

## DHCD Work Group 3 2009 USBC/SFPC Technical Amendments

First meeting April 2, 2009, at 9:30 a.m. at DHCD 1<sup>st</sup> Floor Board Room,  
501 North 2<sup>nd</sup> Street, Richmond, Virginia 23219

### Welcome

### Introductions

#### USBC/2008 NEC:

1. Arc-fault devices for entire dwelling unit: 2006 USBC has for bedrooms. Discuss safety risks and impacts. Cost is few 100 dollars per service panel-100 amps and higher for 200 amp panel. Work Group 4 is reviewing for the IRC. What states and localities have adopted or deleted? Is there a consensus to move forward, amend or delete? **(no handout)**
2. Child-proof covers for receptacles: Data on cost and safety impact? \$100-\$200 dollars? If tampered with or not operational - maintenance issues? These are required by licensure agencies for child day care facilities. Is there a consensus to move forward, amend or delete? **(no handout)**
3. USBC 2701.1.3, 2702.2.17 R-4, I-1, R-3, R-5 Emergency power: Discussion only on experiences and any need for amendments for DSS licensed assisted living facilities and group homes. **(page 9)**
4. USBC 2701.1.1 #1: Can this be deleted for NM cabling? Is there a consensus to delete or retain from USBC? **(no handout)**
5. Others issues. **(no handout)**

#### USBC/2009 IPC:

1. Need from VPMIA a list of major 2009 IPC and IRC-P code changes. **(no handout)**
2. VDH in licensed I-1, R-4 and I-4 placement of toilets per a 2006 AIA guideline with CMS requirements and IBC accessibility requirements. VDH to bring these AIA and CMS documents to meeting. Discussion only. **(page 12)**
3. Gray water, reclaimed water and rainwater harvesting - IPC Appendix C Gray water: DHCD/USBC, DEQ, DCR and VDH all have roles. Probably time to move Appendix C into the USBC/IPC coordinated with other state agencies. Discussion and consensus to move Appendix C into USBC with or without amendments. **(page 14)**

4. Grease traps and cross connection devices: Local water-sewer agencies are dictating or want to do so on what is approved. State law gives USBC the authority inside buildings. Discussion only to what, if any, actions to take. **(page 40)**
5. USBC P310.4 and T403.1: Delete as in 2009 IPC. Is there a consensus to delete? **(no handout)**
6. IPC 604.9/2903.5 Water hammer: Do we need to retain state amendment since it failed at ICC? **(page 43)**
7. IPC 3003.14.2/705.8.2 Primers: Discussion only if any USBC amendments are needed. **(page 45)**
8. IPC: Test shower liners. Discussion only. **(no handout)**
9. IPC: Occupant load must be split into genders before applying fixture ratio. Discussion only. **(no handout)**

#### **USBC/2009 Mechanical and Fuel Gas Codes:**

1. Need major code changes from VPMIA so that BHCD can see. **(no handout)**
2. FG310.1 CSST: Review state technical amendment. Is there a consensus to remain, delete or change? **(no handout)**
3. FG 202 Water heaters/closets: Is there a consensus to move forward with 2009 change? AGA still opposes as too stringent in calculation of sizing and space. Is part of the issue storage if located in a closet? What happens if the water heater is in an open basement turned into a habitable space and is then located in a “closet” or mechanical room? **(page 49)**
4. FG 621.2 Unvented room heaters: Contentious debate at ICC. Let ICC consider for the 2012 cycle for consensus? USBC only regulates unvented room heaters if connected to a fuel supply and not those heaters that have kerosene or propane with those regulated by the SFPC. Can the SFPC or local ordinances ban these types of portable unvented heaters? Discussion only. **(page 52)**
5. M1101.10 Locks for port caps: Should there be other options besides a locked cap in all instances? Industry was OK with the locked caps, but where the equipment was on a roof in a locked room, then should that be OK? Is there a consensus to move forward or amend to have more options? **(page 48)**
6. CO alarms: There were no code changes/challenges for IBC R occupancies; only in the IRC for new and existing dwellings. Work Group 4 on the IRC will take that code change up in their meeting. Legislation SB853 was introduced for 2009 as has

been the case for the past 3 years to require CO alarms in all residential occupancies. Need to review. The 2008 VHC also took no action. **(no handout)**

7. USBC/IMC: Remove ventilation rates as IMC has approved them in the 2009 IMC. Is there a consensus to delete? **(no handout)**
8. IMC Grease hoods: DSS/VDH Licensed facilities are being constructed that can be I-1, I-4, R-4 and could be R-3, R-5 and even R-2 ALF's. Local building officials are requiring grease hoods even when the stoves might be commercial style but the key term is for commercial purposes. Discussion only. **(page 13)**
9. IMC: 35 feet again for clothes dryer. Should the section say 35feet or manufacturer's instructions as some vents are less or more than 35 feet? Most are okay at 35 feet. Is there a consensus to move forward? **(no handout)**
10. Propane gas cylinders protection. Existing incidents Southwest. **(page 42)**

#### **USBC/2009 IFC:**

1. 605.10: Requires eye wash station for I-2. Is there a consensus to move forward? **(no handout)**

#### **USBC/2009 IBC:**

1. I-3 USBC changes: Is there a consensus to delete all that passed at ICC? 1-2 did not pass. **(no handout)**
2. Smoke detectors: Required and can use one of two UL listed photoelectric or ionization. Ionization better for flaming fires and photoelectric for smoldering fires. Location was more important than type of detector. Discussion only. Is this perhaps an ICC 2012 issue? **(Page 61)**
3. T503: VHC and legislation heard this issue of restricting combustible construction to one story, not 3, for juvenile homes and licensed R and I occupancies. The BHCD also heard the code change and denied it. Fire records show a very good record and the USBC requires for R's with 13R to sprinkle the attics for senior facilities. The ICC CTC is working on other changes for R-4, I-1 and I-4 recommending to date additional smoke compartments where residents need some assistance during emergencies. Discussion only. **(page 62)**
4. IBC 202 310.1 G26 and 903.6.2 R-4: Makes clear R-4 even when constructed under the IRC need to be sprinkled. Thus USBC amendment, deletion or change? Is there a consensus to retain USBC amendment, delete or modify based on changes in the 2009 IBC? **(page 64)**
5. IBC Live-Work units: Review. **(no handout)**

6. IBC G30 308.3: From 5 to 1 patients for I-2. Far more restrictive than current 5 or CMS at 4. Impact on R-4, R-5, I-1 and coordination with current USBC to avoid confusion. Major change. Is there a consensus to move forward, amend or delete? **(no handout)**
7. IBC E160 508.4: Increases fire rating I-2 and other occupancies to 2 hours. Review for justification and fire data. Is there a consensus to move forward, amend or delete? CMS change. **(no handout)**
8. IBC E121 1017.2: Requires 6 feet corridors where not capable of self-preservation in any occupancies. What are the impacts on R-5 or R-4 and I-1? Is there a consensus to move forward? **(no handout)**
9. USBC 909.6 I-3 smoke control: Is there a consensus to retain or go with 2009 IBC? **(no handout)**
10. IBC 704.5. Increases from 5 to 10 feet fire separation distance for fire rating of exterior walls limits glazing and types of materials used. Major change to now require fire rating based on interior now required to exterior too. If sprinkled what is issue and fire data? Is there a consensus to move forward, amend or delete? **(page 69)**
11. IBC 1003.7 Occupant elevator: Good change that finally elevates fire service elevators at 120 feet to be MOE in emergencies (long used in Europe). Would also be a trade-off for 3<sup>rd</sup> stairs in super high rises over 420 feet. Is there a consensus to move forward, amend or delete? **(Page 71)**
12. IBC T1005.1: Major change to end sprinkler trade-off for exit stairs and impact is typical 44 inch stair goes to 66 inches in sprinkled buildings. Logic was not for fire but for other evacuations like bomb threats. Little data for this substantial mandate. Is there a consensus to move forward, retain current 2006 requirements as USBC amendment? **(no handout)**
13. IBC 1008.1.8.6 and USBC 407.8: Special locking arrangements. Delete USBC for the IBC version? Item 4 in each is different. USBC seems more specific. Is there a consensus to move forward with IBC or retain USBC version? **(Page 80)**
14. IBC 1027.22: Exit markings 75 feet A, B, M, E, I, R-1 new and existing based on 911 for interior corridors and exit stairs. Based on fire data what is problem? Why not scope on just super high rises - 420 or 120? Is there a consensus to move forward, amend or delete? **(Page 81)**
15. IBC Chapter 7: Fire blocking now listed materials instead of 2.4's in combustible construction. Is there a consensus to move forward, amend or delete? **(no handout)**

16. IBC Chapter 7: Stencil all fire rated assemblies. 2006 USBC does for R attics. Is there a consensus to move forward, amend or delete including USBC change? **(Page 100)**
17. IBC 1614: Structural integrity impact here in Virginia for 3 stories or higher. Is there a consensus to move forward, amend or delete? **(Page 85)**
18. USBC Tower Cranes: Standard and requirements to erect from foundation base, attachments to the building, power and structural. Discussion only. **(Page 106)**
19. USBC Machine-roomless elevators: Standards and requirements review. Discussion only. Carryover from 2006 based on comments from Fairfax. Is there a consensus to allow and standards with any amendments? **(no handout)**
20. USBC concrete cylinder molds smaller sizes? Fairfax issue carryover. Is there a consensus to reference and allow use? **(no handout)**
21. IBC 202, 903.2.2 B ambulatory health care facilities/ambulatory surgical centers: Good code changes to bring in-line with CMS for these outpatient facilities. Requires smoke compartments and barriers, alarms and egress requirements independently. Is there a consensus to move forward? Other changes considered for 2012 cycle. **(Page 89)**
22. IBC 308 I occupancies: Hospices considered I-2 and not other categories listed in I-1. Discussion and possible USBC and ICC amendments. **(no handout)**
23. IBC/USBC 308/310 I-1, I-2, I-4, R-4, R-3 and R-5: Licensed ALF's are today handling residents requiring some moderate assistance in emergencies. Rating systems are used to place residents in the ALF's and I-2 nursing homes and hospices. Rated at 1-4 residents can be in ALF's and 5-7 in I-2 facilities. ICC CTC has a draft 2012 proposal to keep current I's but beefing up I-1 by such requirements for passive systems like smoke barriers, floor ceiling separations, rated doors, CO alarms, along with the arc-fault devices and alarms with direct grade access for those needing assistance and those capable of being able to exit able to be on other floors. See JFSRC denied code changes F109 for bedroom separation and F116 for flame spread ratings for walls and ceilings as options. Discussion for USBC needs to also look at SFPC fire drill code changes for the 2009, and working concurrently with code changes to the ICC for 2012. Is there a consensus to develop code changes and move forward in USBC and then to the ICC? **(Page 101)**
24. IBC 905.2 exception: Should 13R be allowed same? Code change submission by East Coast Fire Protection. **(page 70)**
25. USBC/IWUIC: Carry-over with the 2009 IWUIC having even more stringent provisions added from California. Definitions on urban interface zone as it might

relate to urban areas and vacant land or parks still an issue along with the size of such zones. Technical issues include clearing, tree canopies, water storage, materials allowed to be used, storage and existing buildings. Discussion only. **(no handout)**

**USBC/2009 IEBC:**

1. IEBC 605.1 Denied HUD change to have rehabilitation of existing building altered residential to have Type A and B units even though FHAG doesn't require. Are there some options that would increase supply? Discussion only. **(Page 111)**

**USBC/2009 VMC/IPMC:**

1. PM 604.3: New section on electrical hazard and how to have certified with manufacturer. Would this be a USBC VCC issue? Can do already so what is the need for laundry list including how to determine if damaged wiring or equipment can be reused? Generally, you get electrical contractor, PE, UL or manufacturer to provide technical advice in testing the cables for replacement of the wiring. **(Page 114)**
2. House Bill 1671: Another tool for dealing with vacant properties besides current USBC and spot blight ordinances. **(no handout)**

**New Business:**

**Fire pits IFC 307.4.3 and IFGC: What is covered by the USBC or SFPC?**

1. Pool Safety - new standard for entrapment. Does 4 foot barrier wall of above-ground pools meet the requirement? **(no handout)**
2. Lightweight trusses: Used IRC and in Type 3 and 5 construction. Issues and solutions? What is fire data? **(no handout)**

**Work Group 3's next meeting will be May 6, 2009 at 9:30 a.m. at DHCD, 501 North 2<sup>nd</sup> Street, Richmond, VA in the 1<sup>st</sup> floor Board Room. Staff will advise if DHCD has moved to our new location (scheduled for sometime in May of 2009).**

**Board of Housing and Community Development (BHCD), Fire Services Board  
(FSB) and BHCD's Codes and Standards Committee  
2009 Regulatory Action and Meeting Dates**

**These dates are subject to change.**

**January 26, 2009:** BHCD presented with 2009 regulatory schedule.

**March 23, 2009:** BHCD approves Notice of Intended Regulatory Action (NOIRA).

**May 18, 2009:** BHCD's Codes and Standards Committee will meet from approximately 11:00 a.m. to 4:00 p.m. at DHCD, 1<sup>st</sup> floor board room (right after the BHCD board meeting that will be from 10:00 a.m. to 11:00 p.m.). Four Work Groups, advisory committees, Fire Services Code Committee and associations should have identified their 2009 code changes and gained consensus where possible.

**June 22, 2009:** BHCD's Codes and Standards Committee will meet to review non-consensus items at DHCD, 1<sup>st</sup> floor board room from 9:30 a.m. to 4:00 p.m.

**July 27, 2009:** BHCD will meet at VDHA, 4224 Cox Road (Innsbrook), 1<sup>st</sup> floor. BHCD and FSB Public Hearing at 9:30 a.m., Codes and Standards Committee following the hearing from approximately 11:00 a.m. to 12:15 p.m. and BHCD Board meeting at 1:00 p.m. to approve the 2009 proposed regulations.

**August, September, and October, 2009:** No meetings during this time as regulations are approved for publication and 60 days comment period.

**November 16<sup>th</sup> or December 21<sup>st</sup>, 2009:** BHCD's Codes and Standards Committee will meet to review public comments on the proposed regulations, carry-over code changes and new code changes.

**January 18<sup>th</sup> or 25<sup>th</sup>, 2010:** BHCD and FSB will hold a public hearing on the proposed regulations.

**March 1, 2010:** Deadline for new code changes.

**May 17, 2010:** BHCD's Codes and Standards Committee will meet to consider all code changes not approved, public comments or any new code changes and a final review of the regulations and approval to submit for the BHCD to approve.

**June 21, 2010:** BHCD approve final regulations with input from the FSB on the SFPC. Codes and Standards Committee will have a short meeting prior to the BHCD meeting.

**September 30, 2010:** Effective date of final regulations if approved by the OAG and Governor's Office.

(Updated March 27, 2009)

## **2009 BHCD Regulatory Cycle Schedule and Meetings for the USBC, SFPC, VADR, VCS, MHSR and the IBSR**

March 19, 2009: Work Group 2 - Administrative and Selected Technical Issues for the USBC, SFPC, MHSR, IBSR, VADR and VCS Regulations meets.

March 23, 2009: BHCD approves the publication of the NOIRA's for each regulation.

March 26, 2009: Work Group 1 - USBC Energy Code Requirements meets.

April 2, 2009: Work Group 3 - USBC/SFPC Technical Amendments meets.

April 9, 2009: Work Group 4 - International Residential Code meets.

April 23, 2009: Work Group 1 - USBC Energy Code Requirements meets.

April 30, 2009: Work Group 2 - Administrative and Selected Technical Issues for the USBC, SFPC, MHSR, IBSR, VADR and VCS Regulations meets.

May 6, 2009: Work Group 3 - USBC/SFPC Technical Amendments meets.

May 13, 2009: Work Group 4 - International Residential Code meets.

May 18, 2009: BHCD's Codes and Standards Committee meets - 1<sup>st</sup> floor board room at DHCD from approximately 11:00 to 4:00 (following the regular scheduled BHCD meeting).

June 22, 2009: BHCD's Codes and Standards Committee meets 1<sup>st</sup> floor board room at DHCD from 9:30 to 4:00.

July 27, 2009: BHCD and Fire Services Board will hold a public hearing at 9:30 a.m. The Codes and Standards Committee will meet from approximately 11:00 to 12:15. The BHCD will meet at 1:00 to approve the draft regulations. The meetings will be held at VDHA in Innsbrook at 4224 Cox Road, 1<sup>st</sup> floor.

August to October, 2009: 60 day public comment period for the proposed USBC, SFPC and related regulations.

November 16<sup>th</sup> or December 21<sup>st</sup>, 2009: BHCD's Codes and Standards Committee meets to consider public comments, carry-over code changes from the Work Groups 1-4 meetings and any new code changes.

January 18<sup>th</sup> or 25<sup>th</sup>, 2010: BHCD and Fire Service Board will hold a second public hearing.

March 1, 2010: Deadline for 2009 code changes.

May 17, 2010: BHCD's Codes and Standards Committee meets to consider all remaining code changes and approve the final regulations for submission to the full BHCD.

June 21, 2010: BHCD approve final regulations with input from the FSB.

Effective Date: September 30, 2010.

(Updated March 27, 2009)

**Rodgers, Emory**

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**From:** Rodgers, Emory  
**Sent:** Thursday, August 21, 2008 1:20 PM  
**To:** Hodge, Vernon; McGreal, Judith (VDSS)  
**Cc:** Eubank, Paula  
**Subject:** RE: Technical Assistance

Judith: Agree with Vernon's assessment on conflicts and response. I also thought there were going to be revisions to what had to be operating under emergency power? To operate heat, medical equipment, lights, refrigerator there might be a need for some rather large generators even for the 16 or less facilities that are generally homes?

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**From:** Hodge, Vernon  
**Sent:** Thursday, August 21, 2008 11:24 AM  
**To:** Rodgers, Emory  
**Cc:** Eubank, Paula  
**Subject:** RE: Technical Assistance

There are no conflicts with the USBC, which is what she asked. However, the section they are referencing (960-D) does not tie the emergency power in to the emergency preparedness plan, but instead it specifically lists those things that the emergency generator must provide power for. They are heating and cooling, lighting, refrigeration and medical equipment. I thought there was some talk about them repealing Section 960-D as it went further than the law requiring the generators.

Vernon

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**From:** Rodgers, Emory  
**Sent:** Tuesday, August 19, 2008 7:06 AM  
**To:** Hodge, Vernon  
**Subject:** FW: Technical Assistance

Thoughts? It appear DSS is now saying a lot more items are required to have emergency power besides some lights and medical equipment, but also heat/cooling and refrigeration?

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**From:** McGreal, Judith (VDSS) [mailto:judith.mcgregal@dss.virginia.gov]  
**Sent:** Monday, August 18, 2008 2:14 PM  
**To:** Rodgers, Emory  
**Subject:** Technical Assistance

Emory,

Please look at the attached. I just want to make sure there's nothing in conflict with the building code. Thanks.

Judy

**Rodgers, Emory**

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**From:** McGreal, Judith (VDSS) [judith.mcgregal@dss.virginia.gov]  
**Sent:** Tuesday, July 01, 2008 3:13 PM  
**To:** Rodgers, Emory  
**Cc:** Hackney, Susan (VDSS)  
**Subject:** FW: generators

Emory,

Please see the question below from Susan Hackney, Licensing Administrator.

Section 63.2-1732.D of the *Code of Virginia* states: Regulations shall require all licensed assisted living facilities with six or more residents to be able to connect by July 1, 2007, to a temporary emergency electrical power source for the provision of electricity during an interruption of the normal electric power supply. The installation shall be in compliance with the Uniform Statewide Building Code.

Section 22 VAC 40-72-960 D of the *Standards for Licensed Assisted Living Facilities* states: Each facility with six or more residents shall be able to connect by July 1, 2007, to a temporary emergency electrical power source for the provision of electricity during an interruption of the normal electric power supply. The installation of a connection for temporary electric power shall be in compliance with the Virginia Uniform Statewide Building Code, 13 VAC 5-63.

Please assist me with what the proper response should be to Susan's question. Also, if the portable gas powered generators are acceptable and meet the above Code requirement, is there any building or fire official who should be looking at or approving these generators?

Thanks for your help.

Judy

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**From:** Hackney, Susan (VDSS)  
**Sent:** Tuesday, July 01, 2008 12:59 PM  
**To:** McGreal, Judith (VDSS)  
**Subject:** generators

Judy,

We have a group of ALFs managed by Richard Brewer and Irvin Land and they are not getting hookups for the various ALFs with which they are involved as their position is the Code does not require a hookup but an ability to connect to a temporary emergency electrical power sources for the provision of electricity. Therefore, they are purchasing portable gas powered generators for each facility to connect to in order to run the electricity. Does that meet the Code?

**22 VAC 40-72-960 D – Emergency equipment and supplies**

**Question:** *The standard requires that the facility be able to connect to a temporary emergency electrical power source for the provision of electricity during an interruption of the normal electric power supply. What does the electricity have to be able to do, i.e., to what extent do we have to be able to power the facility in an emergency when the normal electric power supply is interrupted?*

**Answer:** The facility must be able to power the facility to the extent necessary to meet the provisions of its emergency preparedness and response plan, which is required by 22 VAC 40-72-930. The plan requires that procedures be developed for sheltering in place (as well as for evacuation and relocation). The facility is responsible for protecting the life safety of residents, staff, volunteers and visitors, and for protecting essential equipment, medications, and vital records. There must be adequate electricity available to meet this responsibility. The emergency preparedness and response plan must address, for example, how the facility will ensure that residents will not be endangered by extreme heat or cold, how lighting will be sufficient to avoid harm, how medications that need refrigeration will be preserved, and how necessary medical equipment will be operated. Whether the facility chooses to have enough emergency power for the whole building or only for part of it, the protection of residents, staff, etc., is essential. (0610)

**Rodgers, Emory**

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**From:** Eddy, Carrie (VDH) [Carrie.Eddy@vdh.virginia.gov]  
**Sent:** Monday, November 10, 2008 11:34 AM  
**To:** Rodgers, Emory  
**Cc:** Durrer, Chris (VDH); Altizer, Ed (VDFFP); Kane, Connie (VDH); Stolcis, Gregory (VDH); Ron Clements  
**Subject:** RE: upcoming building cde meetings

Sorry, Emory, didn't mean to be criptique or mysterious about the commode issue.

I was contacted a month or so ago over a construction project in NO. Va. that had been reviewed by the No.. Va building code folks and the architect, who had placed the commode according to the recommendations of the AIA, was instructed that the placement did not fit with the USBC and to redesign, no variance was allowed.

From our perspective the issue relates to patient safety and staff access should there be a problem and the patient needs assistance getting out of the bathroom. Apparently, the current placement places a strain on any staff should the resident need to be lifted off the commode or off the floor around the commode. I think I kept the email exchange and will forward along to you for more clarification. In the meantime, I'll look at the AIA and provide the hoped for language.

Again my apologies for the vagueness. on that one.

I've responded to Ed's comments re: the range hood, so let me know if additional comments there. I can get specifics if needed.

Carrie

Carrie Eddy  
 Senior Policy Analyst  
 Office of Licensure and Certification  
 Virginia Department of Health  
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 Richmond, VA 23233

P: 804.367.2157  
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**From:** Rodgers, Emory [mailto:Emory.Rodgers@dhcd.virginia.gov]  
**Sent:** Monday, November 10, 2008 10:36 AM  
**To:** Eddy, Carrie (VDH)

**Rodgers, Emory**

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**From:** Rodgers, Emory  
**Sent:** Monday, November 10, 2008 2:04 PM  
**To:** 'Clements, Ron'; Eddy, Carrie (VDH); mclift@co.kinggeorge.state.va.us  
**Cc:** Durrer, Chris (VDH); Altizer, Ed (VDFP); Kane, Connie (VDH); Stolcis, Gregory (VDH)  
**Subject:** RE: upcoming building cde meetings

Well I did hit this one on the nose as it is common code problem and just not with I-1 or R-4 application, but happens in many occupancies where there is a residential stove and hood used versus commercial for limited number of people for 1-3 meals per day and not continuously cooking as you have in restaurants. Have seen residential stoves and exhausts in fire stations, recreation centers, churches and in I-1 dwelling unit suites with or without a main dining room. Believe there is approvals being done today by building officials on a case by case basis. Will put this one into Work Group 3.

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**From:** Clements, Ron [mailto:ClementsRo@chesterfield.gov]  
**Sent:** Monday, November 10, 2008 11:43 AM  
**To:** Eddy, Carrie (VDH); Rodgers, Emory; mclift@co.kinggeorge.state.va.us  
**Cc:** Durrer, Chris (VDH); Altizer, Ed (VDFP); Kane, Connie (VDH); Stolcis, Gregory (VDH)  
**Subject:** RE: upcoming building cde meetings

I have copied Mike Clift with this email. Mike is the VBCOA/VPMA Plumbing code committee chair for VBCOA. I would recommend getting any suggested code change language regarding water closet placement or other plumbing issues to him for review by the VBCOA/VPMA Plumbing code committee. They may be able to help craft the language if you can get the information to them from AIA.

Ron

Ron Clements  
Chief of Commercial Plan Review  
Chesterfield County Virginia  
Building Inspection Department  
9800 Government Center Parkway, PO Box 40  
Chesterfield, VA 23832-0040  
Phone: (804) 751-4163  
Fax: (804) 717-6080

-----Original Message-----

**From:** Eddy, Carrie (VDH) [mailto:Carrie.Eddy@vdh.virginia.gov]  
**Sent:** Monday, November 10, 2008 11:34 AM  
**To:** Rodgers, Emory (DHCD)  
**Cc:** Durrer, Chris (VDH); Altizer, Ed (VDFP); Kane, Connie (VDH); Stolcis, Gregory (VDH); Clements, Ron  
**Subject:** RE: upcoming building cde meetings

Sorry, Emory, didn't mean to be criptique or mysterious about the commode issue.

I was contacted a month or so ago over a construction project in NO. Va. that had been reviewed by the No. Va building code folks and the architect, who had placed the commode according to the recommendations of the AIA, was instructed that the placement did not fit with the USBC and to redesign, no variance was allowed.

**Rodgers, Emory**

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**From:** Rourke, Valerie [varourke@deq.virginia.gov]  
**Sent:** Wednesday, October 29, 2008 7:03 AM  
**To:** Rodgers, Emory  
**Subject:** RE: Update on IAPMO plumbing code for indoor gray water

Hi Emory.

I believe the best contact at VDH regarding gray water reuse indoors would be ~~Nwayne Roadcap~~. Regarding rainwater harvesting and stormwater reuse, you might want to contact ~~Jack Frye~~ at DCR. Their contact information is on the global e-mail list of the VITA network.

I hope to look over the materials that you sent regarding the 2009 USBC workgroups very soon and provide comments. Thanks for keeping me in the loop.

Valerie

-----Original Message-----

**From:** Rodgers, Emory (DHCD)  
**Sent:** Wednesday, October 29, 2008 6:55 AM  
**To:** Rourke, Valerie  
**Cc:** John Glover; lynn.underwood@norfolk.gov; Shahriar Amiri; Brian Gordon; bhardiman@hbav.com; lcc@ldassociatesinc.com; Hodge, Vernon (DHCD); Eubank, Paula (DHCD); Wallace, Clinton (DHCD); Brock, Larry (DHCD); jpeters@iccsafe.org  
**Subject:** RE: Update on IAPMO plumbing code for indoor gray water

Valerie: thanks. I am sending this onto our code folks as we will try to place this into our 2009 USBC IPC and work with you, VDH, builders, designers and submit our product to the ICC too for their 2012 ICC codes. We have an appendix on gray water, but now have reclaimed water and rainwater harvesting to discuss for possible USBC code changes and to coordinate with DEQ and VDH regulations. Who should we be contacting at VDH?

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**From:** Rourke, Valerie [mailto:varourke@deq.virginia.gov]  
**Sent:** Monday, October 27, 2008 7:34 AM  
**To:** Rodgers, Emory  
**Subject:** Update on IAPMO plumbing code for indoor gray water

-----Original Message-----

**From:** Horne, Daniel (VDH)  
**Sent:** Friday, October 24, 2008 11:04 AM  
**To:** Rourke, Valerie  
**Cc:** Degen, Marcia  
**Subject:** FW:

Valerie -

I thought you might like to see this.

Dan H.

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**From:** Rimer, Alan E. [mailto:RimerAE@bv.com]

**Rodgers, Emory**

**From:** Rourke, Valerie [varourke@deq.virginia.gov]  
**Sent:** Monday, November 17, 2008 10:02 AM  
**To:** Rodgers, Emory  
**Cc:** Wallace, Clinton  
**Subject:** FW: "Purple pipe" for non-reuse water issue

Hi Emory.

I thought you might be interested to receive an update regarding IAPMO color coding for gray water piping.

Valerie

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**From:** Rimer, Alan E. [mailto:RimerAE@bv.com]  
**Sent:** Sunday, November 16, 2008 8:53 PM  
**To:** AccardiAM@bv.com; adriano.vieira@hdrinc.com; jtaguinaldo@doosanhydro.com; hinesb@trinityra.org; ben.gould@as-h.com; blauer@awwa.org; Bloetscher, Fred; chalmersrb@cdm.com; cnuesa@coconutcreek.net; carolyn@baw.com; chandra.mysore@m-e.aecom.com; ccleveland@carollo.com; christopher.haney@hdrinc.com; Conway, Kevin; Craig.Riley@DOH.WA.GOV; Horne, Daniel (VDH); DWS@Freese.com; dkhiari@awwarf.com; Don Safrin; ebenvironmental@aol.com; jimedwards340@msn.com; fjohns@ttfwi.com; gary.grinnell@lvvwd.com; greg.wieland@parsons.com; elson.gushiken@itcwater.com; hthomas@brwncald.com; jbratby@brwncald.com; jimc@mrwpca.com; jmosher@nwri-usa.org; joan.oppenheimer@mwhglobal.com; jonathan.vorheis@ch2m.com; kcup461@ecy.wa.gov; Kevin Parker; lajohnso@ebmud.com; lee.cesario@denverwater.org; prietolm@cdm.com; lmoody@awwa.org; michelle.lawrence@co.fulton.ga.us; mpeterson@hntb.com; paul.kinshella@phoenix.gov; viraj.desilva@parsons.com; radamski@GFNET.com; Reddy, Sanjay P.; rimerae@bv.com; robert.reed@earthlink.net; schenkre@cdm.com; ssetoodeh@eid.org; tgsands@srpnet.com; tslifko@lacs.org; tnogaj@jgg.com; timothy.bosetti@us.army.mil; twoleftfeet26@yahoo.com; vijaycha@bol.net.in; VandertulipWD@cdm.com; williamddavidson@yahoo.com; wmiller@watereuse.org  
**Subject:**

#### AWWA Water Reuse Committee List Serve

The following update on proposed use of Purple Pipe in Gray Water Systems has been provided to the Executive Directors of AWWA/WEF and WRA. Thanks for Don Vandertulip's efforts on this.

To Executive Directors:

I participated in a conference call today with IAPMO to address the central concern our organizations raised over use of purple pipe in Gray water systems. Based on the meeting Alan and I had with Dave Viola in Chicago, Dave prepared alternate language (attached). Alan proposed some minor edits with a comment suggesting a completely separate section on Reclaimed water.

The IAPMO Standards Council is to meet on Friday in California and the specific limited discussion today was to agree on a resolution to the specific protest. The immediate solution was that all GTC Alternate Water Non-Potable Task Group members on the conference call agreed that purple pipe will be reserved for reclaimed water produced and distributed by a public agency. Wording that also requires labeling with black letter would apply on private property where local plumbing code requirements have been adopted. All other non-potable, alternate waters would fall under the yellow pipe with black text requirement. This essentially reverts back to the current 2006 code language.

Dave Viola will submit a report on the Task Group decision and recommendation to the Standards Council for their action Friday. If approved, the color purple is then reserved to delineate highly treated reclaimed water distributed by public agencies.

There are many other technical issues to continue to address related to color code and labeling for several types of alternate waters that could be provided on one property (rain water harvesting, stormwater, A/C condensate, etc). Discussion started on whether the on-site alternate waters used in a building (excluding subsurface irrigation) should match the same water quality as reclaimed water. I suggested that the "quality" be linked to the reclaimed water quality standard established within each State for the use intended but that it would still not be appropriate to use purple pipe. Participants agreed with the logic (based on quality control) not to use purple pipe for alternate waters that might be treated on-site to the same standard.

There will be additional review of this item. There will also be additional discussion with Canada as they have adopted purple pipe for non-potable waters. Dave Viola reports this new code has not been widely distributed or accepted.

We will continue to work toward greater clarity and appreciate all input.

**Alan E. Rimer P.E. DEE**  
**Director of Water Reuse**  
**BLACK & VEATCH International Company**  
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"Please consider your environmental responsibility before printing this e-mail"

**Stormwater Reuse:  
A Presentation to the Virginia  
Housing Commission**



Department of Conservation & Recreation  
CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES

Russ Baxter  
Deputy Director

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**DCR - Agency Responsibilities:  
Stormwater**

- Lead State Nonpoint Source Water Quality Agency (§ 10.1 – 104.1)
- Implements Virginia Stormwater Act (§10.1-603.1 et seq.)
- Operates VSMP General Permit for Discharges of Stormwater from Construction Activities and MS4 Permits (responsibility transferred from DEQ in January 2005 as the result of the passage of HB 1177 in 2004)
- Oversees 166 local erosion and sediment control programs



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**Statutory Authority Related to  
Stormwater "Reuse"**

10.1-603.4. Development of regulations.  
The Board is authorized to adopt regulations that specify minimum technical criteria and administrative procedures for stormwater management programs in Virginia. The regulations shall .....

8. Encourage *low impact development* designs, regional and watershed approaches, and nonstructural means for controlling stormwater; and
9. *Promote the reclamation and reuse of stormwater for uses other than potable water in order to protect state waters and the public health and to minimize the direct discharge of pollutants into state waters; (Effective 7/1/2008)*



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### “Current Events”

DCR is undertaking a comprehensive rewrite of existing stormwater management regulations.

- Regulations will address stormwater “quality and quantity”
- Encourage the use of Low Impact Development (LID) and Better Site Designs to address nutrient reductions and control runoff characteristics (volume, velocity, frequency, duration, and peak flow rate)



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### “Current Events”

DCR Stormwater TAC has recommended revisiting the water QUANTITY criteria:

- Considering improvements to channel protection criteria (key quantity issue)
- Considering adding recharge/runoff volume reduction options



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### What does this have to do with reuse?

- More stringent quality and quantity criteria will likely drive water retention and storage practices; less runoff = less pollution
- If water is stored, it is available for reuse.
- Water in storage must be drawn down so storage capacity is available for next rainfall event
- Planned reuse = available storage



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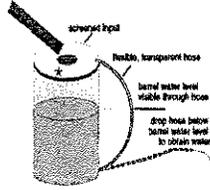
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## Examples

- Rain barrel



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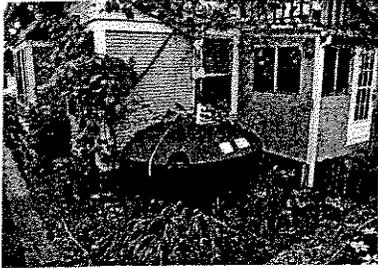
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## Example

- Cistern



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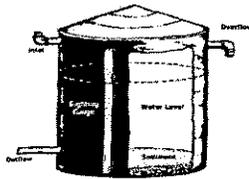
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## Example

- Cistern



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Example

- Tank



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Example



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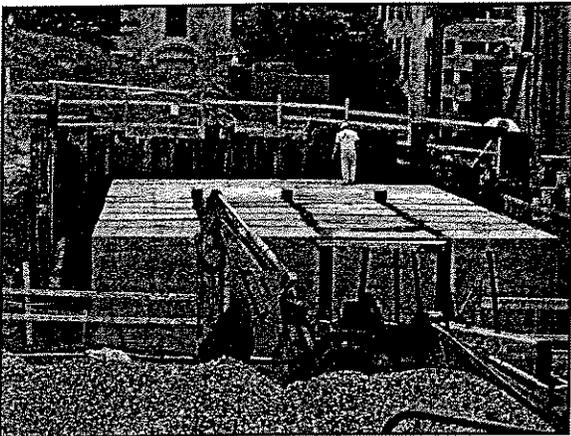
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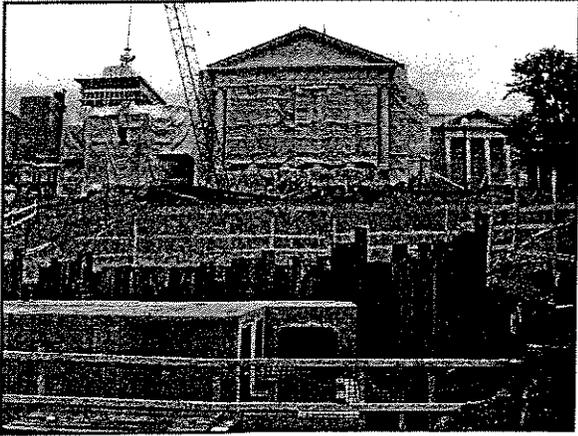
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Questions?

