood of inexperienced, questionably trained dealers are now offering geothermal. While some companies allow *anyone* to sell their products, WaterFurnace requires an ongoing commitment to the most extensive training and education programs in the industry. WaterFurnace only invests in dealers who are passionate about offering the finest in products and service, and are less concerned with simply being the cheapest. That's why WaterFurnace is the most recognized and respected name in residential geothermal. Or maybe it's because WaterFurnace units use the clean, renewable energy found in your backyard to provide savings up to 70% on heating, cooling and hot water. Or is it thanks to the industry's best warranty? Decide for yourself. For more information, visit waterfurnace.com to find a dealer near you or contact one of the three WaterFurnace Territory Managers covering Virginia... or be prepared to deal with a flood of your own.

YOUR LOCAL WATERFURNACE TERRITORY MANAGERS

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Tate Rust
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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, IAEL, 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.



Constitution and By-Laws

ARTICLE I — The Name, Seal, and Address of this Association

Section 1. The name shall be the Virginia Plumbing and Mechanical Inspectors Association; herein and hereafter referred to as the Association.

Section 2. The seal shall be as indicated below:



Section 3. The address shall be that of the Executive Secretary or as otherwise designated by the Board of Directors.

ARTICLE II — Objectives

- Section 1.** The objectives of the Association are:
- A. To participate in the formulation of Virginia Plumbing and Mechanical Code provisions.
 - B. To promote uniform understanding and application of the Virginia Uniform Statewide Building Code.
 - C. To promote and secure uniform inspection methods throughout the Commonwealth of Virginia.
 - D. To promote closer industry unity between code officials, governing agencies and the private sector.
 - E. To promote and improve the standard of professional plumbing and mechanical inspectors.
 - F. To provide professional development through an annual education and training seminar which shall be known as the School of Instruction.
 - G. To encourage growth of the Association by providing enhanced services to its members and by promoting strong leadership values, respect and the pursuit of common goals.

ARTICLE III — Membership

Section 1. Active membership shall be open to code officials actively engaged in plumbing and/or mechanical code enforcement. Application for membership shall be in writing and submitted to the Executive Secretary.

Section 2. Associate and student memberships shall be open to those persons interested in the design, manufacture, installation or sale of plumbing and/or mechanical systems/products.

Section 3. Retired membership shall be open to those members submitting written application for retired status to the Executive Secretary.

Section 4. Life membership may be extended only to Active and Associate members who have significantly contributed to promoting the objectives of the Association. Life members may be nominated and approved by the general membership at the third general membership meeting. Life membership shall be limited to one Active member and one Associate member per calendar year.

Section 5. Charter members are those who founded the Association.

Section 6. Honorary membership shall be open to those persons who are not members of the Association but have made a significant contribution in promoting the objectives of the Association.

Section 7. Application for associate, student and honorary member-

ships shall be in writing, submitted to the Executive Secretary and reviewed by the Board of Directors for approval.

Section 8. All members shall conduct themselves in accordance with the Associations Code of Ethics and shall be willing to promote the objectives of the association.

ARTICLE IV — Board of Directors

Section 1. The Association shall be governed by a Board of Directors, herein and hereafter referred to as the Board, which shall consist of the elected officers, District Directors, the Director-at-Large and the Chairperson of each standing committee.

Section 2. The Board shall manage the policies, business, property and affairs of the Association.

Section 3. Officers

- A. The officers of the Association shall consist of a President, Vice President, Secretary and Treasurer. The officers shall be Active members and shall be elected and installed during the annual School of Instruction.
- B. The officers shall hold office from the close of the annual School of Instruction through the close of the annual School of Instruction of the following year. Officers shall serve no more than two consecutive terms in the same office.

Section 4. Directors

- A. A total of four active members may be elected as District Directors. The Directors shall be Active members and shall be elected and installed during the annual School of Instruction.
- B. The Directors shall hold office from the close of the annual School of Instruction through the close of the annual School of Instruction the following year.
- C. Each District shall consist of all cities, towns and counties as outlined in Appendix A.
- D. The Director-at-Large shall be the immediate Past President.
- E. Non-voting Ex-officio members on the Board of Directors shall include the President, or his or her duly appointed representative, of the Virginia Chapter of the International Association of Electrical Inspectors, The Virginia Fire Prevention Association, and The Virginia Building Code Officials Association.

Section 5. In the event that an Officer or Director resigns, the Board shall appoint, as soon as possible, an Active member to fill the unexpired term.

Section 6. Appointments

- A. An Executive Secretary shall be appointed by the Board for a maximum term of five years or as determined by the Board. Compensation of services rendered shall be as approved by the Board.
- B. A Director of Finance shall be appointed by the Board for a maximum term of five years or as determined by the Board. Compensation of services rendered shall be as approved by the Board.

Section 7. General duties

- A. Board members shall review the draft General Membership or Board of Director meeting minutes and return

(continued)



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- Free benefits - Governmental Members: Your staff can receive free ICC benefits too*
- And much more!

Join the International Code Council (ICC) and start growing your building career now!
Visit our Member page at www.iccsafe.org/membership for an application.

*Some restrictions apply. Speak with an ICC Member Services Representative for details.

14-09142



Constitution and By-Laws

corrections within 5 business days after receipt of such draft minutes.

ARTICLE V — Duties of the Officers, Directors, Executive Secretary and Finance Director

Section 1. The President

- A. To preside over all meetings.
- B. To select all committee chairpersons except the finance and the nominating committees.
- C. The President may appoint members to represent the Association on local, state or national committees, boards and similar entities when such representation is requested or provided for by regulation or statute. Appointments shall not conflict with the Association's by-laws or code of ethics.
- D. To be an ex-officio member of all committees except the nominating committee.
- E. To perform such other duties applicable to the office as prescribed by the parliamentary authority adopted by the Association.

Section 2. The Vice President

- A. To assist the President at all meetings.
- B. To preside over all meetings in the absence of the President.
- C. To perform such other duties as applicable to the office as prescribed by the parliamentary authority adopted by the Association.

Section 3. The Secretary

- A. To assist the presiding officer with the orders of business and to distribute correspondences to all members present.
- B. Notification of meetings.
 1. To send to all Board members a notice of every Board meeting at least twenty days in advance of such meeting.
 - a. Ten days notice, including an agenda, shall be given for all special meetings.
 2. To send all members a notice of every General Membership meeting at least thirty days in advance of such meeting.
- C. The Secretary shall, electronically or by mail, send the draft Board of Director or General Membership meeting minutes to the Board of Directors for comments and revisions within seven business days after the conclusion of the meeting.
- D. To maintain and have available at all meetings the official minute book.
- E. To record the voting at all meetings.
- F. To send letter ballots to all Board members not present at meetings for which there is no quorum.
- G. To perform such other duties as applicable to the office as prescribed by the parliamentary authority adopted by the Association.

Section 4. The Treasurer

- A. To accurately record and post all funds received and disbursed.
- B. To pay all bills that have been approved as per the budget or by the Board.
- C. To submit a quarterly report of the Association's finances to the Finance Committee.
- D. To submit a report of the Association's finances at all

meetings, except special meetings unless included in the special meeting agenda.

- E. To maintain the financial records of the Association on a fiscal year from May 1 through April 30, unless otherwise approved by the Board.
- F. To be a standing member of the Finance Committee.
- G. To perform such other duties as applicable to the office as prescribed by the parliamentary authority adopted by the Association.
- H. The Board of Directors has the authority to require the Treasurer be bonded as deemed necessary. If the Board of Directors determines that a bond is required, the value, timeframe and terms of the bond shall be established in a board-adopted policy. The Association shall pay the bond premium and any other costs associated with the bond.

Section 5. The District Director

- A. To attend the Board and General Membership Meetings per term of office.
- B. To assist in the management of the Association.
- C. To report any concerns of the members within their district to the Board.

Section 6. The Executive Secretary

- A. To prepare for the Board all business that has not been assigned to others.
- B. To present or have presented at all meetings all reports received from committee chairpersons.
- C. To recommend plans of work and conduct the general business of the Association under the direction of the Board and the General Membership.
- D. To be a standing member of the School of Instruction Committee.
- E. To authorize both active and/or retired membership status.
- F. To maintain all membership applications.
- G. To receive the letter of resignation of an Officer or Director and present it at the next Board meeting.
- H. To send to each Director a current roster of all members within their respective districts no more than thirty days after the third General Membership meeting.
- I. To maintain and have available at all meetings a current roster which lists only members in good standing by district affiliation.
- J. To send all membership renewals by December 1 of each year.

Section 7. The Director of Finance

- A. To coordinate the finances of the Association.
- B. To serve as the chairperson of the Finance Committee.

ARTICLE VI — Committees

Section 1. The number of committee members, mentioned below, includes the chairperson. Standing Committee chairpersons are appointed by the President, see previously in the text, Article V, Section 1.B. Standing Committee members are selected by the committee chairperson as stated hereinafter in this Article or are established within the description of the committee. Standing Committee members that are established by the text are in addition to those members appointed and selected. Standing Committees may include, but are not limited to. The following:

- A. An Advertising and Yearbook Committee, composed of

(continued)

Constitution and By-Laws

- five members, shall be appointed within thirty days after the third General Membership meeting. It shall be the duty of this committee to manage an advertising campaign and publish the yearbook for the Association's School of Instruction.
- B. An Auditing Committee, comprised of three members, shall be appointed within thirty days after the third General Membership meeting. It shall be the duty of this committee to audit the Treasurer's account(s) at the close of the calendar year and report at the fourth regular Board meeting. The Treasurer shall not be a member of this committee.
- C. An Awards Committee, comprised of five members, shall be appointed within thirty days after the third General Membership meeting. It shall be the duty of this committee to select and present, the awards for Outstanding Service to the Active and Associate members of the Association and the awards to the individuals that are the outstanding plumbing and mechanical apprentice of the year.
- D. A By-laws Committee, comprised of five members, shall be appointed within thirty days after the third General Membership meeting. It shall be the duty of this committee to review, discuss, prepare and recommend, to the Association, any necessary changes to the Association's By-laws in order to maintain current directives for the administration of the Association.
- E. A Certification, Education, and Training Committee, comprised of five members, shall be appointed within thirty days after the third General Membership meeting. It shall be the duty of this committee to organize educational classes for the School of Instruction.
- F. A Finance Committee, comprised of three members, the Treasurer and the Finance Director, shall be appointed within thirty days after the third General membership meeting. It shall be the duty of this committee to prepare a budget for the fiscal year and submit it to the Board for approval at its last scheduled meeting prior to the third General Membership meeting. The committee may submit amendments to the current budget at any regular meeting. The committee shall prepare and submit any other reports as directed by the Board.
- G. A Legislative Committee composed of three members, shall be appointed within thirty days after the third General Membership meeting. It shall be the duty of this committee to attend as many Virginia General Assembly meetings as possible and to be observant of new regulations. This committee will review, discuss and report to the Board of Directors and the General Membership, any legislature or regulations that will directly or indirectly effect the Association or its members.
- H. A Membership and Website Committee, comprised of five members, shall be appointed within thirty days after the third General Membership meeting. It shall be the duty of this committee to keep the website current and updated. The website shall be the source of Association meetings, dates, membership and advertisement applications, Association and public information and other Association information.
- I. A Nominating Committee shall be comprised of the five most immediate past presidents of the Association willing to serve in this capacity. The most immediate past president on the committee shall serve as the chairperson. It shall be the duty of this committee to nominate, at the third General Membership meeting, candidates for the offices to be filled. Before the election, additional nominations from the floor shall be permitted.
- J. A Plumbing, Mechanical and Fuel Gas Code Committee, composed of all Association members willing to participate, the chairperson shall be appointed within thirty days after the third General Membership meeting. It shall be the duty of this committee to review, discuss and recommend necessary changes that apply to the Commercial and Residential Plumbing, Mechanical and Fuel Gas Codes.
- K. A School of Instruction Committee, comprised of the Executive Secretary, the chairperson shall be appointed within thirty days after the third General Membership meeting. It shall be the duty of this committee to plan the program for the next Annual School of Instruction.
- L. A Time and Place Committee, comprised of five members, shall be appointed within thirty days after the third General Membership meeting. It shall be the duty of this committee to review the date and location of all General Membership meetings and submit a report and recommendation to the General membership for approval at least twelve months prior to such meeting.