[russ.baxter@dcv.virginia.gov](mailto:russ.baxter@dcv.virginia.gov)



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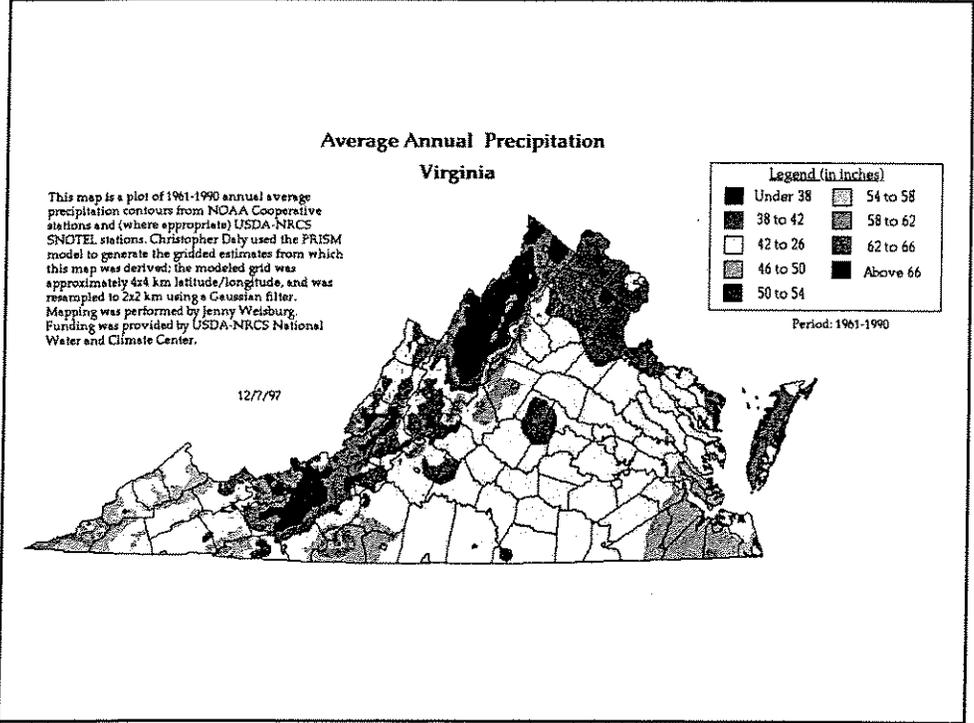
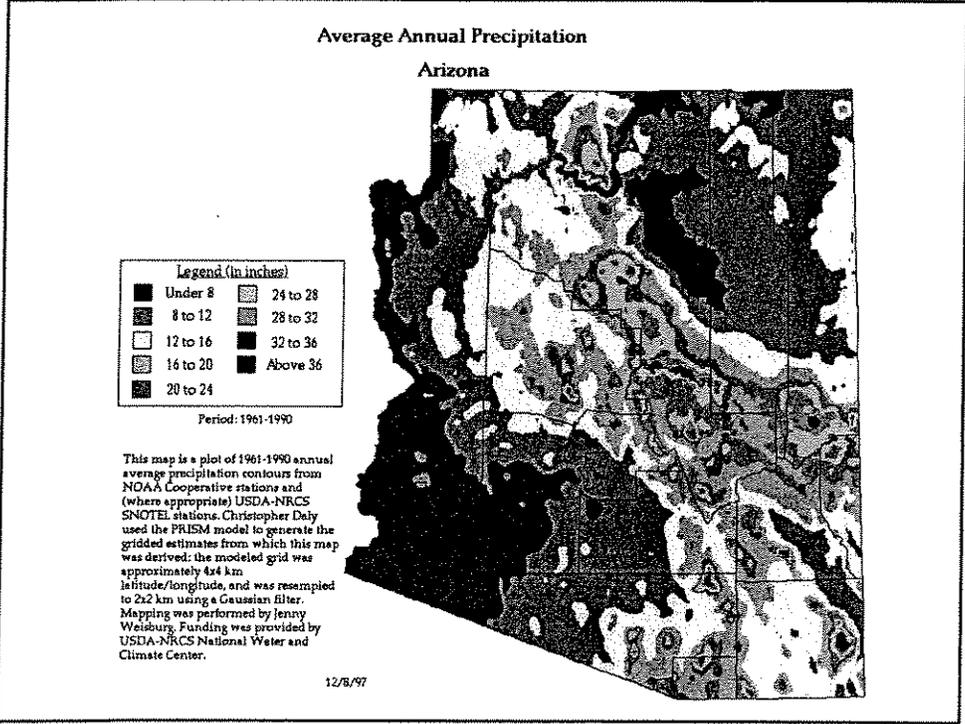
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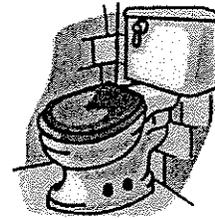
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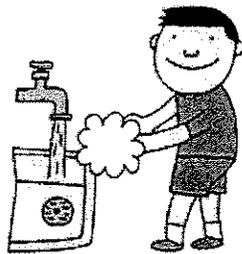
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# Not Graywater



# This is:

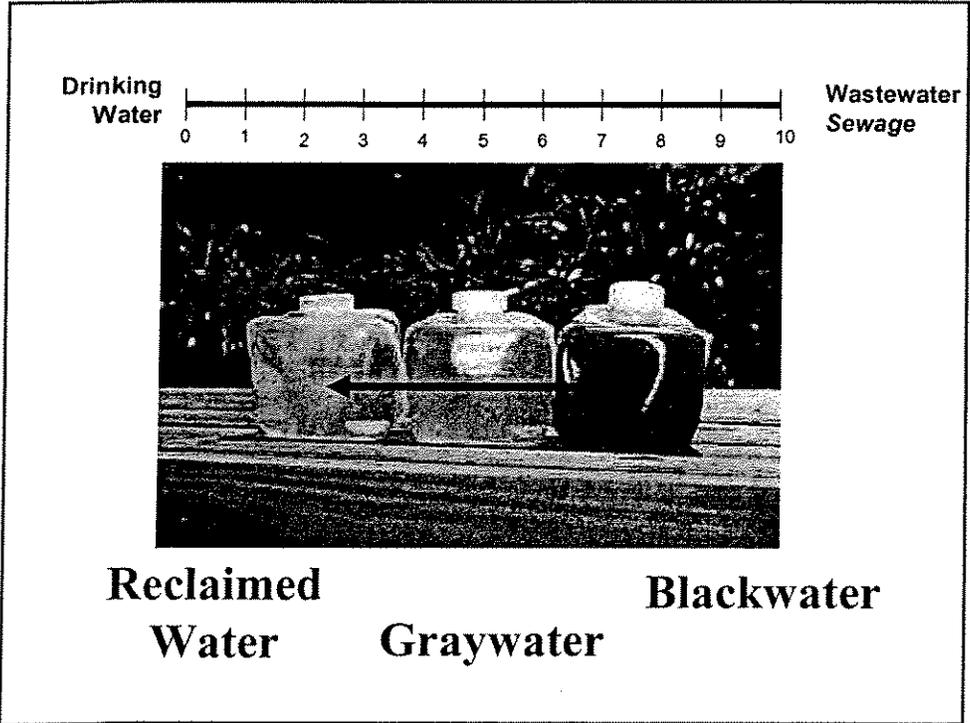


## Terms and Definitions

- Gray water
- Black water
- Sewage
- Effluent
- Wastewater
- Non-potable water
- Reclaimed water
- Reuse water

## And one more layer of complexity:

- **Virginia Department of Conservation and Recreation**
  - Erosion and sediment control
- **Virginia Department of Environmental Quality**
  - Division of Wastewater Engineering
- **Virginia Department of Housing and Community Development**
  - Local building official offices
- **Virginia Department of Health**
  - Local health departments
  - Office of Environmental Health Services
  - Office of Drinking Water



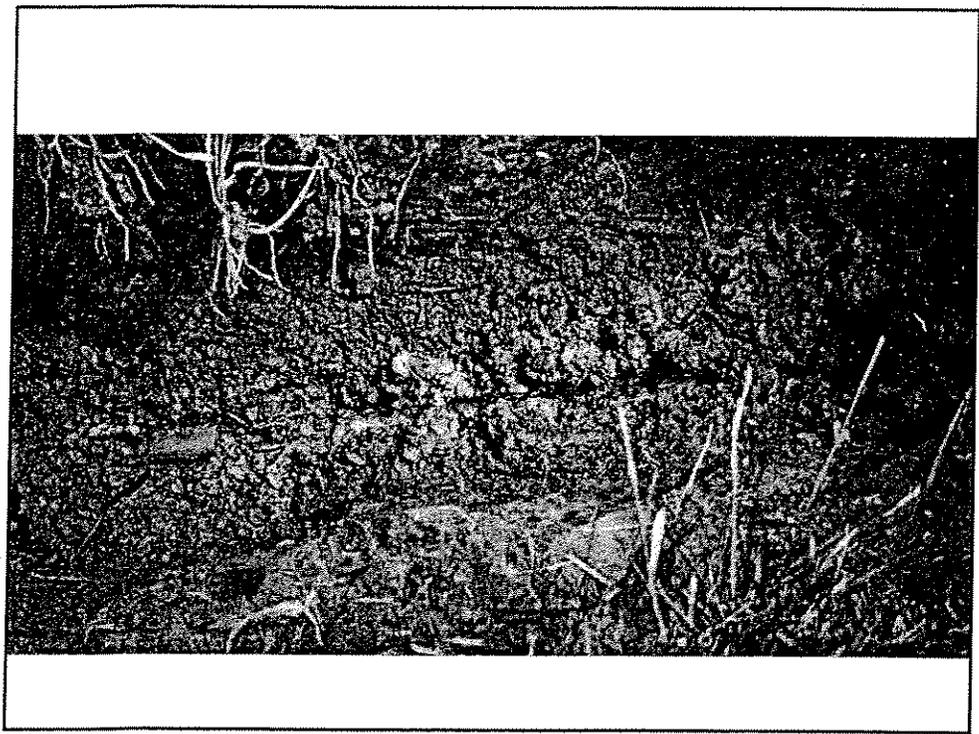
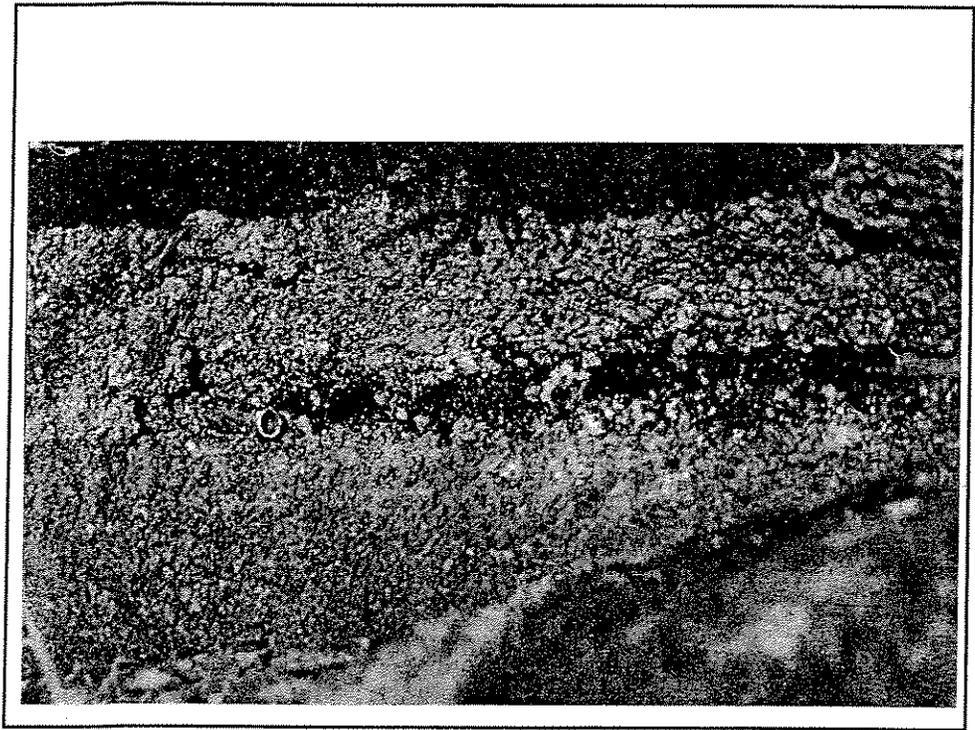
## What's in Gray water?

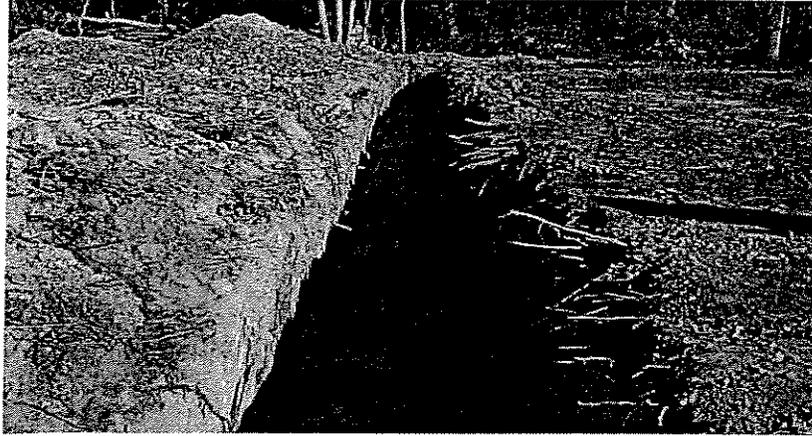
Bath, Basin, Shower

- Hair
- Soaps
- Shampoos
- Hair dyes
- Toothpaste
- Lint
- Body fats
- Oils
- Cleaning Products
- Pathogens from washing

Laundry

- Hair
- Lint
- Oils & greases
- Detergents
- Cleaning Products
- Fecal contamination





## Graywater Production

|            | Gallons/House/Day | Gallons/Person/Day |
|------------|-------------------|--------------------|
| Graywater  | 90 - 120          | 30 - 50            |
| Blackwater | 58 - 80           | 19 - 30            |



### Viruses

1. Over 100 enteric viruses excreted in the feces of man.
2. Filtration by the soil is minimal because of their small size (< 250 nm).
3. Can initiate significant waterborne disease.
4. Presence of aerobic microbes reduces survival rates.



### Bacteria

1. Typical concentration of  $4.2 \times 10^7$  organisms in STE.
2. Adsorption and filtration reduce survival rates (well-drained fine medium textured soils helps greatly).
3. Movement in coarse textures or high water tables may be significant.

Table 3.1 Recommended Maintenance for Greywater Diversion Devices

| GDD Component                              | Maintenance Required  | Frequency   |
|--|---|---|
| Filter                                     | Clean filter<br>– filter should be removed and cleaned, removing physical contaminants (sand, lint, hair, etc.)   | Weekly  |
|  | Replace filter  | As recommended by manufacturer or as required (usually every 6 – 12 months) |
| Surge tank                                 | Clean out sludge from surge tank  | Every 6 months  |
| Sub-surface irrigation distribution system | Check that water is dispersing<br>– regularly monitor soil to ensure all areas are wet after an irrigation period.  | Weekly  |
| Soil condition                             | Check that soil is healthy. Signs of unhealthy soil include:<br>– damp and boggy ground hours after irrigation<br>– surface ponding and run-off of irrigated water<br>– poor vegetation growth<br>– unusual odours<br>– clumping of soil<br>– fine sheet of clay covering surface | Monthly   |

## Operation and Maintenance

- ✘ DON'T leave a diversion device on all the time. Treat it like a garden tap and only reuse greywater when the garden needs watering. Greywater is for reuse, not disposal.

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- ✘ DON'T reuse toilet or kitchen wastewater.

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- ✘ DON'T reuse greywater during rain.

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- ✘ DON'T reuse greywater from the washing of nappies or contaminated clothing.

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- ✘ DON'T reuse greywater when a resident is sick, e.g. has diarrhoea.

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- ✘ DON'T reuse greywater generated by cleaning in the laundry or bathroom, or when using hair dye or other chemicals.

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## Operation and Maintenance

- DON'T** reuse greywater generated by washing rags used for painting or for maintaining machinery and vehicles.
- DON'T** reuse greywater to top up rainwater tanks or swimming pools.
- DON'T** store untreated greywater.
- DON'T** over-water.
- DON'T** irrigate with greywater if the household is located on an aquifer that is used for drinking water
- DON'T** reuse greywater on plants that will be eaten raw or where fruit has fallen to the ground and could be eaten.
- DON'T** use greywater to wash paths, driveways or cars.
- DON'T** allow direct contact or ingestion of the greywater.
- DON'T** use greywater to irrigate on dune sand or shallow rocky soil unless the soil has been enriched to a minimum 300mm in depth.
- DON'T** reuse greywater so that it flows into the streets or down stormwater drains.
- DON'T** install drippers of a sub-surface irrigation system within one metre of boundary lines, inground pools and inground potable water tanks and buildings.
- DON'T** let greywater go beyond the property boundary and cause a nuisance to neighbours.
- DON'T** use greywater in households where immuno-suppressed occupants are present.

## Operation and Maintenance

- DO** select washing detergents that are low in salt – consider using a powder concentrate, or a liquid washing detergent.
- DO** monitor plant and soil response to greywater irrigation.
- DO** occasionally irrigate with drinking water to disperse salts from the soil (only appropriate during extended periods of zero rainfall).
- DO** consider applying a soil rewetting agent every six months.
- DO** ensure that regular maintenance of the greywater system is undertaken.

## APPENDIX C

# GRAY WATER RECYCLING SYSTEMS

*Note:* Section 301.3 of this code requires all plumbing fixtures that receive water or waste to discharge to the sanitary drainage system of the structure. In order to allow for the utilization of a gray water system, Section 301.3 should be revised to read as follows:

**301.3 Connections to drainage system.** All plumbing fixtures, drains, appurtenances and appliances used to receive or discharge liquid wastes or sewage shall be directly connected to the sanitary drainage system of the building or premises, in accordance with the requirements of this code. This section shall not be construed to prevent indirect waste systems required by Chapter 8.

**Exception:** Bathtubs, showers, lavatories, clothes washers and laundry trays shall not be required to discharge to the sanitary drainage system where such fixtures discharge to an approved gray water system for flushing of water closets and urinals or for subsurface landscape irrigation.

### SECTION C101 GENERAL

**C101.1 Scope.** The provisions of this appendix shall govern the materials, design, construction and installation of gray water systems for flushing of water closets and urinals and for subsurface landscape irrigation (see Figures 1 and 2).

**C101.2 Definition.** The following term shall have the meaning shown herein.

**GRAY WATER.** Waste discharged from lavatories, bathtubs, showers, clothes washers and laundry trays.

**C101.3 Permits.** Permits shall be required in accordance with Section 106.

**C101.4 Installation.** In addition to the provisions of Section C101, systems for flushing of water closets and urinals shall comply with Section C102 and systems for subsurface landscape irrigation shall comply with Section C103. Except as provided for in Appendix C, all systems shall comply with the provisions of the *International Plumbing Code*.

**C101.5 Materials.** Above-ground drain, waste and vent piping for gray water systems shall conform to one of the standards listed in Table 702.1. Gray water underground building drainage and vent pipe shall conform to one of the standards listed in Table 702.2.

**C101.6 Tests.** Drain, waste and vent piping for gray water systems shall be tested in accordance with Section 312.

**C101.7 Inspections.** Gray water systems shall be inspected in accordance with Section 107.

**C101.8 Potable water connections.** Only connections in accordance with Section C102.3 shall be made between a gray water recycling system and a potable water system.

**C101.9 Waste water connections.** Gray water recycling systems shall receive only the waste discharge of bathtubs, showers, lavatories, clothes washers or laundry trays.

**C101.10 Collection reservoir.** Gray water shall be collected in an approved reservoir constructed of durable, nonabsorbent and corrosion-resistant materials. The reservoir shall be a closed and gas-tight vessel. Access openings shall be provided to allow inspection and cleaning of the reservoir interior.

**C101.11 Filtration.** Gray water entering the reservoir shall pass through an approved filter such as a media, sand or diatomaceous earth filter.

**C101.11.1 Required valve.** A full-open valve shall be installed downstream of the last fixture connection to the gray water discharge pipe before entering the required filter.

**C101.12 Overflow.** The collection reservoir shall be equipped with an overflow pipe having the same or larger diameter as the influent pipe for the gray water. The overflow pipe shall be indirectly connected to the sanitary drainage system.

**C101.13 Drain.** A drain shall be located at the lowest point of the collection reservoir and shall be indirectly connected to the sanitary drainage system. The drain shall be the same diameter as the overflow pipe required in Section C101.12.

**C101.14 Vent required.** The reservoir shall be provided with a vent sized in accordance with Chapter 9 and based on the diameter of the reservoir influent pipe.

### SECTION C102 SYSTEMS FOR FLUSHING WATER CLOSETS AND URINALS

**C102.1 Collection reservoir.** The holding capacity of the reservoir shall be a minimum of twice the volume of water required to meet the daily flushing requirements of the fixtures supplied with gray water, but not less than 50 gallons (189 L). The reservoir shall be sized to limit the retention time of gray water to a maximum of 72 hours.

**C102.2 Disinfection.** Gray water shall be disinfected by an approved method that employs one or more disinfectants such as chlorine, iodine or ozone.

**C102.3 Makeup water.** Potable water shall be supplied as a source of makeup water for the gray water system. The potable water supply shall be protected against backflow in accordance with Section 608. There shall be a full-open valve located on the makeup water supply line to the collection reservoir.

**C102.4 Coloring.** The gray water shall be dyed blue or green with a food grade vegetable dye before such water is supplied to the fixtures.

**C102.5 Materials.** Distribution piping shall conform to one of the standards listed in Table 605.4.

**C102.6 Identification.** Distribution piping and reservoirs shall be identified as containing nonpotable water. Piping identification shall be in accordance with Section 608.8.

### SECTION C103 SUBSURFACE LANDSCAPE IRRIGATION SYSTEMS

**C103.1 Collection reservoir.** Reservoirs shall be sized to limit the retention time of gray water to a maximum of 24 hours.

**C103.1.1 Identification.** The reservoir shall be identified as containing nonpotable water.

**C103.2 Valves required.** A check valve and a full-open valve located on the discharge side of the check valve shall be installed on the effluent pipe of the collection reservoir.

**C103.3 Makeup water.** Makeup water shall not be required for subsurface landscape irrigation systems. Where makeup water is provided, the installation shall be in accordance with Section C102.3.

**C103.4 Disinfection.** Disinfection shall not be required for gray water used for subsurface landscape irrigation systems.

**C103.5 Coloring.** Gray water used for subsurface landscape irrigation systems shall not be required to be dyed.

**C103.6 Estimating gray water discharge.** The system shall be sized in accordance with the gallons-per-day-per-occupant number based on the type of fixtures connected to the gray water system. The discharge shall be calculated by the following equation:

$$C = A \times B$$

*A* = Number of occupants:

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

Commercial—Number of occupants shall be determined by the *International Building Code*<sup>®</sup>.

*B* = Estimated flow demands for each occupant:

Residential—25 gallons per day (94.6 lpd) per occupant for showers, bathtubs and lavatories and 15 gallons per day (56.7 lpd) per occupant for clothes washers or laundry trays.

Commercial—Based on type of fixture or water use records minus the discharge of fixtures other than those discharging gray water.

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

**C103.7 Percolation tests.** The permeability of the soil in the proposed absorption system shall be determined by percolation tests or permeability evaluation.

**C103.7.1 Percolation tests and procedures.** At least three percolation tests in each system area shall be conducted. The holes shall be spaced uniformly in relation to the bottom depth of the proposed absorption system. More percolation tests shall be made where necessary, depending on system design.

**C103.7.1.1 Percolation test hole.** The test hole shall be dug or bored. The test hole shall have vertical sides and a horizontal dimension of 4 inches to 8 inches (102 mm to 203 mm). The bottom and sides of the hole shall be scratched with a sharp-pointed instrument to expose the natural soil. All loose material shall be removed from the hole and the bottom shall be covered with 2 inches (51 mm) of gravel or coarse sand.

**C103.7.1.2 Test procedure, sandy soils.** The hole shall be filled with clear water to a minimum of 12 inches (305 mm) above the bottom of the hole for tests in sandy soils. The time for this amount of water to seep away shall be determined, and this procedure shall be repeated if the water from the second filling of the hole seeps away in 10 minutes or less. The test shall proceed as follows: Water shall be added to a point not more than 6 inches (152 mm) above the gravel or coarse sand. Thereupon, from a fixed reference point, water levels shall be measured at 10-minute intervals for a period of 1 hour. Where 6 inches (152 mm) of water seeps away in less than 10 minutes, a shorter interval between measurements shall be used, but in no case shall the water depth exceed 6 inches (152 mm). Where 6 inches (152 mm) of water seeps away in less than 2 minutes, the test shall be stopped and a rate of less than 3 minutes per inch (7.2 s/mm) shall be reported. The final water level drop shall be used to calculate the percolation rate. Soils not meeting the above requirements shall be tested in accordance with Section C103.7.1.3.

**C103.7.1.3 Test procedure, other soils.** The hole shall be filled with clear water, and a minimum water depth of 12 inches (305 mm) shall be maintained above the bottom of the hole for a 4-hour period by refilling whenever necessary or by use of an automatic siphon. Water remaining in the hole after 4 hours shall not be removed. Thereafter, the soil shall be allowed to swell not less than 16 hours or more than 30 hours. Immediately after the soil swelling period, the measurements for determining the percolation rate shall be made as follows: Any soil sloughed into the hole shall be removed and the water level shall be adjusted to 6 inches (152 mm) above the gravel or coarse sand. Thereupon, from a fixed reference point, the water level shall be measured at 30-minute intervals for a period of 4 hours, unless two successive water level drops do not vary by more than 0.62 inch (1.59 mm). At least three water level drops shall be observed and recorded. The hole shall be filled with clear water to a point not more than 6 inches (152 mm) above the gravel or coarse sand whenever it becomes nearly empty. Adjustments of the water level shall not be made during the three measurement periods except to the limits of the last measured water level drop. When the first 6 inches (152 mm) of water seeps away in less than 30 minutes, the time interval between measurements shall be 10 minutes and the test run for 1 hour. The water depth shall not exceed 5 inches (127 mm) at any time during the measurement period. The drop that occurs during the final measurement period shall be used in calculating the percolation rate.

**C103.7.1.4 Mechanical test equipment.** Mechanical percolation test equipment shall be of an approved type.

**C103.7.2 Permeability evaluation.** Soil shall be evaluated for estimated percolation based on structure and texture in accordance with accepted soil evaluation practices. Borings shall be made in accordance with Section C103.7.1 for evaluating the soil.

**C103.8 Subsurface landscape irrigation site location.** The surface grade of all soil absorption systems shall be located at a point lower than the surface grade of any water well or reservoir on the same or adjoining property. Where this is not possible, the site shall be located so surface water drainage from the site is not directed toward a well or reservoir. The soil absorption system shall be located with a minimum horizontal distance between various elements as indicated in Table C103.8. Private sewage disposal systems in compacted areas, such as parking lots and driveways, are prohibited. Surface water shall be diverted away from any soil absorption site on the same or neighboring lots.

**TABLE C103.8  
LOCATION OF GRAY WATER SYSTEM**

| ELEMENT                                  | MINIMUM HORIZONTAL DISTANCE |  |
|--|-----------------------------|--|
|  | HOLDING TANK<br>(feet)      | IRRIGATION<br>DISPOSAL FIELD<br>(feet) |
| Buildings                                | 5                           | 2                                      |
| Property line adjoining private property | 5                           | 5                                      |
| Water wells                              | 50                          | 100                                    |
| Streams and lakes                        | 50                          | 50                                     |
| Seepage pits                             | 5                           | 5                                      |
| Septic tanks                             | 0                           | 5                                      |
| Water service                            | 5                           | 5                                      |
| Public water main                        | 10                          | 10                                     |

For SI: 1 foot = 304.8 mm.

**C103.9 Installation.** Absorption systems shall be installed in accordance with Sections C103.9.1 through C103.9.5 to provide landscape irrigation without surfacing of gray water.

**C103.9.1 Absorption area.** The total absorption area required shall be computed from the estimated daily gray water discharge and the design-loading rate based on the percolation rate for the site. The required absorption area equals the estimated gray water discharge divided by the design-loading rate from Table C103.9.1.

**TABLE C 103.9.1  
DESIGN LOADING RATE**

| PERCOLATION RATE<br>(minutes per inch) | DESIGN LOADING FACTOR<br>(gallons per square foot per day) |
|--|--|
| 0 to less than 10                      | 1.2  |
| 10 to less than 30                     | 0.8  |
| 30 to less than 45                     | 0.72   |
| 45 to 60                               | 0.4  |

For SI: 1 minute per inch = min/25.4 mm.  
1 gallon per square foot = 40.7 L/m<sup>2</sup>.

**C103.9.2 Seepage trench excavations.** Seepage trench excavations shall be a minimum of 1 foot (304 mm) to a maximum of 5 feet (1524 mm) wide. Trench excavations shall be spaced a minimum of 2 feet (610 mm) apart. The soil absorption area of a seepage trench shall be computed by using the bottom of the trench area (width) multiplied by the length of pipe. Individual seepage trenches shall be a maximum of 100 feet (30 480 mm) in developed length.

**C103.9.3 Seepage bed excavations.** Seepage bed excavations shall be a minimum of 5 feet (1524 mm) wide and have more than one distribution pipe. The absorption area of a seepage bed shall be computed by using the bottom of the trench area. Distribution piping in a seepage bed shall be uniformly spaced a maximum of 5 feet (1524 mm) and a minimum of 3 feet (914 mm) apart, and a maximum of 3 feet (914 mm) and a minimum of 1 foot (305 mm) from the sidewall or headwall.

**C103.9.4 Excavation and construction.** The bottom of a trench or bed excavation shall be level. Seepage trenches or beds shall not be excavated where the soil is so wet that such material rolled between the hands forms a soil wire. All smeared or compacted soil surfaces in the sidewalls or bottom of seepage trench or bed excavations shall be scarified to the depth of smearing or compaction and the loose material removed. Where rain falls on an open excavation, the soil shall be left until sufficiently dry so a soil wire will not form when soil from the excavation bottom is rolled between the hands. The bottom area shall then be scarified and loose material removed.

**C103.9.5 Aggregate and backfill.** A minimum of 6 inches of aggregate ranging in size from 1/2 to 2 1/2 inches (12.7 mm to 64 mm) shall be laid into the trench below the distribution piping elevation. The aggregate shall be evenly distributed a minimum of 2 inches (51 mm) over the top of the distribution pipe. The aggregate shall be covered with approved synthetic materials or 9 inches (229 mm) of uncompacted marsh hay or straw. Building paper shall not be used to cover the aggregate. A minimum of 9 inches (229 mm) of soil backfill shall be provided above the covering.

**C103.10 Distribution piping.** Distribution piping shall be not less than 3 inches (76 mm) in diameter. Materials shall comply with Table C103.10. The top of the distribution pipe shall be not less than 8 inches (203 mm) below the original surface. The slope of the distribution pipes shall be a minimum of 2 inches (51 mm) and a maximum of 4 inches (102 mm) per 100 feet (30 480 mm).

**TABLE C103.10  
DISTRIBUTION PIPE**

| MATERIAL   | STANDARD    |
|--|-------------|
| Polyethylene (PE) plastic pipe   | ASTM F 405  |
| Polyvinyl chloride (PVC) plastic pipe  | ASTM D 2729 |
| Polyvinyl chloride (PVC) plastic pipe with pipe stiffness of PS 35 and PS 50 | ASTM F 1488 |

**C103.11 Joints.** Joints in distribution pipe shall be made in accordance with Section 705 of this code.

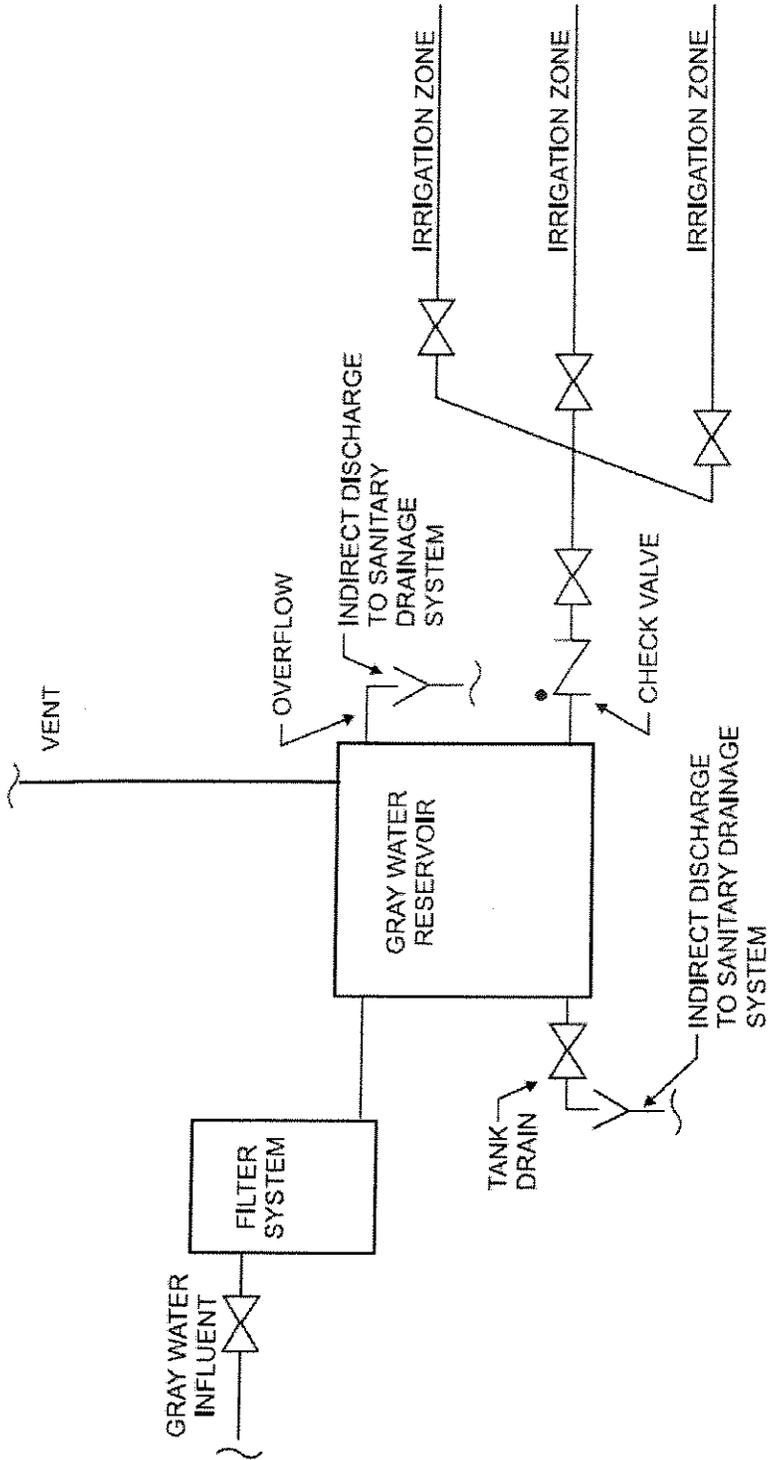


FIGURE 1  
GRAY WATER RECYCLING SYSTEM FOR SUBSURFACE LANDSCAPE IRRIGATION

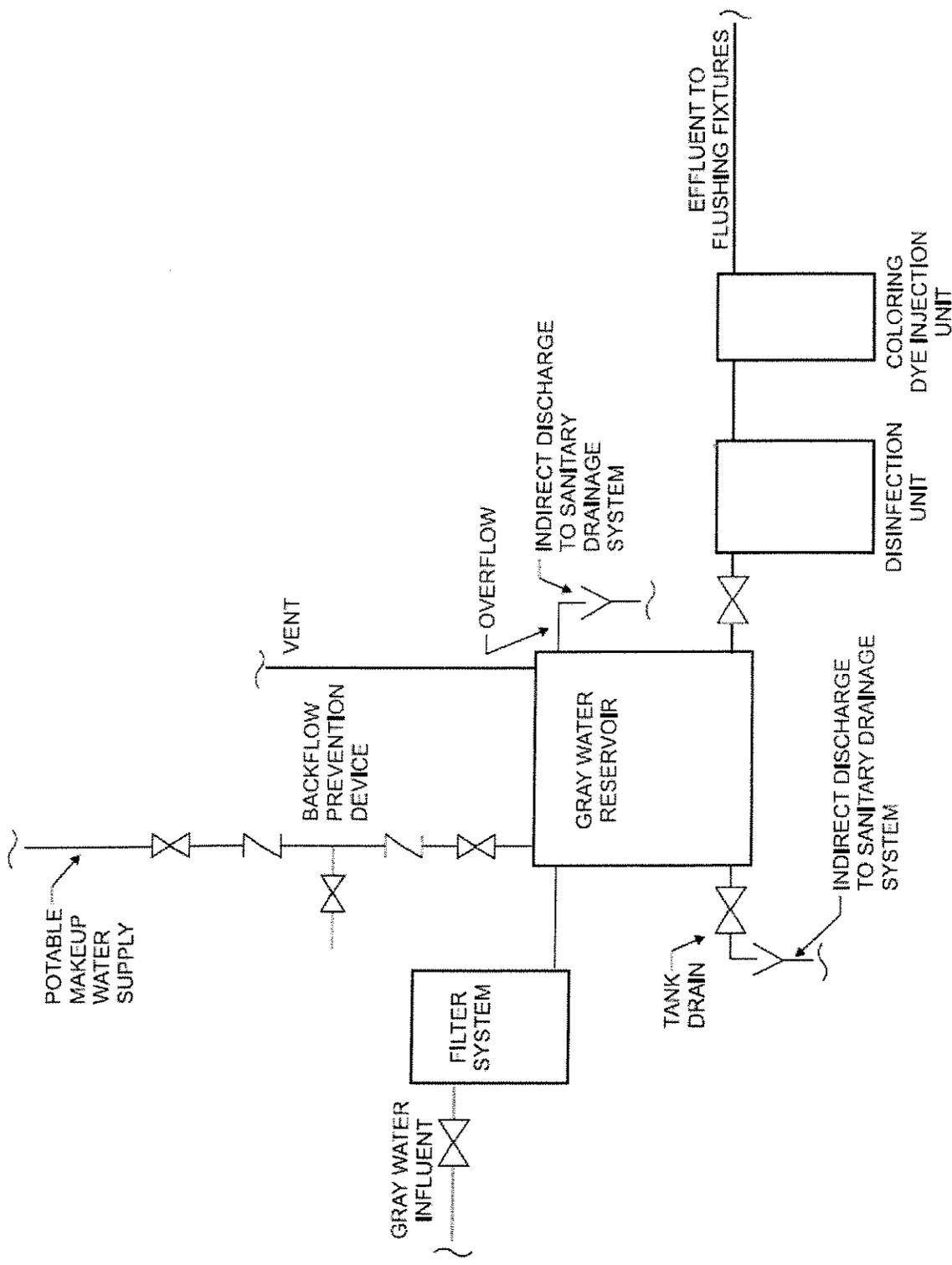


FIGURE 2  
GRAY WATER RECYCLING SYSTEM FOR FLUSHING WATER CLOSETS AND URINALS

12VAC5-610-1140. General.

A. Authority for this article is found in §32.1-164 B 6 of the Code of Virginia. This article pertains only to new construction where a nonpublic water supply, other than a private well, is to be constructed and utilized in conjunction with an onsite sewage disposal system. Approval of the water supply is an integral part of the issuance of an operation permit for a sewage disposal system (see 12VAC5-610-340) and no separate permit is required. An approval of a water supply under this section connotes a water supply meeting the quantity, quality and construction standards of a satisfactory water supply at the time of approval.

B. Quantity.

1. The system shall be capable of supplying water in adequate quantity for its intended usage. Failure to provide adequate capacity may cause intermittent flows and negative pressures which may cause contamination of the system through cross connections or other system deficiencies.
2. The source shall have a capacity to produce 150 gallons per bedroom per day for residential use.
3. The minimum system capacity (source plus storage) should be capable of delivering a sustained flow of five gallons per minute per connection for 10 minutes for ordinary residential use.

C. Quality.

1. Water sources described in this section shall be considered satisfactory if the water sample or samples test negative for coliform organisms. Sources with positive coliform counts, but with less than 100 MPN/100ml shall be provided with a means for continuous disinfection (chlorination).
2. A sample tap shall be provided at or near the water entry point into the system so that samples may be taken directly from the source; this requirement may be met by utilizing the first tap on the line near where the plumbing enters the house (may be a hose bib), provided the tap precedes any water treatment devices.
3. The entire water system including the well shall be disinfected prior to use. After operating the well to remove any remaining disinfectant, a sample of the water from the well shall be collected by the district or local health department for bacteriological examination. The sample may be collected by the owner, or an agent designated by the owner, provided the sample is submitted to a private, certified (by Division of Consolidated Laboratory Services) laboratory for analysis.
4. If tests indicate that the water is unsatisfactory and no other approval source is available, adequate approved methods of water treatment shall be applied. The district or local health department shall be consulted when treatment is necessary.

D. Approval. All water supplies covered by this chapter shall be approved by the district or local health department before being placed into service as a satisfactory water supply.

Historical Notes

Derived from VR355-34-02 §4.52, eff. February 5, 1986; amended, eff. May 11, 1988.

## Gray Water Guidelines

### General

Gray water is untreated wastewater collected from certain plumbing fixtures and drains. Gray water is sewage, but is not highly contaminated with toxic levels of chemicals, organic matter, suspended solids and microorganisms that are potentially pathogenic. Gray water includes wastewater collected from bath tubs, showers, lavatory fixtures, clothes washing machines, and laundry tubs. In addition, rainwater may be collected to supplement gray water flows. Gray water does not include industrial waste or wastewater passing from toilets, urinals, kitchen sinks, dishwashers or laundry water exposed to soiled diapers.

Gray water is typically collected and stored for irrigation uses through a subsurface piping system. However, gray water may be treated through an approved process and used for either above ground irrigation or toilet flushing purposes. The plumbing fixtures, valves, storage container, pumps, irrigation piping, etc., are referred to as a gray water system.

### Permit

A permit issued under the authority of the State Health Commissioner is to be obtained prior to installation and use of a gray water system. The plumbing fixtures used in a gray water system must comply with the requirements of the statewide building code. The gray water system must also comply with applicable state and local regulations and policies implemented through the Virginia Department of Health. A preliminary meeting with local and state health department staff to discuss the proposed gray water system is desirable prior to submission of the permit application.

A complete permit application is to be submitted to the local health department for evaluation and approval prior to installation of a gray water system. The permit application is to include a transmittal letter identifying: the applicant, their means of ownership of the gray water system, and the location of the proposed gray water system. A suitable diagram of the property boundaries, location of residences, buildings, water and sewage utilities, paved areas and irrigation areas that are connected to or within 100 feet of the gray water system is to be submitted with the application. Some construction details such as vent piping, traps, valving, overflows, pump specifications, filters, chemical addition, etc., may be required. Complete information necessary to evaluate site soils, their wastewater adsorption capacity, and water table location, would be required for irrigation systems.

The permit application is to specify the capacity of the gray water system in terms of: estimated flows, storage provided, irrigation area and layout, pump capacity, overflow rates, filtration rates, chemical dosing rates, etc.

Gray water collected from commercial, industrial, or institutional systems is to be characterized as to volume and content based on appropriate records or approved sampling and testing results obtained by the gray water system owner.

### **Installation**

All necessary local permits (Health and Building Code) are to be issued prior to initiating installation of a gray water system.

Components of a gray water system designed to ensure proper treatment and disinfection as required for proposed uses are to be designed and certified by an appropriately licensed professional consultant or have been certified as to treatment performance by a nationally recognized testing authority such as the National Sanitation Foundation (NSF).

Storage tanks are to be installed in a manner to prevent leakage or spillage of gray water and are to be provided with proper traps and venting and provided with an overflow to an approved sewage collection system, or sewage disposal system. Installation of all gray water system components must comply with the issued permit. The gray water system is not to be connected to any potable water system without an approved air gap to prevent any possible backflow. A rainwater collection piping system is to include an approved diversion valve to limit the volume discharge to the storage tank. The constructed gray water system is to be inspected by local and State Health Department staff prior to operation.

During an inspection of construction, certain components on the gray water system are to be tested to ensure proper operation. Exposed gray water system components are to be permanently coded and marked to indicate that the gray water is unsuitable for drinking or personal contact. The gray water system installation is to comply with all buffer zones and set-backs required by existing state and local regulations and ordinances.

### **Operation**

During operation, no untreated or undisinfected gray water is to either reach the ground surface, or be used for toilet flushing. A set of acceptable operation and maintenance instructions is to be developed and remain available to the system owner. Gray water used for toilet flushing is to be dyed or colored by approved methods. The gray water system capacity is to be sufficient to use the generated daily flow. The volume of any rainwater diverted to the gray water system is to be controlled so as not to exceed the established permitted capacity.

**Rodgers, Emory**

**From:** Rodgers, Emory  
**Sent:** Thursday, January 29, 2009 8:23 AM  
**To:** 'Thuruthy, Nisha'  
**Cc:** Hodge, Vernon; 'Cheri B. Hainer'; DeBiasi, Deborah (DEQ); 'Clements, Ron'; Witt, Rick; 'Underwood, Lynn'  
**Subject:** RE: Question about the USBC and IPC

You have raised important and prudent questions that my response is an opinion and offers what might be options to have the saying goes "peace in the valley" by all the affected parties reaching a reasonable consensus in the application of law and regulations and that the impacted stakeholders understand and agree to the final solution.

Let me comment on the issues as you refer to them in your email:

1. Good maintenance and poor maintenance by restaurant owners and other businesses required by the USBC/IPC and Health Department to have grease interceptor devices can be cited with notices of violations. The local officials enforcing building codes, health codes and water purveyor regulations and state law need to communicate. If the water purveyor has done a survey then it needs to be shared with the other regulators for enforcement action and all three need to educate the businesses by out reach to the local restaurant and hotel industry probably on some annual basis or in those areas where the survey found the problem to be most prevalent. If there are food establishments without grease interceptors that can be dealt with by existing local and state laws.
2. The water purveyor may and probably does lack authority to enforce the USBC and IPC or the local Virginia Maintenance Code that requires buildings and the equipment to be properly maintained as does Health regulations. I am not an expert on regulations of food service establishment so I offer no opinion. The City Council could assign USBC/IPC duties to another agency but those functions and the personnel would have to be certified so the water purveyor would need a building official and certified inspectors that would be redundant and compete with already building department personnel doing the same work. I can tell you that for 30 years as a building official these types of matters we concluded the most cost effective and efficient method was to perform backflow and grease interceptors in the building department.
3. The IPC covers grease interceptors inside or if constructed outside the building. If anyone believes those requirements are inadequate there are two methods to effect change. 1<sup>st</sup> is to submit code changes to the International Code Council, due April 24<sup>th</sup> or 2<sup>ndly</sup> submit code changes to DHCD for our 2009 USBC regulatory cycle now underway with a target effective date of September 2010. Ms. Hainer, the building official, can assist in this effort. The building official, under the USBC, can approve designs not yet covered by the IPC or existing standards. I am puzzled why such code changes have not been submitted to ICC or to the consensus standard groups like ASME? If poor maintenance is a problem with current equipment requiring larger sized containment maybe not a solution and would make those complying having to pay higher costs for installations? As an aside is the food service sector involved and have they approved proposed larger designed interceptors?
4. The IPC commentary is often used by designers, owners and code officials to bolster their points and application of the building code regulations. No, they don't replace the USBC and aren't referenced as such.
5. An owner or local government can exceed the USBC and many make that choice for a variety of reasons like better energy systems or larger grease interceptors. §36-98 states the USBC supersedes the regulations of other state agencies and local regulations not covered by the USBC, emphasis added, and water purveyors and sewage operators have functional design freedom. There is a potential conflict certainly related to any other state or local agency attempting to dictate inside the building construction and design requirements in the USBC for food service businesses. Legal counsel for the City would have to be consulted.