Section 2. Duties of the Committee Chairperson

- A. To submit, in writing, all committee findings and recommendations to the Executive Secretary at least ten days prior to any meeting, except special meetings, unless specified on the agenda. If the chairperson or members of the committee is in attendance at the meeting, such written report shall not be required.
- B. To select all committee members not specifically provided for in other sections of these by-laws and report their names to the Executive Secretary within thirty days of their appointment.

Section 3. A Special Ad Hoc Committee shall be appointed for a specific purpose when necessary.

- A. The committee shall be under the authority and direction of the Board, unless specifically provided herein.
- B. The committee shall be comprised of at least five members.
- C. It shall be the duty of this committee to carry out a specified task and present it to the Board.
- D. The committee chairperson shall not be granted the voting privileges as a Standing Committee Chairperson.

ARTICLE VII — Voting

Section 1. Only Active, Charter and Lifetime Active members who are in good standing shall have the right to vote.

Section 2. All members shall have the right to make and second motions.

ARTICLE VIII — Meetings

Section 1. Three General Membership meetings shall be held each year. The first shall take place approximately fourteen days prior to or fourteen days after August 1. The second shall take place approximately thirty days prior to or thirty days after November 15. The third shall take place approximately fourteen days prior to or fourteen days after April 1, during the Annual School of Instruction.

Section 2. Four Board meetings shall be held each year at a time and location determined by the President. The first shall be held at least sixty days prior to the first General Membership meeting. The second shall be held at least sixty days prior to the second General Membership meeting. The third on the day of the second General Membership meeting and the fourth at least thirty days prior to the third General Membership meeting. A quorum shall consist of at least seven Board members. Action taken by less than seven Board mem-

(continued)



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Constitution and By-Laws

bers shall be null and void unless confirmed by a letter ballot from those members who were absent.

Section 3. Special Board meetings may be called by the President. Such meetings may also be called by the Board with the written request of at least seven members. The purpose of the meeting shall be stated in the call. The location of the meeting shall be determined by the President. At least ten days notice shall be given. A quorum shall consist of at least seven Board members. Action taken by less than seven Board members shall be null and void unless confirmed by a letter ballot from those members who were absent.

ARTICLE IX — Dues

Section 1. Annual Dues

- A. Active membership shall be thirty dollars per calendar year.
- B. Associate membership shall be thirty-five dollars per calendar year except those who have paid for five consecutive years shall only be required to pay thirty dollars per consecutive calendar year thereafter.
- C. Retired membership shall be ten dollars per calendar year.
- D. Charter and Life membership shall be absorbed by the Association.

Section 2. No members shall be in good standing whose dues are not paid by March 1 of each year and shall not be maintained on the membership roster if not paid by December 31.

Section 3. Dues may only be revised at General Membership meetings.

ARTICLE X — Amendments

Section 1. The Constitution and By-Laws may be amended by two-thirds vote at any General Membership meeting, provided that the proposed amendment has been submitted in writing at a previous General Membership meeting.

ARTICLE XI — Parliamentary Authority

Section 1. The current edition of Robert's Rules of Order Newly Revised shall be the Association's final authority on all questions of procedure and parliamentary law not covered by the Constitution and By-Laws nor any special rules of order the Association may adopt.

APPENDIX A — Districts of The Virginia Plumbing and Mechanical Inspectors Association

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

According to History, these By-laws were adopted November 1962. Amended April 1988, December 1990, December 1994, April 2006, April 2007, April 2008, October 2010, and July 29th, 2011.

Participate

Attend ANY
of the Board
of Directors
meetings
and THREE
General Membership
meetings
throughout
the year.



Check the VPMIA website,
www.vpmia.org for the most
current meeting information.

Resolution



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Paul Rinell
City of Staunton
(540) 732-3862
rinellp@ci.staunton.va.us

Vice President
Skip Harper
County of Louisa
(540) 967-3414
sharpe@louisa.com

Secretary
Curt Campbell
Chesterfield County
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campbellc@chesterfield.gov

Treasurer
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Fairfax County
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Director-at-Large
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Fairfax County
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District 2 Director
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waldridge@christiansburg.org

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mclehoneyd@chesterfield.gov

District 4 Director
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City of Hampton
(757) 727-6268
cmcelean@hampton.gov

Executive Secretary
Geary Showman
Shenandoah County
Retired
(540) 489-6185
gshowman@shenandocountyva.gov

Resolution of Respect for John "Johnny" Sanderson

Whereas, Before his death on April 12th, 2013, John was a member of Virginia Plumbing and Mechanical Inspectors Association; and

Whereas, John spent his career as a plumbing contractor, a professional boat racer, was an avid fisherman, and worked 9+ years for Chesterfield County as a Commercial Building Inspector in code enforcement insuring the protection of the citizens, as well as all who visited The Commonwealth of Virginia; and

Whereas, John is survived by his wife, Terri; daughter, Taylor; stepson, Ray; siblings, Marilyn S. Farmer (Ron), Reed Sanderson (Betty), H. Lee Sanderson Jr. (Donna); mother-in-law, Beverly; sister-in-law, Michele Scheurenbrand (Jay); and several nieces and nephews; and

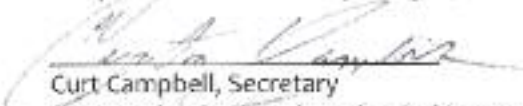
Whereas, The Virginia Plumbing and Mechanical Inspectors Association notes with great sadness the passing of John "Johnny" Sanderson; now, therefore, be it

Resolved, That the Officers, Board of Directors, and the entire membership of the Virginia Plumbing and Mechanical Inspectors Association join the family of John "Johnny" Sanderson in celebration of his life and do also offer their most heartfelt sympathy at the loss of this cherished family member; and

Resolved further, That the Virginia Plumbing and Mechanical Inspectors Association stands in readiness to assist the family of John "Johnny" Sanderson in any manner desired or requested; and

Resolved further, That this resolution be respectfully submitted to Terri Sanderson as a permanent memorial to the memory of John "Johnny" Sanderson.

Adopted this Sixteenth Day of April, 2013


Curt Campbell, Secretary
Virginia Plumbing and Mechanical Inspectors Association,
Chesterfield County Residential Inspection Supervisor

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WILLIAM F. HINES	1987		

*Denotes deceased

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Acknowledgements

Thank You to those whose efforts have made this VPMIA Yearbook possible.

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Our Advertisers, (individually listed on p. 3), Our Exhibitors, (individually listed on p. 35)

With special thanks to our contributing authors, Lee Clifton, ICC, and Luis Escobar, ACCA

—John Seay, Chairman, VPMIA Advertising/Yearbook Committee

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What's New

By Lee Clifton
ICC
Director of PMG Resources

in the 2015 International Plumbing Code® (PC)

The International Plumbing Code (IPC) continues to show its green as it introduces trenchless technology to the most extensive collection of building codes in the world. Pipe bursting as it is commonly referred to, involves the replacement of an old pipeline with a same or larger diameter pipe in a process that destroys

the original pipe as the new one is installed. The pipe bursting tool, which is pulled through the sewer by a winch or rod, is located at an upstream opening, forces its way through existing pipe materials by fragmenting the old pipe and compressing the broken pieces into the soil as it progresses from one end to the other.

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In developed countries, many post WWII utility lines are at the end of their service life, while at the same time a large percentage of the world's population between one and two billion people have substandard sanitation and no regular source of clean drinking water.

In the United States, the topic of failing infrastructure has become a regular theme in the media. The problem is sanitary sewer overflows (SSOs), caused by inflow and infiltration, which occurs when ground water and other surface drainage enter and inundate sanitary sewer systems.

These terms and what they imply are steadily gaining awareness across America and around the world.

The rehabilitation and replacement of an aging sewer infrastructure with the least amount of impact on the consumer is a good thing. This pipe replacement process utilizes HDPE (High Density Polyethylene) seamless piping which is joint-free and prevents root intrusion. A sewer camera is used to do a video inspection to insure that the pipe replacement was done correctly and that the proper grade (slope) of the pipe is obtained.

Let's take a close look at a new code section and the new requirements. Section 717.2 will allow the replacement of building sewer pipe by pipe bursting methods to a maximum of six inches and shall be no less than the same size as the existing piping. Section 717.3 requires the existing piping sections that are to be replaced to be inspected internally by a recorded video camera survey. The survey shall include notations of the position of the cleanouts and the depth of the connections to the existing piping. Section 717.4 requires the replacement piping to be of extra high molecular weight PE3408 material and to be manufactured with a standard diameter ratio (SDR) 17 in compliance with ASTM F 714. The pipe fittings to be connected to the replacement piping shall be of extra high molecular weight PE3408 material and shall be manufactured with SDR 17 in compliance with ASTM D2683. Where the existing building sewer did not previously have cleanouts, the requirements of this code will require cleanout fittings be installed. The completed replacement piping section shall be inspected internally by a recorded video camera survey and then be reviewed and approved by the code official prior to pressure testing of the replacement piping system. The test shall be in accordance with Section 312 of the IPC.

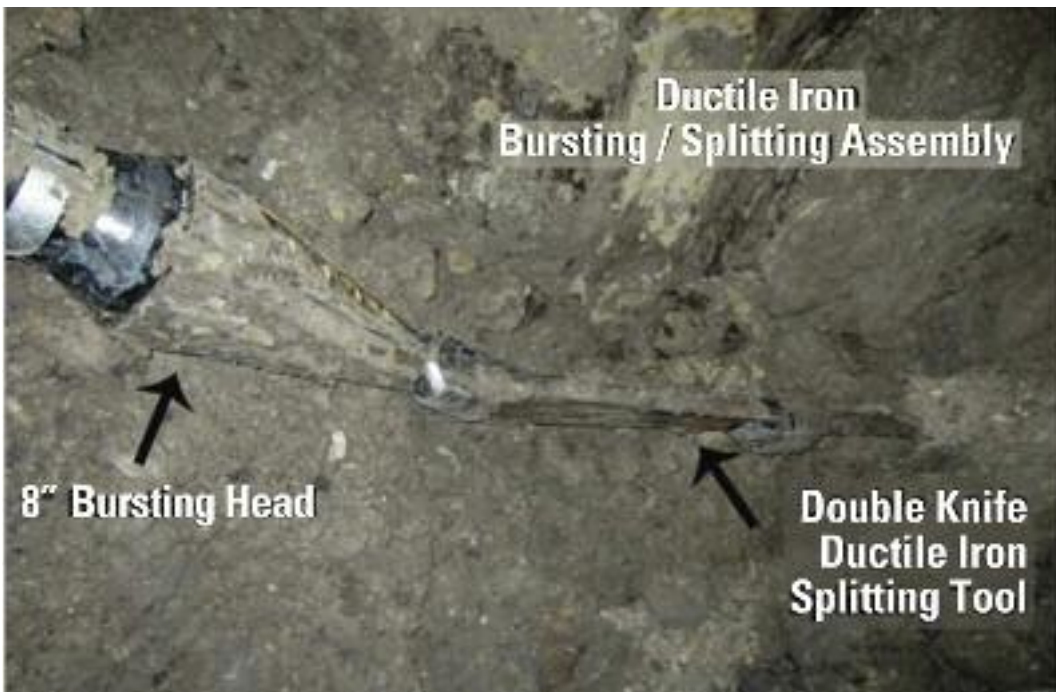
The new code requirements will give contractors and engineers the necessary tools to do the job while still being environmental friendly, and "GREEN" by reducing