I have already placed this matter on our 2009 USBC list of issues to consider potential code changes or even some MOA with DEQ similar to what we have done with other state agencies on water and septic systems.

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**From:** Thuruthy, Nisha [mailto:Thuruthy@pbworld.com]  
**Sent:** Wednesday, January 28, 2009 2:28 PM  
**To:** Rodgers, Emory  
**Cc:** Curtis, Lamont W.; Culbertson, Charles (Grant)  
**Subject:** Question about the USBC and IPC

Mr. Rodgers,

I am a member of the consultant team working with the City of Virginia Beach Department of Public Utilities to initiate a Fats, Oils, and Grease (FOG) Program. The idea of the FOG Program is to help enforce existing code (i.e. that regarding the installation and maintenance of grease interceptors) in order to minimize grease-related sanitary sewer overflows. The City has discovered that a full third of its sanitary sewer overflows are caused by or related to grease. A pilot program was conducted and it was found that, while some food service establishments are doing a wonderful job of maintaining their grease interceptors, many are not. Many food service employees do not know where their grease interceptor is or what it is and many establishments don't have a grease interceptor at all. We concluded that the City's FOG Program would have to regulate food service establishments and enforce the International Plumbing Code.

I understand that the 2006 specifies the following about grease interceptors: 1) that they should be connected to fixtures and equipment discharging grease-laden wastewater, 2) that the size, type, and location of each interceptor shall be designed and installed in accordance with manufacturer instructions, and 3) that they shall conform to PDI G101 and ASME 112.14.3.

The problem is that PDI has not certified any large concrete grease interceptors. They therefore do not have flow ratings. Instead, the manufacturers rate them by volume in gallons. The standard that I helped to develop estimates a size in gallons that is appropriate for a food service establishment. As recommended by the commentary of the IPC, flow rate and retention time are used to estimate this tank volume. After doing research, I found that many different service authorities and Cities have their own methods for sizing large grease interceptors. Washington Suburban Sanitary Commission, Metro Water Services of Nashville and Davidson County, TN, and Cary, NC are some of those researched that have sizing methods of their own.

Here are my questions:

- Does the IPC Commentary hold the same legal weight that the Code does?
- Are we in conflict with the IPC at all that you can see?

We are meeting with Virginia Beach stakeholders tomorrow and it would be helpful to have your comments and suggestions. I would like to talk to you today if possible. Please call me directly at the number below, or call (757) 466-1732 and someone will page me. Thanks for your time. I look forward to hearing from you.

Nisha Thuruthy, EIT

Civil Engineer

Parsons Brinckerhoff  
6161 Kempsville Circle, Suite 110  
Norfolk, VA 23502  
USA

Direct: (757) 466-9674  
Fax: (757) 466-1493  
Email: Thuruthy@pbworld.com

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**Rodgers, Emory**

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**From:** Keith Barker [kbarker@galaxcity.org]  
**Sent:** Thursday, January 29, 2009 10:11 AM  
**To:** 'Hutton, Claude (VD FP)'; Rodgers, Emory  
**Cc:** 'Altizer, Ed (VD FP)'; 'Wyatt, David (VD FP)'; Terry Atwell; Keith Holland  
**Subject:** RE: propane issue

Emory,

Forgive my delayed response but I did not get your original email.

The propane issue in Galax did not involve a tank but rather the line and regulator mounted at the building. A vehicle arrived at the laundry mat and pulled in to a parking space. While parking, the driver hit his gas pedal in lieu of the brake pedal and the car lurched forward. The driver got his car stuck behind a telephone pole and hit the exterior hvac unit and the gas line where it came out of the ground and went into the regulator (which was mounted to the building). The gas line itself was maybe a 2" line and fed the hvac system and dryers.

In regards to guards, they were present at this site around the tank and in compliance with the building and fire codes. There was not a guard at the building itself next to the gas line, however after the incident we asked the building owner to install one there and he complied.

After the incident in Fries, VA, we requested a customer list from all known propane businesses that provided service in Galax. Our building official then did inspections of these businesses to verify compliance with the building/fire code for propane guard compliance. If an owner was found to be in non-compliance, we made use of the property maintenance code, which Galax adopted in 1990 or there about, as the enforcement tool. To my knowledge, owners were pretty cooperative with a few exceptions. We did not have to take anyone to court however.

We feel we have the enforcement tool to address this issue and don't really feel legislation is the answer. This was a fluke accident where everything had to happen exactly right to break the line. the building dates back to the 1960's probably and there had been no incidents that I was aware of. I don't know if your intent is to require vehicle protection for propane lines against buildings, but that's about the only thing that might have stopped this one.

Hope this helps and provide some answers to your questions.

Keith E. Barker  
 Assistant City Manager/  
 Zoning Administrator  
 City of Galax  
 111 E. Grayson St.  
 (276) 236-9944 ph.  
 (276) 236-2889 fax

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**From:** Hutton, Claude (VD FP) [mailto:Claude.Hutton@vdfp.virginia.gov]  
**Sent:** Thursday, January 29, 2009 9:14 AM  
**To:** kbarker@galaxcity.org  
**Cc:** Altizer, Ed (VD FP); Wyatt, David (VD FP)

**PART II – IRC-P  
Committee Action:**

**Disapproved**

**Committee Reason:** The definition should include other valves which are not electronic.

**Assembly Action:**

**None**

*Individual Consideration Agenda*

**This item is on the agenda for individual consideration because an assembly action was successful and a public comment was submitted.**

*Public Comment:*

**Guy Tomberlin, Fairfax County, representing VA Plumbing and Mechanical Inspectors Association and VA Building and Code Officials Association, requests Approval as Modified.**

**Modify proposal as follows:**

**SECTION R202  
DEFINITIONS**

~~**QUICK-CLOSING VALVE.** An electronic solenoid valve that closes automatically in one complete operation when released manually or that is controlled by electric or mechanical means for fast-action closing.~~

**Commenter's Reason:** The discussion in Palm Springs was that the original submission of P-55 did not account for some devices that did need water hammer arrestors installed. The specific example was a commercial spring loaded valve. The as modified version before you incorporates the public comments and has been altered to address the key concerns. Currently there is some confusion about what is a "quick-closing valve." Some say a single handle lavatory or kitchen faucet is quick-closing. They certainly can be fast closing but not to the extent they would need water hammer arrestors installed. For example a public lavatory is limited to .5 gpm at 60 psi (Table 604.4). One half gallon per minute, abruptly shut off, is not going to cause excessive water hammer to the extent that a device needs to be installed to control it. Others have asserted that a lever handle ¼ turn shut off valve is quick closing. This is one of the issues that the previous submission was attempting to correct. Upon further review and evaluation it is clear by the current definition that that this application is not included as quick-closing.

Final Action:        AS            AM            AMPC\_\_\_\_\_        D

**P56-07/08, Part I  
604.9**

**NOTE: PART II DID NOT RECEIVE A PUBLIC COMMENT AND IS ON THE CONSENT AGENDA. PART II IS REPRODUCED FOR INFORMATIONAL PURPOSES ONLY FOLLOWING ALL OF PART I.**

*Proposed Change as Submitted:*

**Proponent:** Guy Tomberlin, Fairfax County, VA, representing himself

**PART I – IPC**

**Revise as follows:**

~~**604.9 Water-hammer arrestors.** The flow velocity of the water distribution system shall be controlled to reduce the possibility of water hammer. A Water-hammer arrestors shall be installed in water distribution systems where quick-closing valves are used utilized. Water-hammer arrestors shall be installed in accordance with manufacturer's specifications installation instructions. Water-hammer arrestors shall conform to ASSE 1010.~~

**Reason:** What this proposal does is clarify exactly where water hammer arrestors are required to be installed. This is a much needed correction of a code section that is consistently misapplied. Currently some require water hammer arrestors be installed at a ¼ turn shut off ball valve that may not be used for many years. Others require they be installed on any single handle faucet. Some still require them be installed at a flush valve even when the definitions clearly identify a flush valve is not a quick closing valve. However, most require individual arrestors at every washing machine hot and cold, ice makers and humidifiers. This new text clarifies where they must be installed and that a manufacturer can determine if they need to be installed at each solenoid valve or a single device to serve the entire system.

The stricken text that addresses flow velocity is a function of the sizing criteria for the piping system served not to determine the use of a water hammer arrestor or not. The velocity that is associated with water hammer is that of "shock" pressure in a piping system, not design velocity. Designers will rarely design a water system using the velocity values produced by "shock" pressure in the system, these numbers are typically three times that of normal design velocity. Water hammer arrestors are just that, a device that controls the "hammer" effect from "shock" in water in a piping system.

**Cost Impact:** The code change proposal will not increase the cost of construction.

**PART I – IPC**

**Committee Action:**

**Disapproved**

**Committee Reason:** The proponent requested disapproval based upon committee's action on P55-07/08 so he can bring forth better wording in a public comment for the final action hearing.

**Assembly Action:**

**None**

*Individual Consideration Agenda*

**This item is on the agenda for individual consideration because a public comment was submitted.**

*Public Comment:*

**Guy Tomberlin, Fairfax County, representing VA Plumbing and Mechanical Inspectors Association and VA Building and Code Officials Association, requests Approval as Modified.**

**Modify proposal as follows:**

**604.9 Water-hammer arrestors.** The flow velocity of the water distribution system shall be controlled to reduce the possibility of water hammer. Water-hammer arrestors shall be installed in water distribution systems where quick-closing valves are utilized. Water-hammer arrestors shall be installed in accordance with manufacturer's installation instructions. Water-hammer arrestors shall conform to ASSE 1010.

**Commenter's Reason:** It is important to incorporate the language "in water distribution systems," identifying the fact that you may not need a water hammer arrestor installed at each quick-closing valve but rather the system design needs to account for all of the quick-closing devices and locate the water hammer arrestors accordingly. It is further important to change the terms to "installation instructions" rather than the existing term "specifications" for enforcement purposes. The code requires products to be installed per their certification which includes the installation instructions, however manufacturer "recommendations" are not enforceable.

The discussion in Palm Springs was that P-55 needs to be more inclusive before this language is approved. P-55 has been altered to accommodate the comments received. The modification before you is to have the first sentence remain. It was stated that water hammer arrestors control velocity, however this is not true.

Final Action:        AS            AM            AMPC\_\_\_\_\_        D

NOTE: PART II REPRODUCED FOR INFORMATIONAL PURPOSES ONLY – SEE ABOVE

**P56-07/08, PART II – IRC-Plumbing**

**Revise as follows:**

**P2903.5 (Supp) Water hammer arrestors.** ~~The flow velocity of the water distribution system shall be controlled to reduce the possibility of water hammer.~~ Water-hammer arrestors shall be installed in water distribution systems where quick-closing valves are utilized. ~~Water hammer arrestors shall be installed in accordance with the manufacturer's installation instructions.~~ Water hammer arrestors shall conform to ASSE 1010.

**Reason:** What this proposal does is clarify exactly where water hammer arrestors are required to be installed. This is a much needed correction of a code section that is consistently misapplied. Currently some require water hammer arrestors be installed at a ¼ turn shut off ball valve that may not be used for many years. Others require they be installed on any single handle faucet. Some still require them be installed at a flush valve even when the definitions clearly identify a flush valve is not a quick closing valve. However, most require individual arrestors at every washing machine hot and cold, ice makers and humidifiers. This new text clarifies where they must be installed and that a manufacturer can determine if they need to be installed at each solenoid valve or a single device to serve the entire system.

The stricken text that addresses flow velocity is a function of the sizing criteria for the piping system served not to determine the use of a water hammer arrestor or not. The velocity that is associated with water hammer is that of "shock" pressure in a piping system, not design velocity. Designers will rarely design a water system using the velocity values produced by "shock" pressure in the system, these numbers are typically three times that of normal design velocity. Water hammer arrestors are just that, a device that controls the "hammer" effect from "shock" in water in a piping system.

**Cost Impact:** The code change proposal will not increase the cost of construction.

**PART II – IRC-P**

**Committee Action:**

**Disapproved**

**Committee Reason:** RP15-06/07 removed the term "quick closing valve" from this section and there is no need to reintroduce the term.

**Assembly Action:**

**Approved as Submitted**

## PART I – IPC

### Committee Action:

Disapproved

**Committee Reason:** It is too much burden on inspectors to have to carry a special light and climb around to illuminate joints to check to see if primer was used.

### Assembly Action:

None

### *Individual Consideration Agenda*

**This item is on the agenda for individual consideration because public comments were submitted.**

#### *Public Comment 1:*

#### **Sid Cavanaugh, Cavanaugh Consulting, representing IPS Corp, requests Approval as Submitted**

**Commenter's Reason:** Wording recognizing clear detectable primers has been added to the appropriate standard ASTM F656. This code change simply gives an option to the contractor/user to assure that primers are used when required by the code. This is seen as beneficial in preventing visible damage to finished surfaces in case of primer spills or splashes as recognized by the IRC committee and it is the responsibility of the contractor/manufacture to assure that proper UV lighting sources are provided to inspectors and on the jobsite to allow proper inspection the of installations using these clear detectable primers.

#### *Public Comment 2:*

#### **Michael Cudahy, Plastic Pipe and Fittings Association (PPFA), requests Approval as Submitted.**

**Commenter's Reason:** PPFA members support the UV detectable primer technology, as it can offer a builder an additional option in jurisdictions requiring primers and the use of UV primers may reduce incidental damages to finished surfaces. The builder must supply the UV lamps and have them on site when inspections may occur. The IRC approved this change in P60 - Part II.

Final Action:        AS            AM            AMPC \_\_\_\_\_        D

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## **P60-07/08, Part II**

### **IRC P2904.9.1.2, P2904.9.1.3, P3003.14.2**

#### *Proposed Change as Submitted:*

**Proponent:** Sidney L. Cavanaugh, Cavanaugh Consulting, representing IPS Corp.

## **PART II – IRC-P**

### **Revise as follows:**

**P2904.9.1.2 CPVC plastic pipe.** Joint surfaces shall be clean and free from moisture and an approved purple primer or clear detectable primer shall be applied. Solvent cement for CPVC plastic pipe, orange in color and conforming to ASTM F 493, shall be applied to all joint surfaces. The parts shall be joined while the cement is wet and in accordance with ASTM D 2846 or ASTM F 493. Solvent-cement joints shall be permitted above or below ground.

**Exception:** A primer is not required where all of the following conditions apply:

1. The solvent cement used is third-party certified as conforming to ASTM F 493.
2. The solvent cement used is yellow in color.
3. The solvent cement is used only for joining ½-inch (13 mm) through 2-inch (51 mm) diameter CPVC pipe and fittings.
4. The CPVC pipe and fittings are manufactured in accordance with ASTM D 2846.

**P2904.9.1.3 PVC plastic pipe.** A purple primer or clear detectable primer that conforms to ASTM F 656 shall be applied to PVC solvent cemented joints. Solvent cement for PVC plastic pipe conforming to ASTM D 2564 shall be applied to all joint surfaces.

**P3003.14.2 Solvent cementing.** Joint surfaces shall be clean and free from moisture. A purple primer or clear detectable primer that conforms to ASTM F 656 shall be applied. Solvent cement not purple in color and conforming to ASTM D 2564, CSA B137.3 or CSA B181.2 shall be applied to all joint surfaces. The joint shall be made while the cement is wet, and shall be in accordance with ASTM D 2855. Solvent-cement joints shall be permitted above or below ground.

**Reason:** This code change recognizes a new technology that allows a clear primer to be used which is detectable with a UV or "blue light". The code change also underscores the fact that a primer must be detectable either by color or other means to assure it is used when required.

**Cost Impact:** The code change proposal will not increase the cost of construction.

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** The product would be beneficial in preventing visible damage to finished surfaces in case of primer spills or splashes.

**Assembly Action:**

**Disapproved**

### *Individual Consideration Agenda*

**This item is on the agenda for individual consideration because an assembly action was successful.**

Final Action:      AS              AM              AMPC \_\_\_\_\_      D

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## **P61-07/08, Part I**

### **705.8.2, 705.14.2**

*Proposed Change as Submitted:*

#### **PART I – IPC**

Revise as follows:

**705.8.2 Solvent cementing.** Joint surfaces shall be clean and free from moisture. A purple primer that conforms to ASTM F 656 shall be applied. Solvent cement not purple in color and conforming to ASTM D2564, CSA B137.3, CSA B181.2 or CSA B182.1 shall be applied to all joint surfaces. The joint shall be made while the cement is wet and shall be in accordance with ASTM D 2855. Solvent-cement joints shall be permitted above or below ground.

Exception: A primer is not required where all of the following conditions apply:

1. The solvent cement used is third-party certified as conforming to ASTM D 2564.
2. The solvent cement is used only for joining drain waste and vent PVC pipe and fittings in non-pressure applications in sizes up to and including 4 inch (100 mm) in diameter.

**705.14.2 Solvent cementing.** Joint surfaces shall be clean and free from moisture. A purple primer that conforms to ASTM F 656 shall be applied. Solvent cement not purple in color and conforming to ASTM D2564, CSA B137.3, CSA B181.2 or CSA B182.1 shall be applied to all joint surfaces. The joint shall be made while the cement is wet and shall be in accordance with ASTM D 2855. Solvent-cement joints shall be permitted above or below ground.

Exception: A primer is not required where all of the following conditions apply:

1. The solvent cement used is third-party certified as conforming to ASTM D 2564.
2. The solvent cement is used only for joining drain waste and vent PVC pipe and fittings in non-pressure applications in sizes up to and including 4 inch (100 mm) in diameter

**Reason:** To introduce an exception in chapter 7, Sanitary Drainage, allowing for the practice of one-step solvent cementing of non-pressure DWV systems 4" and under.

This exception allows for an optional one-step procedure for joining non-pressure DWV PVC piping systems 4" in diameter and below with solvent cement conforming to ASTM D 2564. This method is practiced, and the code should include specific language to indicate when it is acceptable.

Pressure testing completed by NSF International has shown that solvent cement conforming to ASTM D 2564, when used without primer on PVC DWV pipe and fittings, both solid wall and cell core, generates bonding forces well in excess of what is required for these systems. See attached NSF International report.

**Committee Reason:** This proposal adds attics and crawl spaces to the list of spaces from which return air must not be taken. Mold and odors from unconditioned attics and crawl spaces could be introduced into the conditioned space without this prohibition. The modification creates a new item for crawl spaces and adds the term "unconditioned" to both attics and crawl spaces to clarify that taking return air from conditioned attics and crawl spaces would be acceptable.

**Assembly Action:**

**None**

### **PART III – IFGC**

**Revise as follows:**

**618.5 Prohibited sources.** Outside or return air for a forced-air heating system shall not be taken from the following locations:

1. Closer than 10 feet (3048 mm) from an appliance vent outlet, a vent opening from a plumbing drainage system or the discharge outlet of an exhaust fan, unless the outlet is 3 feet (914 mm) above the outside air inlet.
2. Where there is the presence of objectionable odors, fumes or flammable vapors; or where located less than 10 feet (3048 mm) above the surface of any abutting public way or driveway; or where located at grade level by a sidewalk, street, alley or driveway.
3. A hazardous or insanitary location or a refrigeration machinery room as defined in the *International Mechanical Code*.
4. A room or space, the volume of which is less than 25 percent of the entire volume served by such system. Where connected by a permanent opening having an area sized in accordance with Section 618.2, adjoining rooms or spaces shall be considered as a single room or space for the purpose of determining the volume of such rooms or spaces.

**Exception:** The minimum volume requirement shall not apply where the amount of return air taken from a room or space is less than or equal to the amount of supply air delivered to such room or space.

5. A room or space containing an appliance where such a room or space serves as the sole source of return air.

**Exception:** This shall not apply where:

1. The appliance is a direct-vent appliance or an appliance not requiring a vent in accordance with Section 501.8.
2. The room or space complies with the following requirements:
  - 2.1. The return air shall be taken from a room or space having a volume exceeding 1 cubic foot for each 10 Btu/h (9.6 L/W) of combined input rating of all fuel-burning appliances therein.
  - 2.2. The volume of supply air discharged back into the same space shall be approximately equal to the volume of return air taken from the space.
  - 2.3. Return-air inlets shall not be located within 10 feet (3048 mm) of any appliance firebox or draft hood in the same room or space.
3. Rooms or spaces containing solid fuel-burning appliances, provided that return-air inlets are located not less than 10 feet (3048 mm) from the firebox of such appliances.
6. A closet, bathroom, toilet room, kitchen, garage, mechanical room, boiler room or furnace room, attic, or crawl space.

**Reason:** There are times when it is required to heat a crawl space for various reasons but installing a return air duct doesn't mean it is fully conditioned. There are good reasons not to do this. Mold, odors and insects just to name a few. The IFGC doesn't specifically prohibit this situation although implied. This language would clarify that this should not occur.

**Cost Impact:** The code change proposal will not increase the cost of construction.

### **PART III - IFGC**

**Committee Action:**

**Approved as Modified**

**Modify proposal as follows:**

**618.5 Prohibited sources.** Outside or return air for a forced-air heating system shall not be taken from the following locations:

1. Closer than 10 feet (3048 mm) from an appliance vent outlet, a vent opening from a plumbing drainage system or the discharge outlet of an exhaust fan, unless the outlet is 3 feet (914 mm) above the outside air inlet.
2. Where there is the presence of objectionable odors, fumes or flammable vapors; or where located less than 10 feet (3048 mm) above the surface of any abutting public way or driveway; or where located at grade level by a sidewalk, street, alley or driveway.
3. A hazardous or insanitary location or a refrigeration machinery room as defined in the *International Mechanical Code*.
4. A room or space, the volume of which is less than 25 percent of the entire volume served by such system. Where connected by a permanent opening having an area sized in accordance with Section 618.2, adjoining rooms or spaces shall be considered as a single room or space for the purpose of determining the volume of such rooms or spaces.

**Exception:** The minimum volume requirement shall not apply where the amount of return air taken from a room or space is less than or equal to the amount of supply air delivered to such room or space.

5. A room or space containing an appliance where such a room or space serves as the sole source of return air.

**Exception:** This shall not apply where:

1. The appliance is a direct-vent appliance or an appliance not requiring a vent in accordance with Section 501.8.
2. The room or space complies with the following requirements:
  - 2.1. The return air shall be taken from a room or space having a volume exceeding 1 cubic foot for each 10 Btu/h (9.6 L/W) of combined input rating of all fuel-burning appliances therein.
  - 2.2. The volume of supply air discharged back into the same space shall be approximately equal to the volume of return air taken from the space.
  - 2.3. Return-air inlets shall not be located within 10 feet (3048 mm) of any appliance firebox or draft hood in the same room or space.
3. Rooms or spaces containing solid fuel-burning appliances, provided that return-air inlets are located not less than 10 feet (3048 mm) from the firebox of such appliances.
6. A closet, bathroom, toilet room, kitchen, garage, mechanical room, boiler room, or furnace room, or ~~attic or crawl space~~.
7. A crawl space by means of direct connection to the return side of a forced air system. Transfer openings in the crawl space enclosure shall not be prohibited.

**Committee Reason:** Return air should not be taken from attics and crawl spaces because of contaminants that could be present in such spaces. The modification creates a separate item for crawl spaces recognizing that although direct connection between the return air duct system and the crawl space is undesirable, air taken from the crawl space through transfer openings should not pose a problem.

**Assembly Action:**

**None**

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## M91-07/08, Part I

### 1101.10 (New)

*Proposed Change as Submitted:*

**Proponent:** Mona Casey, Naples, FL

#### PART I – IMC

Add new text as follows:

**1101.10 Locking access port caps.** Refrigerant circuit access ports located outdoors shall be fitted with locking-type tamper-resistant caps.

**Reason:** The purpose of this code modification is to add new requirements to the Code. The existing code does not address the issue of accessibility to the lethal chemical Chlorofluorocarbons (CFCs/Freon) by untrained and unlicensed individuals, including children.

Because the lethal chemical Freon is easily accessible, "huffing", which refers to the inhalation of Freon and other dangerous chemicals, has been on the rise over the past few years not only among pre-teens and teenagers but among adults as well. Freon is highly addictive and is considered a gateway drug because users often progress from inhalants to illegal drugs and alcohol.

#### *National Statistics*

- The National Institute on Drug Abuse reports that one in five American teens have used Inhalants to get high.
- According to Stephen J. Pasierb, President and CEO of The Partnership for Drug-Free America, 22% of 6th and 8th graders admitted abusing inhalants and only 3% of parents think their child has ever abused inhalants.
- An analysis of 144 Texas death certificates by the Texas Commission on Alcohol and Drug Abuse involving misuse of inhalants found that the most frequently mentioned inhalant (35%) was Freon (51 deaths). Of the Freon deaths, 42 percent were students or youth with a mean age of 16.4 years.
- Suffocation, inhaling fluid or vomit into the lungs, and accidents each cause about 15% of deaths linked to inhalant abuse.
- National Institute on Drug Abuse's 'Monitoring the Future' study reveals that inhalant abuse among 8<sup>th</sup> graders is up 7.7% since 2002.

55% of deaths linked to inhalant abuse are caused by "Sudden Sniffing Death Syndrome." SSSD can occur on the first use or any use. The Inhalant causes the heart to beat rapidly and erratically, resulting in cardiac arrest.

22% of inhalant abusers who died of SSSD had no history of previous inhalant abuse. In other words, they were first-time users.

*Individual Consideration Agenda*

This item is on the agenda for individual consideration because a public comment was submitted.

*Public Comment:*

**Bob Croft, Pikes Peak Regional Building Department, representing Colorado Chapter of ICC, requests Disapproval.**

**Commenter's Reason:** Although the proposed definition is taken from Section 3.3.17.1 of the 2006 National Fuel Gas Code, it does not solve the issue of which is the correct table [504.3 (6a) thru (7b)] to apply when designing a vent system. The use of a masonry chimney as a gas vent has certain inherent problems associated with the condensing of flue gases. The reason for the number tables is to ensure climatic and physical conditions are addressed. By this definition, many non-exterior chimneys may have a much higher percentage surface area exposed to an unconditioned space such as the attic and portion above the roof line, than those that meet this proposed definition.

Final Action:        AS            AM            AMPC \_\_\_\_\_        D

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**FG15-07/08  
202**

*Proposed Change as Submitted:*

**Proponent:** Guy Tomberlin, Fairfax County, representing the Virginia Plumbing and Mechanical Inspectors Association and Virginia Building and Code Officials Association

**Revise definition as follows:**

**SECTION 202 (IFGC)  
GENERAL DEFINITIONS**

**ROOM LARGE IN COMPARISON WITH SIZE OF THE APPLIANCE (Supp).** Rooms having a volume equal to at least 12 times the total volume of a furnace, water heater or air-conditioning appliance and at least 16 times the total volume of a boiler. Total volume of the appliance is determined from exterior dimensions and is to include fan compartments and burner vestibules, when used. When the actual ceiling height of a room is greater than 8 feet (2438 mm), the volume of the room is figured on the basis of a ceiling height of 8 feet (2438 mm).

**Reason:** This criterion is actually already included within the installation instructions of most water heaters not listed for installation in closets or alcoves. Adding this text to the IFGC increases usability and lends to consistency with the water heater manufacturer's recommendations. This also is consistent with the action taken last code cycle in the IMC (see M18-06/07). Further, it only makes sense to identify the minimum size space a water heater can be installed in where the water heater is not listed for closet or alcove installation, exactly the same as other gas appliances.

**Cost Impact:** The code change proposal will not increase the cost of construction.

**Committee Action:** **Approved as Submitted**

**Committee Reason:** The revision is consistent with the appliance manufacturer's installation instructions. The definition serves to define a closet. The concern for a water heater should be no different than for a furnace, boiler or air-conditioning appliance.

**Assembly Action:** **None**

*Individual Consideration Agenda*

This item is on the agenda for individual consideration because a public comment was submitted.

*Public Comment:*

**Ted A. Williams, American Gas Association, requests Disapproval.**

**Commenter's Reason:** The proposed sizing of rooms applied to water heaters is inconsistent with sizing principles and methods for providing adequate combustion air and clearances for these appliances in closets and other rooms, which are conventional building practice. The proposal will disallow this type of installation and, instead, require installation in spaces that are unnecessarily large and in many cases

would be incompatible with conventional building floor plans. The proponent has provided no argument or evidence that the current practice of installation and provision of adequate combustion air and clearances is unsafe or otherwise unacceptable. The proponent's argument for consistency with provisions for other water heaters under the IMC may be evidence of problematic issues within that code, but it does not argue for changing the IFGC.

Final Action

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## FG17-07/08, Part I

### 306.3, 306.4

#### *Proposed Change as Submitted:*

**Proponent:** Guy McMann, Jefferson County, CO, representing Colorado Association of Plumbing and Mechanical Officials (CAPMO)

#### **PART I – IFGC**

#### **Revise as follows:**

**[M] 306.3 (Supp) Appliances in attics.** Attics containing appliances requiring access shall be provided with an opening and unobstructed passageway large enough to allow removal of the largest ~~component of the appliance.~~ The passageway shall not be less than 30 inches (762 mm) high and 22 inches (559 mm) wide and not more than 20 feet (6096 mm) in length ~~when measured along the centerline of the passageway from the opening to the appliance.~~ The passageway shall have continuous solid flooring not less than 24 inches (610 mm) wide. A level service space not less than 30 inches (762 mm) deep and 30 inches (762 mm) wide shall be present at the front or service side of the appliance. The clear access opening dimensions shall be a minimum of 20 inches by 30 inches (508 mm by 762 mm), ~~where such dimensions are~~ and large enough to allow removal of the largest ~~component of the appliance.~~

#### **Exceptions:**

1. The passageway and level service space are not required where the appliance is capable of being serviced and removed through the required opening.
2. Where the passageway is not less than 6 feet (1829 mm) high for its entire length, the passageway shall be not greater than 50 feet (15 250 mm) in length.

**[M] 306.4 (Supp) Appliances under floors.** Under-floor spaces containing appliances requiring access shall be provided with an access opening and unobstructed passageway large enough to remove the largest ~~component of the appliance.~~ The passageway shall not be less than 30 inches (762 mm) high and 22 inches (559 mm) wide, nor more than 20 feet (6096 mm) in length ~~when measured along the centerline of the passageway from the opening to the appliance.~~ A level service space not less than 30 inches (762 mm) deep and 30 inches (762 mm) wide shall be present at the front or service side of the appliance. If the depth of the passageway or the service space exceeds 12 inches (305 mm) below the adjoining grade, the walls of the passageway shall be lined with concrete or masonry extending 4 inches (102 mm) above the adjoining grade and having sufficient lateral-bearing capacity to resist collapse. The clear access opening dimensions shall be a minimum of 22 inches by 30 inches (559 mm by 762 mm), ~~where such dimensions are~~ and large enough to allow removal of the largest ~~component of the appliance.~~

#### **Exceptions:**

1. The passageway is not required where the level service space is present when the access is open and the appliance is capable of being serviced and removed through the required opening.
2. Where the passageway is not less than 6 feet high (1829 mm) for its entire length, the passageway shall not be limited in length.

**Reason:** This language is inconsistent with that of the IMC and IRC. The intent is to provide relief in the size of the opening provided that the appliance can be removed through such a size; not to be dismantled in order to do so. All three documents need to be consistent in their approach; that the opening needs to be as large as the largest appliance, not the largest piece. The last sentence of each section fails to specify an access opening size where the opening is NOT large enough to allow removal of the appliance. The IMC and IRC text is revised to be consistent with the IFGC text. The text only implies that the openings might need to be larger than 20" x 30" based on an appliance size. The revision clarifies that both criteria apply.

1. Closer than 10 feet (3048 mm) from an appliance vent outlet, a vent opening from a plumbing drainage system or the discharge outlet of an exhaust fan, unless the outlet is 3 feet (914 mm) above the outdoor air inlet.
2. Where there is the presence of objectionable odors, fumes or flammable vapors; or where located less than 10 feet (3048 mm) above the surface of any abutting public way or driveway; or where located at grade level by a sidewalk, street, alley or driveway.
3. A hazardous or insanitary location or a refrigeration machinery room as defined in this code.
4. A room or space, the volume of which is less than 25 percent of the entire volume served by such system. Where connected by a permanent opening having an area sized in accordance with Sections 918.2 and 918.3, adjoining rooms or spaces shall be considered as a single room or space for the purpose of determining the volume of such rooms or spaces.

**Exception:** The minimum volume requirement shall not apply where the amount of return air taken from a room or space is less than or equal to the amount of supply air delivered to such room or space.

5. A closet, bathroom, toilet room, kitchen, garage, mechanical room, boiler room or furnace room.

**Exception:** Where return air intakes are located not less than of 10 feet (3048 mm) from cooking appliances, taking return air from kitchen service areas shall not be prohibited.

6. A room or space containing a fuel-burning appliance where such room or space serves as the sole source of return air.

**Exceptions:**

1. This shall not apply where the fuel-burning appliance is a direct-vent appliance.
2. This shall not apply where the room or space complies with the following requirements:
  - 2.1. The return air shall be taken from a room or space having a volume exceeding 1 cubic foot for each 10 Btu/h (9.6 L/W) of combined input rating of all fuel-burning appliances therein.
  - 2.2. The volume of supply air discharged back into the same space shall be approximately equal to the volume of return air taken from the space.
  - 2.3. Return-air inlets shall not be located within 10 feet (3048 mm) of any appliance firebox or draft hood in the same room or space.
3. This shall not apply to rooms or spaces containing solid fuel-burning appliances, provided that return-air inlets are located not less than 10 feet (3048 mm) from the firebox of such appliances.

**Reason:** Many Commercial kitchens are designed with HVAC systems that serve only the kitchen service area. Many do not have defining walls from other service areas leaving designers and inspectors with the question of where does the kitchen start and end. Section 5 prohibits return opening in a kitchen, leaving designers with the choice of using outside air only or returning air to another part of the building. This change would allow for recirculation in a kitchen service area without interfering with the operation of other appliances such as hoods. The distance of 10' was from a legacy code and from the distances provided in the same section from odors and intakes.

**Cost Impact:** The code change proposal will not increase the cost of construction.

**PART II – IMC**

**Committee Action:**

**Disapproved**

**Committee Reason:** The proponent requested that the committee disapprove this code change to allow him to possibly rework it and submit a public comment.

**Assembly Action:**

**None**

*Individual Consideration Agenda*

**This item is on the agenda for individual consideration because a public comment was submitted for Part II.**

*Public Comment:*

**Tony Longino, County of Greenville, SC, representing South Carolina Plumbing, Mechanical and Gas Inspectors Association, requests Approval as Modified by this public comment for Part II.**

**Modify proposal as follows:**

918.6 Prohibited sources. Outside or return air for a forced-air heating system shall not be taken from the following locations:

1. through 4. (No change to current text)
5. A closet, bathroom, toilet room, kitchen, garage, mechanical room, boiler room or furnace room.

**Exception:** Where return air intakes are located not less than 10 feet from cooking appliances, and serve only the kitchen area, taking return air from a kitchen area shall not be prohibited

**6. (No change to current text)**

**Commenter's Reason:** I requested disapproval from the committee in Palm Springs due to a misunderstanding between the staff and myself on the intent of my code change. Staff re-worded my original proposal before it came to the committee to improve on the code language and concerns over the term "kitchen service area". However with the re-write of the section we lost the intent of allowing a return when the system serves only the kitchen area.

The code as written prohibits return ducts to be located in a kitchen due to concerns of interfering with the draft of the exhaust hoods and to prevent the contaminants and byproducts of cooking from entering the HVAC system.

When a HVAC system serves only a kitchen area, the return must either come from that area or it must have 100% outside air. Standard HVAC systems are not designed to handle more than 25% of the air that is returned to the system to be unconditioned. This would make it impossible to condition the area with a standard system. This would be a waste of energy and an increase in expense to the owner and builder both at the purchase of the equipment and the constant expense of conditioning outside air.

This proposal would allow a return intake to be installed in a commercial kitchen provided there is a 10' separation between the cooking appliances and the return intake, as long as the system served only the kitchen area. This will prevent contaminants, smoke and odor from spreading to a dining area or other areas of the building.

I believe this modification will clean up the language as intended by staff and eliminate the need to define the term "kitchen service area", while reducing the cost of commercial kitchens both in construction and operation.

The 10' distance between appliances and return intakes was drawn from a legacy code and was effective for many years without incident. There are testing procedures currently in code to prevent the return from interfering with the exhaust and all returns for HVAC systems require filtering to prevent damage to the system from contaminants.

Final Action:                    AS                    AM                    AMPC \_\_\_\_\_                    D

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## FG47-07/08

### 621.2

#### *Proposed Change as Submitted:*

**Proponent:** Perry Bumpers, Fireplace Creations, representing himself; David Price, representing Environmental Protection Agency (EPA); Craig Conner, Building Quality, representing himself; and Stephen Klossner, representing American Lung Association Health House

#### **Revise as follows:**

**621.2 Prohibited use.** One or more unvented room heaters shall not be used as the sole source of comfort heating in a dwelling unit. Unvented room heaters shall not be installed in a manufactured home. Unvented room heaters shall not be installed in a residence that complies with the air leakage requirements in Section 402.5 of the International Energy Conservation Code.

**Reason (Bumpers):** I have been in the hearth industry for 19 years. My company has torn out 375 unvented units because of consumer complaints. Consumers complain of various problems: moisture related problems, sooting, bad smells, headaches, and sinus problems. Many consumers report that their health improves after the unvented unit is removed. My company will not sell or install gas-fired unvented fireplaces or heaters.

In my area, consumers frequently purchase the unvented units themselves. Those consumers often intend to heat their whole residence with unvented heaters. The consumers seldom read or understand the code. Unvented heaters should not be used to heat homes.

**Reason (Price):** EPA supports the proposed changes to the International Fuel Gas Code that would add additional restrictions to the use of un-vented "vent-free" heating devices. EPA believes the proposed restriction should include, gas space heaters, vent-free gas log-sets installed in fireplaces where the damper is to remain closed, vent-free gas fireplace inserts installed in existing masonry or factor-built fireplaces and vent-free gas fireplaces and stoves. Pollutant emissions from these devices will include carbon monoxide, nitrogen dioxide, formaldehyde, respirable suspended particles, and water vapor. The proposed changes target the conditions presented by tighter energy-efficient building envelopes and reduced air change rates, found in manufactured homes, and in much new construction.

Proponents of the use of un-vented equipment frequently cite the modeling study by Whitmyre and Pandian, (2003), which attempted to predict the contribution of water vapor from these combustion devices to levels of indoor relative humidity. The study utilizes an air exchange rate of 0.35 – 1.0 ACH. However, much of the nation's new housing stock is tighter than this range. Data show the average normalized leakage for energy efficient homes is 0.31, however many energy-efficient homes are well below this level. And, energy-efficiency programs and the numerous emerging green programs (and fast-rising fuel prices) are expected to produce many more homes that achieve this level of tightness. However, with these reduced air exchange rates, devices like un-vented appliances, depositing a range of pollutants to the indoor air, become evermore problematic to occupant health.

While the study reports expected RH levels in areas (with this equipment) that are connected to other living spaces to be below 70% RH in all cases, and below 60% RH in 95 - 100% of simulations for all DOE Heating Regions, RH levels in rooms not connected to other spaces begin to approach or exceed 60% RH fairly frequently. EPA recommends that RH be kept below 60%RH, and ideally between 30 - 50%. Unfortunately, mold growth in actual homes frequently does not follow the modeling parameters. When humidity levels become elevated, all that is often needed is a surface in the home cooler than ambient levels, (from contributors such as a lack of air movement, poor ventilation, or insufficient insulation), for condensation to develop, leading to mold growth. Conditions in homes are not consistent throughout. EPA believes that un-vented devices would be expected to present conditions for mold growth in many tight, energy-efficient homes.

Manufacturers of these products recommend that their use be limited to four hours, however, in practice, human behavior does not match guidance. Reports indicate that many individuals use these devices as a primary heating source for living spaces for extended hours, greatly increasing the opportunity for increases in pollutant loads beyond those modeled in the study.

Finally, as a safety measure, the manufacturers indicate that they equip un-vented heating equipment with an oxygen detection sensors, to automatically shut off the supply of gas to the unit if oxygen levels drop below normal levels (20.9% at sea level) to 18%, to prevent a device from consuming oxygen levels in a room to below safe levels. Atmospherically-vented combustion equipment, normally (sans spillage conditions) provides venting of pollutants to the outdoors, regardless of the burn efficiency. Any gas appliance is subject to impairments to normal operation, resulting from installation errors that may affect operation, clogged burners, or accumulations of dirt from lack of owner maintenance (which is common in household where regular replacement of furnace filters often does not occur) that impairs the combustion efficiency. It is an unreasonable risk to a home's inhabitants to provide only an oxygen detection sensor as the margin of safety.

**Reason (Conner):** This proposal adds one sentence explicitly prohibiting unvented gas heaters from being installed in existing manufactured homes. This proposal helps protect manufactured homes from excessive moisture. Moisture produced by unvented gas heaters goes directly into the home. Excessive moisture causes mold and can damage the structure. The solution is simple: vent gas heaters.

The producers of unvented gas heaters assert there are no documented fatalities associated with unvented gas heaters. A comparison to showers may be useful. Unvented showers would probably not produce fatalities either. However, unvented showers are a bad idea because routinely venting shower moisture into the home will lead to moisture problems; therefore the code requires showers to be vented. Accordingly, we should vent gas heater moisture for the same reason we vent shower moisture.

The producers of unvented heaters point to the benefits of their oxygen depletion sensor (ODS). The sensor may protect against oxygen depletion, but it does not protect against excessive moisture.

HUD regulates the construction of all manufactured homes, no matter where the homes are placed. Both HUD's Manufactured Home Construction and Safety Standards (Section 3280.707) and NFPA 501, the "Standard for Mobile Homes", prohibit unvented gas heaters in manufactured homes. NFPA 501, Section 10.6 states:

*"Fuel-burning, heat-producing appliances and refrigeration appliances shall be of the vented type and shall vent to the outside.*

*Exception: Ranges and ovens."*

In spite of HUD's and NFPA 501's regulation prohibiting unvented gas heaters, unvented gas heaters are routinely sold for use in existing manufactured homes.

Opponents offered in testimony that the term "manufactured home" was the wrong term. The IRC defines "Manufactured Homes" in its definition section. Moreover, Appendix E of the IRC addresses manufactured homes as a code topic.