A 100 Ton Ram Winch Pulling New HDPE Pipeline 270'

negative impacts to property and infrastructures. They will eliminate cost associated with the replacement of landscaping, trees, driveways, sidewalks, patios and more. The environmental benefits of Trenchless Technology will be attractive to those jurisdictions that will be adopting the 2015 International Plumbing Code. Current research shows that CO2 emissions are reduced when trenchless methods are used versus open-cut. This translates to a direct-cost benefit for cities that are facing "carbon taxation." Yes, trenchless technology saves time, money and minimizes restoration cost. The IPC again leads the way with new innovative technology. •

8" Bursting Head Preparing to Enter Ductile Iron Pipe



Lee Clifton, Director of Plumbing, Mechanical, and Fuel Gas Resources for the International Code Council (ICC) with 40 years of experience in the Plumbing, Mechanical, and Fuel Gas Industry. His career began as a second generation plumber, working for his father at Clifton Plumbing Inc. in Tampa, Florida. He retired from the City of Los Angeles in 2007 as a Principal Inspector after 21 years of service.

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1983-1984	George H. Williams, Jr.	1999-2000	Michael D. Thuot
1984-1985	Robert M. Broome	2000-2001	Guy Tomberlin
1985-1986	-----	2001-2002	John B. Seay, Jr.
1986-1987	Paul M. Adams	2002-2003	Dennis Martinelli
1988-1989	Paul Hostetler & Joseph Hall	2003-2004	Geary Showman
		2004-2005	James T. Moore
1989-1990	Dennis W. McNaughton	2005-2006	Wayne Kushner
1990-1991	Floyd Proffitt	2006-2007	James Anjam
1991-1992	Jeffrey Shawver	2007-2008	Richard Witt
1992-1993	Tommy Cantrell	2008-2009	Paul Rimel
1993-1994	Hassel E. DeShazo	2009-2010	Richard Grace
1994-1995	Doug Stover & Jack Rhoden	2010-2011	Skip Harper
		2011-2012	Curt Campbell
1995-1996	Robert D. Carroll	2012-2013	Shawn Strausbaugh
1996-1997	Roy N. McFarland, Jr.		

OUTSTANDING SERVICE

David L. Carr Associate Award

1981-1982	William E. Foley	1999-2000	David Johnston
1982-1983	John V. Duley	2000-2001	David L. Maupin
1983-1984	J. C. Nuckols	2001-2002	Lorrie Norton
1984-1985	Lawrence R. Muse	2002-2003	Allen Tryall
1985-1986	-----	2003-2004	Jonathan Sargeant
1986-1987	David Maupin	2004-2005	-----
1987-1988	Ronald Bryant	2005-2006	-----
1988-1989	Robert W. Price	2006-2007	-----
1989-1990	Fred Borden, Jr.	2007-2008	Jay Otto
1990-1991	Billy E. Leeder	2008-2009	-----
1992-1993	James B. Muncy	2009-2010	Richard (Dick) Maher
1993-1994	John Otto	2010-2011	-----
1994-1995	Danny & Laurie Crigler	2011-2012	Tom Harlan
1995-1996	James B. Hyler	2012-2013	Vic Hines
1996-1997	J. C. Nuckols		
1997-1998	James S. Steinle		
1998-1999	Thomas C. Roberts		

LIFETIME MEMBERSHIP

D. Paul Jack Active Award

1988-1989	Edward J. Baldwin, Jr.	2001-2002	Larry Dehaven
1989-1990	George H. Williams, Jr.	2002-2003	Lawrence Nuckols
1990-1991	Kenneth R. Snyder, Sr.	2003-2004	Roy McFarland, Jr.
1991-1992	Jesse R. Hurt	2004-2005	Guy Tomberlin
1992-1993	Douglas Stover	2005-2006	Stephen P. Borders
1993-1994	Ernest "Bud" Lester	2006-2007	Charles Gerber
1994-1995	Paul Hostetler	2007-2008	James T. Moore
1995-1996	Paul M. Adams	2008-2009	Geary Showman
1996-1997	Michael D. Redifer	2009-2010	Dennis Martinelli
1997-1998	Hassel E. DeShazo	2010-2011	John B. Seay, Jr.
1998-1999	Kathleen T. Dye	2011-2012	Wayne Kushner
1999-2000	-----	2012-2013	Richard Witt
2000-2001	William F. Hines		

LIFETIME MEMBERSHIP

John A. Otto Associate Award

1988-1989	Cecil F. Hardee, Sr.	2001-2002	Laurie/Danny Crigler
1989-1990	J. Richard Maher	2002-2003	Dave Johnson
1990-1991	David L. Carr	2003-2004	-----
1991-1992	Robert W. Price	2004-2005	-----
1992-1993	-----	2005-2006	-----
1993-1994	Billy E. Leeder	2006-2007	David Maupin
1994-1995	James B. Muncy	2007-2008	-----
1995-1996	Thomas C. Roberts	2008-2009	-----
1996-1997	Tom Kreutzer	2009-2010	-----
1997-1998	James S. Steinle	2010-2011	Jay Otto
1998-1999	John Otto	2011-2012	Mike Thuot
1999-2000	-----	2012-2013	Jonathan D. Sargeant
2000-2001	Herbert L. Joyner		

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AirDuctSys

ACCA's Manual D

The state of Virginia has referenced ANSI/ACCA 1 Manual D® (*Residential Duct Systems*) since its original inclusion in the 2003 state building code. It is the industry standard for properly sizing the air ducts that deliver conditioned air to the various rooms of a home. However, in my conversations with code officials around the state over the past couple of years, I have come to learn that it is not well understood. The intent of this article is to summarize the procedure contained in Manual D, and suggest ways in which you, a Virginia plan reviewer or inspector, can evaluate a design to ensure it complies with the code requirement.