The IRC may be applied to existing manufactured homes under IRC Appendix E, applied as a sort of "condition of listing" for the homes, or applied to the homes simply because they are residences. IRC Appendix E states that it applies to:

*"Manufactured homes used as a single dwelling unit installed on privately owned (non-rental) lots" including application to "Alterations, additions, or repairs to existing manufactured homes."*

IRC Appendix E also states:

*"BUILDING SERVICE EQUIPMENT, AE505.1 General. The installation, alteration, repair, replacement, addition to or maintenance of the building service equipment within the manufactured home shall conform to regulations set forth in the Manufactured Home Standards."*

The term "building service equipment" is defined to include heaters. Clearly parts of the IRC apply to manufacturer homes and the equipment in those homes.

Opponents offered manufactured homes might not belong in the I-codes, due to HUD's preemptive regulation of new manufactured homes. As outlined above, portions of the I-codes are sometimes applied to manufactured homes after they are sited.

Unvented gas heater producers assert that there is no evidence of moisture damage to manufactured homes. The manufactured home industry thinks differently. Manufactured home industry research has identified unvented heaters as a major moisture problem in manufactured homes.

*"Domestic sources of moisture include bathing, showering, cooking, mopping, and clothes washing and drying. The more problematic indoor sources are unvented gas appliances, indoor gardens, saunas, hot tubs, and indoor storage of firewood."*<sup>1</sup>

Unvented gas heaters should not be allowed in the relatively air tight homes that meet the energy code air sealing requirements to avoid moisture and air quality problems. Unvented gas heaters should never be installed in manufactured homes.

**Reason (Klossner):** My primary concerns with unvented appliances would fall into four main categories:

1. The production of water vapor from the combustion process.  
The moisture production from even a 10,000 Btu unvented appliance would exceed the water vapor production from a shower, if both operated for the same period of time. Most codes would require operable windows or mechanical ventilation in bathrooms to help in controlling this moisture production by a shower. There is also the likelihood that an unvented appliance would operate for longer periods of time on average, and that occupants would be unlikely to open windows when attempting to use these as a heat source because it is cold outside.
2. The introduction of low levels of carbon monoxide into the home environment.  
There is limited data on the health impacts of low level carbon monoxide exposure. What is known is that the elderly, very young and pregnant females would have increased health effects from this contaminant. At levels of 25 PPM, which is below the alarm threshold for UL rated carbon monoxide detectors, the study I listed below shows damage to hearing for children.
3. The introduction of nitrogen dioxide into the home environment.  
Nitrogen dioxide is a known exasperator for asthmatics. The study cited below they found that when unvented combustion heating

<sup>1</sup> From "Moisture Problems in Manufactured Homes" by the Manufactured Housing Research Alliance (emphasis added), page 4.2. The report is available at <http://www.pathnet.org/si.asp?id=441>

appliances were replaced with vented appliances or electric heat, the incidence of all asthma-related symptoms and missed school days declined sharply.

4. The introduction of combustion contaminants in current housing stock, based on house tightness. Housing stock is getting tighter based on current codes and standards. Energy efficient programs are grabbing a larger share of the housing market. None of the energy programs that I am aware of allow unvented appliances to be installed. This is partly because of the increased contaminant load from carbon monoxide, nitrogen dioxide and water vapor. The American Lung Association's Health House program has excluded them from our building guidelines mainly because of the water vapor productions and nitrogen dioxide, a known asthma exasperator.

#### Studies and Executive Summaries -

1. The production of water vapor from combustion  
<http://www.homeenergy.org/archive/hem.dis.anl.gov/eehem/96/960905.html#tab1>  
From this article - Even benign gases can be a problem if not adequately vented. A shower emits about 300 grams per hour of water into the air and is typically used for less than one hour daily. Building codes require operable windows or installed ventilation fans to remove this vapor. In contrast, about 400 grams of water vapor is produced per 10,000 Btu of fuel consumed. This water, if not removed by ventilation, will condense on cold surfaces such as windows and wall cavities. In moderate and moist climates, the accumulation of moisture leads to mildew and fungal growth. Fungal colonies in building materials cause rot and decay, and produce spores that can cause allergic reactions.
2. The introduction of low levels of carbon monoxide into the home environment  
[University of California - Los Angeles \(http://www.newsroom.ucla.edu/\)](http://www.newsroom.ucla.edu/) Contact: Elaine Schmidt  
How chronic exposure to tiny levels of carbon monoxide damages hearing in young ears - UCLA scientists first to identify mechanism.  
Findings: UCLA scientists have discovered how chronic exposure to low levels of carbon monoxide [C O] damages the inner ear, resulting in permanent hearing loss. At the Ca/OSHA's exposure limit of 0.0025 percent -- or 25 parts per million CO in the air -- the gas creates oxidative stress, a condition that damages the cochlear cells, leading to impairment of the auditory nerves.  
Context: Tobacco smoke, gas heaters, stoves and ovens all emit CO, which can rise to high concentrations in poorly ventilated homes. Infants and children are particularly vulnerable to CO exposure because they spend a great deal of time in the home. No policies exist to regulate CO in the home.  
This is the first time that inhaled CO has been linked to oxidative stress, a known risk factor in many disorders, including Alzheimer's, Parkinson's, Multi Sclerosis, Lou Gherig's Disease and Cardiovascular Disease. Tobacco smoke, which contains CO, aggravates many of these diseases. The UCLA findings highlight the need for policy makers to reexamine the regulation of car exhaust, tobacco smoke, smog, and heating and cooking appliances.
3. The introduction of nitrogen dioxide into the home environment.  
<http://www.epa.gov/jag/no2.html#Health%20Effects%20Associated%20with%20Nitrogen%20Dioxide>  
From this document:  
Sources of Nitrogen Dioxide. Kerosene heaters, un-vented gas stoves and heaters. Environmental tobacco smoke.  
Health Effects Associated with Nitrogen Dioxide  
Eye, nose, and throat irritation. May cause impaired lung function and increased respiratory infections in young children.  
EPA's Integrated Risk Information System profile for Nitrogen Dioxide - [epa.gov/iris/subst/0080.htm](http://epa.gov/iris/subst/0080.htm)<sup>14</sup>  
NO<sub>2</sub> acts mainly as an irritant affecting the mucosa of the eyes, nose, throat, and respiratory tract. Extremely high-dose exposure (as in a building fire) to NO<sub>2</sub> may result in pulmonary edema and diffuse lung injury. Continued exposure to high NO<sub>2</sub> levels can contribute to the development of acute or chronic bronchitis. Low level NO<sub>2</sub> exposure may cause increased bronchial reactivity in some asthmatics, decreased lung function in patients with chronic obstructive pulmonary disease and increased risk of respiratory infections, especially in young children.  
Average level in homes without combustion appliances is about half that of outdoors. In homes with gas stoves, kerosene heaters, or un-vented gas space heaters, indoor levels often exceed outdoor levels.  
The full text of the study below is posted at <http://ije.oupiournals.org/cgi/reprint/33/1/208>  
"Scientists Say Unvented Gas Heaters Worsen Asthma Symptoms"  
In February 2004, Australian scientists expressed concern that unvented gas heaters and related combustion appliances pose a risk to asthmatic children. The study they conducted focused on unvented heaters in schools, but the researchers asserted that it is reasonable to conclude that unvented combustion appliances pose a risk to children and all asthmatics in the home environment as well.  
In the home, unvented fireplaces, gas logs, and gas heaters release carbon dioxide, nitrous oxides, and nitrous acids in their combustion processes. Outdoors, nitrous oxides form smog, a potent asthma trigger in sensitive populations. Indoors, the Australian study linked nitrous oxides, in combination with breathing in higher concentrations of carbon dioxide and nitrous acids, with increased incidence of tight chest, difficulty breathing, and full-blown asthma attacks requiring the use of fast-acting "rescue" inhalers.  
The study found that when unvented combustion heating appliances were replaced with vented appliances or electric heat, the incidence of all asthma-related symptoms and missed school days declined sharply.  
<http://www.homeenergy.org/archive/hem.dis.anl.gov/eehem/98/980108.html>  
From this article  
The New York State Research and Development Authority (NYSERDA) produced a peer-reviewed critique of the GRI standard. Among other things, it criticizes the GRI's indoor air quality guideline of 0.5 ppm (parts per million) for nitrogen dioxide. "No international, federal, or state guidelines that have been adopted are as high as 0.5 ppm. If an air quality guideline of 0.25 ppm is used for nitrogen dioxide, air quality will quickly reach unacceptable levels for homes" in climates with more than 2,000 heating degree-days. Some such climates include mild Santa Barbara, California; St. Louis, Missouri; and Washington, D.C.  
The NYSERDA report also criticized the GRI's science. "The heater sizes recommended," it says, "are larger than the heater sizes which were used to calculate indoor air contaminant levels."  
4. The introduction of combustion contaminants in current housing stock, based on house tightness.  
The following study shows data on approximately 100,000 homes measured for air tightness. At the medial tightness levels, energy programs should have mechanical ventilation and ordinary homes should possibly have some form of ventilation. Adding this contaminant load without requiring ventilation could lead to increased problems with moisture and increased exasperation for asthmatics and other people with reactive air way disease occupying these homes. This would include the very young and elderly in this category.  
<http://epb.lbl.gov/publications/lbnl-59041.pdf>

**Cost Impact:** The code change proposal will not increase the cost of construction.

**Committee Action:**

**Disapproved**

**Committee Reason:** Unvented room heaters are safe if installed and used in accordance with the manufacturer's instructions. No evidence was given to support the banning of such appliances. Some of the health concerns expressed by the proponents could not be substantiated and could be attributed to other causes.

**Assembly Action:**

**None**

### *Individual Consideration Agenda*

**This item is on the agenda for individual consideration because public comments were submitted.**

*Public Comment 1:*

#### **Perry Bumpers, Fireplace Creations, requests Approval as Submitted.**

**Commenter's Reason:** I've been in the hearth industry for 20 years. My company will not sell a vent free product. We have torn out and replaced well over 400 vent free fireplaces. Complaints remain the same year after year. Headaches, more sinus problems, moisture related problems, soot related problems bad smell and film all over the windows. After removal of the vent free product, many customers report fewer colds, sore throats and sinus problems. Also, the moisture is gone.

My company sells hearth products in five states and in these areas of the country it is not uncommon to find vent free products being used as the sole source of heat. These homes and businesses have window air conditioner units and sometimes as many as 4 vent free products being used for heating. They have no central heating systems. Why is this being allowed when everyone agrees vent free products are for supplemental heat only? When the consumer comes into the showroom, 90% of them tell you they want heat. The comment is usually made, "I want a vent free." We train our people to ask the questions, "Why do you want vent free?" The answer usually is, "I want all the heat and I don't want to lose any of the heat up the flue." Why should the consumer believe any different than they shouldn't use the vent free for heat? Most advertisements in the winter months for vent free go as follows:

1. Heat your home for pennies an hour.
2. Vent free 99.9% efficiency saves \$\$ while it heats your home.
3. Don't let your money go up your chimney; heat with vent free logs.
4. Cut your fuel bill in half with vent free logs, stoves or fireplaces. They're 99.9% efficient.
5. For just pennies a day, heat your home.

It seems that those ads that sell vent free products are always about heat. It's usually never mentioned that vent free is for supplemental heat only, or anything about how to size the room your vent free should go into.

It is not uncommon to find new construction that 2 or 3 vent free fireplaces in them. Many times these products range from 32,000 to 40,000 BTUs. Many times the combined area in which 2 or 3 vent free fireplaces are installed may only equal 1,000 to 1,500 square feet and nobody seems to care. In most new construction today, the end user never sees an owner's manual and, if they do, most don't read the instructions again. A customer comes into my showroom complaining about their fireplace. There was no information about the fireplace when I bought the house. We turned on the fireplace and it smelled so bad and it got the mantel hot. I need someone to come out and check it. Most of the time, the customers want to know why the product was put in the home after they got all the facts.

Most companies today that manufacture gas fireplaces make a product called a direct vent. The product eliminates most of the concerns and dangers that are associated with using vent free fireplaces, logs and space heaters.

For all the reasons above, I feel vent free products should be removed from the marketplace.

*Public Comment 2:*

#### **Tim Manz, University of Minnesota Building Code Division, representing Association of Minnesota Building Officials, requests Approval as Submitted.**

**Commenter's Reason:** Unvented appliances generate products of combustion that are not vented out of the room in which they are installed. Primary constituents of the products of combustion include carbon monoxide, carbon dioxide, water vapor and nitrogen oxides—all of which can have an adverse affect on the building materials, furnishings and occupants in the building. Energy efficient buildings are not capable of tolerating high levels of relative humidity due to the likely formation of condensation on windows and exterior walls, which can create mold, mildew and even structural issues. As a result, it is unacceptable to allow the use of these types of appliances that will likely be operated on a regular basis for extended periods of time.

*Public Comment 3:*

**Craig Conner, Building Quality, representing himself, requests Approval as Modified by this public comment.**

**Stephen R. Klossner, American Lung Association of the Upper Midwest, requests Approval as Modified by this public comment.**

**Roger Oxford, Hearth & Home Technologies, Inc., requests Approval as Modified by this public comment.**

**Modify proposal as follows:**

**621.2 Prohibited use.** One or more unvented room heaters shall not be used as the sole source of comfort heating in a dwelling unit. Unvented room heaters shall not be installed in a manufactured home. Unvented room heaters shall not be installed in a residence that complies with the air leakage requirements in Section 402.4 of the *International Energy Conservation Code*.

**Commenter's Reason – Conner:** The original code change required determining if a residence was as airtight as required by the energy code. Verbal testimony correctly noted it could be difficult to establish air tightness, especially for existing residences. The moisture produced by unvented heaters in routine operation could easily be a problem in existing as well as new homes. Therefore, it makes sense to eliminate the use of unvented heaters in all residences and use vented heaters instead. Some states, jurisdictions, and even countries have already banned the use unvented heaters, severally restricted their use or required mechanical ventilation in conjunction with the unvented heaters.

Perhaps stating the obvious—Unvented heaters produce moisture inside the home as a product of their operation, even when operating correctly. That moisture is deposited in the home, usually on some colder condensing surface. Excessive or uncontrolled moisture can damage homes and/or have negative health impacts. Mechanical systems can malfunction or run at less than perfect adjustment. This is a health/life safety issue. As homes become tighter, they become less tolerant of additional moisture sources and indoor pollutants. Approved changes in the IECC will require an overall tightening of the building shell increasing the potential for moisture problems from unvented gas heaters. Common sense indicates that moisture and the byproducts of combustion should be vented.

More discussion of unvented heaters can be found at <http://www.ventyes.org/>

**Commenter's Reason – Klossner:** There is concern on several fronts for allowing the operation of unvented appliances in today's housing stock. Moisture production as well as contaminant production must all be considered with their operation. The moisture production from even a 10,000 Btu unvented appliance would exceed the water vapor production from a shower, if both operated for the same period of time. Most codes would require operable windows or mechanical ventilation in bathrooms to help in controlling this moisture production by a shower. Assuming a consumer will open a window when using these appliances for heating is not reasonable. Moisture problems in new housing stock are a significant call back problem for builders. Studies have clearly shown that low level combustion contaminants such as carbon monoxide are not safe for the elderly or pregnant woman and can affect the hearing of very young children. These occur below the current level of detection for UL approved carbon monoxide detectors. In a recent study by the University of Illinois, nitrogen dioxide, which exacerbates asthma, was found to exceed the World Health Organizations threshold value in over 80% of the homes studied. Even using the less stringent Canadian standards, this study found 50% of the homes exceeded their threshold level. Clearly there is no place for unvented appliances in today's housing stock!

**Commenter's Reason – Oxford:** Hearth and Home Technologies (HHT) is the world's largest manufacturer of hearth products under the brands Heatilator®, Heat & Glo™, Quadra-Fire® and Harman. Annually, we manufacture hundreds of thousands gas, wood, pellet and electric hearth systems. We are the recognized technology leader in the hearth industry and have more design patents than any other company including a patent for unvented gas fireplaces that dates back to 2000. We have the ability to make and sell unvented gas hearth products; but in the best interest of the homeowner/consumer choose not to make or sell unvented gas hearth products.

Additionally, we own the largest hearth installation and distribution company in the US, acquired in 2000. When acquired the distribution business was selling a large amount of unvented products. We exited the unvented category at significant financial risk to our revenue and profitability, unless we could convert the new company's builders and consumers to a vented product. We did this because we believed so strongly that the unvented gas category is not right for the homeowner/consumer. As we have acquired more companies through the years, the same decision has been made each and every time.

Our vision is to be profitable, to be responsible corporate citizens and to create long term value for our stakeholders while conducting our business in a way that sustains the well-being of society, our environment and the economy in which we live and work. Quite simply, we consider selling unvented gas heater products irresponsible. We have always held that the unvented gas heater category was not in the best interest of the homeowner/consumer and therefore should not be manufactured by the industry. It is our opinion unvented gas heaters are not appropriate for today's homes for the reasons listed below. Our position has gotten stronger through the years, as proof of our concerns has grown with the increased use of the unvented category since the mid 1990's.

**Expanding consensus to exclude unvented gas appliances.**

- Virtually all of the largest national homebuilders have ceased using unvented gas hearth products because of inherent liability.
- Many jurisdictions ban or severely limit the application of unvented gas heaters. With housing being built tighter and more efficient every year, we believe this ban should be consistent in all jurisdictions.
- National organizations have introduced green building programs which exclude unvented gas appliances as a prerequisite to certification. Those include US Green Building Council's LEED® for Homes, American Lung Association's Health House® and Environmental Protection Agency's Energy Star® with Indoor Air Package. The National Association of Home Builders' Model Green Home Building Guidelines recommends the use of direct vent systems.

**Reduced indoor air quality (IAQ).**

1. Water vapor from the gas combustion process exhausts at approximately 1 quart/hour. Tightly built homes can't adequately process this additional moisture, so mold growth can result as condensation accumulates on cooler surfaces in the home.
2. Unhealthy indoor air quality can result from the byproducts of unvented gas combustion, specifically carbon monoxide and nitrogen dioxide.
3. Improper usage and installation by homeowner/consumers can put them in an unsafe position in violation of manufacturer's instructions.
  - Manufacturer's claim that unvented gas appliances are "99% efficient" leading consumers to believe these appliances can be used as primary heat sources. In reality, the 99% efficiency claim is attainable only if all the water vapor condenses completely within the home.
  - Public statements show many "do-it-yourself" homeowners lack the knowledge to properly install and maintain unvented gas heaters.

**Better alternatives, in line with consumer preferences, comprise the majority of what is sold and in use today. The vented products are cost competitive.**

- Unvented gas appliances have represented a declining share of hearth market since 1997.
- Manufacturers provide comparable vented gas appliances at a comparable consumer cost.
- The consumer advantage with unvented gas appliances being cheaper to install does not justify the risks.

- Many other manufacturers of hearth products choose not to manufacture unvented gas hearth products. The vast majority of manufacturers of unvented gas appliances also manufacture vented gas appliances, so they could also change to vented products.

Not one person on our management team would use unvented gas hearth products in their home. We believe that homeowner/consumers are people just like us and would want the same thing we do. The best overall value product should safely meet their needs and the unvented category is does not, so why would we manufacture and sell them? The potential liability is a financial risk; but, more than money is at issue here. Behaving responsibly means having a positive impact on the environment of people's homes where our product is used. We must strive to move beyond what we have the right to sell our customers —but to focus on what is the right thing to sell our customers.

*Public Comment 4:*

**Don Denton, Vent-Free Gas Products Alliance of the Air-Conditioning, Heating and Refrigeration Institute, requests Disapproval.**

**Sue Walker, Vice President of DESA, LLC and Chairperson of the Vent-Free Gas Products Alliance, requests Disapproval.**

**Mark Jaynes, Vice President of Blossman Gas, requests Disapproval.**

**Dave Delaquila, Section Director of the Air-Conditioning, Heating, and Refrigeration Institute (AHRI), requests Disapproval**

**Bruce Swiecicki, Vice President of the National Propane Gas Association, requests Disapproval.**

**Gary Whitmyre, Board Certified Toxicologist and Principle of risksciences, llc, requests Disapproval.**

**A. L. Wilson, Qualified Environmental Professional (QEP), Wilson Environmental Associates, requests Disapproval.**

**Committer's Reason:** This public comment is made by a group of gas equipment and Indoor Air Quality (IAQ) experts on behalf of the Vent-Free Gas Products Alliance of the Air-Conditioning, Heating and Refrigeration Institute (AHRI). These individuals include the Vice President of a leading vent-free manufacturer, the Vice President of a major LP retailer in the Southeastern United States, the AHRI Director responsible for vent-free standards and regulatory matters, the Vice President of the National Propane Gas Association, a consulting engineer specializing in combustion and indoor air quality, a Board Certified toxicologist, and a Qualified Environmental Professional.

We wholeheartedly endorse the unanimous decision of the 12 members of the International Fuel Gas Code Committee to reject Proposal FG47 at the Code Development Hearing (CDH) held on February 21, 2008, in Palm Springs, California. The following information is our group's written Public Comment.

**Sue Walker, Vice President of DESA, LLC and Chairperson of the Vent-Free Gas Products Alliance**  
*[Topics: Regulatory, code, and consumer acceptance; CPSC findings on safety; landmark IAQ studies]*

The Vent-Free Gas Product Alliance is comprised of 13 manufacturers of whole goods and controls whose mission is to work closely with code and regulatory authorities to maintain proper coverage of vent-free gas products as supplemental heating appliances in relevant national, state and local codes. After 28 years of this work, **49 states and all major codes permit the installation of vent-free gas products after conducting very careful review of the product's performance and safety record.** Each of these codes including the IFGC and the IECC define how adequate air volume must be calculated to support the safe operation of gas combustion products and the requirements are identically stringent for vent-free and vented gas appliances.

In 1980 the ANSI Z21.11.2 safety standard was implemented and required that all vent-free gas products be equipped with "new technology" oxygen detection safety pilots and numerous other safety features. Since then more than 18 million units of vent-free gas appliances have been installed in U.S. homes. **The Consumer Product Safety Commission (CPSC) in 2005 confirmed that since 1980 there has never been a documented death or poisoning associated with emissions from a vent-free gas product. Concurrently numerous landmark indoor air quality research studies have confirmed that vent-free gas products meet the most recognized IAQ guidelines used in this country.**

Our industry is not aware of any technology that has come under closer scrutiny for the past 28 years. However, there is simply no independent scientific research confirming any negative environmental IAQ impact related to vent-free gas products. **Should this code change proposal be adopted, the market for these products would be severely restrained without justification.**

**Mark Jaynes, Vice President of Blossman Gas**  
*[Topics: Major retailers' long-term experience]*

Thank you for the opportunity to register in opposition to Proposal FG-47. **I have 25 years experience managing the sale, installation and service of home appliances for two major propane companies in 14 southeastern states. My experience with vent-free gas products has been extremely positive** compared to that described by Mr. Bumpers, one of the proponents of FG-47. I have been the appliance merchandising manager for Dowdle Gas Company with 70+ retail outlets in 5 states, and in a similar position for Blossman Gas Company responsible for 70 retail outlets in 9 states, installing and servicing vent-free gas products as well as a full line of home appliances. Both Dowdle and Blossman Gas are highly recognized as extremely responsible, successful propane gas companies that rely on customer satisfaction in all their activities. Neither company would ever persist in marketing an appliance that was linked to extensive customer dissatisfaction and removal, as Mr. Bumpers alleges. During testimony at the Palm Springs meeting before the IFGC Committee, Mr. Bumpers admitted that each time he removed a vent-free gas product he benefited financially by installing a more expensive, more profitable vented appliance.

Over these 25 years, I estimate that these two companies have been responsible for the sale, installation and service of 20,000+ vent-free gas products including heaters, logs, fireplaces and stoves. I am pleased to assure you that most consumers have been very pleased with the performance of these products. Frankly, existing customers have been the key to future sales as they recommend the appliance to family, friends, and neighbors. Many households purchased the products for supplemental heat, others chose the logs for the economy and cleanliness vs. vented gas logs or burning wood. Some consumers simply wanted a reliable source of heat during power outage. As with any category of appliance, occasionally there was a problem or complaint. Generally the issue was resolved via a routine service call, and consumer education regarding proper use of the product. Manufacturers of the product have been very responsive and supportive of retailers and consumers. In summary, **I believe that vent-free gas products are safe, offer reliable performance, and are very important to many households that depend on supplemental gas heat to save on home heating costs.**

**Dave Delaquila, Section Director of the Air-Conditioning, Heating, and Refrigeration Institute (AHRI)**

*[Topics: Conflicts caused by proponents' proposed code changes; safety, performance, and construction requirements of national product standard and third-party certification of compliance]*

This proposal takes a narrowly focused viewpoint between the interrelationships of the various I-codes simply by noting compliance with the air leakage requirements in section 402.5 of the IECC. **The codes already provide for adequate coverage and in fact there is no problem when installing an unvented heater in a home that conforms with the IECC** if the code requirements are followed.

**First, the codes are very clear with respect to the installation of gas-fired equipment in the IECC and the need to provide adequate ventilation, make-up and combustion air when installing gas equipment.** In section 102 of the IECC, which covers materials, systems and equipment, it specifically states that all equipment shall be installed in accordance with the manufacturer's installation instructions and the International Building Code (IBC). The IBC clearly states in section 101 that other I-codes referenced in the IBC shall be considered part of that code to the prescribed extent as specified in each of those codes. Furthermore, in clause 101.4.2, for gas equipment, it states that the International Fuel Gas Code (IFGC) shall apply to the installation and operation of gas appliances.

**The IFGC is very clear about the need for providing adequate ventilation, make-up and combustion air when installing gas appliances** as referenced in section 304. It also prescribes specific appliance requirements as provided for in section 621 for unvented room heaters. From this standpoint all of the proper installation requirements are adequately covered and the need to restrict the installation of these heaters is unjustified. **The proponents provide no direct evidence whatsoever that a properly installed and maintained gas appliance in a home that conforms to the IECC is problematic and as such there no basis for adopting this code change.**

In addition, awareness should be raised with respect to the proponents concern that the Oxygen Depletion Safety pilot (ODS) is the only safety device provided for in the product safety standard, ANSI Z21.11.2. This is simply incorrect. The product standard includes many requirements addressing the safe construction and performance that all gas-fired unvented room heaters must conform to get listed. For example, performance testing includes combustion tests where products of combustion cannot exceed 0.02% CO and 0.002 % NO<sub>2</sub> air free. In addition, the standard includes tests for pilot burners and safety shutoff devices; ODS safety shutoff systems; burner operating characteristics; clothing ignition potential, wall, floor and ceiling as well as surface and discharge air temperatures. Furthermore, as part of the product listing, the certification agency conducts follow-up inspections whereby it randomly selects product literally "off-the-shelf" and tests it. If it does not pass the manufacturer must take corrective action or de-list the product. These are continued safety measures that verify that the listed products continue to perform as designed and manufactured.

It is completely misleading to suggest that manufacturers simply attached an ODS pilot to a gas burner, surround it with decorative logs and then sell the product. There are safety, construction, and performance tests, as well as instructional content intended to eliminate product defects. And all products sold and installed in the U.S. are required to be listed by an independent third party certification agency

**There is simply no evidence that provides any basis for adopting this code change proposal and AHRI fully supports the committee and subsequent floor action to reject.**

**Bruce Swiecicki, Vice President of the National Propane Gas Association**

*[Topics: Propane industry experience; combustion air requirements; national product standard; acceptability for installation in after-market manufactured homes]*

Of the 18 million vent free gas products installed in the U.S. since 1980, about 40%, or 7.2 million, are fueled by propane. These units are used in both site-built homes and manufactured homes.

Propane marketers install a large percentage of these units. These marketers are highly trained, competent and qualified to perform this work.

**The same code requirements for combustion air are in place for both vented equipment and vent free appliances.**

**Unvented heaters must comply with nationally recognized standards,** specifically ANSI Z21.11.2. There are emissions tests and safety requirements that each unit must comply with prior to being listed and labeled by a third party agency such as CSA.

Vent free heaters are extremely important for providing heat to people living in mild climates and they should not be banned from use by the IFGC.

With respect to manufactured housing, local codes have jurisdiction once the manufactured home is placed on site. **ANSI Z21.11.2 permits the installation of unvented heaters in manufactured housing and the Manufactured Housing Institute acknowledges that vent free heaters can be installed in manufactured homes once they are on site.**

**Don Denton, Consulting Engineer, specializing in gas combustion and indoor air quality**

*[Topics: Scientific evidence on compliance with national indoor air quality guidelines; product liability safety record; impacts of tight construction and over-sizing, New York State review and acceptance]*

The core issue raised by the proposal concerns the impact of vent-free gas products on a home's indoor air quality. During the original development of the International Mechanical Code years ago, and ultimately the International Fuel Gas Code as well, the code developers had to evaluate whether or not vent free gas products should be permitted. A highly qualified independent firm, American Gas Association Research (AGAR), under sponsorship of the Gas Research Institute (GRI), conducted two landmark studies that provided the answers.

These researchers examined five primary emissions of concern for all kinds of operating conditions and housing stock throughout the United States. They created a computer model to run these permutations, and verified it by comparing calculated emissions to actual emission measurements taken from two control test houses. Importantly, the results were compared against nationally recognized IAQ guidelines developed by the Consumer Product Safety Commission, ASHRAE, and others.

**AGAR concluded that vent-free gas products met these nationally recognized IAQ guidelines, and in most cases yield emissions that are significantly less than the maximum allowable. In short, they are safe to use.**

Subsequent studies conducted by other reputable organizations such as Energy International, Arthur D. Little, Wilson Environmental, and Risksciences have added to confirmation of the original AGAR research or contributed to strengthening of the national product standard,

as in the case of the nitrogen dioxide requirement. Most importantly, these research conclusions are backed up by the outstanding safety and product liability record of 18+ million units installed in the U.S. since 1980. We live in a litigious society in which people are quick to file lawsuits, and my experience as a Product Liability Administrator for 20 years does not support the proponents' claims about vent-free.

Furthermore, I appreciate their concerns about tight construction. The great news about vent-free gas products is that **as a home is made tighter, less cold air enters through air exchanges; there is less need for heat, so the emissions go down.** Also, even at extreme tightness of 0 ACH, the ODS will shut off the heater long before unsafe emission levels are reached.

Likewise, the proponents expressed concerns about over-sizing a heater for the application. The input merely determines the cycle time. A heater with twice the needed input will operate only half of the time as a heater sized best for the application, so **an oversized heater does not negatively impact IAQ either. Relative to both tightness of the home and input of the appliance, these products are self-compensating devices.**

New York State evaluated vent-free gas heating products for almost two years over 1996-1998. The state departments that are responsible for protecting consumers reviewed the available scientific evidence and endorsed their allowance.

In conclusion, **I urge the ICC members to reject Proposal FG47.**

**Gary Whitmyre, Board Certified Toxicologist and Principle of risksciences, llc**

*[Topics: Scientific research on water vapor and mold/mildew formation]*

In 2002, I conducted a computer modeling study to determine how much vent-free gas heating appliances contribute to water vapor indoors. This study has been accepted and published in a peer-reviewed scientific journal. Water vapor is measured as relative humidity. **The concern is that high humidity may cause active mold and mildew growth.**

Using the computer model the results of this study were as follows: For most of the United States, these appliances did not raise the indoor relative humidity in any residential situation beyond a "safe zone" of less than 60 % relative humidity. This study was based on over 200,000 iterations of the model, representing different residential conditions in all of the different DOE heating regions. Even in Florida and the Gulf Coast where the outdoor humidity is high, the results were still very favorable. In colder regions, where the appliance is "ON" more, the total indoor relative humidity is still in the "safe zone". Even extended use of the appliance does not raise humidity beyond the "safe zone."

When the interior room door is closed, most of the cases involving a vent-free gas heater produce an indoor relative humidity that is still less than the level of concern for mold and mildew, which is 70 % relative humidity. Simply opening the interior door of the room where the vent-free gas heating device is located increases dilution of water vapor into the house. **My conclusion is that use of a vent-free appliance does NOT produce sufficient water vapor to promote mold and mildew growth.**

One of the proponents raised the issue that for tight houses, poor indoor air quality will occur. However, because a tighter home lets less cold air enter, the heating demand decreases and the vent-free heater spends less time "ON". It is a self-limiting process.

In summary, vent-free gas heating appliances are only minor contributors to indoor relative humidity. Based on my 29 years of experience as a risk assessor, vent-free gas heating appliances are safe. **In conclusion, I recommend a vote "AGAINST" the proposal as written.**

**A. L. Wilson, Qualified Environmental Professional (QEP), Wilson Environmental Associates**

*[Topics: California field trials with favorable humidity results]*

This testimony summarizes the results from a study of selected vent-free gas logs conducted primarily during the winter and spring of 1998 to 1999. It was designed to provide performance and usage information to Southern California Gas Company and to the California state agencies involved in developing standards for such appliances.

Thirty-five volunteers used the vent-free gas logs during one winter and kept a diary. They used the logs an average of 2 to 3 times per week for 2 to 3 hours each use. Participants used the logs for heating the room, but sometimes, they were used for decoration. Participants would generally turn it off when the room was warm enough or when they went to bed. Temperature and humidity recording were made indoors for each home continuously.

Indoor temperature and relative humidity data were generally recorded every 30 minutes in the 35 homes during the winter. There was a wide range of temperatures recorded. The average indoor temperature ranged from 60°F to 74°F. Average indoor relative humidity ranged from 43 to 69 percent. Dew point temperature was calculated from the temperature and relative humidity data for each recorded period. Average dew point was calculated to range from 46°F to 55°F.

ASHRAE Standard 55 recommends that the dew point of occupied spaces not be less than 36°F to protect comfort. The thermal recommended upper bound for dew point temperature is approximately 60°F but varies slightly with indoor temperature. **The vast majority (>97%) of the calculated dew points were well within the comfort zone of 36°F to 60°F.** Less than 0.8 percent of the recordings indicated dew points more than 60°F while 1.6 percent of the time the dew point was less than 36°F. Most of the periods outside of the comfort zone were caused by low dew point temperature.

In March 1999, ten (10) homes were selected to conduct an extensive indoor air quality (IAQ) evaluation during a "worst-case" scenario. The smallest achievable connected room volume was separated from the rest of the house by closing internal and external doors. The gas logs were burned on the highest setting for about 4 hours. Indoor and outdoor measurements were made before, during and after the burns. About 8 hours of investigation was required for each home. The results provided information on the fireplace room volumes, pollutant concentration, pollutant decay rates, relative humidity and some limited emission rate data. Contaminants measured were: CO, CO<sub>2</sub>, particulates, and aldehydes.

**The relative humidity in 9 of the 10 homes actually decreased during the "worst-case" scenario burn tests.** The only home that did not decline only had the humidity increase from 53% to 57%.

#### **Concluding Group Comment**

**We urge the ICC members voting in the IFGC Final Action Hearing to support the Committee's unanimous decision by rejecting Proposal FG47 as well. We encourage you to follow the science, take comfort in the safety record, and strongly consider the repeated careful review of the technology by the entire code and regulatory communities at both the federal and state levels.**

**If you would like to know more about vent-free gas heating products, we invite you to check out our website at [www.ventfree.org](http://www.ventfree.org) and visit our booth at the conference exhibit during the ICC Annual Meeting in Minneapolis. We'd be delighted to meet you and answer any questions that you might have. Our many years of experience have proven that when people know the facts, they make informed decisions. That's why vent-free gas heating products are allowed in 49 states and by all major codes, and they're the popular (and safe!) heating choice of 18 million Americans.**

Bibliography

Whitmyre, Gary. Impacts of Vent-Free Gas Heating Products on Indoor Relative Humidity. Arlington, VA: 2002.  
Wilson, A. L. Vent-Free Hearth Products Evaluation. Los Angeles, CA: Wilson Environmental Associates, 1999.  
DeWerth, Douglas; Borgeson, Robert A.; Aronov, Michael. Development of Sizing Guidelines for Vent-Free Supplemental Heating Products. Cleveland, OH: American Gas Association Research Division, 1996.  
DeWerth, Douglas; Borgeson, Robert A.; Aronov, Michael. The Effect of Properly Sized and Operated Vent-Free Gas Products on Indoor Air Quality (IAQ). Cleveland, OH: American Gas Association Research Division, 1995.

*Public Comment 5:*

**Ted A. Williams, American Gas Association, requests Disapproval.**

**Commenter's Reason:** The Committee Reason for disapproval at the Palm Springs hearing is correct: "No evidence was given to support the banning of such appliances [unvented room heaters]." Concerns expressed by the proponents should be addressed to responsible U. S. authorities with jurisdiction over the safety of these products. The U. S. Consumer Product Safety Commission (CPSC) is the responsible authority in the federal government. CPSC has promulgated federal rulemakings affecting the design and use of these products and should be consulted by the proponents in this case. Beyond CPSC's authority and activity regarding these products, other national organizations including the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) and the University of Illinois under sponsorship from the U. S. Department of Housing and Urban Development (HUD) are developing information and research on these products. Given these activities and opportunities to address the installation and use of unvented room heaters, ICC should not engage in activities that might unilaterally and without justification ban the use of these products.

Final Action:            AS            AM            AMPC\_\_\_\_            D

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## Rodgers, Emory

---

**From:** vpffld@aol.com  
**Sent:** Friday, August 29, 2008 9:02 AM  
**To:** Rodgers, Emory  
**Subject:** Fw: A Message on Smoke Alarms from the USFA

Art Lipscomb  
Legislative Director  
Virginia Professional Fire Fighters  
18 north 8th St.  
Richmond, Va 23219  
434 941-4086  
Fax:804 643-4064

-----Original Message-----  
From: "VFCA News " <b@emergencyemailnetwork.net>  
Date: Fri, 29 Aug 2008 08:59:53  
To: <vpffld@aol.com>  
Subject: A Message on Smoke Alarms from the USFA

A Message from the U.S. Fire Administrator about Home Smoke Alarms  
Posted on August 27, 2008 by Gregory B. Cade, U.S. Fire Administrator

USFA is aware that there is a growing controversy about which type of smoke alarm is most appropriate to protect Americans in their homes. In accordance with our mission to reduce life and economic losses due to fire, we offer the following guidance regarding home smoke alarms.

USFA recommends that every residence and place where people sleep be equipped with either both ionization and photoelectric smoke alarms or dual sensor smoke alarms.

The body of scientific knowledge about fire, smoke, and smoke detection has developed over many years and is extensive. The USFA has either fully or partially funded a number of research efforts, including a recent study by the National Institute of Standards and Technology's (NIST) Center for Fire Research. Other contributors to this knowledge include the Consumer Product Safety Commission (CPSC), the National Fire Protection Association, Underwriters Laboratories, the Home Fire Safety Council, the Residential Fire Safety Institute, the Home Fire Sprinkler Coalition, and distinguished academics with expertise in smoke alarm and sensor technology. The body of research reflects the following:

There are two types of smoke alarms in general use for residential smoke alarms: photoelectric and ionization. These types of smoke alarms sense the presence of smoke differently. The type of smoke produced by a fire depends strongly on the type of fire. Flaming fires produce a different type of smoke than smoldering fires.

Both types of smoke alarms will detect the smoke from either a smoldering fire or a flaming fire. It has been factually established and well known for many years that:  
Ionization type smoke alarms tend to respond faster to the smoke produced by flaming fires than photoelectric type smoke alarms, and  
Photoelectric type smoke alarms tend to respond faster to the smoke produced by smoldering fires than ionization type smoke alarms.

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084744204

**SENATE BILL NO. 167**

Offered January 9, 2008

Prefiled January 7, 2008

*A BILL to amend and reenact § 36-99.5:1 of the Code of Virginia, relating to the Uniform Statewide Building Code; use of noncombustible materials in the construction of certain structures.*

-----  
 Patron-- Blevins  
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Referred to Committee on General Laws and Technology  
 -----

Be it enacted by the General Assembly of Virginia:

1. That § 36-99.5:1 of the Code of Virginia is amended and reenacted as follows:

§ 36-99.5:1. Smoke detectors and other fire detection and suppression systems in assisted living facilities, adult day care centers and nursing homes and facilities.

A. Battery- or AC-powered smoke detector devices shall be installed in all assisted living facilities and adult day care centers licensed by the Department of Social Services, regardless of when the building was constructed. The location and installation of the smoke detectors shall be determined by the Uniform Statewide Building Code.

The licensee shall obtain a certificate of compliance from the building official of the locality in which the facility or center is located, or in the case of state-owned buildings, from the Department of General Services.

The licensee shall maintain the smoke detector devices in good working order.

B. The Board of Housing and Community Development shall promulgate regulations in accordance with the Administrative Process Act (§ 2.2-4000 et seq.) establishing standards for requiring (i) smoke detectors ~~and~~, (ii) ~~such~~ other fire detection and suppression systems ~~as deemed necessary by the Board~~, and (iii) *noncombustible construction materials* to increase the safety of persons in assisted living facilities, residential dwelling units designed or developed and marketed to senior citizens, nursing homes and nursing facilities. All nursing homes and nursing facilities which are already equipped with sprinkler systems shall comply with regulations relating to smoke detectors.

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**Legislative Information System**

**SB 167 Uniform Statewide Building Code; use of noncombustible materials in certain structures construction.**

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*Summary as introduced:*

**Uniform Statewide Building Code; use of noncombustible materials in the construction of certain structures.** Requires the Board of Housing and Community Development to promulgate regulations establishing standards for requiring the use of noncombustible materials in the construction of assisted living facilities, residential dwelling units designed or developed and marketed to senior citizens, nursing homes, and nursing facilities.

*Full text:*

01/07/08 Senate: Prefiled and ordered printed; offered 01/09/08 084744204 (impact statement)

*Status:*

01/07/08 Senate: Prefiled and ordered printed; offered 01/09/08 084744204

01/07/08 Senate: Referred to Committee on General Laws and Technology

01/16/08 Senate: Passed by in General Laws and Technology with letter (14-Y 0-N)

01/16/08 Senate: Subject matter referred by letter to Housing Commission pursuant to Senate Rule 20 (L)

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Public Comment:

Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee, requests Approval as Modified by this public comment.

Modify proposal as follows:

903.6.2 Group I-1. An automatic sprinkler system in accordance with Section 903.3.1.1 shall be installed throughout all existing buildings with a fire area containing a Group I-1 occupancy provided throughout the floor where the Group I-1 occupancy is located, and in all floors between the Group I-1 occupancy and the level of exit discharge.

903.6.3 Group I-2. An automatic fire sprinkler system in accordance with Section 903.3.1.1 shall be installed throughout all existing buildings with a fire area containing a Group I-2 occupancy.