THE BASICS

Duct system design can be broken down to five main steps:

- Determine the external static pressure (ESP) at the design CFM from the HVAC equipment manufacturer's blower performance data;
- Sum up the component pressure losses (CPL) for things like the coil, air filters, and supply/return grilles;
- Subtract the total component pressure loss from the external static pressure to find the available static pressure (ASP);
- Identify the longest supply and return runs within the home to calculate the total effective length (TEL);

Figure 1 Residential Plans Examiner Review Form

ACCA
ANSI/ACCA 1 Manual D

**Residential Plans Examiner Review Form
for HVAC System Design (Loads, Equipment, Ducts)**

Form
RPER 1.01
8-Mar-10

County, Town, Municipality, Jurisdiction
Header Information

Contractor _____
Mechanical License # _____
Building Plan # _____
Home Address (Street or Lot#, Block, Subdivision) _____

REQUIRED ATTACHMENTS¹

Manual J Form (and supporting worksheets or WUFI Form) (and supporting worksheets)
OEM performance data (heating, cooling, blower)
Manual D Friction Rate Worksheet
Duct distribution system sketch

ATTACHED

No No
Yes No
Yes No
Yes No

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature _____ °F
Indoor temperature _____ °F
Total heat loss _____ Btu

Summer Design Conditions

Outdoor temperature _____ °F
Indoor temperature _____ °F
Grains difference _____ Δ Gr @ _____ % Rh
Sensible heat gain _____ Btu
Latent heat gain _____ Btu
Total heat gain _____ Btu

Building Construction Information

Building

Orientation (front door faces) _____
North, East, West, South, Northeast, Northwest, Southeast, Southwest

Number of bedrooms _____
Conditioned floor area _____ Sq Ft

Number of occupants _____

Windows

Eave overhang depth _____ Ft

Internal shade _____
Blinds, drapes, etc. _____

Number of skylights _____

HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type _____
(Furnace, heat pump, boiler, etc.)
Model _____
Heating output capacity _____ Btu
(Heat pump - capacity at winter design outdoor cond. temp.)
Auxiliary heat output capacity _____ Btu

Cooling Equipment Data

Equipment type _____
(Air-Conditioner, Heat pump, etc.)
Model _____
Sensible cooling capacity _____ Btu
Latent cooling capacity _____ Btu
Total cooling capacity _____ Btu

Blower Data

Heating CFM _____ CFM
Cooling CFM _____ CFM

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow _____ CFM
External Static Pressure (ESP) _____ IWC
Component Pressure Losses (CPL) _____ IWC
Available Static Pressure (ASP) _____ IWC
ASP = ESP - CPL

Longest supply duct: _____ Ft
Longest return duct: _____ Ft
Total Effective Length (TEL) _____ Ft
Friction Rate: _____ IWC
Friction Rate = 25SP x 100 ÷ TEL

Duct Materials Used (inside)
Trunk Duct: Duct board, Flex, Sheet metal, Unlined sheet metal, Other (specify) _____
Branch Duct: Duct board, Flex, Sheet metal, Unlined sheet metal, Other (specify) _____

I declare the load calculation, equipment selection, and duct system design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's Printed Name _____ Date _____
Contractor's Signature _____

Reserved for use by County, Town, Municipality, or Authority having jurisdiction.

¹ The AHJ shall have the discretion to accept Required Attachments printed from approved ACCA software versions, see list on page 2 of instructions.
² If a third-party version of Manual J is used for load calculation, then verify residence meets requirements, see Altered Edition Checklist on page 13 of instructions.

System Design

Luis Romeo Escobar
Manager of Codes & Standards, ACCA

- Use the available static pressure and total effective length to calculate the system's friction rate (FR). This is done with the simple equation $FR = (ASP \times 100) / TEL$.

The designer wants the friction rate to fall within 'the wedge' (a friction rate between 0.06 and 0.18 inches of

water column or IWC) in order to avoid inadequate fan performance. A friction rate lower than 0.06 IWC can result in larger than needed ducts, which can increase home construction and/or HVAC installation costs. A friction rate higher than 0.18 IWC will result in air speed that is too high, which means that the ducts will

cause noise problems. If the friction rate is not in the wedge, the designer will need to adjust the design layout or change the components that cause pressure losses.

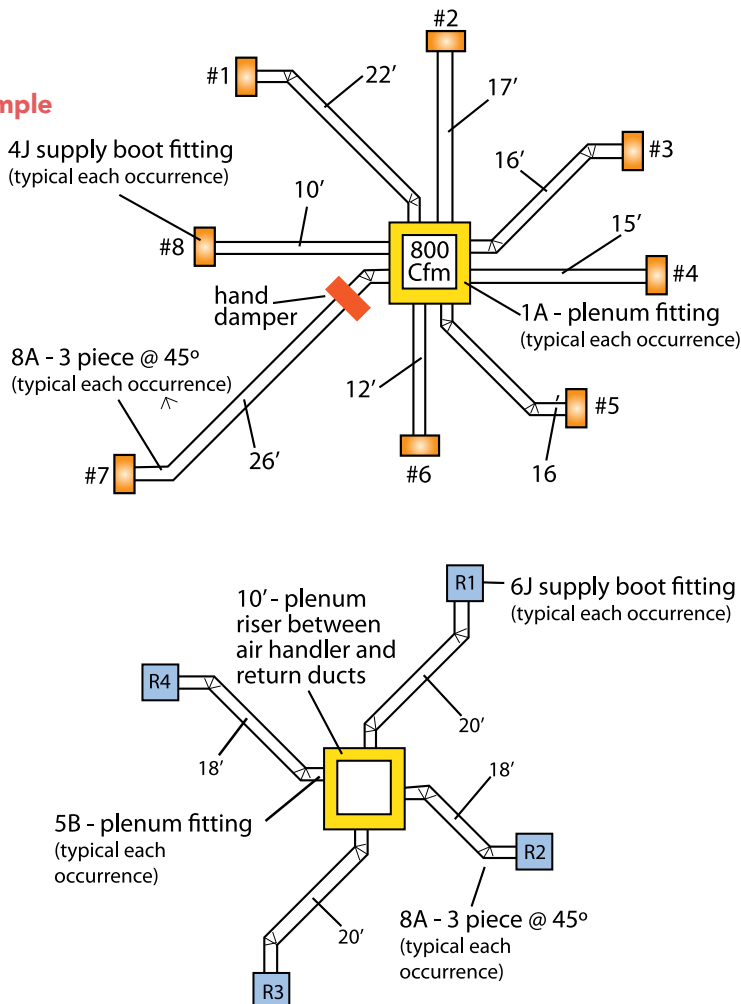
Final duct sizing will depend on the velocity of the air within the ducts. Manual D allows for a maximum speed of 900 feet per minute (fpm) for supply ducts, and 700 fpm for return ducts. If the design air speed exceeds these limits, the designer needs to size the ducts for the maximum speed allowable. They'll do this by using a duct wheel which allows them to compare air volume (CFM), air velocity (fpm), friction rate (FR), and duct diameter. ACCA has a duct wheel that is easy to use (also available as a mobile app), but the designer should use whichever they feel comfortable with.


Beware of contractors that *always* have a friction rate of 0.10! It is usually an indicator of someone that has not taken the time to properly size the ducts, but is instead following an outdated rule-of-thumb.

RESOURCES

It is inexcusable for a professional HVAC contractor to ignore the sizing procedure in Manual D. The manual itself discusses intricacies and details that can be encountered when designing the duct system. But in order to help the designer keep everything

Figure 2
Radial Duct
System Example



Two broken fortune cookies are shown on a light blue surface. A small, rectangular paper slip of paper is placed between the two broken pieces. The slip of paper has the text "The true cost of Chinese pipe depends on the worth of one's reputation." written on it in a serif font. Small crumbs of the cookie are scattered around the pieces.

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Duct Design, continued

straight for a particular system design, Manual D provides a Friction Rate Worksheet (see Figure 3) on which they can log the pertinent values. ACCA urges you to require submission of this worksheet for every permit request.

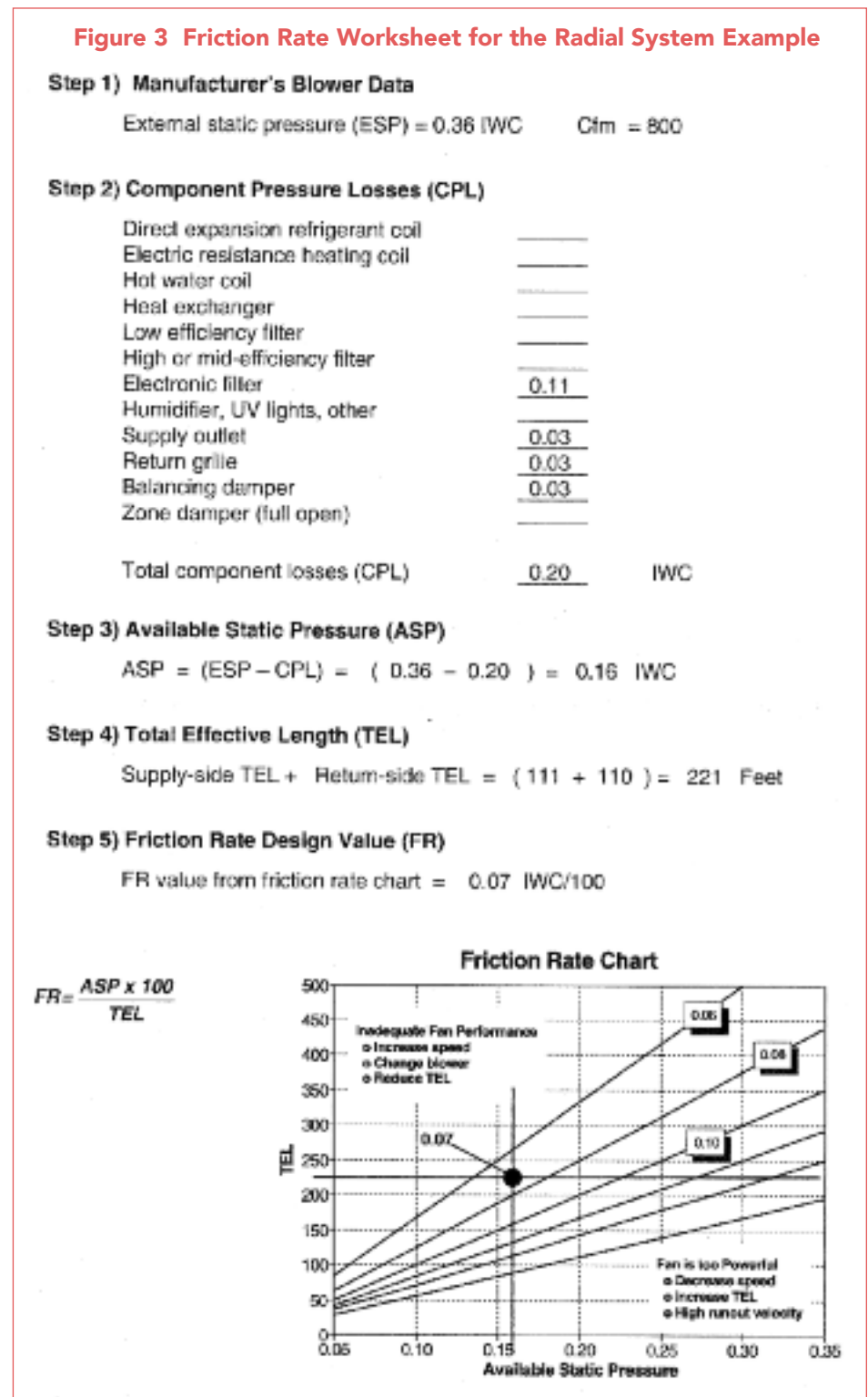
To further support plan reviewers, we have also developed the Residential Plans Examiner Review Form for HVAC System Design, which we make available for free in the downloads section at <http://www.acca.org/standards/codes/system-design-review-form/>.