Commenter's Reason: This proposal recognizes the need to provide fire sprinkler protection for some of the existing Group I occupancies. These facilities have a high potential for life loss and contain patients/clients who are incapable of self-preservation.

A new Group I-1 occupancy would be required to be protected by fire sprinklers in addition to other construction requirements. This proposal does not mandate compliance with current code, however, it does require fire sprinklers in existing Group I-1 occupancies where the life safety of the patients is most in need.

In 2005, Kimberly D. Rohr and John R. Hall, Jr., of the Association's Fire Analysis and Research Division presented startling statistics regarding the efficacy of automatic extinguishing equipment. The data examined was for the years 1989 to 1998 (the last year for which good data on sprinklers is available) and measured the average number of civilian deaths per thousand fires in various types of facilities. In stores and offices the figures were 1.0 to 0.3 respectively; in health care facilities for the aged or sick 4.9 per thousand fires in non-sprinklered buildings compared to 1.2 in those that were protected with fire sprinklers. There was also a significant decline in property damage costs per fire; down 66 percent in health care occupancies when the facility is protected by a fire sprinkler system.

Even though the sprinkler requirements for I-2 are shown as stricken, they are still retained and are only stricken in this Public Comment. The Code Development Committee disapproved Item F153 07-08 in favor of the wording in Item F154 07-08. This Public Comment has been revised to be consistent with the wording and provisions approved in Item F154. Therefore, this Public Comment only affects I-1 occupancies and will be limited to application of the I-1 occupancy and floor levels between the I-1 and the level of exit discharge, rather than the entire building.

Final Action: AS AM AMPC \_\_\_\_\_ D

F155-07/08
903.6.2 (New)

Proposed Change as Submitted:

Proponent: Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee

Add new text as follows:

903.6.2 Group R-4. An automatic sprinkler system installed in accordance with Section 903.3.1.2 or 903.3.1.3 shall be provided throughout all existing buildings with a Group R-4 fire area.

Reason: The IFC does not contain requirements for existing Group R-4 occupancies. However, these facilities can house clients that have limited capabilities for self-evacuation.

One other solution would be to restrict residents in Group R-4 occupancies only to those who can evacuate without assistance. Those clients not capable of self-evacuation would be placed into an I occupancy. This solution brings with it many more requirements than sprinklers and is more restrictive than necessary. Therefore, the installation of fire sprinklers in the existing Group R-4 occupancies provides a mitigation to the other hazards present and allows for extended evacuation times.

The problem created by only placing clients capable of self-evacuation into Group R-4 is that as the client continues to live in the facility and loses mobility, the resident at some point is no longer capable of self-evacuation. This would result in having to relocate after living in a facility many times for years.

The solution of installing fire sprinklers into the existing facilities mitigates many of the issues and provides a safe environment for the clients.

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

Committee Action:

Disapproved

Committee Reason: The proposal was disapproved because the committee felt that the proposal is not needed since Group R-4 occupants are capable of self-preservation and that Group R-4 buildings can be built without sprinklers under the IRC. The proposal would create conflict with the IRC in that if that is the code the Group R-4 is built to without sprinklers, it would immediately be in violation of the proposed requirement in this proposal.

Assembly Action:

None

## Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

### Public Comment:

**Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee, requests Approval as Submitted.**

**Commenter's Reason:** The IFC does not contain requirements for existing Group R-4 occupancies. However, these facilities can house clients that have limited capabilities for self-evacuation. The definition of Assisted Living specifies that the occupants are capable of **responding** to an emergency situation. The ability to respond places no requirement on how long they take to evacuate, or they capability during that evacuation. Therefore, the installation of fire sprinklers in the existing Group R-4 occupancies provides mitigation to hazards present and allows for extended evacuation times.

Many clients are placed in Group R-4 at a time when the client is quite capable of self-evacuation. As the client continues to live in the facility, mobility is reduced and at some point the client has limited capability of self-evacuation.

The solution of installing fire sprinklers into the existing facilities mitigates many of the issues and provides a safe environment for the clients. This Public Comment will also provide consistency with mandated Federal Regulations for R-4 occupancies. In other words, the Federal Regulations require sprinklers. If the IFC contains this requirement, it will eliminate confusion and frustration on the part of the owner/developer and eliminate finger pointing after the code official has "approved" the facility.

Final Action:        AS            AM            AMPC\_\_\_\_        D

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## F162-07/08 907.2 (IBC [F] 907.2)

### Proposed Change as Submitted:

**Proponent:** Jeffrey M. Shapiro, PE, International Code Consultants, representing National Multi Housing Council

### Revise as follows:

**907.2 (IBC [F] 907.2) (Supp) Where required - new buildings and structures.** An approved manual, automatic or manual and automatic fire alarm system installed in accordance with the provisions of this code and NFPA 72 shall be provided in new buildings and structures in accordance with Sections 907.2.1 through 907.2.22 and provide occupant notification in accordance with Section 907.6, unless other requirements are provided by another section of this code.

A minimum of one manual fire alarm box shall be provided in an approved location to initiate a fire alarm signal for

fire alarm systems employing automatic fire detectors or waterflow detection devices. Where other sections of this code allow elimination of fire alarm boxes due to sprinklers, a single fire alarm box shall be installed.

### Exceptions:

1. The manual fire alarm box is not required for fire alarm systems dedicated to elevator recall control and supervisory service.
2. The manual fire alarm box is not required for Group R-2 occupancies.

**Reason:** Manual fire alarm boxes in apartment occupancies invite tampering and false alarms, and there is no apparent fire safety benefit to be gained by placing a single fire alarm box in such occupancies.

Justification offered last year to substantiate the need for the single manual alarm box was that it might be needed by a sprinkler technician to initiate an alarm if sprinklers/waterflow switches are out of service, but this makes no sense. Assuming that the alarm box is located in the valve room to avoid making it available to vandals, a technician working on any part of the sprinkler system, other than the valve, would be far away, and may or may not even know where the alarm box is. If the box were to be located where it will be accessible for occupant use, it is difficult to believe that occupants would know the location of a single pull box in a building or that they would seek out the box to initiate an alarm if the waterflow switch failed.

**Cost Impact:** The code change proposal will not increase the cost of construction.

### Committee Action:

**Approved as Modified**

Congregate living facilities (transient) with 10 or fewer occupants are permitted to comply with the construction requirements for Group R-3.

**R-2 Residential occupancies containing sleeping units or more than two dwelling units where the occupants are primarily permanent in nature, including:**

- Apartment houses
- Boarding houses (not transient)
- Convents
- Dormitories
- Fraternities and sororities
- Hotels (nontransient)
- Live/work units
- Monasteries
- Motels (nontransient)
- Vacation timeshare properties

Congregate living facilities with 16 or fewer occupants are permitted to comply with the construction requirements for Group R-3.

**R-3 Residential occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, R-4 or I, including:**

- Buildings that do not contain more than two dwelling units.
- Adult care facilities that provide accommodations for five or fewer persons of any age for less than 24 hours.
- Child care facilities that provide accommodations for five or fewer persons of any age for less than 24 hours.

Congregate living facilities with 16 or fewer persons.  
~~Adult care and child care facilities that are within a single family home are permitted to comply with the *International Residential Code*.~~

**Exception:** Occupancies complying with the *International Residential Code* shall not be required to be classified as Group R-3 provided that the building is protected by an automatic extinguishing system installed in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3.

**R-4 Residential occupancies shall include buildings arranged for occupancy as residential care/assisted living facilities including more than five but not more than 16 occupants, excluding staff.**

Group R-4 occupancies shall meet the requirements for construction as defined for Group R-3, except as otherwise provided for in this code, or shall comply with the *International Residential Code*.

**Reason:** The proposal will require that the design of these facilities will stay within the IBC. The IRC does not require sprinklers and many of the occupants of a small facility for the mentally retarded are not capable of self preservation in an emergency.

This proposal will allow these facilities to be constructed either as an R-3 under the IBC which will require a fire sprinkler system, or as a one-family dwelling under the IRC provided a fire sprinkler system is installed.

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

**Committee Action:**

**Disapproved**

**Committee Reason:** Based upon the fact that such facilities are already classified as Group R-3 occupancies the allowance of using the IRC is appropriate without the need for sprinklers. Such an exception would create confusion as to how to apply the IRC.

**Assembly Action:**

**None**

### *Individual Consideration Agenda*

**This item is on the agenda for individual consideration because a public comment was submitted.**

*Public Comment:*

**Tom Lariviere, Fire Department, Madison, MS, representing the Joint Fire Service Review Committee requests Approval as Modified by this public comment.**

**Replace proposal as follows:**

**308.2 (IFC [B] 202) Group I-1.** This occupancy shall include buildings, structures or parts thereof housing more than 16 persons, on a 24-hour basis, who because of age, mental disability or other reasons, live in a supervised residential environment that provides personal care services. The occupants are capable of responding to an emergency situation without physical assistance from staff. This group shall include, but not be limited to, the following:

- Residential board and care facilities
- Assisted living facilities
- Halfway houses
- Group homes
- Congregate care facilities
- Social rehabilitation facilities
- Alcohol and drug centers
- Convalescent facilities

A facility such as the above with housing five or fewer persons shall be classified as Group R-3 or shall comply with the *International Residential Code* provided the building is protected by an automatic extinguishing system installed in accordance with Sections ~~404.2~~ 903.3.1.1, 903.3.1.2 or 903.3.1.3. A facility such as above, housing at least six and not more than 16 persons, shall be classified as Group R-4.

**Commenter's Reason:** The Code Development Committee disapproved this item. Their disapproval was based on their desire to allow the use of the IRC for construction of these occupancies. This Public Comment retains the ability to use the IRC provided the facility is sprinklered.

This new wording was approved by the Code Development Committee in Item G36 where the same concept applies. These occupancies, even though housing less than six occupants, still have the same clientele as the I-1 occupancy. The facility is still a Group Home, a Congregate Care Facility, or an Assisted Living Facility, etc. Fire sprinklers are a very appropriate life safety feature when the occupant load is 6 or more, and is just as important when the occupant is less than 6. Many of the occupants in these facilities have limited capability or delayed response for self-preservation in an emergency.

This Public Comment will allow these facilities to be constructed either as an R-3 under the IBC which will require a fire sprinkler system, or as a one-family dwelling under the IRC provided a fire sprinkler system is installed.

Final Action:        AS            AM            AMPC \_\_\_\_\_        D

**G36-07/08**  
**310.1 (IFC [B] 202)**

*Proposed Change as Submitted:*

**Proponent:** Tom Lariviere, Fire Department, Madison, MS, representing the Joint Fire Service Review Committee

**Revise as follows:**

**310.1 (IFC [B] 202) (Supp) Residential Group R.** Residential Group R includes, among others, the use of a building or structure, or a portion thereof, for sleeping purposes when not classified as an Institutional Group I or when not regulated by the *International Residential Code* in accordance with Section 101.2. Residential occupancies shall include the following:

**R-1** Residential occupancies containing sleeping units where the occupants are primarily transient in nature, including:

- Boarding houses (transient)
- Hotels (transient)
- Motels (transient)

Congregate living facilities (transient) with 10 or fewer occupants are permitted to comply with the construction requirements for Group R-3.

**R-2** Residential occupancies containing sleeping units or more than two dwelling units where the occupants are primarily permanent in nature, including:

- Apartment houses
- Boarding houses (not transient)
- Convents

- ~~1. Be located above any decorative ceiling, in concealed spaces or other approved location;~~
- ~~2. Be repeated at intervals not exceeding 30 feet (914 mm) measured horizontally along the wall or partition;~~  
and
- ~~3. Include lettering not less than 0.5 inch (12.7 mm) in height, incorporating the suggested wording: "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS", or other approved wording.~~

**Reason:** This proposal seeks to remove the provision requiring marking of fire rated assemblies that was added by a successful public comment at the Rochester Final Hearings. As approved, this new section will require markings on the following walls:

- Interior and exterior sides of exterior walls (where the walls are required to have a fire-resistance rating).
- All walls separating residential dwelling units from adjacent units or corridors.
- All walls separating hotel guest rooms from adjacent rooms or corridors.

As written, this new section also requires the markings of ceilings, and possibly floors, where these assemblies are part of a smoke barrier. Some of the testimony on this issue noted that these markings would be hidden behind decorative ceilings, however, the approved language requires these markings at all rated positions, and only provides additional information as to where to locate the markings when decorative ceilings are provided.

Representatives from several jurisdictions last cycle indicated that they already require this; however, the text approved requires markings in far more locations, and in far more visible locations, than other local amendments and enforcement levels.

There is no evidence that providing these markings, will provide any reduction in the problem of trades creating openings and failing to properly seal them. If anything, this change will likely lead to a false sense of protection; someone seeing this marking, and not already understanding the complexity of fire rated assemblies, firestopping products and installation methods, will simply fill the opening with whatever material they have on hand.

BOMA has submitted a separate code change to address the concerns raised by the proponent of this change in a different manner; a proposed revision to IFC section 509.1 (and correlative change to IBC 911.1) would add, for buildings with fire command centers, information regarding the location of these rated wall assemblies to the schematic building plans that are already required to be provided.

**Cost Impact:** The code change proposal will not increase the cost of construction.

**Committee Action:**

**Disapproved**

**Committee Reason:** The committee agreed that the requirements dealing with marking or signage identifying fire-resistance rated, or smoke, barriers or partitions were appropriate and should remain in the code. These assemblies should be identified for the construction trades to avoid breaching of the assemblies during construction that will occur during alterations, additions or repairs.

**Assembly Action:**

**None**

*Individual Consideration Agenda*

**This item is on the agenda for individual consideration because public comments were submitted.**

*Public Comment 1:*

**Lawrence G. Perry, representing Building Owners and Managers Association (BOMA) International requests Approval as Submitted.**

**Commenter's Reason:** If this proposal is not Approved as Submitted, I can only hope that the proponents of these markings enforce the provisions as aggressively as they have supported this new text. While there may be jurisdictions that have adopted marking requirements, none do so to the extent that the text of this new section requires.

- Is it the intent of the ICC membership to mandate markings every 30' along the exterior side of buildings (where the exterior wall is rated due to construction type or separation distance)? This section requires such marking.
- Is it the intent of the ICC membership to mandate markings on all four walls, the floor, and the ceiling of every hotel room? This section requires such markings. (Although the Fire Safety Committee patted themselves on the back in their approval of FS10-07/08, noting that 'without this exception, the marking...in a typical hotel room would be required on all interior walls of the room', that code change provided an exception only for R-2, not R-1 Occupancies.)
- Is it the intent of the ICC membership to mandate markings throughout walls, ceilings and floors in locations visible to all occupants of a building? As written, the text requires marking above 'decorative ceilings', where provided, but does not exempt the requirement where there is no 'decorative ceiling'.

*Public Comment 2:*

**Michael Viera, Willdan, representing Sacramento Valley Association of Building Officials (SVABO) requests Approved as Modified by this public comment.**

**Place the proposal with the following:**

**6.6 (Supp) Marking and Identification.** Fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions or any other wall required to have protected openings or penetrations shall be effectively and permanently identified with signs or stenciling. Such identification shall:

1. Be located above any decorative ceiling, in accessible concealed floor, floor-ceiling, or attic spaces or other approved location; and
2. Be repeated at intervals not exceeding 30 feet (914mm) measured horizontally along the wall or partition; and
3. Include lettering not less than 0.5 inch (12.7mm) in height, incorporating the suggested wording: "FIRE AND/OR SMOKE BARRIER – PROTECT ALL OPENINGS", or other approved wording.

**Commenter's Reasons:** Concerns were raised at the code hearings in Palm Springs that the code text approved in Rochester was too broad and would require marking of all fire and smoke rated walls, barriers, and partitions, including exterior walls, corridors, etc. We believe the intent of the code was to protect those walls, barriers, and partitions in locations that generally were not visible to the building occupants, where utility piping, wiring, ducts, or other service elements are generally installed. We believe the proposed text clarifies the locations where the identification is necessary.

Final Action: AS AM AMPC \_\_\_\_\_ D

## FS16-07/08

### 704.5

**Proponent:** Gregory Lake, Sacramento Metropolitan Fire District, representing California Fire Chief's Association (Cal Chiefs)

**Revise as follows:**

**704.5 Fire-resistance ratings.** Exterior walls shall be fire-resistance rated in accordance with Tables 601 and 602 and this section. The required fire-resistance rating of exterior walls with a fire separation distance of greater than 5 feet (1524 mm) 10 feet (3048 mm) shall be rated for exposure to fire from the inside. The required fire-resistance rating of exterior walls with a fire separation distance of 5 feet (1524 mm) or less than or equal to 10 feet (3048 mm) shall be rated for exposure to fire from both sides.

**Reason:** This code change proposal is a follow up to our previous Code Change FS20-06/07 which was recommended for disapproval by the Committee. We submitted a Public Comment for approval for discussion during the ICC Final Action Hearings in Rochester, N.Y. We were successful in overturning the Committee's recommendation for disapproval but failed to achieve the necessary 2/3 majority vote for approval by the narrow margin of 111 to 66. Because of the strong interest expressed by the Class A voting members at the hearings, we decided to resubmit this code change proposal for the Committee's consideration. However, in order to make the code change proposal more acceptable to the Committee, we deleted one of the provisions that required all exterior barring walls to have the fire resistance rating based on fire exposures to both the exterior face and the interior face. In other words, we revised the previous code change proposal to only increase the fire separation distance from 5 feet to 10 feet for the purpose of requiring such exterior walls within that fire separation distance to have their fire resistance rating determined by the fire exposures conducted on both sides of the wall. Thus, any exterior wall required to have a fire resistance rating which has a fire separation distance of more than 10 feet would only be required to have its fire resistance rating determine by fire exposure from the inside. We believe this to be the more critical element of our original code change in order to better prevent building to building fire spread where buildings are in close proximity to each other.

This code change addresses concerns about the provisions of Section 704.5 that permit the fire resistance rating of an exterior wall with a fire separation distance greater than 5 feet to be determine based on fire exposure only to the inside face of the wall. The concerns are based the provisions of Section 704.8, item 2, which permit an exterior wall that is not required to have a fire resistance rating to have unlimited unprotected openings. Since Table 602 permits non-fire resistance rated exterior walls in buildings of Types IIB and VB construction in all occupancy groups except H where the fire separation distance is 10 feet or greater, the potential exists for buildings with walls rated from the inside only to be exposed to significant levels of radiant heat. The radiant heat exposure will likely cause walls with combustible components to ignite and burn from the outside, and walls with noncombustible structural components to be reduced in strength. Regardless of the construction of the wall, the degradation caused to the wall may result in collapse and/or fire penetration of the wall by the fire before the time of the required fire-resistance rating has elapsed based on the fire-resistance rating being determined by interior fire exposure only.

To illustrate the impact of the provision of Section 704.5 of concern, assume two buildings of Group S-1 occupancy and Type VB construction are erected on either side of a property line. One building has a fire separation distance of 10 feet. Based on these parameters, Table 602 does not require a fire resistance rating for the exterior wall since it is set back 10 feet. Therefore, unlimited unprotected openings are permitted in the wall. The second building has a fire separation distance of 5.01 feet; therefore, Table 602 requires the exterior wall to have a fire resistance rating of 1 hour and unprotected openings are restricted to 10% of the wall area. However, Section 704.5 indicates that since the wall has a fire separation distance of greater than 5 feet, the fire-resistance rating of the wall only needs to be established for exposure to fire from the inside.

The opening limitations of the IBC, which were originally developed for the BOCA National Building Code (NBC), are intended to limit the radiant heat from a fire in an exposing building so that the radiant heat striking an exposed building does not exceed 12.5 kW/m<sup>2</sup>. It is generally accepted that wood-based products can withstand exposure to this level of radiation in the presence of a pilot flame without igniting. If radiant heat levels exceed this amount, ignition is likely since "pilot flames" in the form of flying brands are likely to be present. Auto-ignition (without a flame present) of wood-based products generally occurs at radiation levels of 35 to 45 kW/m<sup>2</sup> after exposure for about 20 to 25 seconds.

During the development of the IBC, it was decided that if an exterior wall had no required fire-resistance rating, unlimited unprotected openings would be permitted. Since Table 602 does not require exterior walls of buildings (other than Group H) of Types IIB and VB construction to be fire-resistance rated where the fire separation distance is 10 feet or greater, 100% unprotected openings are permitted. Therefore, fires in these buildings are likely to expose adjacent buildings to considerably more radiant heat than 12.5 kW/m<sup>2</sup>.

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

**DEPT. OF HOUSING AND COMMUNITY DEVELOPMENT REGULATORY CHANGE FORM**  
(Use this form to submit changes to building and fire codes)

|  |   |
|--|---|
| Address to submit to:<br><br>DHCD, the Jackson Center<br>501 North Second Street<br>Richmond, VA 23219-1321<br><br>Tel. No. (804) 371 - 7150<br>Fax No. (804) 371 - 7092<br>Email: bhcd@dhcd.state.va.us | Document No. _____<br><br>Committee Action: _____<br><br>BHCD Action: _____ |
|--|---|

Submitted by: Jason Gill Representing: East Coast Fire Protection  
Address: 3017 Vernon Rd, Richmond, VA 23228 Phone No.: (804)222-1381  
Regulation Title: Virginia Construction Code Section No(s): 905.2 (Exception)

**Proposed Change:**  
Current exception reads: "The residual pressure of 100 psi for 2 1/2" hose connection and 65 psi for 1 1/2" hose connection is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section **903.3.1.1** and where the highest floor level is not more than 150' above the lowest level of fire department vehicle access."  
  
Change exception to read: "The residual pressure of 100 psi for 2 1/2" hose connection and 65 psi for 1 1/2" hose connection is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section **903.3.1** and where the highest floor level is not more than 150' above the lowest level of fire department vehicle access."

**Supporting Statement:**  
Section 903.3.1.1 is strictly for NFPA 13 systems only. However, NFPA does not differentiate between NFPA 13 or 13R with respect to the requirement for standpipes. Rather, NFPA only requires standpipes based on building height. The exception to 905.2 acknowledges that the fire department is capable of pressurizing the standpipes with adequate pressure up to 150'. This allows for 100 psi at the the 150' level when the system is pressurized with 175psi at the fire department connection (65psi loss for 150' of elevation and 10psi for friction loss). NFPA 13R systems should be allowed the same exception.

**3002.3 Emergency signs.** An approved pictorial sign of a standardized design shall be posted adjacent to each elevator call station on all floors instructing occupants to use the exit stairways and not to use the elevators in case of fire. The sign shall read: IN FIRE EMERGENCY, DO NOT USE ELEVATOR. USE EXIT STAIRS. ~~The emergency sign shall not be required for elevators that are part of an accessible means of egress complying with Section 1007.4.~~

**Exceptions:**

1. The emergency sign shall not be required for elevators that are part of an accessible means of egress complying with Section 1007.4.
2. The emergency sign shall not be required for elevators that are used for occupant self evacuation in accordance with Section 3008.

**Commenters' Reason:** The National Elevator Industry, Inc. (NEII) and International Association of Fire Fighters (IAFF) opposed the proposed code change E14-07/08 at the ICC Public Hearings in February 2008. As participants in the ASME A17 Task Group on the Use of Elevators for Occupant Evacuation, we shared the concerns of the Means of Egress Committee that including Occupant Evacuation Elevators in a building design should not result in a reduction in exit capacity, that the number of elevators required should be clarified, and that including Occupant Evacuation Elevator systems should be voluntary. Most importantly, we agreed that any proposal should include the most recent work of the ASME A17 Task Group.

This amended version of E14-07/08 reflects the work of the Task Group as of its most recent meeting in May 2008 and includes significant contributions from the US General Services Administration, the original proponent of the code change. We concur with the Means of Egress Committee and those who urged approval of E14-07/08 that "occupant evacuation elevators are a good idea that needs to be moved forward very soon", and urge the voting membership to approve this amended code change. Reasons for the specific amendments shown are as follows:

**1003.7 Elevators, escalators and moving walks.** Occupant evacuation elevators are not presently considered a component of a required means of egress.

**403.19 Occupant evacuation elevators.** This new paragraph was added to clarify which elevators are permitted to be used for occupant-self evacuation. It also addresses the Means of Egress Code Committee's request that occupant evacuation elevators are a voluntary option for architects to consider when designing tall buildings. The new material creates a trigger that can allow voluntary installation of occupant evacuation elevators and points the reader to the appropriate section for the requirements. There is presently no other trigger relating to occupant evacuation elevators in the code.

**3008.1 General** Revisions clarify that all the passenger elevators for general public use complying with section 3008 are to be used for occupant-self evacuation during fires. In order for successful implementation of occupant evacuation elevators, all passenger elevators for general public use must be available for use during this time frame.

**3008.2 Fire safety and evacuation plan.** This paragraph was revised for clarification purposes. Exit stairs are covered elsewhere in the building fire safety and evacuation plan **New egress capacity.** This paragraph was deleted based on concerns raised by the Means of Egress Code Committee. The concept of reduction in egress capacity has not had sufficient technical review at this time.

**3008.3 (new) Operation.** This paragraph was revised for clarification purposes. Number of Occupant Evacuation Elevators. This paragraph was deleted based on the revised text in Section 3008.1 General.

**3008.5 Automatic Sprinkler System.** This paragraph was revised to reference 3008.5.1.

**3008.5.1 Prohibited locations.** This paragraph was revised for clarification purposes only and to be with consistent with proposed requirements in 903.3.1.1.1, Item 6 in IFC. Clarifies that sprinklers shall not be installed in elevator machine rooms and elevator machine spaces for occupant evacuation elevators.

**3008.5.2 Sprinkler system monitoring.** This paragraph was revised for clarification purposes only.

**3008.7 Shunt trip.** Revised to use correct terminology.

**3008.8 Hoistway Enclosure Protection.** Revised to use correct terminology.

**3008.9 Water protection.** This paragraph was revised for clarification purposes. The revisions addresses the concerns of several members of the Committee as well as others that performance based language is preferred over prescriptive language to permit alternative design options. Recommended design options best suited to be provided in commentary. Also, revised to use correct terminology.

**3008.10 Lobby enclosure.** No revisions were made to this section since there is no conflict regarding the lobby enclosure for occupant evacuation elevators and the elevator lobby requirements in Section 707.14.1 for non-occupant evacuation elevators. A smoke barrier is the appropriate reference since it is designed to resist fire and smoke spread and is intended to create an area for occupants to stage prior to using the elevators for evacuation. Lobby construction materials. This paragraph was deleted based on concerns from individuals that the level 2 rating requirements in ASTM C1629/C1629M only applies to gypsum type materials and not concrete.

**3008.10.3.2 Door closing.** This paragraph was revised for clarification purposes only.

**3008.10.5 Signage.** This new paragraph was added to ensure proper signage is posted on all floors informing occupants that the elevators are suitable for occupant-self evacuation.

**3008.10.6 Lobby status indicator.** Item 2 was deleted based on concerns that the fire department may use these elevators for other purposes then only to assist occupants with disabilities.

**3008.11 Two-way communication.** This paragraph was revised for clarification purposes only.

**Standpipe hose connection.** This paragraph was deleted because it was determined that the need for a standpipe hose connection in the exit stair serving the occupant evacuation elevator lobby is not a critical element in the protection scheme for the occupants using the elevators for evacuation. In addition, installation of the standpipe hose connection will not increase the overall safety of occupants using the elevators for evacuation in the subject elevator lobby. Such standpipes serve a greater purpose for fire fighters and are already addressed in the provisions for Fire Service Access Elevators.

**3008.12 Elevator system monitoring.** This paragraph was revised for clarification purposes only.

**3008.12.1 Interface Display.** This paragraph was revised for clarification purposes only.

**3008.12.2 Elevator recall.** This paragraph was revised for clarification purposes only.

**3002.3 Emergency signs.** This paragraph was revised for clarification purposes only. Ensures the standard emergency sign is not installed on elevator landings for elevators that are used for occupant-self evacuation in Section 3008.

**3002.3** Without this exception to the "Do not use elevators" sign, a conflict would exist.

Public Comment 2:

Dave Frable, U.S. General Services Administration, requests Approval as Modified by this public comment.

Modify proposal as follows:

**1003.7 (IFC [B] 1003.7) Elevators, escalators and moving walks.** Elevators, escalators and moving walks shall not be used as a component of a required means of egress from any other part of the building.

**Exceptions:**

1. Elevators used as an accessible means of egress in accordance with Section 1007.4.
2. Elevators when designed in accordance with Section 3008 for use as general egress as approved by the building official.

**403.19 Occupant evacuation elevators.** Where installed in accordance with Section 3008, passenger elevators for general public use shall be permitted to be used for occupant self evacuation.

**SECTION 3008  
OCCUPANT EVACUATION ELEVATORS.**

**3008.1 General.** Elevators arranged in accordance with this section shall be permitted to be used for occupant egress in fires and other emergencies. Where elevators are to be used for occupant self evacuation during fires, all passenger elevators for general public use shall comply with this Section. Where other elevators are used for occupant self evacuation, they shall also comply with this Section.

**3008.5 3008.2 Fire safety and evacuation plan.** The building shall have an approved fire safety and evacuation plan in accordance with the applicable requirements of Section 404 of the International Fire Code. The subject fire safety and evacuation plan shall incorporate specific procedures for the occupants using evacuation elevators and exit stairs.

**3008.3 New egress capacity.** The total required capacity of the exit stairs on each floor can be reduced by not more than 50% where occupant evacuation elevators are provided. The amount of reduction of the required capacity of the exit stairs shall be determined by an approved egress analysis that demonstrates that the total egress time for occupants using the combination of evacuation elevators and exit stairs is not more than the total egress time for occupants only using the required exit stairs.

**3008.2 3008.3 Operation.** The occupant evacuation elevators shall be used for occupant-controlled self evacuation only in the normal elevator operating mode prior to Phase I Emergency Recall Operation in accordance with the requirements in ASME A17.1/CSA B44 and the building's fire safety and evacuation plan.

**3008.4 Number of Occupant Evacuation Elevators.** Each accessible floor that is one or more stories above or below the level of exit discharge shall be provided with a minimum of one bank or group of occupant evacuation elevators. All elevators within that bank or group of elevators, other than the fire service access elevators installed in accordance with Section 3007, shall be occupant evacuation elevators.

**3008.6 3008.4 Emergency voice/alarm communication system.** The building shall be provided with an emergency voice/alarm communication system. The emergency voice/alarm communication system shall be accessible to the fire department. The system shall be provided in accordance with Section 907.2.12.2.

**3008.6.4 3008.4.1 Notification appliances.** A minimum of one audible and one visible notification appliance shall be installed within each occupant evacuation elevator lobby.

**3008.7 3008.5 Automatic sprinkler system.** The building shall be protected throughout by an approved, electrically-supervised automatic sprinkler system in accordance with Section 903.3.1.1, except as otherwise permitted by Section 903.3.1.1.1 and as prohibited by 3008.5.1.

**3008.5.1 Prohibited locations.** Automatic sprinklers shall not be installed in elevator machine rooms and elevator machine spaces for occupant evacuation elevators.

**3008.7.4 3008.5.2 Sprinkler system monitoring.** The sprinkler system shall have a sprinkler control valve supervisory switch and water flow initiating device provided for each floor that is monitored by the building's emergency voice/alarm communication fire alarm system.

**3008.8 3008.6 High hazard content areas.** No building areas shall contain high hazard contents exceeding the maximum allowable quantities per control area as addressed in Section 414.2.

**3008.9 3008.7 Shunt trip breakers.** Shunt breakers Means for elevator shut down in accordance with Section 3006.5 shall not be installed on elevator systems used for occupant evacuation elevators.

**3008.10 3008.8 Hoistway enclosure protection.** The occupant evacuation elevators shall be located in a shaft hoistway enclosure(s) complying with Section 707.

**3008.11 3008.9 Water protection.** The occupant evacuation elevator hoistway and associated elevator landings shall be designed by utilizing an approved method to prevent water from the operation of the automatic sprinkler system from infiltrating into the shaft hoistway enclosure from the operation of the automatic sprinkler system or firefighting activities.

**3008.12 3008.10 Occupant evacuation elevator lobby.** The occupant evacuation elevators shall open into an elevator lobby in accordance with Sections 3008.12.1 through 3008.12.5 10.4.

**3008.12.4 3008.10.1 Access.** The occupant evacuation elevator lobby shall have direct access to an exit enclosure.

~~3008.12.2 3008.10.2 Lobby enclosure.~~ The occupant evacuation elevator lobby shall be enclosed with a smoke barrier having a minimum 1-hour fire-resistance rating, except that lobby doorways shall comply with Section 3008.1210.3.

**Exception:** Enclosed occupant evacuation elevator lobbies are not required at the street floor level(s) of exit discharge.

~~3008.12.2.1 Lobby construction materials.~~ The construction materials of the lobby enclosure shall have a minimum classification level 2 rating in accordance with the requirements of ASTM C1629/C1629M.

~~3008.12.3 3008.10.3 Lobby doorways.~~ Each occupant evacuation elevator lobby shall be provided with a doorway that is protected with a 3/4-hour fire door assembly complying with Section 715.4.

~~3008.12.3.1 3008.10.3.1 Vision panel.~~ A vision panel shall be installed in each fire door assembly protecting the lobby doorway. The vision panel shall consist of fire protection-rated glazing and located to furnish clear vision of the occupant evacuation elevator lobby.

~~3008.12.3.2 3008.10.3.2 Door closing.~~ Each fire door assembly protecting the lobby doorway shall be automatic closing upon receipt of any fire alarm signal from the emergency voice/alarm communication system serving the building.

~~3008.12.4 3008.10.4 Lobby size.~~ Each occupant evacuation elevator lobby shall have minimum floor area as follows:

1. The occupant evacuation elevator lobby floor area shall accommodate, at 3 ft<sup>2</sup> (0.28 m<sup>2</sup>) per person, a minimum of 25 percent of the occupant load of the floor area served by the lobby.
2. The occupant evacuation elevator lobby floor area also shall accommodate one wheelchair space of 30 inch by 48 inch (760 mm by 1220 mm) for each 50 persons, or portion thereof, of the occupant load of the floor area served by the lobby.

**Exception:** The size of lobbies serving multiple banks of elevators shall have the minimum floor area approved on an individual basis and shall be consistent with the building's fire safety and evacuation plan.

~~3008.10.5 Signage.~~ An approved sign indicating elevators are suitable for occupant self evacuation shall be posted on all floors adjacent to each elevator call station serving occupant evacuation elevators.

~~3008.12.5 3008.11 Lobby status indicator.~~ Each occupant evacuation elevator lobby shall be equipped with a status indicator arranged to display the following information:

1. An illuminated green light and the message, "Elevators available for occupant evacuation" when the elevators are operating in normal service and the fire alarm system is indicating an alarm in the building.
2. ~~A yellow light and the message, "Elevators operating under fire department control to assist occupants with disabilities".~~
- 2.3. An illuminated red light and the message, "Elevators out of service, use exit stairs" when the elevators are in Phase I emergency recall operation in accordance with the requirements in ASME A17.1/CSA B44.
3. No illuminated light or message when the elevators are operating in normal service.

~~3008.13 3008.12 Two-way communication system.~~ A two-way communication system shall be provided in each occupant evacuation elevator lobby for the purpose of initiating communication with the fire command center or an alternate location approved by the fire department. Each occupant evacuation elevator car and elevator lobby shall be provided with a two-way communication system for communication between each elevator car and landing and the fire command center or a central control point location approved by the fire department. The two-way communication system shall include both audible and visible signals.

~~3008.12.1 Design and installation.~~ The two-way communication system shall include audible and visible signals and shall be designed and installed in accordance with the requirements in ICC A117.1.

~~3008.12.2 Instructions.~~ Instructions for the use of the two-way communication system along with the location of the station shall be permanently located adjacent to each station. Signage shall comply with the ICC A117.1 requirements for visual characters.

~~3008.13.1 Directions.~~ Directions for the use of the two-way communication system, instructions for summoning assistance via the two-way communication system, and written identification of the location, shall be posted adjacent to the two-way communication system.

~~3008.14 Standpipe hose connection.~~ A Class I standpipe hose connection in accordance with Section 905 shall be provided in the exit enclosure having direct access from the occupant evacuation elevators lobby.

~~3008.15 3008.13 Elevator system monitoring.~~ The occupant evacuation elevators shall be continuously monitored at the fire command center or a central control point approved by the fire department by a standard emergency service interface system meeting the requirements of NFPA 72 and arranged to display the following information:

1. Floor location of each elevator car.
2. Direction of travel of each elevator car.
3. Status of each elevator car with respect to whether it is occupied.
4. Status of normal power to the elevator equipment, elevator controller cooling equipment, and elevator machine room ventilation and cooling equipment.
5. Status of standby or emergency power system that provides backup power to the elevator equipment, elevator controller cooling equipment, and elevator machine room ventilation and cooling equipment.
6. Activation of any fire alarm initiating device in any elevator hoistway (if provided), elevator lobby, or elevator machine room or machine space, or elevator hoistway.
7. ~~Occurrence of an impending over-temperature condition (IOT) condition within the elevator controllers.~~

~~3008.15.4 3008.13.1 Elevator recall system over-ride.~~ The fire command center or a central control point an alternate location approved by the fire department shall be provided with the means to override normal elevator operation and to initiate manually initiate a Phase I Recall of the occupant evacuation elevators in accordance with ASME A17.1/CSA B44.

**3008.16 3008.14 Electrical power.** The following features serving each occupant evacuation elevators shall be supplied by both normal power and Type 60/Class 2/Level 1 standby power:

1. Elevator equipment.
2. Elevator machine room ventilation and cooling equipment.
3. Elevator controller cooling equipment.

**3008.16.1 3008.14.1 Protection of wiring or cables.** Wires or cables that provide normal and standby power, control signals, communication with the car, lighting, heating, air conditioning, ventilation and fire-detecting systems to fire service access elevators shall be protected by construction having a minimum 1-hour fire-resistance rating or shall be circuit integrity cable having a minimum 1-hour fire-resistance rating.

**3002.3 Emergency signs.** An approved pictorial sign of a standardized design shall be posted adjacent to each elevator call station on all floors instructing occupants to use the exit stairways and not to use the elevators in case of fire. The sign shall read: IN FIRE EMERGENCY, DO NOT USE ELEVATOR. USE EXIT STAIRS. ~~The emergency sign shall not be required for elevators that are part of an accessible means of egress complying with Section 1007.4.~~

**Exceptions.**

1. The emergency sign shall not be required for elevators that are part of an accessible means of egress complying with Section 1007.4.
2. The emergency sign shall not be required for elevators that are used for occupant self evacuation in accordance with Section 3008.

Commenter's Reason: As the proponent of the original code change proposal, I submit this comment to request the membership support the subject revised code change. The proposed code change is a by-product of research currently being conducted by the National Institute of Standards and Technology (NIST) and funded by the U.S. General Services Administration. Overall, the Means of Egress Code Committee stated they were in favor of the code change proposal but disapproved the code change proposal based on a number of issues. The purpose of this modified code change is to address the major issues raised by the Means of Egress Code Committee and participants at the hearing in Palm Springs, CA.

1. **1003.7 Elevators, escalators and moving walks.** The existing paragraph was not revised. The use of elevators for general egress from the building is not being considered at this time.
2. **403.19 Occupant evacuation elevators.** This new paragraph was added to clarify which elevators are permitted to be used for occupant-self evacuation. It also addresses the Means of Egress Code Committee's request that occupant evacuation elevators are a voluntary option for architects to consider when designing tall buildings. The new material creates a trigger that can allow voluntary installation of occupant evacuation elevators and points the reader to the appropriate section for the requirements.
3. **3008.1 General.** This paragraph was revised for clarification purposes. Revisions clarify that all the passenger elevators for general public use complying with section 3008 are to be used for occupant-self evacuation during fires. In order for successful implementation of occupant evacuation elevators, all passenger elevators for general public use must be available for use during this time frame.
4. **3008.2 Fire safety and evacuation plan.** This paragraph was revised for clarification purposes.
5. **New egress capacity.** This paragraph was deleted based on concerns raised by the Means of Egress Code Committee. The concept of reduction in egress capacity has not had sufficient technical review at this time.
6. **3008.3 Operation.** This paragraph was revised for clarification purposes.
7. **Number of Occupant Evacuation Elevators.** This paragraph was deleted based on the revised text in Section 3008.1 General.
8. **3008.5 Automatic Sprinkler System.** This paragraph was revised to reference 3008.5.1.
9. **3008.5.1 Prohibited locations.** This paragraph was revised for clarification purposes and to be with consistent with proposed requirements in 903.3.1.1.1, Item 6 in IFC. Revision emphasizes that sprinklers shall not be installed in elevator machine rooms and elevator machine spaces for occupant evacuation elevators.
10. **3008.5.2 Sprinkler system monitoring.** This paragraph was revised for clarification purposes.
11. **3008.7 Shunt trip.** Revised to use correct terminology.
12. **3008.8 Hoistway Enclosure Protection.** Revised to use correct terminology.
13. **3008.9 Water protection.** This paragraph was revised for clarification purposes. The revisions addresses the concerns of several members of the Committee as well as others that performance based language is preferred over prescriptive language to permit alternative design options. Recommended design options best suited to be provided in commentary. Also, this section was revised to use correct terminology.
14. **3008.10 Occupant evacuation elevator lobby.** This paragraph was revised for clarification purposes.
15. **3008.10.2 Lobby enclosure.** No revisions were made to this section since there is no conflict regarding the lobby enclosure for occupant evacuation elevators and the elevator lobby requirements in Section 707.14.1 for non-occupant evacuation elevators. A smoke barrier is the appropriate reference since it is designed to resist fire and smoke spread and is intended to create an area for occupants to stage prior to using the elevators for evacuation.
  - a. **Exception.** The exception was revised for clarification purposes. The term "street floor" is used in the Code is not a defined term in the Code. The term "level of exit discharge" is defined in the Code and seems the more appropriate term to use.
16. **Lobby construction materials.** This paragraph was deleted based on concerns from individuals that the level 2 rating requirements in ASTM C1629/C1629M only applies to gypsum type materials and not concrete.
17. **3008.10.4 Lobby size.** This paragraph was revised for clarification purposes. The new exception provides performance based language for determining the size of occupant evacuation lobbies serving multiple banks of elevators on the same or from multiple floors.
18. **3008.10.5 Signage.** This new paragraph was added to ensure proper signage is posted on all floors informing occupants that the elevators are suitable for occupant-self evacuation.
19. **3008.10.6 Lobby status indicator.** This paragraph was revised for clarification purposes. Item 2 was deleted based on concerns that the fire department may use these elevators for other purposes then only to assist occupants with disabilities.
20. **3008.12 Two-way communication.** This paragraph was revised for clarification purposes.
21. **3008.12.1 Design and installation.** This new paragraph was added for clarification purposes.
22. **3008.12.2 Instruction.** This new paragraph was added for clarification purposes.

23. **Directions.** This paragraph was deleted based on need paragraphs 3008.12.1 and 3008.12.2 being added.
24. **Standpipe hose connection.** This paragraph was deleted because it was determined that the need for a standpipe hose connection in the exit stair serving the occupant evacuation elevator lobby is not a critical element in the protection scheme for the occupants using the elevators for evacuation. In addition, installation of the standpipe hose connection will not increase the overall safety of occupants using the elevators for evacuation in the subject elevator lobby. Such standpipes serve a greater purpose for fire fighters and are already addressed in the provisions for Fire Service Access Elevators.
25. **3008.13 Elevator system monitoring.** This paragraph was revised for clarification purposes.
26. **3008.13.1 Elevator recall.** This paragraph was revised for clarification purposes and has been revised to use the correct terminology.
27. **3002.3 Emergency signs.** This paragraph was revised for clarification purposes. Ensures the standard emergency sign is not installed on elevator landings for elevators that are used for occupant-self evacuation in Section 3008.

*Public Comment 3:*

**Paul K. Heilstedt, PE, FAIA, Chair, representing ICC Code Technology Committee (CTC) requests Approval as Modified by this public comment.**

**Modify proposal as follows:**

**3008.4 Additional means of egress.** Where an additional means of egress is required in accordance with Section 403.17, an additional exit stair shall not be required to be installed in buildings having elevators used for occupant controlled evacuation in accordance with this section.

**403.17 (Supp) Additional means of egress.** For buildings other than Group R-2 that are more than 420 feet in height, one additional means of egress meeting the requirements of Sections 1009 and 1020 shall be provided in addition to the minimum number of exits required by Section 1019.1. The total width of any combination of remaining stairways with one stairway removed shall not be less than the total width required by Section 1005.1. Scissor stairs shall not be considered the additional exit stair required by this section.

**Exception.** An additional exit stairway shall not be required to be installed in buildings having elevators used for occupant-controlled evacuation in accordance with Section 3008.

**(Portions of proposal not shown remain unchanged)**

**Commenter's Reason:** The proposed new Section 3008.4 and coordinated text in Section 403.17 is intended to provide a reasonable alternative to the additional stair requirement for high rise buildings. If the Code is to mandate one additional exit stairway in buildings greater than 420 feet in height, we strongly feel that alternate solutions to increasing evacuation capability in tall buildings should be provided. The proposed text recognizes occupant evacuation elevators as a reasonable alternative to providing an additional exit stair and will improve overall building safety by decreasing the overall occupant evacuation times in tall buildings.

Code issues are assigned to the CTC by the ICC Board as "areas of study". Information on the CTC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the CTC effort can be downloaded from the following website: <http://www.iccsafe.org/cs/cc/ctc/index.html>. Since its inception in April/2005, the CTC has held fifteen meetings - all open to the public. This public comment is a result of the CTC's investigation of the area of study entitled "NIST World Trade Center Recommendations". The CTC web page for this area of study is: <http://www.iccsafe.org/cs/cc/ctc/WTC.html>

*Public Comment 4:*

**Richard Schulte, Evanston, IL, representing himself, requests Disapproval.**

**Commenter's Reason:** Several issues need to be addressed before provisions for occupant evacuation elevators are incorporated into the IBC.

One issue is the overall reliability of elevators.

A second issue is how overcrowding of the elevators is controlled. We learned from the Triangle Shirtwaist Factory fire in 1911 that the use of elevators in a fire is dangerous due to overcrowding. How do we prevent people who don't absolutely need to use the elevators from using the elevators anyway, while those who absolutely need to use the elevator wait for elevators to evacuate?

A third issue is the cost/benefit of providing occupant use elevators. Regarding the issue of cost/benefit of occupant evacuation elevators, the fire safety record of U.S. high rise buildings protected throughout by a sprinkler system is magnificent. A major fire has never occurred in a U.S. high rise building protected throughout by a sprinkler system.

(It should be noted that the fire in the First Interstate Bank (FIB) Building occurred approximately 2-4 weeks before the sprinkler installation was completed. The control valves in the FIB Building were all closed at the time of the fire because the wiring of the water flow alarms in the system was not completed. Hence, the FIB Building was not a sprinklered building at the time of the fire.)

Statistics collected by the National Fire Protection Association (NFPA) indicate that the average number of fire fatalities which occurred in all of the office buildings in the US was one based on statistics between the years 2000 and 2004. Yes, on average only 1 American dies each year in fires in office buildings. That includes both high rise and low rise office buildings with and without sprinkler protection. This statistic is truly amazing considering the population of the United States now exceeds 300 million people. The statistics for high rise hotels and apartment buildings protected throughout a sprinkler system are similar to the statistics for office buildings.

Given these statistics, it seems only logical that the need for occupant evacuation elevators in the event of a fire should be questioned. While there are other reasons to fully evacuate a building, fire is not one of the reasons. The present proposal appears to mostly address the issue of occupant evacuation due a fire. The statistics cited above clearly indicate that the issue of fire has already been addressed without the use of occupant evacuation elevators.

The question has to be asked (and should be answered), why do we keep piling on fire safety requirement after fire safety requirement for buildings which have such a magnificent fire safety track record? The obvious answer to this question is the events of 9/11. The next terrorist attack will not utilize airplanes, but will utilize either chemical, biological or radioactive materials and will likely involve an attack on an entire city.

When Hurricane Rita approached the Texas coast in September 2005, it took 2 days to evacuate Houston and the surrounding communities. Rather than being concerned about how to evacuate tall buildings quickly, we should probably be more concerned about how to expedite an evacuation of our cities. After all, a city is nothing more than several tall high rise buildings turned horizontally.

**Analysis:** The difference between Public Comment 1 and 2 is found in Sections 3008.11, 3008.12.1 and 3008.12.2.

Final Action: AS AM AMPC\_\_\_ D

## E14-07/08, Part II IFC 903.3.1.1.1 (IBC [F] 903.3.1.1.1)

### *Proposed Change as Submitted:*

**Proponent:** David W Frable, US General Services Administration, Gerald H Jones, representing himself

### **PART II – IFC**

#### **Revise as follows:**

**903.3.1.1.1 (IBC [F] 903.3.1.1.1) Exempt locations.** Automatic sprinklers shall not be required in the following rooms or areas where such rooms or areas are protected with an approved automatic fire detection system in accordance with Section 907.2 that will respond to visible or invisible particles of combustion. Sprinklers shall not be omitted from any room merely because it is damp, of fire-resistance rated construction or contains electrical equipment.

1. Any room where the application of water, or flame and water, constitutes a serious life or fire hazard.
2. Any room or space where sprinklers are considered undesirable because of the nature of the contents, when approved by the fire code official.
3. Generator and transformer rooms separated from the remainder of the building by walls and floor/ceiling or roof/ceiling assemblies having a fire-resistance rating of not less than 2 hours.
4. Rooms or areas that are of noncombustible construction with wholly noncombustible contents.
5. Fire service access elevators machine rooms and machinery spaces.
6. Machine rooms and machinery spaces for occupant evacuation elevators designed in accordance with Section 3008.

**Reason:** The use of elevators for occupant egress is a significant change that will have many impacts in regulation and in building design. This proposal is intended to introduce requirements for the arrangement and design of protected elevators for occupant egress into the code without mandating them anywhere. The result would be that they can be used where approved and justified through an engineering analysis. This is no different than acceptance through a variance or performance approach as currently permitted under the code. The difference is that the requirements included in this section provide guidance on safe implementation. The inclusion of this information in the code will permit code officials and designers to develop a comfort level with the technology and to facilitate improvements to the requirements in the Code and referenced technical standards.

The current concept is being addressed by the ASME A17 Task Group on Use of Elevator for Occupant Egress the Occupant evacuation elevators that will incorporate a special evacuation protocol that will be specified in ASME A17.1. While not currently finalized, it is likely to involve the immediate evacuation of the fire floor and two floors above and below the fire floor, then awaiting a decision by the Incident Commander of whether to initiate a full building evacuation. The protocol would be terminated by the activation of Phase I recall as currently required. This protocol requires that the system recognize the floor of origin to begin the process. This would probably be initiated by the (required) sprinkler system if it is arranged to indicate sprinkler flow by floor.

For the record, GSA is committed to this endeavor and been funding research at the National Institute of Standards & Technology (NIST) for the past several years for the development of performance requirements for the use of elevators for occupant egress during a fire emergency prior to Phase I Emergency Recall. GSA has also been participating in the ASME A17 Task Groups on Use of Elevators by Firefighters and Use of Elevator for Occupant Egress regarding this subject matter.

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

### **PART II – IFC**

#### **Committee Action:**

**Disapproved**

**Committee Reason:** For consistency with the action taken by the IBC-MOE Committee on Part I of this proposal. The proposed IFC reference to IBC Section 3008 is moot without approval of Part I.

#### **Assembly Action:**

**None**

### *Individual Consideration Agenda*

**This item is on the agenda for individual consideration because public comments were submitted for Part II.**

Public Comment:

Brian Black, BDBlack Codes, Inc., representing National Elevator Industry, Inc., requests Approval as Submitted.

Jack J. Murphy, representing Fire Safety Directors Association of Greater New York, requests Approval as Submitted.

John J. O'Donoghue, representing International Association of Fire Fighters, requests Approval as Submitted.

Dave Frable, U.S. General Services Administration, requests Approval as Submitted.

Commenter's Reason: See the reason provided for Public Comments 1 and 2 for E14-Part I.

Final Action: AS AM AMPC\_\_\_\_\_ D

## E19-07/08, Part I

Table 1005.1 (IFC [B]1005.1), 3403.5(New), 3410.6.11, Table 3410.6.11(1) (New), Table 3410.6.11, [IEBC [B]302.5(New), [B]1306.11.1(New), [B]Table 1306.11.1(1) (New), Table 1306.11.1]

Proposed Change as Submitted:

Proponent: David Frable, US General Services Administration

### PART I – IBC MEANS OF EGRESS

Delete and substitute as follows:

**TABLE 1005.1 (IFC [B] 1005.1) (Supp)  
EGRESS WIDTH PER OCCUPANT SERVED**

| OCCUPANCY                                 | WITHOUT SPRINKLER SYSTEM        |   | WITH SPRINKLER SYSTEM <sup>a</sup> |   |
|---|---------------------------------|---|------------------------------------|---|
|   | Stairways (inches per occupant) | Other egress components (inches per occupant) | Stairways (inches per occupant)    | Other egress components (inches per occupant) |
| Occupancies other than those listed below | 0.3                             | 0.2   | 0.2                                | 0.15  |
| Hazardous: H-1, H-2, H-3 and H-4          | Not permitted                   | Not permitted                                 | 0.3                                | 0.2   |
| Institutional: I-2                        | Not permitted                   | Not permitted                                 | 0.3                                | 0.2   |

SI: 1 inch – 25.4 mm.

<sup>a</sup>Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.

**TABLE 1005.1 (IFC [B] TABLE 1005.1)  
EGRESS WIDTH PER OCCUPANT SERVED**

| OCCUPANCY       | STAIRWAYS (INCHES PER OCCUPANT) | OTHER EGRESS COMPONENTS (INCHES PER OCCUPANT) |
|-----------------|---------------------------------|---|
| All occupancies | 0.3                             | 0.2   |

SI: 1 inch – 25.4 mm.

**302.5 (IEBC 302.5) Means of egress capacity factors.** Alterations to any existing building or structure shall not be affected by the egress width factors in Table 1005.1 for new construction in determining the minimum egress widths or the minimum number of exits in an existing building or structure. The minimum egress widths for

the components of the means of egress shall be based on the means of egress width factors in the building code under which the building was constructed, and shall be considered as complying means of egress for any alteration if, in the opinion of the building official, they do not constitute a distinct hazard to life.

**2. Revise as follows:**

**3410.6.11 (IEBC [B] 1301.6.11) Means-of-egress capacity and number.** Evaluate the means-of-egress capacity and the number of exits available to the building occupants. In applying this section, the means of egress are required to conform to the following sections of the *International Building Code*: 1003.7, 1004, 1005.1, 1014.2, 1014.3, 1015.2, 1019, 1024.1, 1024.2, 1024.6, 1025.2, 1024.3, 1024.4 and 1026 (except that the minimum width required by this section shall be determined solely by the width for the required capacity in accordance with Table 3410.6.11(1)). The number of exits credited is the number that is available to each occupant of the area being evaluated. Existing fire escapes shall be accepted as a component in the means of egress when conforming to Section 705.3.1.2. Under the categories and occupancies in Table 1301.6.11(2), determine the appropriate value and enter that value into Table 1301.7 under Safety Parameter 1301.6.11, Means-of-Egress Capacity, for means of egress and general safety.

**TABLE 3410.6.11(1) [IEBC TABLE 1306.11.1(1)]  
EGRESS WIDTH PER OCCUPANT SERVED**

| OCCUPANCY                                 | WITHOUT SPRINKLER SYSTEM        |   | WITH SPRINKLER SYSTEM <sup>a</sup> |   |
|---|---------------------------------|---|------------------------------------|---|
|   | Stairways (inches per occupant) | Other egress components (inches per occupant) | Stairways (inches per occupant)    | Other egress components (inches per occupant) |
| Occupancies other than those listed below | 0.3                             | 0.2   | 0.2                                | 0.15  |
| Hazardous: H-1, H-2, H-3 and H-4          | Not permitted                   | Not permitted                                 | 0.3                                | 0.2   |
| Institutional: I-2                        | Not permitted                   | Not permitted                                 | 0.3                                | 0.2   |

For SI: 1 inch = 25.4 mm.

a. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.

**TABLE 3410.6.11(2) [IEBC TABLE 1306.11.1(2)]  
MEANS OF EGRESS VALUES**

(No change to table – change reference to table in Section 3410.6.11(IEBC 1306.11.1(1)))

**REASON: PART I – IBC MEANS OF EGRESS**

IBC Table 1005: The intent of this code change is to revise the egress width factors in Table 1005.1 such that the concept of determining egress capacity for the components of the means of egress within a building is not a function of whether or not a building is protected throughout by an automatic fire sprinkler system. Not all building emergencies that necessitate occupant egress either out of a building or within a building to a safe area are dependent on a fire sprinkler system. Please also note that the occupancy factors are still unchanged for I-2 and H occupancies since all I-2 and H occupancies are required to be protected by an automatic fire sprinkler system.

3403.5/IEBC 302.5: The intent of this code change is to ensure coordination of requirements within the IBC. This action will ensure coordination with the proposed new egress width factors in Table 1005.1 such that the impact of such revisions to Table 1005.1 of the IBC will not be detrimental to existing building stock across the country when making alterations in accordance with the requirements within the IBC and IEBC

3410.6.11/IEBC 1306.11: The intent of this code change is to ensure coordination of requirements within the IBC. This action will ensure coordination with the proposed new egress width factors in Table 1005.1 such that the impact of such revisions to Table 1005.1 of the IBC will not be detrimental to existing building stock across the country when making alterations in accordance with the requirements within the IBC and IEF

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

**Analysis:** IBC Section 3410.6.11 was revised to coordinate with IEBC Section 1301.6.11 by the CCC committee at their Sept. 2007 meeting. EB62-04/05 revise the general reference to IBC Chapter 10 in IEBC 1301.6.11 to the specific sections dealing with means of egress capacity and number. This revision, copied into the IBC would provide the same more precise reference rather than the generic language in the 2006 IBC.

**PART I – IBC MEANS OF EGRESS  
Committee Action:**

**Approved as Submitted**

**Committee Reason:** Occupants may need to egress buildings during non-fire events where sprinklers systems do not provide additional protection. Therefore, the increase in corridor and stairway width, and thus egress capacity, is justified.

## E51-07/08

### 1008.1.8.6 (New) [IFC [B] 1008.1.8.6 (New)]

#### *Proposed Change as Submitted:*

**Proponent:** John Williams, Construction Review Services, Washington State Department of Health, Emory Rogers, Virginia Department of Housing and Community Development, John Neff City of Lacey, WA, representing Washington State Building Code Council

#### **Add new text as follows:**

**1008.1.8.6 (IFC [B] 1008.1.8.6) Special locking arrangements in Group I-2.** Where the clinical needs of patients require the restraint of movement, locks shall be permitted on doors within the means of egress, provided that:

1. The building is equipped with an approved automatic sprinkler system in accordance with Section 903.3.1.1, and an approved automatic fire alarm system in accordance with Section 907.
2. The doors unlock upon actuation of the automatic fire alarm system, or, upon the loss of power to the lock or lock mechanism.
3. The doors are capable of being unlocked by a signal from a switch at a nurse station or other approved location.
4. An electronic device, such as a keypad and code, is provided adjacent to each door equipped with a lock. Such device shall deactivate the door locking mechanism and permit operation of the door. Instructions for exiting shall be posted within six feet of the door.
5. All clinical staff shall have the codes or other means necessary to operate the device in Item #4.

**Reason:** This change provides a much needed option for facilities that house dementia and Alzheimer's patients. There is a reoccurring issue with elopement of dementia patients. Facilities that house these patients face significant challenges in maintaining a safe and secure environment for these patient types within the framework of the building code. The States of Washington and Virginia have amended the building code with similar special provisions for dementia control. The conditions that allow this special locking arrangement provide a measured approach to life safety, similar to delayed egress. We use this as a practical solution to a real world problem.

There were three proposals last cycle that dealt with this concept, all were defeated by the committee. Two changes were turned down in favor of a third amendment (G83-06/07) that was almost identical to this one. The committee turned down G83-06/07 due to concerns that patients would learn to pull the fire alarm to get out of the building. An existing exception to IBC 907.2.6 allows the fire alarm pulls to be located at nurse stations and other constantly staff attended locations, which mitigates this concern.

To address other committee concerns: We believe that while there may be occupancies that may house these types of patients, it is clear that Group I-2 definitely houses these patients. The purpose of this change is targeted towards a verifiable condition. The committee preferred the language "clinical staff" as opposed to "all staff". This change has been made

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

#### **Committee Action:**

**Disapproved**

**Committee Reason:** The proponent requested disapproval based on the committee actions to E44-07/08 and E49-07/08. They intend to work with the Code Technologies Committee Care Facility task group to address this issue.

#### **Assembly Action:**

**None**

#### *Individual Consideration Agenda*

**This item is on the agenda for individual consideration because public comments were submitted.**

#### *Public Comment 1:*

**Paul K. Heilstedt, PE, FAIA, Chair, representing ICC Code Technology Committee (CTC) requests Approval as Modified by this public comment.**

#### **Replace proposal as follows:**

**1008.1.8.6 (IFC [B] 1008.1.8.6) Special locking arrangements in Group I-2.** Approved delayed egress locks shall be permitted in a Group I-2 occupancy where the clinical needs of persons receiving care require such locking. Delayed egress locks shall be permitted in such occupancies where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or an approved automatic smoke or heat detection system installed in accordance with Section 907, provided that the doors unlock in accordance with Items 1 through 6 below. A building occupant shall not be required to pass through more than one door equipped with a delayed egress lock before entering an exit.

1. The doors unlock upon actuation of the automatic sprinkler system or automatic fire detection system.
2. The doors unlock upon loss of power controlling the lock or lock mechanism.
3. The door locks shall have the capability of being unlocked by a signal from the fire command center, a nursing station or other approved location.
4. The procedures for the operation(s) of the unlocking system shall be described and approved as part of the emergency planning and preparedness required by Chapter 4 of the *International Fire Code*.
5. All clinical staff shall have the keys, codes or other means necessary to operate the locking devices.
6. Emergency lighting shall be provided at the door.

**Exception:** Items 1 through 3 shall not apply to doors to areas where persons which because of clinical needs require restraint or containment as part of the function of a mental hospital.

[Renumber subsequent sections]

**Commenter's Reason:** As noted in the reason for disapproval, the proponent recognized that this issue falls within the scope of the CTC area of study entitled "Care Facilities". The CTC care facility study group invited the interested stakeholders to discuss how best to address locking arrangements necessary to both balance the needs of the facility as well as the life safety of the occupants. The proposed revisions are fundamentally based on the current provisions of Section 1008.1.8.6, with the exception of items 4 and 5 which have been replaced by items 4, 5 and 6.

Items 4 and 5 in current Section 1008.1.8.6 require an audible signal to be initiated in the event of the delayed egress lock being activated. This is reasonable for occupancy Groups A, E and H, however, there are special considerations necessary where the occupants are in different environments in Group I-2 hospitals. Such audible signals are considered as nuisance alarms in areas where the patients are under a form of restraint and as such they have been replaced by items 4, 5, and 6 which provides a reasonable mechanism to monitor and allow the unlocking system to be activated.

Hospitals which contain patients with mental disabilities present even more of a challenge in that they need to be restrained and/or contained for their own safety. For these occupancies, it is imperative that the level of restraint be maintained even if the fire protection systems are activated. However, in order to provide the necessary life safety features which would allow for such patients to be evacuated, the emergency planning and preparedness plan must be developed to allow for such evacuation (Item 5) and the clinical staff have the ability to monitor and enable the evacuation (Item 6).

Code issues are assigned to the CTC by the ICC Board as "areas of study". Information on the CTC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the CTC effort can be downloaded from the following website: <http://www.iccsafe.org/cs/cc/ctc/index.html>. Since its inception in April/2005, the CTC has held fifteen meetings - all open to the public. This public comment is a result of the CTC's investigation of the area of study entitled "Care Facilities". The CTC web page for this area of study is: <http://www.iccsafe.org/cs/cc/ctc/care.html>

*Public Comment 2:*

**John Woestman, The Kellen Company, requests Approval as Modified by this public comment.**

Replace proposal as follows:

**1008.1.8.6 (IFC [B] 1008.1.8.6) Special locking arrangements in Group I-2.** Listed delayed egress locks shall be permitted in n Grpuf I-2 occupancy where the clinical needs of persons receiving care require such locking. Delayed egress locks shall be permitted in such occupancies where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or an approved automatic smoke or heat detection system installed in accordance with Section 907, provided that the doors unlock in accordance with Items 1 through 6 below. A building occupant shall not be required to pass through more than one door equipped with a delayed egress lock before entering an exit.

1. The doors unlock upon actuation of the automatic sprinkler system or automatic fire detection system.
2. The doors unlock upon loss of power controlling the lock or lock mechanism.
3. The door locks shall have the capability of being unlocked by a signal from the fire command center, a nursing station or other approved location.
4. The procedures for the operation(s) of the unlocking system shall be described and approved as part of the emergency planning and preparedness required by Chapter 4 of the *International Fire Code*.
5. All clinical staff shall have the keys, codes or other means necessary to operate the locking devices.
6. Emergency lighting shall be provided at the door.

**Exception:** Items 1 through 3 shall not apply to doors to areas where persons which because of clinical needs require restraint or containment as part of the function of a mental hospital.

[Renumber subsequent sections]

**Commenter's Reason:** This public comment is the same as that provided by the CTC with one revision – the changing of the first word in the first sentence from "Approved" to "Listed." I respectfully submit that "Listed" should replace "Approved" in this proposal because "listed" requires third-party oversight and provides code officials with a consistent basis for verifying that the delayed egress locks are appropriate for the intended use. With this in mind, I recommend E51 be approved as modified by this public comment.

Final Action:      AS                      AM                      AMPC\_\_\_\_                      D

**Exceptions:**

1. Exit signs are not required in rooms or areas that require only one exit or exit access.
2. Main exterior exit doors or gates that are obviously and clearly identifiable as exits need not have exit signs where approved by the building official.
3. Exit signs are not required in occupancies in Group U and individual sleeping units or dwelling units in Group R-1, R-2 or R-3.
4. Exit signs are not required in dayrooms, sleeping areas rooms, or dormitories in occupancies in Group I-3.
5. In occupancies in Groups A-4 and A-5, exit signs are not required on the seating side of vomitories or openings into seating areas where exit signs are provided in the concourse that are readily apparent from the vomitories. Egress lighting is provided to identify each vomitory or opening within the seating area in an emergency.

**Reason:** This change clarifies the intent of this section that exit signs are not required in cells or contiguous housing dayrooms or sleeping dormitories in Group I-3 occupancies as those areas are within the same smoke compartment and therefore fall under the Group I-3 classification. Most occupants in such buildings are long-time residents who become familiar with the locations of all exits outside their sleeping areas, whether they are marked or unmarked. In cases of emergency, occupants in Use Group I-3 are escorted by staff to the exits and to safety. The exit signs also represent potential for vandalism and use as weapons when they are accessible to the residents.

**Cost Impact:** The code change proposal will not increase the cost of construction.

|                            |     |     |    |
|----------------------------|-----|-----|----|
| Public Hearing: Committee: | AS  | AM  | D  |
| Assembly:                  | ASF | AMF | DF |

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**E80-07/08**

**1011.6 (New), 1011.7 (New), [IFC [B] 1011.6 (New), [B] 1011.7 (New)]**

**Proponent:** Manny Muniz, Manny Muniz Associates, LLC, representing himself

**Add new text as follows:**

1011.6 (IFC [B] 1011.6) Floor-level exit signs. Where exit signs are required by Section 1011.1, additional approved floor-level exit signs which are internally or externally illuminated, photoluminescent or self-luminous shall be provided in all interior corridors of Groups A, E, I, R-1, R-2 and R-4 Occupancies.

**Exceptions:**

1. Where path marking complying with Section 1011.7 is provided.
2. Group I-3 occupancies.

The bottom of the sign shall not be less than 6 inches (152 mm) or more than 8 inches (203 mm) above the floor level and shall indicate the path of exit travel. For exit and exit-access doors, the sign shall be on the door or adjacent to the door with the closest edge of the sign or marker within 4 inches (102 mm) of the door frame.

1011.7 (IFC [B] 1011.7) Path marking. When exit signs are required by Section 1011.1, approved path marking shall be installed at floor level or no higher than 8 inches (203 mm) above the floor level in all interior corridors of Groups A, E, I, R-1, R-2 and R-4 occupancies.

Such marking shall be continuous except as interrupted by door-ways, corridors or other such architectural features in order to provide a visible delineation along the path of travel and shall comply with Section 1011.5.3.

**Exceptions:**

1. Where floor level exit signs complying with Section 1011.6 are provided.
2. Group I-3 occupancies.

**on:** Corridor smoke from a fire stratifies from the ceiling downward. This often renders the exit signs located above the exit doors difficult, if possible, to see. From the time a fire begins, the clock for successful evacuation begins to count down. There must never be confusion about the exits are.

JL 924, the UL standard for exit signs, does not nor has it ever tested or listed exit signs for visibility through smoke, only for clear air. UL 924 test and list exit signs for use at the floor proximity where the air is typically clear during the early stages of a fire.

California has had requirements in their building code for floor-level exit signs or path markings in interior corridors of Groups A, E, I, and R since 1989. The State of Connecticut recently enacted a similar law to require floor proximity path markings in all new Group A occupancies with an occupant load of more than three hundred persons, Group B medical occupancies, Group E, Group I-1, Group I-2, Group R-1 hotels and motels, and Group R-2 dormitories.

The Federal Aviation Administration, the International Maritime Organization and the American Public Transit Association all require floor-proximity exit path markings on passenger planes, passenger ships and passenger trains.

The discussion should not be about whether or not buildings should have floor proximity egress path marking but rather which buildings should have it

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

|                 |            |     |     |    |
|-----------------|------------|-----|-----|----|
| Public Hearing: | Committee: | AS  | AM  | D  |
|                 | Assembly:  | ASF | AMF | DF |

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## E81-07/08

### 1012.5 (IFC [B] 1012.5)

**Proponent:** Scott Crossfield, Theatre Projects Consultants, Inc., representing himself

**Revise as follows:**

**1012.5 (IFC [B] 1012.5) (Supp) Handrail extensions.** Handrails shall return to a wall, guard or the walking surface or shall be continuous to the handrail of an adjacent stair flight. Where handrails are not continuous between flights the handrails shall extend horizontally at least 12 inches (305 mm) beyond the top riser and continue to slope for the depth of one tread beyond the bottom riser. At ramps where handrails are not continuous between runs, the handrail shall extend horizontally above the landing 12 inches (305 mm) minimum beyond the top and bottom of ramp runs. At stairways and ramps the handrail extensions shall extend in the same direction of the stair flight and ramp run.

**Exceptions:**

1. Handrails within a dwelling or sleeping unit that is not required to be accessible Accessible units or Type A units in accordance with Section 1107, need extend only from the top riser to the bottom riser.
2. Aisle handrails in Group A and E occupancies in accordance with Section 1025.13.
3. Handrails for alternating tread devices may terminate at a location vertically above the top and bottom risers. Handrails for alternating tread devices are not required to be continuous between flights or to extend beyond the top or bottom risers.

**Reason:** The change adds a new sentence for clarification of the direction of the handrail extensions. The current provisions do not indicate if the handrails extensions must go straight or could bend. If they bend, they no longer assist the stairway user that needs the handrail for support. The change is also for coordination with 2004 ADA/ABA Accessibility Guidelines and ICC A117.1 Section 505.10.

G208 Part I put a change into Section 3409.8 to address an exception for handrail extension on stairways being altered in existing buildings. The intent of the additional language in Exception 1 is so that it is clear that the exception may not be used in Accessible units or Type A units when the individual units have a stairway within the unit. It is our understanding that Fair Housing does not address requirements for stairways within an individual unit, therefore, Type B units could use this exception.

**Cost Impact:** The code change proposal will not increase the cost of construction.

|                 |            |     |     |    |
|-----------------|------------|-----|-----|----|
| Public Hearing: | Committee: | AS  | AM  | D  |
|                 | Assembly:  | ASF | AMF | DF |

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## E82-07/08

### 1012.5 (IFC [B] 1012.5)

**Proponent:** Philip Brazil, Reid Middleton, Inc., representing himself

**Revise as follows:**

**1012.5 (IFC [B] 1012.5) (Supp) Handrail extensions.** Handrails shall return to a wall, guard or the walking surface shall be continuous to the handrail of an adjacent stair flight. Where handrails are not continuous between flights the handrails shall extend horizontally at least 12 inches (305 mm) beyond the top riser and continue to slope for the depth of one tread beyond the bottom riser. At ramps where handrails are not continuous between runs, the handrail shall extend horizontally above the landing 12 inches (305 mm) minimum beyond the top and bottom of ramp runs. The extensions of handrails shall be in the same direction of the stair flights at stairways and the ramp runs at ramps.

**Cost Impact:** The code change proposal will not increase the cost of construction.

**Analysis:** This proposal is based on Section 1027 – Means of Egress for Existing Buildings of the IFC 2006 edition.

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** The committee agreed that the proponent’s reason statement accurately and adequately substantiates the need for the change, which will provide correlation with Section 1017.3 for new buildings which was revised by code change E130-06/07 by increasing the dead-end limits to 50 feet in sprinklered Groups E, I-1 and U.

**Assembly Action:**

**None**

*Individual Consideration Agenda*

**This item is on the agenda for individual consideration because a public comment was submitted.**

*Public Comment:*

**Jonathon D. Hamrick, Florida Department of Education, requests Disapproval.**

**Commenter’s Reason:** It is a mistake to increase the maximum allowed dead-end in an educational occupancy from ~~20~~ feet to 50 feet in a fully sprinklered building.

A 50 feet long dead-end is an extremely long way for young children, who have short legs and panic easily, to travel in an emergency situation. This increase in dead-end travel distance also increased the time needed to evacuate a building. This increase in dead end travel distance is dangerous for small children. The limit for a dead-end corridor should remain at 20 feet for an educational occupancy.

Final Action:      AS              AM              AMPC \_\_\_\_\_      ~

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**F211-07/08**  
**1027.22 (New)**

*Proposed Change as Submitted:*

**Proponent:** Gary Lewis, City of Summit, NJ, representing ICC Ad-Hoc Committee on Terrorism Resistant Buildings

**Add new text as follows:**

**1027.22 Exit path markings. Existing buildings of Group A, B, E, I, M, and R-1 having occupied floors located more than 75 feet (22 860mm) above the lowest level of fire department vehicle access shall have exit path markings in accordance with Section 1027 (Supp).**

**Reason:** The membership, at the final hearings of the 2006/2007 code development cycle, overturned the committee action on E84-06/07 with a two-thirds majority vote to include requirements in the IBC and the IFC for luminous exit path markings. The TRB Ad Hoc committee was the original proponent to this code change and it was our intent to make these requirements retroactive for existing buildings. Our intent was not clear in the original proposal, so, at this time, the TRB Ad Hoc committee is proposing to make these requirements applicable to existing buildings.

The proposed new section on exit path markings will require luminescent exit path markings be provided in existing buildings. This proposal will facilitate rapid egress and assist in full building evacuation and is drawn from Recommendations 17 and 18 of the National Institute of Standards and Technology’s (NIST) report on the World Trade Center tragedy.

Up to this point, code requirements for high rise buildings were written under the assumption that the building would be evacuated floor by floor. In most instances, in a building with a full suppression system, only the floor where the fire is located and the floors immediately above and below would be evacuated. Acts of terrorism and accidental incidents like power failures have made it necessary to consider design for full building evacuation that is as rapid as possible. This may be made necessary in response to an event within the building or an event outside the building. The proposed code change to require exit path markings is intended to facilitate the most rapid possible full building evacuation.

In the City of New York, after the first bombing of the WTC, requirements were instituted to require exit path markings in vertical exit enclosures in new and existing buildings. This proposal is taken directly from those requirements.

**Bibliography:**

1. Reference Standard 6-1, Photoluminescent exit path markings as required by Local Law 26 of 2004, New York City Building Code, § 27-383(b)
2. National Institute of Standards and Technology. Final Report of the National Construction Safety Team on the Collapses of the World Trade Center Towers. United States Government Printing Office: Washington, D.C. September 2005.

**Cost Impact:** The proposal will increase the cost of construction however, the life safety benefit is great.

**Analysis:** This proposal is based on Section 1027 – Means of Egress for Existing Buildings of the 2006 edition, which will be renumbered to be 1028 in the 2009 edition (due to the addition of new Section 1027 - Exit Path Markings in the 2006/2007 cycle). The reference in this proposal to Section 1027 (Supp) will be to the new Section 1027 in the 2009 edition.

**Committee Action:**

**Disapproved**

**Committee Reason:** The proposal was disapproved because the committee felt that it was overbroad and would require immediate compliance in all high-rises of the listed occupancies. Historic buildings, which are very difficult to retrofit, would be included. It was noted that there is no documentation on the cost-effectiveness of these markings in existing buildings and that the NIST report did not discuss requiring egress path markings in existing buildings. The section, in order to be effective, would require retrofitting of exit enclosure illumination in accordance with Section 1027.1.7 of the 2007 Supplement. It was suggested that the IEBC might be a better place to deal with this issue.

**Assembly Action:**

**None**

### *Individual Consideration Agenda*

**This item is on the agenda for individual consideration because a public comment was submitted.**

*Public Comment:*

**Gary Lewis, Chair, ICC Ad Hoc Committee on Terrorism Resistant Buildings, requests Approval as Modified by this public comment.**

**Modify proposal as follows:**

**1027.22 Exit path markings.** Existing buildings of Group A, B, E, I, M and R-1 having occupied floors located more than 75 feet (22,860 mm) above the lowest level of fire department vehicle access shall be provided with exit path markings in accordance with Section 1027 (Supp).

Exception: Open, unenclosed stairwells in historic buildings designated as historic under a state or local historic preservation program.

**Commenter's Reason:** This comment is intended to support the requirements for photo luminescent exit path markings in vertical exit enclosures in existing buildings of Group A, B, E, I, M and R-1. This same language, minus the exception for historic structures, was already approved by the membership as the standard in the IBC for all newly-constructed high rises.

In situations where building evacuation is necessary, it is not unusual for power to be lost, rendering stairwells darker than when lit. If criminal intent was involved, stairway lighting may be one of the first targets to deactivate. Emergency lighting can leave dark spots in stairwells as well. Occupants may move slower than egress model plans for the building as a result, also confirmed by the study by recent research.

Photoluminescent markings (PLM) have been proven to improve occupant egress in buildings. Research has shown a marked improvement in egress time when PLM's are present in buildings vs. unmarked unlit stairwells.<sup>1</sup> From 65-75% of building occupants using stairwells with PLM's felt comfortable going down the stairwells with PLM and reduced lighting. Additionally the speed of movement in this study showed an improvement in speed to egress the building. Handrail marking seemed to help considerably.

A perceived emergency situation requiring evacuation brings an amount of stress to occupants. Building egress systems can often be complex and non-intuitive to users.<sup>2</sup> Adding comfort of occupants during this difficult and stressful emergency evacuation egress situation may reduce stress keeping occupants focused on the task of negotiating the stairway and transfer corridors, with very clear pathways marked for egress more frequently than exit signs.

Products and information on the process for installation of PLM's exist due to New York City's mandate retroactively in 2004. Surface preparation for adhesive backed systems and discussion about mechanically fastened systems has been taking place in leading groups like the Society of Fire Protection Engineers.<sup>3</sup>

Some compromises were made from the original proposal as existing buildings can be a bit more challenging when retrofitting passive life safety systems. The compromises were made based on the February 18 – March 1, 2008 Public Hearings on the 2006 Edition of the International Fire Code Committee Hearing results. The hearing results noted that this proposal was disapproved based on the fact that the committee determined it to be "overbroad and would require immediate compliance in all high-rises of the listed occupancies." Of particular importance, the committee noted that "Historic buildings, which are very difficult to retrofit, would be included." The Ad Hoc committee concurs with the concerns and has adjusted the proposal accordingly.

The Committee has modified F211 to take into account the aesthetics and possible natural light in an open, unenclosed stairway, in a historic building. Also, the requirement is only applicable to buildings above 75 feet above the lowest level of the fire department access, so the requirement has limited application in the first place within these historic structures.

Photo luminescent exit path markings will facilitate quick egress from buildings during full building evacuation, regardless of emergency or non-emergency conditions. This type of marking is similar to what is currently used in the airline industry to evacuate large aircraft. It has been proven to work in the airline industry, and it will work in the building industry too. Photo luminescent markings in the vertical exit enclosures will not only help to illuminate the exit path, it will provide clear guidance on the travel direction for exiting the building.

This proposal also in alignment with the NIST recommendation number 18 on egress system be designed items (2) "to maintain their functional integrity and survivability under foreseeable building-specific or large-scale emergencies" and (3) "with consistent layouts, standard signage, and guidance so that systems become intuitive and obvious to building occupants during evacuations"

The marking requirement is only applicable to those buildings that have occupied floors exceeding 75 feet above the lowest level of fire department vehicle access. The cost impact on existing buildings is minor when considering the life safety benefit. Therefore, it is logical and affordable to extend this same level of protection provided new high rise structures, to existing high rise buildings.

1. Evaluation and comparison of different installations of photoluminescent marking on stairwells of a high rise building. N. Benichou, Proulx, G, Sept. 3-5, 2007.

Public Comment:

**Joseph J. Messersmith, Jr. PE., Portland Cement Association, requests Approval as Submitted.**

**Commenter's Reason:** The provisions in Sections 12.14.7.5.1, 12.14.7.5.2, 12.14.7.5.3 and 12.14.7.5.4 (Simplified Alternate Structural Design Criteria ...) of ASCE 7-05 were extracted from Sections 12.11.2.2.1, 12.11.2.2.3, 12.11.2.2.4 and 12.11.2.2.5, respectively, of ASCE 7-05. The latter sections apply to buildings assigned to Seismic Design Category (SDC) C and higher; whereas, the identical provisions in Section 12.14.7.5 apply to buildings assigned to SDC B and higher.

The provisions of Section 12.14.7.5.1 are especially onerous since continuous ties or struts are required to extend across the building length and width at each wall anchor. In the direction of the main framing members (i.e., joists, trusses, etc.), these members can be used as the continuous ties; however, in the direction perpendicular to the main framing members, steel straps continuous across the building length are generally required to comply with this requirement since wood structural sheathing is not permitted to serve as continuous ties (see Section 12.14.7.5.2).

The requirement for continuous ties originated in the UBC and eventually found its way into the NEHRP Provisions and ASCE 7. In the UBC, these provisions applied to Seismic Zones 2, 3 and 4 (areas of moderate and high seismic risk). When incorporated into the NEHRP Provisions and ASCE 7, they applied to buildings assigned to SDC C, D, E or F (building at moderate or high seismic risk). When the simplified design procedure (SDP) of the 2003 NEHRP Provisions was incorporated into ASCE 7-05, the provisions were extended to apply to buildings assigned to SDC B (buildings at low seismic risk).

"Based on default site class D soil, buildings of Occupancy Categories I, II and III in a significant portion of the eastern US and Rocky Mountain area are assigned to SDC B (low seismic risk)". These additional requirements, which are not justified for buildings assigned to SDC B, will discourage the use of the SDP. Use of simplified provisions should be encouraged rather than discouraged by adding requirements that do not apply where the regular design procedures of ASCE 7 are used.

Based on the foregoing, I urge you to vote against the floor motion to disapprove the change, and vote for a subsequent floor motion to approve the change as submitted.

Final Action: AS AM

**S101-07/08**  
**1614 (New)**

*Proposed Change as Submitted:*

**Proponent:** Ronald O. Hamburger, SE, Simpson Gumpertz & Heger, Inc, representing National Council of Structural Engineers Associations/Ad Hoc Joint Industry Committee on Structural Integrity

**Add new section as follows:**

**SECTION 1614**  
**STRUCTURAL INTEGRITY**

**1614.1 General.** Buildings and other structures assigned to Occupancy Category II, III, or IV, exceeding three stories above grade plane shall comply with the requirements of this section. ~~Frame structures shall comply with the requirements of Section 1614.3. Bearing wall structures shall comply with the requirements of Section 1614.4.~~

**Exception:** Structures other than buildings with structural systems that are not like building structures including, but not limited to, billboards, signs, silos, tanks, stacks, mechanical and electrical equipment.

**1614.2 Definitions.** The following words and terms shall, for the purposes of Section 1614, have the meanings shown herein.

**BEARING WALL STRUCTURE.** A building or other structure in which vertical loads from floors and roofs are primarily supported by walls.

**FRAME STRUCTURE.** A building or other structure in which vertical loads from floors and roofs are primarily supported by columns.

**1614.3 Frame structures.** Frame structures shall comply with the requirements of this section.

**1614.3.1 Concrete frame structures.** Frame structures constructed primarily of reinforced or prestressed concrete, either cast-in-place or precast, or a combination of these, shall conform to the requirements of ACI 318 Sections 7.13, 13.3.8.5, 13.3.8.6, 16.5 and 18.12.6, b18.12.7 and 18.12.8 as applicable. Where ACI 318 requires that nonprestressed reinforcing or prestressing steel pass through the region bounded by the longitudinal column

reinforcement, that reinforcing or prestressing steel shall have a minimum nominal tensile strength equal to 2/3 of the required one-way vertical strength of the connection of the floor or roof system to the column in each direction of beam or slab reinforcement passing through the column.