This form (see Figure 1) streamlines the process of design review by presenting the essential information from the HVAC system design (load calculation, equipment selection, duct system design) all in one place. If your jurisdiction doesn't already require it, please check it out. We also have free Speed-Sheets available for system designers at <http://www.acca.org/standards/acca-speed-sheets/>.

FRICION RATE EXAMPLE

Let's examine this radial duct system: (see Figure 2). We see that there are eight supply runs and four return runs. It shows the distance from the air handler, the type of boots, and type of fittings. It tells us the design CFM, and from manufacturer data (not shown) we know that the blower will deliver the 800 CFM at an external static pressure (ESP) of 0.36 IWC.

The first thing the designer needs to do is determine the longest supply and return runs by finding their total effective lengths. To do this, they not only measure the physical length to each supply, but also note that



every fitting/takeoff/boot has an effective length associated with it that must be added to the run's length. That's what the 5B, 6L, 1A, etc. signify. They correspond with groups

found in Appendix 3 of Manual D, which contains the associated effective lengths. After summing up the various effective lengths for each supply, the designer finds that the

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Duct Design, continued

longest run is to supply #7, and that the total effective length is 111 feet. The total effective length for the longest return path (R1 or R3, both equal length) is 110 feet. So total effective length (TEL = longest supply + longest return side) used on the Friction Rate Worksheet is 221 feet.

The design plans are to install an electronic filter (0.11 IWC of

pressure loss), a supply outlet (0.03 IWC), a return (0.03 IWC), and a hand damper (0.03 IWC) gives us a total component pressure loss (CPL) of 0.20 IWC. We subtract this from the ESP to find that the available static pressure (ASP) is 0.16 IWC. Note that this 0.16 IWC would be further reduced if high-efficiency filters are used, or other components such as humidifiers, hotwater coils, zone dampers, etc. are in the air system.

Using the friction rate equation [FR = (ASP x 100) / TEL], we calculate the friction rate as 0.07 IWC (see Figure 3). Note that this friction rate is a function of the system physical attributes, and not just an arbitrary value that many designers use for every system. Different systems would have unique friction rates that would be used for sizing the ducts with a duct wheel. •

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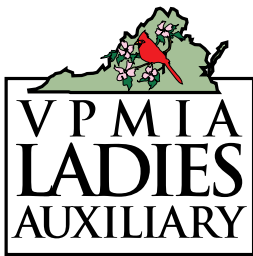
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Spouses attending the SOI may join in any of the activities as our guests.
Members are welcome to assist at Registration.

TENTATIVE PROGRAM

Wednesday, April 2	7:00		8:15	Registration
	11:30	–	1:00	Lunch @ HILTON GARDEN — <i>adjacent to the Holiday Inn</i>
	1:00	–	4:00	Craft
	5:00	–	6:00	VPMIA President’s Welcome Reception
	6:00	–	8:00	Dinner @ HILTON GARDEN
Thursday, April 3	10:00			Ladies Auxiliary Business meeting
	12:00	–	1:00	Lunch @ HILTON GARDEN
	1:00	–	3:00	Shop/tour
	6:30	–	10:00	Banquet @ Holiday Inn
Friday, April 4	7:30	–	9:00	Breakfast Buffet @ HILTON GARDEN
	9:00			Bingo

Be sure to stop by the Conference Registration desk for the latest news about activity plans/meeting locations.

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HOLDRITE: Secondary piping support devices, acoustical abatement products, other engineered solutions

MISSION RUBBER: Flexible rubber couplings, gaskets, no-hub and heavyweight couplings for plumbing, waterworks and industrial

OATEY-SCS: Plumbing chemicals, cements, drains, tubular products and specialties manufactured by **Oatey, Hercules, Harvey, Cherne** and **Dearborn**

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REQUIRED WORK ATTACHED

MECHANICAL JOBSITE
BUILDING PLAN
HVAC LOAD CALCULATION AND DESIGN
DESIGN CONDITIONS
BUILDING CONSTRUCTION INFORMATION
HVAC EQUIPMENT SELECTION (MCM 1401.3)
HVAC DUCT DISTRIBUTION SYSTEM DESIGN (MCM 1601.1)

MECHANICAL DESIGNER'S SIGNATURE
DATE

RECEIVED FOR COUNTY, TOWN, MUNICIPALITY, OR AUTHORITY (SEE INSTRUCTIONS)

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No reference library is complete without:

- **Manual J**, Residential Load Calculation (Referenced in VRC §M1401.3 Sizing)
- **Manual S**, Residential Equipment Selection (Referenced in VRC §M1401.3 Sizing)
- **Manual D**, Residential Duct Systems (Referenced in VRC §M1601.1 Duct Design)
- **Bob's House**, Understanding the Residential HVAC Design Process

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