**Exception:** Where concrete slabs with continuous reinforcing having an area not less than 0.0015 times the concrete area in each of two orthogonal directions are present and are either monolithic with or equivalently bonded to beams, girders or columns, the longitudinal reinforcing or prestressing steel passing through the column reinforcement shall have a nominal tensile strength of 1/3 of the required one-way vertical strength of the connection of the floor or roof system to the column in each direction of beam or slab reinforcement passing through the column.

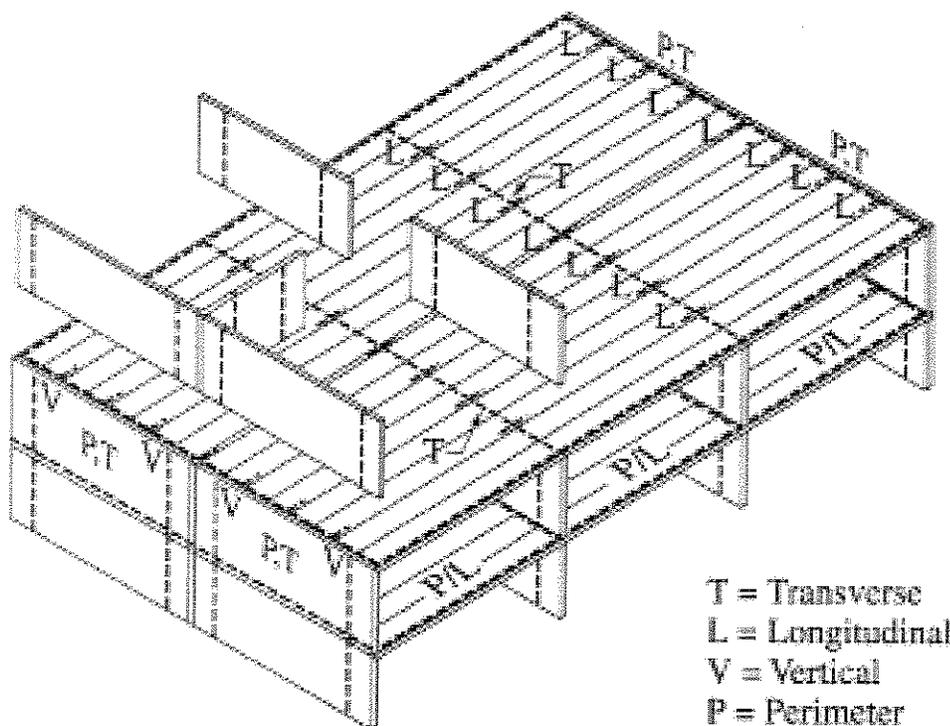
**1614.3.2 Structural steel, open web steel joist or joist girder, or composite steel and concrete frame structures.** Frame structures constructed with a structural steel frame or a frame composed of open web steel joists, joist girders with or without other structural steel elements or a frame composed of composite steel or composite steel joists and reinforced concrete elements shall conform to the requirements of this section.

**1614.3.2.1 Columns.** Each column splice shall have the minimum design strength in tension to transfer the design dead and live load tributary to the column between the splice and the splice or base immediately below.

**1614.3.2.2 Beams.** End connections of all beams and girders shall have a minimum nominal axial tensile strength equal to the required vertical shear strength for Allowable Strength Design (ASD) or 2/3 of the required shear strength for Load and Resistance Factor Design (LRFD) but not less than 10 kips (45 kN). For the purpose of this section, the shear force and the axial tensile force need not be considered to act simultaneously.

**Exception:** Where beams, girders, open web joist, and joist girders support a concrete slab or concrete slab on metal deck that is attached to the beam or girder with not less than 3/8 in. (9.5 mm) diameter headed shear studs, at a spacing of not more than 12 in. (305 mm) on center, averaged over the length of the member, or other attachment having equivalent shear strength, and the slab contains continuous distributed reinforcement in each of two orthogonal directions with an area not less than 0.0015 times the concrete area, the nominal axial tension strength of the end connection shall be permitted to be taken as half the required vertical shear strength for ASD or 1/3 of the required shear strength for LRFD, but not less than 10 kips (45 kN).

**1614.4 Bearing wall structures.** Bearing wall structures shall have vertical ties in all load bearing walls and longitudinal ties, transverse ties, and perimeter ties at each floor level in accordance with this section and as shown in Figure 1614.4.



T = Transverse  
 L = Longitudinal  
 V = Vertical  
 P = Perimeter

**FIGURE 1614.4**  
**LONGITUDINAL, PERIMETER, TRANSVERSE AND VERTICAL TIES**

**Reason:** Same as Parts IV, V and VI.

**Cost Impact:** Same as Parts IV, V and VI.

**PART III – IFC**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** The proposal was approved for consistency with the action taken on code change G16-07/08, Part III.

**Assembly Action:**

**None**

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## **G20-07/08**

### **303.1 (IFC 202)**

#### *Proposed Change as Submitted:*

**Proponent:** Don Lee, DLR Group, representing himself

#### **Revise as follows:**

**303.1 (IFC 202) (Supp) Assembly Group A.** Assembly Group A occupancy includes, among others, the use of a building or structure, or a portion thereof, for the gathering of persons for purposes such as civic, social or religious functions; recreation, food or drink consumption; or awaiting transportation.

#### **Exceptions:**

1. A building or tenant space used for assembly purposes with an occupant load of less than 50 persons shall be classified as a Group B occupancy.
2. A room or space used for assembly purposes with an occupant load of less than 50 persons and accessory to another occupancy shall be classified as a Group B occupancy or as part of that occupancy.
3. A room or space used for assembly purposes that is less than 750 square feet (70 m<sup>2</sup>) in area and accessory to another occupancy shall be classified as a Group B occupancy or as part of that occupancy.
4. ~~Assembly areas that are accessory to Group E occupancies are not considered separate occupancies~~  
~~except when applying the assembly occupancy requirements of Chapter 11.~~  
For the purpose of allowable area Assembly areas that are accessory to Group E occupancies are not considered separate occupancies. All other requirements of the code for the Assembly areas shall apply.
5. Accessory religious educational rooms and religious auditoriums with occupant loads of less than 100 are not considered separate occupancies.

**Reason:** This change is intended to clarify the intent of the accessory assembly areas within schools. The present changes made in the 2007 Supplement do address the concern but fall short in defining the other assembly requirements of the code. The 2007 Supplement does not address the assembly portions of Chapters 9 and 10 which need to be recognized.

**Cost Impact:** The code change proposal will not increase the cost of construction.

**Committee Action:**

**Disapproved**

**Committee Reason:** Some of the committee members preferred G21-07/08 to G20-07/08 as it was felt to more comprehensively deal with the issue. Other committee members felt that the provisions were currently working well and no change was necessary. There was also concern that such provisions were better placed in Chapter 5 if the focus was only supposed to be on allowing height and area allowances where Group E occupancies contained assembly spaces. Note that G21-07/08 was also disapproved.

**Assembly Action:**

**None**

#### *Individual Consideration Agenda*

**This item is on the agenda for individual consideration because a public comment was submitted.**

Public Comment:

Don Lee, DLR Group, representing himself requests Approval as Modified by this public comment.

Replace proposal as follows:

303.1 (IFC 202) (Supp) Assembly Group A. Assembly Group A occupancy includes, among others, the use of a building or structure, or a portion thereof, for the gathering of persons for purposes such as civic, social or religious functions; recreation, food or drink consumption; or awaiting transportation.

Exceptions:

1. A building or tenant space used for assembly purposes with an occupant load of less than 50 persons shall be classified as a Group B occupancy.
2. A room or space used for assembly purposes with an occupant load of less than 50 persons and accessory to another occupancy shall be classified as a Group B occupancy or as part of that occupancy.
3. A room or space used for assembly purposes that is less than 750 square feet (70 m<sup>2</sup>) in area and accessory to another occupancy shall be classified as a Group B occupancy or as part of that occupancy.
4. ~~Assembly areas that are accessory to Group E occupancies are not considered separate occupancies except when applying the assembly occupancy requirements of Chapter 11.~~ Assembly uses associated with Group E occupancies, which exceed 10% of the floor area of any story shall be considered as part of the Group E occupancy for the purpose of allowable height and area, provided all other code requirements applicable to assembly uses and occupancies are met.
5. Accessory religious educational rooms and religious auditoriums with occupant loads of less than 100 are not considered separate occupancies.

**Commenter's Reason:** This change is intended to clarify the intent of the assembly areas within schools. The present changes made in the 2007 Supplement do address the concern but fall short in defining the other assembly requirements of the code. The 2007 Supplement does not address the other use portions other than Chapters 11 which need to be recognized. At the hearings the committee disapproved the change but G20 and G21 were heard together and G21 was intended to delete this section. Discussion of the two proposals was confusing at best. In the 2006 code the provision was located in Chapter 5, Mixed occupancies, 508.3.1, Exception 2. In the 2007 Supplement the accessory use section was moved from the height and area section of Chapter 5 and moved to the occupancy chapter, Chapter 3. As a result the question of area is reduced to single occupancy and that classified as Group E. The move to Chapter 3 indicates this is a use and occupancy classification issue and not an allowable area concern. Table 508.3.3 supports this by grouping the A and E use groups together without any fire-resistance-rated separation requirement. The other code requirements for any use groups associated with the school naturally are to be met. The reason this exception starts at 10% is because at 10% or less, then the provisions for accessory occupancies in Section 508 clearly apply.

Final Action: AS AM AMPC \_\_\_\_\_ D

## G23-07/08, Part I

304.1, 202 (New) [IFC [B] 202 (New)], 421 (New)

### Proposed Change as Submitted:

**Proponent:** John Williams, State of Washington Department of Health, Construction Review Services, WA

### PART I – IBC GENERAL

#### 1. Revise as follows:

304.1 (IFC [B] 202) Business Group B. Business Group B occupancy includes, among others, the use of a building or structure, or a portion thereof, for office, professional or service-type transactions, including storage of records and accounts. Business occupancies shall include, but not be limited to, the following:

- Airport traffic control towers
- Ambulatory health care facilities (see section 421)
- Animal hospitals, kennels and pounds
- Banks
- Barber and beauty shops
- Car wash
- Civic administration
- Clinic—outpatient
- Dry cleaning and laundries: pick-up and delivery stations and self-service
- Educational occupancies for students above the 12th grade
- Electronic data processing
- Laboratories: testing and research
- Motor vehicle showrooms

organization to meet federal or state requirements and which follow the requirements of NFPA 101. Group I-5 occupancies shall comply with the provisions of this section and that of Group I-2 occupancy as required by this code. Where the code requirements create a conflict, the more restrictive code requirement shall apply.

Accredited health care facilities include:

**308.6.1 (IFC [B] 202) Group I-5.1 New health care.** A new occupancy used for the purpose of medical or other treatment or care of four or more persons where such occupants are mostly incapable of self-preservation due to age, physical or mental disability or because of security measures not under the occupant's control and following the provisions of NFPA 101, Chapter 18 as required by the accreditation organization.

**308.6.2 (IFC [B] 202) Group I-5.2 Existing health care.** An existing occupancy or portions thereof occupied as health care occupancies following the provisions of NFPA 101, Chapter 19 as required by the accreditation organization.

**308.6.3 (IFC [B] 202) Group I-5.3 New ambulatory health care.** A building or portion thereof used to provide services or treatment simultaneously to four or more patients that provides, on an outpatient basis, one or more of the following:

1. Treatment for patients that renders the patients incapable of taking action for the self-preservation under emergency conditions without action from others;
2. Anesthesia that renders a patient incapable of taking action for self-preservation under emergency conditions without action from others;
3. Emergency or urgent care for patients who, due to the nature of their illness or injuries, are incapable of taking action for self-preservation under emergency conditions, and follow the provisions of NFPA 101, Chapter 20 as required by the accreditation organization.

**308.6.4 (IFC [B] 202) Group I-5.4 Existing ambulatory health care occupancies.** Existing health care buildings or a portion thereof currently occupied as ambulatory health care occupancies following the provisions of NFPA 101, Chapter 21 as required by the accreditation organization.

**Reason:** The IBC provides no separate recognition for independent health care facilities which are required to meet the NFPA 101 life safety code to receive and maintain accreditation from a nationally recognized accreditation organization to meet federal and state requirements. Most health care facilities opt to be accredited by an independent agency, such as JAHCO, in order to be certified to treat patients covered by Medicare and Medicaid. Congress amended the social security act in 1965 to require that health care facilities be accredited by JAHCO. JAHCO uses the provisions of the life safety code as the basis of their accreditation.

**Cost impact:** This code change will not increase the cost of construction.

**Analysis:** It is unclear how this new occupancy classification will address code requirements such as heights and areas.

|                 |            |     |     |    |
|-----------------|------------|-----|-----|----|
| Public Hearing: | Committee: | AS  | AM  | D  |
|                 | Assembly:  | ASF | AMF | DF |

## G23-07/08

**304.1, 202 (New) [IFC [B] 202 (New)], 421 (New); IFC 903.2.2 (New) [IBC [F] 903.2.2 (New)], 907.2.2 (IBC [F] 907.2.2)**

**Proponent:** John Williams, State of Washington Department of Health, Construction Review Services, WA

**THESE PROPOSALS ARE ON THE AGENDA OF THE IBC GENERAL AND IFC CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.**

### PART I – IBC GENERAL

#### 1. Revise as follows:

**304.1 (IFC [B] 202) Business Group B.** Business Group B occupancy includes, among others, the use of a building or structure, or a portion thereof, for office, professional or service-type transactions, including storage of records and accounts. Business occupancies shall include, but not be limited to, the following:

- Airport traffic control towers
- Ambulatory health care facilities (see section 421)
- Animal hospitals, kennels and pounds

Banks  
 Barber and beauty shops  
 Car wash  
 Civic administration  
 Clinic—outpatient  
 Dry cleaning and laundries: pick-up and delivery stations and self-service  
 Educational occupancies for students above the 12th grade  
 Electronic data processing  
 Laboratories: testing and research  
 Motor vehicle showrooms  
 Post offices  
 Print shops  
 Professional services (architects, attorneys, dentists, physicians, engineers, etc.)  
 Radio and television stations  
 Telephone exchanges  
 Training and skill development not within a school or academic program

2. Add new definition as follows:

**SECTION 202 (IFC 202)  
 DEFINITIONS**

**AMBULATORY HEALTH CARE FACILITY.** Buildings or portions thereof used to provide medical, surgical, psychiatric, nursing or similar care on a less than 24-hour basis to individuals who are rendered incapable of self-preservation.

3. Add new text as follows:

**SECTION 421  
 AMBULATORY CARE FACILITIES**

**421.1 General.** Occupancies classified as Group B Ambulatory Health Care Facilities shall comply with the provisions of this section and other applicable provisions of this code.

**421.2 Smoke barriers.** Smoke barriers shall be provided to subdivide every ambulatory care facility greater than 10,000 square feet (929 m<sup>2</sup>) into a minimum of two smoke compartments. The travel distance from any point in a smoke compartment to a smoke barrier door shall not exceed 200 feet (60 960 mm). The smoke barrier shall be installed in accordance with Section 709.

**421.3 Refuge area.** At least 30 net square feet (2.8 m<sup>2</sup>) per nonambulatory patient shall be provided within the aggregate area of corridors, patient rooms, treatment rooms, lounge or dining areas and other low-hazard areas on each side of each smoke barrier.

**421.4 Independent egress.** A means of egress shall be provided from each smoke compartment created by smoke barriers without having to return through the smoke compartment from which means of egress originated.

**421.5 Automatic Sprinkler Systems.** Automatic sprinklers systems shall be provided for ambulatory care facilities in accordance with Section 903.2.2.

**421.6 Fire alarm systems.** A fire alarm system shall be provided in accordance with Section 907.2.2.

**PART II – IFC**

1. Add new text as follows:

**903.2.2 (IBC [F] 903.2.2) Group B ambulatory health care facilities.** An automatic sprinkler system shall be provided for Group B Ambulatory Health Care Facility occupancies when either of the following conditions are met:

1. Four or more care recipients are incapable of self preservation at any given time
2. One or more care recipients that are incapable of self preservation are located at other than the level of exit discharge.

(Renumber subsequent sections)

Post offices  
Print shops  
Professional services (architects, attorneys, dentists, physicians, engineers, etc.)  
Radio and television stations  
Telephone exchanges  
Training and skill development not within a school or academic program

2. Add new definition as follows:

**SECTION 202 (IFC 202)  
DEFINITIONS**

**AMBULATORY HEALTH CARE FACILITY.** Buildings or portions thereof used to provide medical, surgical, psychiatric, nursing or similar care on a less than 24-hour basis to individuals who are rendered incapable of self-preservation.

3. Add new text as follows:

**SECTION 421  
AMBULATORY CARE FACILITIES**

**421.1 General.** Occupancies classified as Group B Ambulatory Health Care Facilities shall comply with the provisions of this section and other applicable provisions of this code.

**421.2 Smoke barriers.** Smoke barriers shall be provided to subdivide every ambulatory care facility greater than 10,000 square feet (929 m<sup>2</sup>) into a minimum of two smoke compartments. The travel distance from any point in a smoke compartment to a smoke barrier door shall not exceed 200 feet (60 960 mm). The smoke barrier shall be installed in accordance with Section 709.

**421.3 Refuge area.** At least 30 net square feet (2.8 m<sup>2</sup>) per nonambulatory patient shall be provided within the aggregate area of corridors, patient rooms, treatment rooms, lounge or dining areas and other low-hazard areas on each side of each smoke barrier.

**421.4 Independent egress.** A means of egress shall be provided from each smoke compartment created by smoke barriers without having to return through the smoke compartment from which means of egress originated.

**421.5 Automatic Sprinkler Systems.** Automatic sprinklers systems shall be provided for ambulatory care facilities in accordance with Section 903.2.2.

**421.6 Fire alarm systems.** A fire alarm system shall be provided in accordance with Section 907.2.2.

**Reason:** This code change is intended to address the issue of ambulatory surgery centers. Thirty years ago, few surgical procedures were performed outside of the hospital. Today, complex outpatient surgeries outside of the hospital are commonplace. They are performed in facilities often called "day surgery centers" or "Ambulatory surgical centers (ASC's)" because patients are able to walk in and walk out the same day. Procedures render patients temporarily incapable of self-preservation by application of nerve blocks, sedation, or anesthesia. Patients in these facilities typically recover quickly.

The IBC identifies the healthcare Group I occupancies as having 24 hour stay. Without 24 stay these surgery centers are being classified as Group B. Essentially this allows you to render an unlimited number of people incapable of self preservation with no more protection than a business office. Since there is no distinct classification for ASC's in the I codes, the total number of these facilities cannot be quantified. These types of facilities contain distinctly different hazards to life and safety than other Business Occupancies, such as:

- Patients incapable of self-preservation require rescue by other occupants or fire personnel.
- Medical staff must stabilize the patient prior to evacuation; therefore, staff may require evacuation as well.
- Use of oxidizing medical gases such oxygen and nitrous oxide
- Prevalence of surgical fires.

Past changes have tried to force these occupancies into the Group I-2 category. This is a poor fit, because these are not hospitals. Other Federal and State jurisdictions have recognized that there is a middle ground somewhere in between Group B and I-2. This proposal provides a scaled approach to protection. Occupancy classification stays as group B. A fire alarm is required in all facilities for increased staff awareness. A sprinkler is required when several people are incapable of self preservation. In larger facilities, a smoke compartment is provided to allow more of a protect-in-place environment. These allow staff a safer environment to stabilize the patients before evacuation, and protection for fire personnel who may have to evacuate both patients and staff.

An ICC CTC study group was formed last year to examine these facilities and determine what if any changes to the code are necessary. Unfortunately, scheduling did not allow enough time for the study group to complete a proposal for a code change. Hundreds of these facilities are being built every year, and those are the ones that we know about. Please do not wait until 2012 to provide a safer environment for this very sensitive population of patients.

**Cost Impact:** The code change proposal will not increase the cost of construction.

**PART I – IBC GENERAL  
Committee Action:**

**Approved as Modified**

**Modify the proposal as follows:**

**304.1 (IFC [B] 202) Business Group B.** Business Group B occupancy includes, among others, the use of a building or structure, or a portion thereof, for office, professional or service-type transactions, including storage of records and accounts. Business occupancies shall include, but not be limited to, the following:

- Airport traffic control towers
- Ambulatory health care facilities (~~see section 421~~)
- Animal hospitals, kennels and pounds
- Banks
- Barber and beauty shops
- Car wash
- Civic administration
- Clinic—outpatient
- Dry cleaning and laundries: pick-up and delivery stations and self-service
- Educational occupancies for students above the 12th grade
- Electronic data processing
- Laboratories: testing and research
- Motor vehicle showrooms
- Post offices
- Print shops
- Professional services (architects, attorneys, dentists, physicians, engineers, etc.)
- Radio and television stations
- Telephone exchanges
- Training and skill development not within a school or academic program

**421.2 Smoke barriers.** Smoke barriers shall be provided to subdivide every ambulatory care facility greater than 10,000 square feet (929 m<sup>2</sup>) into a minimum of two smoke compartments per story. The travel distance from any point in a smoke compartment to a smoke barrier door shall not exceed 200 feet (60 960 mm). The smoke barrier shall be installed in accordance with Section 709.

(Portions of proposal not shown remain unchanged)

**Committee Reason:** The proposal was felt to comprehensively address the issue of surgery centers that are not classified as Group I occupancies but need increased regulation based upon the conditions of the people being treated at these facilities. There were two modifications made. The first was simply an editorial revision to remove an unnecessary reference in the occupancy classifications to the new Section 421. The second clarifies that each story needs to be divided into at least 2 smoke compartments. This addresses multiple story facilities. The committee also felt that an issue to be addressed during public comment would be the threshold number of patients that classify an occupancy as an ambulatory health care facility.

**Assembly Action:**

**None**

*Individual Consideration Agenda*

**This item is on the agenda for individual consideration because public comments were submitted.**

*Public Comment 1:*

**Lori Lee Graham, City of Portland, OR, representing herself requests Approval as Modified by this public comment for Part I.**

**Further modify proposal as follows:**

**421.2 Smoke barriers.** Smoke barriers shall be provided to subdivide every ambulatory care facility greater than 10,000 square feet (929 m<sup>2</sup>) into a minimum of two smoke compartments per story. The travel distance from any point in a smoke compartment to a smoke barrier door shall not exceed 200 feet (60 960 mm). The smoke barrier shall be installed in accordance with Section 709.

**Exception:** Smoke barriers are not required for stories provided with not less than 2 exterior exit doors where the exit discharge from the exit doors do not include any stairs.

(Portions of proposal not shown remain unchanged)

**Commenter's Reason:** : The intent of providing smoke compartments both positive and necessary where the care facility is located on an upper level and it is not possible to move patients off the floor quickly. However, at grade level, it seems reasonable to provide an exception to the compartment requirement in those cases where patients can be evacuated directly out of the building. In order to facilitate the swift evacuation from the building, it would be essential that such routes not contain stairs.

*Public Comment 2:*

**Paul K. Heilstedt, PE, FAIA, Chair, representing the ICC Code Technology Committee (CTC) requests Approval as Modified by this public comment for Part I.**

Further modify proposal as follows:

**SECTION 421  
AMBULATORY CARE FACILITIES**

**421.1 General.** Occupancies classified as Group B Ambulatory Health Care Facilities shall comply with the provisions of this section and other applicable provisions of this code by the services provided.

**421.2 Smoke barriers.** ~~Smoke barriers shall be provided to subdivide every ambulatory care facility greater than 10,000 square feet (929 m<sup>2</sup>) into a minimum of two smoke compartments per story. The travel distance from any point in a smoke compartment to a smoke barrier door shall not exceed 200 feet (60 960 mm). The smoke barrier shall be installed in accordance with Section 709.~~

**421.2 Separation.** Ambulatory Health Care Facilities where four or more care recipients are rendered incapable of self preservation at any given time shall be separated from adjacent spaces, corridors or tenants with a fire partition installed in accordance with Section 708.

**421.3 Smoke compartments.** Where the aggregate area of one or more Ambulatory Health Care Facility exceeds 10, 000 square feet on one story, the story shall be provided with a smoke barrier to subdivide the story into not less than two smoke compartments. The area of any one such smoke compartment shall not exceed 22,500 square feet (2092 m<sup>2</sup>). The travel distance from any point in a smoke compartment to a smoke barrier door shall not exceed 200 feet (60 960 mm). The smoke barrier shall be installed in accordance with Section 709 with the exception smoke barriers shall be continuous from outside wall to an outside wall, a floor to a floor, or from a smoke barrier to a smoke barrier or a combination thereof.

**421.3 421.4 Refuge area.** At least 30 15 net square feet (2.8 m<sup>2</sup>) per nonambulatory patient occupant shall be provided within the aggregate area of corridors, patient rooms, treatment rooms, lounge or dining areas and other low-hazard areas on each side of each smoke barrier. Each Ambulatory Health Care Facility shall be provided with access to the required refuge areas without passing through or utilizing adjacent tenant spaces.

**421.4 421.5 Independent egress.** A means of egress shall be provided from each smoke compartment created by smoke barriers without having to return through the smoke compartment from which means of egress originated.

**421.5 421.6 Automatic Sprinkler Systems.** Automatic sprinklers systems shall be provided for ambulatory care facilities in accordance with Section 903.2.2.

**421.6 421.7 Fire alarm systems.** A fire alarm system shall be provided for ambulatory health care facilities in accordance with Section 907.2.2.

**Commenter's Reason:** The CTC has thoroughly vetted this proposal through both a separate Study Group formed to review care facilities and then the full CTC. This public comment represents the collaborative efforts of a broad range of interested parties, including licensing agencies from several states and the proponents of similar code changes in this cycle. Changes include:

- Remove an unneeded reference to "Group B" whenever the term Ambulatory Health Care Facility(s) is used.
- Clarified the definition so that this change refers to those facilities that render patients incapable by the services provided.
- Added a fire partition separation from adjacent spaces in facilities with greater than 4 occupants.
- Modified the continuity requirements of a smoke barrier to reduce impact on adjacent tenants and building owners.
- Added 22,500 square foot limit to a smoke compartment, similar to I-2s.
- Changed the area of refuge from 30 per patient to 15 per occupant, to be consistent with the horizontal exit/area of refuge requirements for this type of facility in IBC Section 1022.4.
- For multiple tenant spaces, language is added to the area of refuge requirements which is consistent with Section 1014.2.1 to clarify that the area of refuge must be accessed without going through adjacent tenant spaces.

The overall change responds to developments within the modern healthcare delivery system. More and more people are being rendered incapable of self preservation in outpatient facilities, but do not receive care for more than 24 hours. Currently these facilities are classified as B occupancies, which could be unprotected construction without fire alarm or sprinklers. This proposals attempting to deal with this issue have been before the committee every single code cycle since the ICC's inception. The committees have sent a consistent message: these facilities do not belong in Group I, but may need more protections than Group B.

Both the original proposal and this change provide a scalable, measured approach to the risks. As the facilities get larger, either by number of people incapable or by area of facility, the protections increase. If one patient is incapable of self preservation, a fire alarm system is required. As the number of patients increase, or they move off of the level of exit discharge, fire sprinklers are required. Smoke compartmentation is required for larger facilities. These thresholds were designed to be consistent with other standards and federal regulations.

Code issues are assigned to the CTC by the ICC Board as "areas of study". Information on the CTC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the CTC effort can be downloaded from the following website: <http://www.iccsafe.org/cs/cc/ctc/index.html>. Since its inception in April/2005, the CTC has held fifteen meetings - all open to the public. This public comment is a result of the CTC's investigation of the area of study entitled "Care Facilities". The CTC web page for this area of study is: <http://www.iccsafe.org/cs/cc/ctc/care.html>

Final Action:      AS                      AM                      AMPC \_\_\_\_\_                      D

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## G23-07/08, Part II

IFC 903.2.2 (New) [IBC [F] 903.2.2 (New)], 907.2.2 (IBC [F] 907.2.2)

*Proposed Change as Submitted:*

**Proponent:** John Williams, State of Washington Department of Health, Construction Review Services, WA

### PART II – IFC

#### 1. Add new text as follows:

**903.2.2 (IBC [F] 903.2.2) Group B ambulatory health care facilities.** An automatic sprinkler system shall be provided for Group B Ambulatory Health Care Facility occupancies when either of the following conditions are met:

1. Four or more care recipients are incapable of self preservation at any given time
2. One or more care recipients that are incapable of self preservation are located at other than the level of exit discharge.

(Renumber subsequent sections)

#### 2. Revise as follows:

**907.2.2 (IBC [F] 907.2.2) (Supp) Group B.** A manual fire alarm system that activates the occupant notification system in accordance with Section 907.6 shall be installed in Group B occupancies where one of the following conditions exists:

1. The combined Group B occupant load of all floors is 500 or more.
2. The Group B occupant load is more than 100 persons above or below the lowest level of exit discharge.  
**Exception:** Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

A manual and automatic fire alarm system shall be installed in all Group B Ambulatory Health Care Facilities.

**Reason:** This code change is intended to address the issue of ambulatory surgery centers. Thirty years ago, few surgical procedures were performed outside of the hospital. Today, complex outpatient surgeries outside of the hospital are commonplace. They are performed in facilities often called "day surgery centers" or "Ambulatory surgical centers (ASC's)" because patients are able to walk in and walk out the same day. Procedures render patients temporarily incapable of self-preservation by application of nerve blocks, sedation, or anesthesia. Patients in these facilities typically recover quickly.

The IBC identifies the healthcare Group I occupancies as having 24 hour stay. Without 24 stay these surgery centers are being classified as Group B. Essentially this allows you to render an unlimited number of people incapable of self preservation with no more protection than a business office. Since there is no distinct classification for ASC's in the I codes, the total number of these facilities cannot be quantified. These types of facilities contain distinctly different hazards to life and safety than other Business Occupancies, such as:

- Patients incapable of self-preservation require rescue by other occupants or fire personnel.
- Medical staff must stabilize the patient prior to evacuation; therefore, staff may require evacuation as well.
- Use of oxidizing medical gases such oxygen and nitrous oxide
- Prevalence of surgical fires.

Past changes have tried to force these occupancies into the Group I-2 category. This is a poor fit, because these are not hospitals. Other Federal and State jurisdictions have recognized that there is a middle ground somewhere in between Group B and I-2. This proposal provides a scaled approach to protection. Occupancy classification stays as group B. A fire alarm is required in all facilities for increased staff awareness. A sprinkler is required when several people are incapable of self preservation. In larger facilities, a smoke compartment is provided to allow more of a protect in place environment. These allow staff a safer environment to stabilize the patients before evacuation, and protection for fire personnel who may have to evacuate both patients and staff.

An ICC CTC study group was formed last year to examine these facilities and determine what if any changes to the code are necessary. Unfortunately, scheduling did not allow enough time for the study group to complete a proposal for a code change. Hundreds of these facilities are being built every year, and those are the ones that we know about. Please do not wait until 2012 to provide a safer environment for this very sensitive population of patients.

**Cost Impact:** The code change proposal will not increase the cost of construction.

### PART II – IFC

#### Committee Action:

Approved as Modified

Modify the proposal as follows:

**903.2.2 (IBC [F] 903.2.2) Group B ambulatory health care facilities.** An automatic sprinkler system shall be provided for installed throughout all fire areas containing a Group B Ambulatory Health Care Facility occupancies when either of the following conditions are met exist at any given time:

1. Four or more care recipients are rendered incapable of self preservation at any given time
2. One or more care recipients that are incapable of self preservation are located at other than the level of exit discharge.

**907.2.2 (IBC [F] 907.2.2) (Supp) Group B.** A manual fire alarm system that activates the occupant notification system in accordance with Section 907.6 shall be installed in Group B occupancies where one of the following conditions exists:

1. The combined Group B occupant load of all floors is 500 or more.
2. The Group B occupant load is more than 100 persons above or below the lowest level of exit discharge.
3. Fire areas containing a Group B occupancy classified as an ambulatory health care facility

**Exception:** Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

A manual and automatic fire alarm system shall be installed in all Group B ambulatory health care facilities.

**907.2.2.2 (IBC [F] 907.2.2.2) Group B - Ambulatory health care facilities.** Fire areas containing ambulatory health care facilities shall be provided with an electrically supervised automatic smoke detection system installed within the ambulatory health care facility and in public use areas outside of tenant spaces, including public corridors and elevator lobbies.

**Exception:** Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 provided the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

**Committee Reason:** The committee agreed that the proponent's reason statement accurately and adequately substantiates the need for the change. This code change represents a co-operative effort of concerned parties through the ICC Code Technology Committee's Care Study Group to resolve a long-standing problem in how the code deals with the subject facilities. This also correlates with the action taken by the IBC-G Committee in Part I. The modification represents additional consensus on the level of protection that should be afforded these facilities.

**Assembly Action:**

None

### *Individual Consideration Agenda*

**This item is on the agenda for individual consideration because a public comment was submitted.**

*Public Comment:*

**Paul K. Heilstedt, PE, FAIA, Chair, representing the ICC Code Technology Committee (CTC) requests Approval as Modified by this public comment for Part II.**

Further modify proposal as follows:

**903.2.2 (IBC [F] 903.2.2) Ambulatory health care facilities.** An automatic sprinkler system shall be installed throughout all fire areas containing a Ambulatory Health Care Facility occupancies when either of the following conditions exist at any given time:

1. Four or more care recipients are rendered incapable of self preservation
2. One or more care recipients that are incapable of self preservation are located at other than the level of exit discharge.

(Portions of proposal not shown remain unchanged)

**Commenter's reason:** This public comment is submitted as an editorial comment to delete the term "occupancy" as the term "ambulatory care facility" is defined and to further coordinate item 1 of Section 903.2.2 with the approved definition.

The term "rendered" needs to be added in order to make it clear that the facility in question is the cause of and reason why the patient is incapable of self preservation.

Code issues are assigned to the CTC by the ICC Board as "areas of study". Information on the CTC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the CTC effort can be downloaded from the following website: <http://www.iccsafe.org/cs/cc/ctc/index.html>. Since its inception in April/2005, the CTC has held fifteen meetings - all open to the public. This public comment is a result of the CTC's investigation of the area of study entitled "Care Facilities". The CTC web page for this area of study is: <http://www.iccsafe.org/cs/cc/ctc/care.html>

Final Action: AS AM AMPC\_\_\_\_\_ D

## G25-07/08, Part II

306.2 (IFC [B] 202), 311.2 (IFC 202.1), 311.3 (IFC 202.1), 421.2.1(New), [F] 412.2.6 (IFC 914.8.2), Table [F] 421.2.6 (IFC Table 914.8.2) (New), [F] 412.2.6.1 (IFC 914.8.2.1) (New), [F] 412.2.6.2 (IFC 914.8.2.2) (New)

THIS CODE CHANGE WILL BE HEARD ON THE IFC PORTION OF THE HEARING ORDER.

NOTE: PART I DID NOT RECEIVE A PUBLIC COMMENT AND IS ON THE CONSENT AGENDA. PART I IS REPRODUCED FOR INFORMATIONAL PURPOSES ONLY FOLLOWING ALL OF PART II.

Proposed Change as Submitted:

Proponent: Tom Lariviere, Fire Department, Madison, MS, representing the Joint Fire Service Review Committee

### PART II – IFC

#### 1. Revise as follows:

[F] 412.2.6 (IFC 914.8.2) **Fire suppression.** Aircraft hangars shall be provided with a fire suppression system designed in accordance with as required by NFPA 409, based upon the classification for the hangar given in Table 412.2.6.

**Exception:** When a Fixed Base Operator has separate repair facilities on site, Group II hangars operated by a Fixed Base Operator used for storage of transient aircraft only, as defined in NFPA 409, storing private aircraft without major maintenance or overhaul are shall have a fire suppression system, but the system is exempt from foam suppression requirements.

#### 2. Add new table and text as follows:

[F] TABLE 412.2.6 (IFC TABLE 914.8.2)  
HANGAR FIRE SUPPRESSION REQUIREMENTS<sup>a,b</sup>

| Maximum Single Fire Area, sq. ft. (m <sup>2</sup> ) | TYPE OF CONSTRUCTION |           |           |           |           |           |           |           |           |
|---|----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|   | IA                   | IB        | IIA       | IIB       | IIIA      | IIIB      | IV        | VA        | VB        |
| >40,001 (3,716)                                     | Group I              | Group I   | Group I   | Group I   | Group I   | Group I   | Group I   | Group I   | Group I   |
| 40,000 (3,716)                                      | Group II             | Group II  | Group II  | Group II  | Group II  | Group II  | Group II  | Group II  | Group II  |
| 30,000 (2,787)                                      | Group III            | Group II  |
| 20,000 (1,858)                                      | Group III            | Group III | Group II  |
| 15,000 (1,394)                                      | Group III            | Group III | Group III | Group II  | Group III | Group II  | Group III | Group II  | Group II  |
| 12,000 (1,115)                                      | Group III            | Group III | Group III | Group III | Group III | Group III | Group III | Group II  | Group II  |
| 8,000 (743)   | Group III            | Group III | Group III | Group III | Group III | Group III | Group III | Group III | Group II  |
| 5,000 (465)   | Group III            | Group III | Group III | Group III | Group III | Group III | Group III | Group III | Group III |

- Aircraft hangars with a door height greater than 28 feet shall be provided with fire suppression for a Group I hangar regardless of maximum fire area.
- Groups shall be as classified in accordance with NFPA 409.

[F] 412.2.6.1 (IFC 914.8.2.1) **Hazardous Operations.** Any Group III aircraft hangar according to Table 914.8.2 that contains hazardous operations including, but not limited to, the following shall be provided with a Group I or Group II fire suppression system in accordance with NFPA 409 as applicable:

# F116-07/08, Part I

## Table 803.3

**NOTE: PART II DID NOT RECEIVE A PUBLIC COMMENT AND IS ON THE CONSENT AGENDA. PART II IS REPRODUCED FOR INFORMATIONAL PURPOSES ONLY FOLLOWING ALL OF PART I.**

*Proposed Change as Submitted:*

**Proponent:** Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee

### PART I – IFC

**Revise table as follows:**

**TABLE 803.3  
INTERIOR WALL AND CEILING FINISH REQUIREMENTS BY OCCUPANCY\***

| Group             | Sprinklered <sup>1</sup>                            |           |  | Nonsprinklered                                      |           |  |
|-------------------|---|-----------|--|---|-----------|--|
|                   | Exit enclosures and exit passageways <sup>a,b</sup> | Corridors | Rooms and enclosed spaces <sup>c</sup> | Exit enclosures and exit passageways <sup>a,b</sup> | Corridors | Rooms and enclosed spaces <sup>c</sup> |
| B, E, M, R-1, R-4 | B   | C         | C                                      | A   | B         | C                                      |
| <u>R-4</u>        | <u>B</u>  | <u>C</u>  | <u>C</u>                               | <u>A</u>  | <u>B</u>  | <u>B</u>                               |

(Portions of table and footnotes not shown remain unchanged)

**Reason:** Table 803.3 in the IFC governs wall and ceiling finish in existing buildings. Table 803.3 in the IBC governs wall and ceiling finish in new buildings.

The change that occurs in this proposal is to increase the flame spread rating from Class C to Class B in rooms and areas within Group R-4 occupancies. These occupancies house clients that in many cases need assistance to evacuate. The increased level of safety afforded by requiring a Class B rating will provide additional time for evacuation before the room is totally involved in fire.

This proposal is consistent with Federal regulations for board and care facilities.

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

### PART I – IFC

#### Committee Action:

2 

**Committee Reason:** The proposal was disapproved because the committee had several concerns with the proposal, including that federal licensing requirements should remain a choice, not an IFC mandate because the code cannot accommodate widely varying licensure requirements. Also, changing the class of interior finish for non-sprinklered Group R-4 in the proposal would be in conflict with the IBC interior finish requirements for new buildings. Applying the provisions to existing buildings would create an undue burden in requiring changes to existing interior finishes.

#### Assembly Action:

None

#### Individual Consideration Agenda

**This item is on the agenda for individual consideration because a public comment was submitted for Part I.**

#### Public Comment:

**Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee, requests Approval as Submitted.**

**Commenter's Reason:** This item was divided into two parts at the Hearing in Palm Springs. Part I was heard by the IFC Development Committee and Part II was heard by the IBC Fire Safety Committee, with the following outcome:

1. The IFC Development Committee disapproved Part I because it was felt that this requirement should be in the IBC.
2. The IBC Fire Safety Committee approved Part II as submitted. Therefore, it will be in the IBC.

This Public Comment is completing the process of correlating the IFC and IBC. The flame spread rating for interior finish in Group R-4 will be required to be Class B in the IBC. This Public Comment will correlate the IFC with the flame spread requirements in the IFC for existing structures. These occupancies house clients that in many cases need assistance to evacuate. The increased level of safety afforded by requiring a Class B rating will provide additional time for evacuation before the room is totally involved in fire.

Without the inclusion of this information in the IFC, a new facility could be constructed and completed. The IFC would not require that it be maintained to the same level of flame spread classification. The IBC contains this requirement, and it will eliminate confusion and frustration for the IFC to contain a consistent requirement.

Final Action: AS AM AMPC \_\_\_\_\_ D

**NOTE: PART II REPRODUCED FOR INFORMATIONAL PURPOSES ONLY – SEE ABOVE**

**F116-07/08, PART II – IBC FIRE SAFETY**

Revise table as follows:

**TABLE 803.9 (Supp)  
INTERIOR WALL AND CEILING FINISH REQUIREMENTS BY OCCUPANCY<sup>k</sup>**

| Group             | Sprinklered <sup>l</sup>                            |           |  | Nonsprinklered                                      |           |  |
|-------------------|---|-----------|--|---|-----------|--|
|                   | Exit enclosures and exit passageways <sup>a,b</sup> | Corridors | Rooms and enclosed spaces <sup>c</sup> | Exit enclosures and exit passageways <sup>a,b</sup> | Corridors | Rooms and enclosed spaces <sup>c</sup> |
| B, E, M, R-1, R-4 | B   | C         | C                                      | A   | B         | C                                      |
| R-4               | <u>B</u>  | <u>C</u>  | <u>C</u>                               | <u>A</u>  | <u>B</u>  | <u>B</u>                               |

(Portions of table and footnotes not shown remain unchanged)

**Reason:** Table 803.3 in the IFC governs wall and ceiling finish in existing buildings. Table 803.3 in the IBC governs wall and ceiling finish in new buildings.

The change that occurs in this proposal is to increase the flame spread rating from Class C to Class B in rooms and areas within Group R-4 occupancies. These occupancies house clients that in many cases need assistance to evacuate. The increased level of safety afforded by requiring a Class B rating will provide additional time for evacuation before the room is totally involved in fire.

This proposal is consistent with Federal regulations for board and care facilities.

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

**PART II – IBC FIRE SAFETY**

**Committee Action:**

**Approved as Submitted**

**Committee Reason:** The committee agreed that it was appropriate for the allowable flame spread index in Group R-4, interior wall and ceiling finishes, to be reduced in some instances. Occupants with Group R-4 in many cases need assistance to evacuate. The increased level of safety afforded by requiring a lower maximum flame spread index (Class B rating) provides additional time for evacuation of the structure.

**Assembly Action:**

**None**

**F117-07/08**

**803.5.1, 803.5.1.1; Chapter 45 (New)**

*Proposed Change as Submitted:*

**Proponent:** Marcelo M. Hirschler, GBH International

**1. Revise as follows:**

**803.5.1 (Supp) Textile wall coverings.** Textile wall coverings shall comply with one of the following:

1. The textile wall or ceiling coverings shall have a Class A flame spread index in accordance with ASTM E 84 or UL 723 and be protected by automatic sprinklers installed in accordance with Section 903.3.1.1 or 903.3.1.2. Test specimen preparation and mounting shall be in accordance with ASTM E 2404.
2. The textile wall covering shall meet the criteria of Section 803.5.1.1 or ~~803.5.1.2~~ when tested in the manner intended for use in accordance with NFPA 265 using the product-mounting system, including adhesive, of actual use, or
3. The textile wall or ceiling covering shall meet the criteria of Section 803.1.2.1 when tested in accordance with NFPA 286 using the product-mounting system, including adhesive, of actual use.

**Committee Reason:** The current definition should be retained. It has a long history of accommodating gypsum and other commonly recognized noncombustible materials and has not been shown to be a problem. This will also correlate with the disapproval action taken by the respective committees in Parts I, III, IV, V, VI and VII.

**Assembly Action:**

None

*Individual Consideration Agenda*

**This item is on the agenda for individual consideration because a public comment was submitted.**

*Public Comment:*

**Tony Crimi, A.C. Consulting Solutions, representing Southwest Research Institute requests Approved as Modified by this public comment for Part VII.**

**Modify proposal as follows:**

**SECTION 202  
DEFINITIONS**

**NONCOMBUSTIBLE MATERIAL.** A material that, ~~under the conditions anticipated,~~ will not ignite or burn when subjected to fire or heat. Materials that pass ASTM E 136 are considered noncombustible materials.

(Portions of proposal not shown remain unchanged.)

**Commenter's Reason:** The concept of "noncombustible materials" and "noncombustibility" in terms of types of construction is widely used throughout the International Codes. While the IRC, IMC, and IWUIC all contain definitions of the term, they are all different from each other. In contrast, the IBC, IFC, IEBC and IFGC do not contain a separate definition, even though they use the terminology "noncombustible materials". There is a need for a consistent definition of "noncombustible material" in all ICC codes that use the term.

In common usage, the term "noncombustible" is used to denote materials which do not ignite or are not capable of sustaining combustion. The common Dictionary definitions for "noncombustible" are typically as follows:

**Noncombustible, adj** – not capable of igniting and burning (*Webster's Third New International Dictionary of the English Language, Unabridged, 2007*)

In contrast to the common usage, the traditional use of the terminology and concept of "noncombustible materials" in the Codes has been based on acceptable performance when tested in accordance with ASTM E136, Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C. Materials passing the test are permitted limited flaming and other indications of combustion. However, these have traditionally been acceptable. Understandably, ASTM E136 does not replicate the full spectrum of actual building fire exposure conditions. However, this test method does provide an assessment indicating those materials which do not act to aid combustion or add appreciable heat to an ambient fire.

While each of the model I-Codes which reference the term "noncombustible" do have unique additional attributes, we are in agreement with the original proponent, that these are best addressed outside of the definition. For example, section 703.4 of the IBC does provide additional requirements and acceptance criteria which are specific to its own intent and contained in Sections 602.2, 602.3, and 602.4.

Final Action: AS AM AMPC\_\_\_ D

**FS6-07/08**

**202 (New) [IFC 202 (New)]**

*Proposed Change as Submitted:*

**Proponent:** Bill McHugh, Firestop Contractors International Association

**Add new definitions as follows:**

**SECTION 202 (IFC 202)  
DEFINITIONS**

**COMPARTMENTATION.** Fire, smoke or fire-and smoke-resistance-rated construction separation of adjacent spaces to safeguard against the spread of fire, smoke, or fire and smoke or other hazards within a building and the spread of fire to or from buildings.

**Reason:** Fire and smoke resistance rated construction is referred to as compartmentation. The concept of compartmentation uses fire, smoke and other resistance rated construction to form cubes in buildings to protect against fire, smoke and other spread, allow occupant egress, fire department entry, provide occupant and fire department havens of safety. Effective Compartmentation, when properly designed installed, inspected and maintained, saves lives.

Compartmentation is used in the code in 405.4, 715.4.7.3, 3410.6.3, and related tables. Compartmentation is the word used to describe fire and smoke resistance rated horizontal assemblies and fire and/or smoke barriers, with protected openings and penetrations for fire safety, means of egress and general safety. Compartmentation is not currently defined in any chapter of the International Building Code. The code must define key items used in construction, and that includes adding a definition for compartmentation into the building code. Since compartmentation is used in several chapters, the definition should be added to Chapter 2.

**Cost Impact:** The code change proposal will not increase the cost of construction.

**Committee Action:** **Disapproved**

**Committee Reason:** The committee indicated that the language within the proposed definition of "compartmentation" was confusing and therefore would be difficult to interpret and enforce. The confusing language includes "smoke-resistance-rated", "or other hazards" and "fire to and from buildings."

**Assembly Action:** **None**

*Individual Consideration Agenda*

**This item is on the agenda for individual consideration because a public comment was submitted.**

*Public Comment:*

**Bill McHugh, Firestop Contractors International Association requests Approval as Modified by this public comment.**

**Modify proposal as follows:**

**SECTION 202 (IFC 202)  
DEFINITIONS**

**202 (New) COMPARTMENTATION.** Fire ~~resistance-rated~~, smoke ~~resistant~~, or ~~both fire-resistance-rated~~ and smoke-~~resistant~~ ~~resistance-rated~~ construction separation of adjacent spaces to safeguard against the spread of fire, smoke, and or fire and smoke ~~or other hazards~~ within a building. ~~and the spread of fire to or from buildings.~~

**Commenter's Reason:** FCIA believes in the concept of Total Fire Protection, including Effective Compartmentation, Sprinklers, Detection & Alarm systems, as well as Occupant and Firefighter Education for fire and life safety.

FCIA listened to the very positive committee and assembly comments about this important definition in the International Family of Codes. We've modified the proposal to correct the language, and eliminated spread 'to or from buildings', as was commented in Palm Springs. Effective Compartmentation, whether fire-resistance-rated, smoke resistant, either or both, is an important concept in the code that is the overarching concept to fire-resistance. And, it's definition is nowhere in the codes, even though it is used in several places in Chapter 4, 5, and 34 to describe this important concept...Compartmentation.

Each Effective Compartmentation component or feature is discussed separately rather than as a system in the code. Compartmentation components include the fire barrier, smoke barrier wall, the fire resistance rated floor, firestopping, rolling and swinging fire doors, fire rated glazing, fire, smoke or combination fire/smoke dampers with the supporting fire resistance rated columns and beams. This code change seeks to unify and describe the concept into one place so it can be referred to as a fire protection strategy in the code.

Compartmentation, where it is left in the code, is an important concept to keep people safe in buildings as they remain in place, egress, or try to keep separate from fire and smoke threats. Whether it is during egress (stairwells, havens of safety, elevator lobbies and corridors), to keep entities safely separated (occupancy separations), or provide vertical migration protection and structural support, (fire resistance rated floors and supporting structure), compartmentation is equally important as Detection and Alarm Systems, Sprinklers and Occupant Education.

This new definition of "Compartmentation" brings the important concept of compartmentation into the building and fire codes as a system. We believe the modification reflects the feedback from the committee and assembly.

Final Action:      AS              AM              AMPC \_\_\_\_\_

**FS11-07/08  
703.6**

*Proposed Change as Submitted:*

**Proponent:** Lawrence G. Perry, AIA, representing Building Owners and Managers Association (BOMA) International

**Delete without substitution as follows:**

~~**703.6 (Supp) Marking and identification.** Fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions or any other wall required to have protected openings or penetrations shall be effectively and permanently identified with signs or stenciling. Such identification shall:~~



# International Code Council

## Report on Health Care Code Changes

### Code Change Cycle 2007-08

September 23, 2008

The 2007-08 Code Change Cycle contained a number of proposals that affected Health Care Facilities. Some of these proposals were applicable to new construction, and others were specifically targeted towards existing facilities. A general synopsis follows regarding what was approved and what changes will occur in the 2009 I-Codes:

- New Ambulatory Surgical Centers are specifically regulated as a subset of Group B occupancies. New provisions include smoke compartmentation, fire sprinkler system, fire alarm system, and established areas of refuge. (what was included is consistent with CMS regs, but additional provisions are still needed).
- Emergency eye wash and showers will be required in laboratories within I-2 – hospitals where chemicals are used. (consistent with CMS regs)
- Fire sprinkler systems will be required in all existing I-2 – hospitals. (consistent with CMS regs)
- Emergency lighting in I-2 – hospitals must operate for 90 minutes. (consistent with CMS regs)
- Patient room suites in existing Hospitals shall be provided with 2 exits. (consistent with CMS regs)
- Definition for Outpatient Clinics is revised to specifically reference patients that are incapable of self-preservation. (consistent with CMS regs)
- Patient room doors and bathroom/closet doors in R-4 – Assisted Living Facilities shall be unlockable by staff. (consistent with CMS regs)
- R-4 Occupancies must be sprinklered even when constructed under the IRC regulations. (consistent with CMS regs for congregate care and assisted living facilities)
- High flame spread ratings on floor coverings is prohibited in I-1 – Large Assisted Living Facilities. (consistent with CMS regs) Hospitals, nursing homes and mental hospitals are regulated as an I-2 when there is one patient or more. Previously the threshold was 5 patients or more. (more restrictive than CMS regs. CMS specifies 4 or more.)
- The fire separation between I-2 and other occupancies has been increased to 2-HR fire rating. (consistent with CMS regs)
- A reference standard has been included for design and installation of hyperbaric chambers located in I-2 – hospitals. (consistent with CMS regs)
- Allows horizontal sliding doors across the exit corridors in I-2 – hospitals. (consistent with CMS regs)

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 Virginia Department of Health  
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**From:** Rodgers, Emory [<mailto:Emory.Rodgers@dhcd.virginia.gov>]  
**Sent:** Wednesday, October 29, 2008 1:47 PM  
**To:** Knachel, Leslie (VDSS); Cullen, Karen (VDSS); Anderson, Leslie (DMHMRSAS); rleebr321@aol.com; Durrer, Chris (VDH); [pat.cummins@vda.virginia.gov](mailto:pat.cummins@vda.virginia.gov); [haynesy@rbha.org](mailto:haynesy@rbha.org); Nichols, Laura; [mjones4799@aol.com](mailto:mjones4799@aol.com); Beverley Soble; [sward@vhha.com](mailto:sward@vhha.com); [mtetterton@vahc.org](mailto:mtetterton@vahc.org); [John.Catlett@alexandriava.gov](mailto:John.Catlett@alexandriava.gov); [lynn.underwood@norfolk.gov](mailto:lynn.underwood@norfolk.gov)  
**Cc:** Altizer, Ed (VDFF); Hodge, Vernon (DHCD)  
**Subject:**

All: Some of you are aware that the International Code Council (ICC) produces the model codes used here in Virginia as the referenced codes and standards for our Virginia Uniform Statewide Building Code (USBC) that is used to construct and alter group homes referred to as R-4 occupancies, assisted living facilities referred to as I-1 occupancies and nursing homes referred to as I-2 occupancies. The ICC has a Code Technology Committee that is revamping all these occupancies to reflect the reality of how residents are assigned by the state licensure agencies, to address necessary construction and fire suppression, alarm and detection systems, to recognize that all residents cannot be placed into the most stringently built I-2 licensed facilities for economic and insurance cost reasons and to recognize that for some time I-1 and R-4 occupancy residents do have some moderate physical and mental capacity limits that was always in conflict with our USBC requirement that all residents in these I-1 and R-4 licensed facilities had to be capable of complete self-evacuation during emergencies without no help.

So for our 2009 USBC that will commence in March and April of 2009, we will concurrently undertake a similar review with the goal to reach consensus where Virginia could do technical amendments in our USBC along the lines being proposed for the 2012 ICC codes. We have a Virginian on the CTC, who is Ron Clements from Chesterfield County. This is not a new subject, but is one with some urgency to bring together all the stakeholders to discuss licensure rating systems for the placement of residents into these care facilities and then how building and fire codes need to be changes to ensure reasonable and appropriate building construction and fire system components. At the same time we need to visit fire drill requirements that are contained in our Statewide Fire Prevention Code (SFPC). Both matters overlap as the requirements for fire drills, both in terms of frequency, participation by the residents and staff are interdependent on the way a building is constructed and its life safety systems.

Here is the ICC website for the proposed new requirements referred to as Draft 5 for Care Facilities. <http://www.iccsafe.org/cs/cc/ctc/index.html>. They are 10 pages so take a look at them and feel free to contact me with comments/questions at 804.371.7151 or email [emory.rodgers@dhcd.virginia.gov](mailto:emory.rodgers@dhcd.virginia.gov). I will pass along to Ron Clements your comments.

DHCD will be sending out at the end of January, 2009 agendas for each of our planned four Work Groups. The licensed assisted living and care facilities will be part of Work Group 3 agenda items, as it would require a number of technical amendments to our USBC, that is scheduled to meet April 2, 2009 here at DHCD commencing at 9:30 in our 1<sup>st</sup> floor board room. The matter on fire drills covered by our SFPC will be part of the Work Group 2 agenda that is scheduled to meet March 19, 2009 here at DHCD same time and location.

State participation by the licensure agencies and the industry is critical to the development and then approval of sound and balanced code changes. It might also be a good idea for the ALF Advisory Committee to have a briefing session that I can work with DSS staff to do so in the 1<sup>st</sup> half of next year. The ICC CTC meets in November, January and February to finalize their code changes. There is also an ICC Joint Fire Service Review Code Committee developing proposals so that by the end of March, 2009 we can have a better idea of the scope and direction of these proposals for a briefing and to have our Work Groups also do their consensus building work.

Emory Rodgers  
Deputy Director  
Building and Fire Regulations  
Virginia Department of Housing and Community Development

accordance with Section 711 of the *International Building Code* or both, with not less than a one-hour fire-resistance rating. Openings shall be protected by smoke-actuated automatic-closing or self-closing fire doors with a 3/4-hour fire rating.

**Exception:** Where the building is protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3.

**2. Revise as follows:**

**703.1.2 Smoke barriers.** Required smoke barriers shall be maintained to prevent the passage of smoke and all openings protected with approved smoke barrier doors or smoke dampers. Construction elements designed to resist the passage of smoke shall be maintained to prevent the passage of smoke.

**Reason:** The incidental use areas identified in IBC 508.2 are portions of a building where there is an increased potential for fire. As a result of the increased hazard, these areas are required to be separated by either 1-HR fire rated construction or provided with sprinklers when in a new building. This proposal does not mandate compliance with requirements for new construction. For example, waste collection rooms, linen collection rooms, and paint shops are required to have 1-HR separation **and** sprinklers in new construction.

Group I occupancies have a higher life hazard than other occupancies, therefore, this proposal only addresses existing Group I occupancies. This proposal will require that the separation between the incidental use areas and the remainder of the building is constructed to resist the passage of smoke. Incidental use areas are frequently adjacent to, or have direct access, corridors. Providing construction to limit the spread of smoke will increase the integrity of the corridor during evacuation.

The "construction capable of resisting passage of smoke" is currently required in the IBC. This construction is by definition not a smoke barrier, and the IFC currently only requires maintenance of smoke barriers. Therefore, the revision to IFC 703.1.2 is added to include a maintenance requirement for the construction designed to resist the passage of smoke.

This proposal will correlate the IFC with Federal regulations for these facilities.

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

**Committee Action:**

**Disapproved**

**Committee Reason:** The proposal was disapproved because the committee felt that the proposal would create conflict with the IBC treatment of non-separated mixed uses. It was also judged to be more restrictive than the IBC, which would create a scoping conflict between the two codes. It was also unclear as to the meaning of the term "incidental accessory occupancies".

**Assembly Action:**

**None**

*Individual Consideration Agenda*

**This item is on the agenda for individual consideration because a public comment was submitted.**

*Public Comment:*

**Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee, requests Approval as Modified by this public comment.**

Modify proposal as follows:

**703.5 Incidental accessory occupancies in Group I-1, I-2 and R-4 Occupancies.** ~~Where located~~ In existing Group I-1, I-2 and R-4 occupancies, the incidental accessory occupancies listed in Table 508.2.5 (Supp) of the *International Building Code* shall be separated from the remainder of the building by a fire barrier constructed in accordance with Section 706 of the *International Building Code* or a horizontal assembly constructed in accordance with Section 711 of the *International Building Code* or both, with not less than a one-hour fire-resistance rating. Openings shall be protected by smoke-actuated automatic-closing or self-closing fire doors with a 3/4-hour fire rating.

**Exceptions:**

1. Where the building is protected by an automatic extinguishing system installed in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3.
2. Where only the incidental accessory occupancy is protected by an automatic extinguishing system, the separation between the incidental accessory occupancy and the remainder of the building shall be allowed to be of construction designed to resist the passage of smoke.

**703.1.2 Smoke barriers.** Required smoke barriers shall be maintained to prevent the passage of smoke and all openings protected with approved smoke barrier doors or smoke dampers.

**703.1.3 Construction designed to resist the passage of smoke.** Construction elements designed to resist the passage of smoke shall be maintained to prevent the passage of smoke.

**Commenter's Reason:** Incidental accessory occupancies identified in IBC Table 508.2.5 (2007 Supplement) are portions of a building where there is an increased potential for fire. As a result of the increased hazard, these areas are required to be separated by either 1-HR fire rated construction or provided with sprinklers when in a new building. And in some cases, the choice is not either rated construction or fire sprinklers. For example, waste collection rooms, linen collection rooms, and paint shops are required to have 1-HR separation **and** sprinklers in new construction. This Public Comment does not mandate compliance with requirements for new construction.

**DEPARTMENT OF LICENSES AND INSPECTIONS**

**REGULATIONS GOVERNING THE ERECTION,  
INSPECTION AND USE OF TOWER CRANES**

SECTION 1. The Regulations set forth under Section 9-1004 of The Philadelphia Code are hereby amended as follows:

TITLE 9. REGULATION OF BUSINESSES, TRADES AND PROFESSIONS

\* \* \*

CHAPTER 9-1000. TRADES

\* \* \*

§ 9-1004. Contractors.

\* \* \*

**§ 9-1004(R) Erection and Use of Tower Cranes.**

**1. Definitions.**

(a) ANSI: American National Standards Institute.

(b) ASME: American Society of Mechanical Engineers.

(c) Building owner: Any person, agent, firm or corporation having a legal or equitable interest in a property.

(d) Competent person: An individual who is capable of identifying existing and predictable hazards at the job site or is knowledgeable of policies and practices that affect working conditions which are unsanitary, hazardous or dangerous to employees, and who has authority to take prompt corrective measures to eliminate them.

(e) Construction manager: A person identified by a building owner to manage a construction project.

(f) Dedicated safety representative: A person who has expertise in the area of construction site safety and who will be responsible for worker and public safety in connection with tower crane erection and operation.

(g) Department: Department of Licenses and Inspections.

(h) NCCCO: National Commission for the Certification of Crane Operators.

(i) NCCA: National Commission for Certifying Agencies.

(j) Qualified person: An individual who has obtained a college degree or such other equivalent professional credential in an applicable field, or who by extensive knowledge, training and experience, has successfully demonstrated the ability to solve or resolve problems relating to the erection and operation of tower cranes.

(k) Tower crane: A structure used for lifting which utilizes a vertical mast or tower to support a load hook suspended from a work boom or jib which can rotate about the tower center to swing loads. The tower base may be fixed in one location or ballasted and moveable between locations.

## **2. Erection, Jumping, Lowering and Dismantling of Tower Cranes.**

(a) No person shall erect a tower crane unless:

(1) the tower crane owner has disclosed the following information to the construction manager and building owner:

(i) The age of the tower crane that will be used on the project;

(ii) Whether the tower crane manufacturer is currently in business;  
and

(iii) Whether the original equipment manufacturer's parts are available to repair major components of the tower crane should such repair become necessary;

(2) all rigging used in erecting, climbing (jumping), dismantling and hoisting operations has been inspected by a competent person upon arrival at the installation site and inspected by a qualified person prior to the commencement of the operation;

(3) the construction manager has submitted documentation including plans or drawings to the Department detailing how the tower crane will be supported and attached to the building. Such documentation shall be reviewed and sealed by a professional engineer registered in the Commonwealth of Pennsylvania with expertise in structural design; and

(4) the construction manager has submitted to the Department a valid Certificate of Insurance with a minimum of \$15,000,000.00 of General Comprehensive

Liability Insurance naming the City of Philadelphia as an additional insured and a certificate holder. Such certificate must be maintained in effect at all times the tower crane is located on the job site.

(b) No person shall erect, climb (jump), lower or dismantle a tower crane unless:

(1) a qualified person who is factory-trained and who is experienced with the specific crane being used is designated by the construction manager to supervise the operation;

(2) the supervisor has submitted a job hazard analysis for the operation to the construction manager;

(3) the construction manager has designated a dedicated safety representative that is present at the time of the operation;

(4) the supervisor has determined that each member of the crew designated to work on the operation has received a minimum of 30 hours of documented on-the-job or classroom training and, where necessary, is certified in accordance with subsection 3 below regarding individuals who are involved in any aspect related to the operation of the tower crane;

(5) the supervisor and the dedicated safety representative have convened a site-meeting with all members of the crew in order to ensure that each member understands his/her particular task(s) and the hazards associated with those tasks and the overall operation; and

(6) either:

(i) the supervisor ensures that site-specific procedures utilizing written instructions provided by the crane manufacturer are followed for the operation. Such written procedures shall be maintained on site with other documentation related to the project and made available for inspection by the Department upon request; or

(ii) A professional engineer registered in the Commonwealth of Pennsylvania who is familiar with the type of equipment involved and the procedures of the operation is present at the site, monitors the operation and provides advice to the supervisor regarding the engineering safety aspects of the operation.

### 3. Use of Tower Cranes.

(a) No contractor, construction manager or qualified person designated as the supervisor of an operation in which a tower crane is erected, climbed (jumped), lowered or dismantled shall:

(1) permit any individual to operate a tower crane, or an assist crane that is used to erect, climb (jump), or dismantle a tower crane, unless such individual has been certified by NCCCO, or another organization that is NCCA or ANSI accredited which has equivalent testing and certification requirements. Such programs, at a minimum, shall meet the requirements of the current edition of ASME B30;

Exception: An individual may operate a tower crane without the required certification, provided such operation is performed under the direct supervision of a crane operator that is certified for the type of crane being operated, and the individual is currently enrolled in an apprenticeship or training program that is approved by the Commonwealth of Pennsylvania.

(2) permit any individual to provide hand signals or verbal communications to a tower crane operator directing the operation of the tower crane unless such individual is certified by NCCCO, or another organization whose program is NCCA or ANSI accredited. Such programs, at a minimum, shall meet the requirements of the current edition of ASME B30.

Exception: An individual that has completed in-service training by an organization that is not NCCA or ANSI-accredited may continue to perform signaling duties until January 1, 2010, provided the individual can document that the training received was in accordance with the appropriate ASME B30 crane standard.

(3) permit an individual to perform rigging duties associated with the operation of the tower crane, unless such individual is certified by NCCCO, or another organization whose program is NCCA or ANSI-accredited. Such programs, at a minimum, shall meet the requirements of the current edition of the American National Standard Institute (ANSI) A10.42 standard related to the qualification of "Riggers."

Exception: An individual that has completed in-service training by an organization that is not NCCA or ANSI-accredited may continue to perform rigging duties until January 1, 2010, provided the individual can document that the training received was in accordance with the current edition of ANSI A10.42.

(b) No person shall be considered certified pursuant to the requirements of this subsection unless such person maintains his or her certification when performing the duties related to the certification in accordance with the requirements of the organization issuing the certification.

SECTION 2. The Regulations set forth under Subcode B (The Philadelphia Building Code) of Title 4 of The Philadelphia Code (The Philadelphia Building Construction and Occupancy Code) are hereby amended as follows:

TITLE 4. THE PHILADELPHIA BUILDING CONSTRUCTION AND OCCUPANCY  
CODE

\* \* \*

SUBCODE "B"  
(THE PHILADELPHIA BUILDING CODE)  
REGULATIONS

\* \* \*

**B-1704.13(R) Special Inspection of Tower Cranes and Similar Equipment:**

**1. Definitions.**

(a) Building owner: Any person, agent, firm or corporation having a legal or equitable interest in a property.

(b) Construction manager: The person identified by the building owner to manage the construction project

(c) Department: Department of Licenses and Inspections.

(d) NCCCO: National Commission for the Certification of Crane Operators.

(e) NCCA: National Commission for Certifying Agencies.

(f) Tower crane: A structure used for lifting which utilizes a vertical mast or tower to support a load hook suspended from a work boom or jib which can rotate about the tower center to swing loads. The tower base may be fixed in one location or ballasted and moveable between locations.

**2. Tower Crane Inspections.**

(a) Immediately following any of the following circumstances, a tower crane inspector who has been certified by the manufacturer for the crane to be erected, or who has

been certified by NCCCO or another organization accredited by NCCA and is knowledgeable of the manufacturer's operating and design specifications for the crane to be erected, shall conduct a thorough inspection of the tower crane covering all items as required by the Occupational Safety and Health Administration (OSHA):

- (1) The erection of a tower crane;
- (2) The climbing (jumping) or lowering of a tower crane; or
- (3) The expiration of any 180-day period following a previous inspection if the tower crane has not been raised or lowered in the intervening period.

(b) Until July 1, 2010, An individual who has been certified to inspect maritime cranes in accordance with OSHA Standard 29 CFR 1919, or who has a minimum of five (5) years of documented experience inspecting maritime cranes, may perform the inspections required in subsection (a).

(c) The construction manager shall submit to the Department documentation reflecting the performance and result of an inspection required by subsection (a) within 10 days of such inspection.

(d) The dedicated safety representative designated pursuant to the regulations promulgated under Code section 9-1004 shall periodically inspect all rigging and crane equipment while the crane remains on site. All unresolved defects and practices that affect the safe operation of the crane shall be reported to the construction manager, who in turn shall take immediate and appropriate action to suspend the use of the crane until all safety defects have been corrected.

SECTION 3. These regulations shall become effective immediately and shall expire at the earlier of December 31, 2008 or upon adoption by City Council of an ordinance governing the general subject matter of these regulations.

Key: New language is shown in underlined text.

ent:

it, U.S. Department of Housing and Urban Development (HUD), requests Approval as Modified  
Public comment for Part I.

Proposal as follows:

(IEBC 308.7) Alterations in Group I-1, I-2 and R, and in structures, facilities, or elements serving Groups I or R. Where four or more dwelling units or sleeping units intended to be occupied as a residence in Group I-1, I-2 and R occupancies are altered the entire structure altered building, facility or element shall comply with the applicable provisions of Section 1107. Additionally, where structures, facilities, or elements serving Groups I-1, I-2 and R occupancies are altered the altered entire structures, facilities or elements shall comply with Section 1107.

Exceptions:

1. Structures built for first occupancy before March 13, 1991 are not required to provide Type B units.
2. Type B units are not required to be provided where Type B dwelling units and sleeping units were not required at the time of first occupancy in structures designed and constructed after March 13, 1991.
3. Structures that are not required to provide Type B dwelling units and structures not serving Type B dwelling units in accordance with Section 1107 shall comply with Section 3409.6.
4. ~~Alterations limited to one individually owned dwelling unit or sleeping unit shall comply with Section 3409.6.~~

(Portions of the proposal not shown remain unchanged)

**Commenter's Reason:** HUD continues to believe that it is in the public interest to ensure that buildings with 4 or more dwelling units that are covered by the Fair Housing Act's design and construction requirements (that is, were built for first occupancy after March 13, 1991) but were not built in compliance with those requirements, are in fact brought into compliance. Therefore, HUD originally proposed that Chapter 34 of the IBC and corresponding provisions in the IEBC be modified to require buildings with four or more dwelling units that are being altered to be altered in a manner that brings the entire building into compliance. However, given the concerns raised by the MOE Committee, as well as a similar concern raised by the IEBC Committee: we are proposing changes to G214 to limit its scope to only the portions of the building that are being altered. While this change may result in HUD's not being able to recognize Chapter 34 of the IBC and corresponding provisions in the IEBC as being consistent with the design and construction requirements of the Fair Housing Act, we believe it will at least begin to incorporate Type B dwelling units and their related requirements into buildings that should have been built in compliance with the Fair Housing Act in the first place. It is our intention that the proposal apply only to buildings that were not built in compliance with the requirements of the Fair Housing Act and should have been built in compliance, therefore, this proposal would not apply to buildings built in compliance with those editions of the IBC that HUD has previously recognized as a safe harbor for compliance (i.e., the 2000 IBC as amended by the 2001 Supplement, the 2003 IBC and the 2006 IBC). If the code requires such buildings to come into compliance with the current edition of the code when altered, including accessibility requirements that may have changed from one edition to the next, we believe that is a standard code practice and that it should not insurmountable with respect to accessibility any more than it is with respect to all other code matters.

Final Action: AS AM AMPC      D

## G214-07/08, Part II

3409.1 (IEBC [B] 308.1), 3409.4 (IEBC [B] 308.4), 3409.4.1 (IEBC [B] 308.4.1), 3409.4.2 (IEBC [B] 308.4.2), 3409.5 (IEBC [B] 308.5), 3409.6 (IEBC [B] 308.6), 3409.7 (IEBC [B] 308.7) (New), 3409.8 (IEBC [B] 308.8), 3409.8.7 (IEBC [B] 308.8.7); IEBC 605.1, 605.1.8, 605.1.9 (New), 706.3, 912.8, 1005.1, 1005.2 (New)

THIS CODE CHANGE WILL BE HEARD ON THE IBC MEANS OF EGRESS PORTION OF THE HEARING ORDER.

Proposed Change as Submitted:



Proponent: Cheryl Kent, U.S. Department of Housing and Urban Development (HUD)

### PART II – IEBC

#### 1. Revise as follows:

**605.1 General.** A building, facility or element that is altered shall comply with the applicable provisions in Sections 605.1.1 through 605.1.12 ~~605.1.12~~ 605.1.13, Chapter 11 of the *International Building Code* and ICC A117.1 unless it is technically infeasible. Where compliance with this section is technically infeasible, the alteration shall provide access to the maximum extent that is technically feasible.

A building, facility or element that is constructed or altered to be accessible shall be maintained accessible during occupancy.

### Exceptions:

1. The altered element or space is not required to be on an accessible route unless required by Sections 605.1.9 or 605.2.
2. Accessible means of egress required by Chapter 10 of the *International Building Code* are not required to be provided in existing buildings and facilities.
3. ~~Type B dwelling or sleeping units required by Section 1107 of the *International Building Code* are not required to be provided in existing buildings and facilities.~~
4. 3. The alteration to Type A individually owned dwelling units within a Group R-2 occupancy shall meet the provisions for Type B dwelling units and shall comply with the applicable provisions in Chapter 11 of the *International Building Code* and ICC A117.1.

**605.1.8 (Supp) Accessible and Type A dwelling or sleeping units.** Where Group I-1, I-2, I-3, R-1, R-2, or R-4 dwelling or sleeping units are being altered, the requirements of Section 1107 of the *International Building Code* for Accessible or Type A units and Chapter 9 of the *International Building Code* for visible alarms apply only to the quantity of the spaces being altered.

### 2. Add new text as follows:

**605.1.9 Alterations in Group I and R, and in structures, facilities, or elements serving Groups I or R.** Where Group I-1, I-2 and R occupancies are altered the entire structure shall comply with the applicable provisions of Section 1107. Additionally, where structures, facilities, or elements serving Groups I-1, I-2 and R occupancies are altered they shall comply with Section 1107 of the *International Building Code*.

### Exceptions:

1. Structures built for first occupancy before March 13, 1991 are not required to provide Type B units.
2. Type B units are not required to be provided where Type B dwelling units and sleeping units were not required at the time of first occupancy in structures designed and constructed after March 13, 1991.
3. Structures that are not required to provide Type B dwelling units and structures not serving Type B dwelling units in accordance with Section 1107 of the *International Building Code* shall comply with Section 605.1.8.
4. Alterations limited to one individually owned dwelling unit or sleeping unit shall comply with Section 308.6.

(Renumber subsequent sections)

### 3. Revise as follows:

**605.2 Alterations affecting an area containing a primary function.** Where an alteration affects the accessibility to a, or contains an area of, primary function, the route to the primary function area shall be accessible. The accessible route to the primary function area shall include toilet facilities or drinking fountains serving the area of primary function.

### Exceptions:

1. The costs of providing the accessible route are not required to exceed 20 percent of the costs of the alterations affecting the area of primary function.
2. This provision does not apply to alterations limited solely to windows, hardware, operating controls, electrical outlets and signs.
3. This provision does not apply to alterations limited solely to mechanical systems, electrical systems, installation or alteration of fire protection systems and abatement of hazardous materials.
4. This provision does not apply to alterations undertaken for the primary purpose of increasing the accessibility of an existing building, facility or element.

**706.3 (Supp) Accessible and Type A dwelling units and sleeping units.** Where Group I-1, I-2, I-3, R-1, R-2, or R-4 dwelling units or sleeping units are being added, the requirements of Section 1107 of the *International Building Code* for accessible units or Type A units and Chapter 9 of the *International Building Code* for visible alarms apply only to the quantity of spaces being added.

**912.8 (Supp) Accessibility.** Existing buildings that undergo a change of group or occupancy classification shall comply with this section.

**Reason:** The current code does not set a maximum water temperature for bathtubs and showers. However, the American Society of Sanitary Engineering recommends a maximum mixed water temperature setting of 120°F (49°C).

According to the Consumer Products Safety Commission, "Each year, approximately 3,800 injuries and 34 deaths occur in the home due to scalding from excessively hot tap water. The majority of these injuries involve the elderly and children under the age of five. The U.S. Consumer Product Safety Commission (CPSC) urges all users to lower their water heaters to 120 degrees Fahrenheit. In addition to preventing injuries, this decrease in temperature will conserve energy and save money.

CPSC goes on to state "Most adults will suffer third-degree burns if exposed to 150 degree water for two seconds. Burns will also occur with a six-second exposure to 140 degree water or with a thirty second exposure to 130 degree water. Even if the temperature is 120 degrees, a five minute exposure could result in third-degree burns." See [www.cpsc.gov/CPSCPUB/PUBS/5098.pdf](http://www.cpsc.gov/CPSCPUB/PUBS/5098.pdf)

**Cost Impact:** The code change proposal will not increase the cost of construction. Because this proposal involves only an adjustment to the temperature settings for hot water in residences, it is not expected to result in new costs.

**Committee Action:** **Disapproved**

**Committee Reason:** Retroactive requirements for temperature limiting devices within dwelling units would become an enforcement and inspection issue for many jurisdictions with respect to budgeting and personnel constraints.

**Assembly Action:** **None**

### *Individual Consideration Agenda*

**This item is on the agenda for individual consideration because a public comment was submitted.**

#### *Public Comment:*

**Tom Neltner, National Center for Healthy Housing, representing National Center for Healthy Housing and Alliance for Healthy Homes, requests Approval as Modified by this public comment.**

#### **Modify proposal as follows:**

**505.4 Water heating facilities.** Water heating facilities shall be properly installed, maintained and capable of providing an adequate amount of water to be drawn at every required sink, lavatory, bathtub, shower and laundry facility at a temperature of not less than 110°F (43°C). A gas-burning water heater shall not be located in any bathroom, toilet room, bedroom or other occupied room normally kept closed, unless adequate combustion air is provided. An approved combination temperature and pressure-relief valve and relief valve discharge pipe shall be properly installed and maintained on water heaters. In dwelling units, the hot water supplied to tubs, whirlpool bathtubs, showers and tub-shower combinations shall be maintained at a maximum temperature of the water at the spout in a bathtub or shower shall not exceed 120°F (49°C) by a water temperature limiting device that conforms to either ASSE 1070 or ASSE 1016.

**Commenter's Reason:** The current version of the International Residential Code requires the use of water temperature limiting devices. Sections P2708.3 and P2713.3 of the International Residential Code require the use of a device that conforms to American Society of Safety Engineers (ASSE) 1070 or 1016 standards for tubs, whirlpool bathtubs, showers and tub-shower combinations as appropriate. The devices must limit water temperature to a maximum of 120°F (49°C).

The ASSE 1016 standard covers the delivery of water to individual fixtures that are adjusted and controlled by the user. The ASSE 1070 standard covers the control of maximum temperature to a fixture or group of fixtures. These standards allow the maximum temperature to be set at 120°F (49°C) at the bathtub or shower where scalding is most likely to cause injury and/or death.

According to the Consumer Products Safety Commission, "Each year, approximately 3,800 injuries and 34 deaths occur in the home due to scalding from excessively hot tap water. The majority of these injuries involve the elderly and children under the age of five. The U.S. Consumer Product Safety Commission (CPSC) urges all users to lower their water heaters to 120 degrees Fahrenheit."

CPSC goes on to state "Most adults will suffer third-degree burns if exposed to 150 degree water for two seconds. Burns will also occur with a six-second exposure to 140 degree water or with a thirty second exposure to 130 degree water. Even if the temperature is 120 degrees, a five minute exposure could result in third-degree burns." See [www.cpsc.gov/CPSCPUB/PUBS/5098.pdf](http://www.cpsc.gov/CPSCPUB/PUBS/5098.pdf)

In addition to preventing injuries, this decrease in temperature will conserve energy and save money.

This change is important because the current International Property Maintenance Code (IPMC) sets a minimum temperature of 110°F (43°C) but does not set a maximum temperature. Without the provision, local jurisdictions will not have the specific language they need from a model code to adopt the provision in their community.

Regarding the committee's concern that requiring these devices would put a burden on the jurisdiction with respect to enforcement and inspection, the jurisdiction has the option to select which provisions of the model IPMC to adopt. It could choose not to require the devices or require incorporation of the devices for certain types of housing. If the jurisdiction chooses to prevent the injuries to children and the elderly and conserve energy by limiting the maximum temperature, it needs the specific language in the model code.

In addition, in rental property the requirement would be self-implementing since most state landlord-tenant laws require compliance with housing and property maintenance codes as a condition of all residential leases.

Final Action:      AS              AM              AMPC\_\_\_\_              D

## PM16-07/08

604.3.1 (New), 604.3.1.1 (New), 604.3.2 (New), 604.3.2.1 (New)

*Proposed Change as Submitted:*

**Proponent:** Wayne R. Jewell, City of Southfield, representing Hazard Abatement in Existing Buildings Committee

**Add new text as follows:**

**604.3.1 Abatement of electrical hazards associated with water exposure.** The provisions of this section shall govern the repair and replacement of electrical systems and equipment that have been exposed to water.

**604.3.1.1 Electrical equipment.** Electrical distribution equipment, motor circuits, power equipment, transformers, wire, cable, flexible cords, wiring devices, ground fault circuit interrupters, surge protectors, luminaries, ballasts, motors and electronic control, signaling and communication equipment that have been exposed to water shall be replaced in accordance with the provisions of the *International Building Code*.

**Exception:** The following equipment shall be allowed to be repaired where an inspection report from the equipment manufacturer or approved manufacturer's representative indicates that the equipment has not sustained damage that requires replacement:

1. Enclosed switches, rated 600 Volts or less
2. Busway, rated 600 Volts or less
3. Panelboards, rated 600 Volts or less
4. Switchboards, rated 600 Volts or less
5. Fire pump controllers, rated 600 Volts or less
6. Manual and magnetic motor controllers
7. Motor control centers
8. Alternating current high-voltage circuit breakers
9. Low voltage power circuit breakers
10. Protective relays, meters, and current transformers
11. Low and medium voltage switchgear
12. Liquid-filled transformers
13. Cast-resin transformers
14. Wire or cable that is suitable for wet locations and whose ends have not been exposed to water.
15. Wire or cable, not containing fillers, that is suitable for wet locations and whose ends have not been exposed to water.
16. Luminaires that are listed as submersible
17. Motors
18. Electronic control, signaling and communication equipment

**604.3.2 Abatement of electrical hazards associated with fire exposure.** The provisions of this section shall govern the repair and replacement of electrical systems and equipment that have been exposed to fire.

**604.3.2.1 Electrical equipment.** Electrical switches, receptacles and fixtures, including furnace, water heating, security system and power distribution circuits, that have been exposed to fire shall be replaced in accordance with the provisions of the *International Building Code*.

**Exception:** Electrical switches, receptacles and fixtures that shall be allowed to be repaired where an inspection report from the equipment manufacturer or approved manufacturer's representative indicates that the equipment have not sustained damage that requires replacement.

**Reason:** The ICC Board approved the development of new code requirements in the I-Codes which address hazards, such as those from fire, as well as, the development of requirements relative to issues such as hazardous conditions due to structural issues. This would provide code requirements for all disciplines to be used by building owners to bring their existing building stock up to minimum standards and enforcing agencies when performing inspections of existing buildings. The Hazard Abatement of Existing Buildings Committee (HAEB) was formed to develop these requirements.

During this 07/08 cycle, the HAEB committee is proposing several unsafe conditions requirements for inclusion within the text of the existing International Codes, predominately the *International Property Maintenance Code* and the *International Fire Code*.

During the 06/07 cycle, the committee proposed this as an appendix in the International Fire Code. Based on comments received from the Code Committee as well as the membership, this committee has decided that these requirements would be better placed in the Property Maintenance Code. Also, the requirements have been consolidated as compared to the original proposal in 06/07 to facilitate enforcement.