

DHCD Work Group 4 2009 USBC International Residential Code

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

Welcome

Introductions

2009 Schedule: NOIRA, Public Hearings, Work Groups, Codes and Standards Committee, BHCD actions, public comment periods.

2009 USBC/IRC technical amendments:

1. USBC 202 Story above grade: Delete in IRC. Is there a consensus to delete and use IRC? **(no handout)**
2. USBC subsoil drains: Delete in IRC. Is there a consensus to delete and use IRC? **(no handout)**
3. USBC/R302.1 Exterior: Delete USBC as in IRC. Is there a consensus to delete and use IRC? **(page 50)**
4. USBC R302.1 and table: Henrico townhomes with porches and rating required discuss to see if changes necessary in USBC and at ICC IRC. In this matter homes were sprinkled based on local proffers. **(page 8)**
5. USBC/R310.1 Emergency openings: USBC amend to match IRC, but likely need to keep amended USBC due to sprinkler exception. Is there a consensus to amend USBC and move forward? **(no handout)**
6. USBC/R317 Two family dwellings: Review dependent on sprinkler issue and could be the example and basis for incentives as option for sprinklers in Exceptions 1 and 2. Amend 13 to 13D? Why would you do 13 for IRC 2 family building? Need to clarify that one hour is okay or not for lot line? Is there a consensus to retain or amend? **(page 49)**
7. USBC R326, 327, 328 Appendices G, H, K: Retain in 2009 USBC. Entrapment standard approved for pools. IRC AG106.1 and G24441: Standard for pool entrapment. Is there a consensus to move forward as further improvement over the 2006 CSPC retrofit? How will this be implemented? Is there a consensus to require retrofitting of existing pools? Swimming pool barrier covers: AG105.5 amend to allow as does the IBC 3109.4. Above-grade pools and issues with 4 foot barrier requirements being met by the pool side wall? **(page 9)**
8. USBC T404: Delete in IRC. Is there a consensus to delete? **(no handout)**

9. USBC 401.1 Exception: Keep in 2009 USBC? Is there a consensus to keep?
(no handout)
10. USBC 401.3: Chesterfield - first sentence used to drain entire lot versus protecting foundation that is what section covers. Needs clarification? Code change submitted from the builder. Is there a consensus to amend or retain as is this section? **(page 11)**
11. IRC 401.4, 403.1.8.1 items 1-4: See PWC policy as basis for ICC and USBC code change where plasticity is 20 or less. Discussion only. **(page 18)**
12. USBC R502.2.2.1 Deck Ledger: Delete in IRC. Is there a consensus to delete?
(no handout)
13. USBC 602.10 Wall bracing: Delete in IRC. Are there parts to retain? Is there a consensus to delete or amend to retain some sections? **(page 19)**
14. USBC R613.2 Window sills: Retain or amend per IRC? Increased sill height from 24 inches to 36 inches and our USBC 18 inches, but provided several exceptions to consider? Is there a consensus to retain, amend or delete? **(page 21)**
15. USBC P3202 Sub-drain: Delete in IRC-P. Is there a consensus to delete?
(no handout)
16. USBC P3007: Delete in IRC. Is there a consensus to delete? **(no handout)**
17. USBC P2903.5 Water hammer: Retain. Denied at ICC again. Is there a consensus to retain? **(no handout)**
18. USBC P3002.2.1 Tracer wire: Coordinate with IPC to fix glitch in version used. Is there a consensus to amend IPC and IRC versions to match? **(no handout)**
19. USBC G2411.1 CSST: Is there a consensus to retain, amend or delete? **(no handout)**
20. USBC M1801.1.1: Delete? Is there a consensus to delete or retain? **(no handout)**
21. USBC G2425.1: Deal with inspections and should they be relocated into USBC , inspection section? Discussion only. **(no handout)**
22. USBC R506.2.1 and 506.2.2 Slag: Delete or retain? Covered by standards. Is there a consensus to delete or retain? **(no handout)**
23. IRC 313.1: New that where security alarm/combo smoke alarm systems are installed to comply with IRC smoke alarm requirements the system shall be supervised. The proponent's intent in testimony was making the owner responsible to then maintain the system and the fire official could do a NOV if they didn't where reported by the alarm company for bill not being paid so system would be shut down

thereby having no operable smoke alarms required by the IRC. How will this work in USBC/SFPC? SFPC no periodic inspections for IRC? Should USBC and SFPC code officials be involved between contractual matters? Is there a consensus to delete, amend or forward? Need to review USBC administrative section 103.5 with IRC mandate that existing homes would get smoke detectors whenever a permit is issued. Currently, state law allows localities to do by local ordinances and IRC retrofit provisions not enforceable under the USBC. **(page 23)**

24. IRC 602.10: Eastern shore building official and one builder would like to see a prescriptive wall bracing method instead of requirement for engineered plans that are costly for that rural area. Cite history of wind events, protection of barrier islands and using continuous sheathing/OSB as more than sufficient unless you have wall of glazing. Discussion only. May see code change? Legislator asked for DHCD to put on table for the builder and let regulatory process consider it first. **(page 25)**
25. IRC M2005.2 Water heaters: Cannot put in storage closets. AGA wanted to allow if met space and ventilation rates? VBCOA/VPMIA opposed. Is it clear what constitutes a storage closet? Open basement, most often used for storage, and then permit for recreation space. A water heater and furnace in a mechanical room meeting size and make-up air but is also used for storage of all sorts of things such as Christmas/seasonal decorations, furniture, clothes, etc. Is this a storage closet? Discussion only. **(no handout)**
26. IRC N1101.7, N1101.8 and in IECC duct testing and air barrier testing and special inspections: Should USBC delete N1101.7 Above code and 1101.8 certificate with R and U values? Both are USBC administrative matters as modification function for “above code” and “certificate” could be under final inspection of permits and CO? Is there a consensus to retain or amend/delete? Note as energy changes being discussed in Work Group 1. **(no handout)**
27. IRC E210 and 220 Arc-fault devices: 2008 NEC requires all dwelling units’ circuits to be on arc-fault protection where now only bedrooms are required. Ten states have adopted the measure. Cost to install these breakers in the 100amp service panel is 200-300 dollars more than standard breakers. Proponents cite 400-500 deaths per year so some of these would be saved down the road from nearly 2,400 lives lost from fires in IRC dwelling units. Is there a consensus to move forward, amend to leave for bedrooms or delete? Also, required child protective covers which have the higher cost. How often do these covers need to be replaced? **(page 30)**
28. IRC 313 Smoke Alarms: Need only be listed and can use photoelectric or ionization types. Both can be effective in proper location was conclusion of a FEMA report. One is better for smoldering fires while other for flaming fires. Several deaths reported nationwide where one or other failed but don’t have full details. Should this be ICC issue first? Should one be required over the other? Discussion only. **(no handout)**

29. IRC 313.1.1, 313.1.2 CO alarms: New requirement for CO alarms in IRC with fuel-fired appliances only not in IBC as no code change was up for a vote. Would it include electric house with fireplaces? Would be located in 'sleeping areas near bedrooms? So can one work if bedrooms on one floor? If bedrooms are on other floors, would you need one on each floor? Would you need more than one CO alarm if bedrooms are on the same floor but two bedrooms are down the hall and a master bedroom at the other end? Would you use the manufacturer's instructions to determine how many you need? Proponents were asked and felt you would need more than one per floor. Is the IRC code change concise and clear requirement for the prescriptive IRC? Is there a consensus to move forward, amend, delete? Also, requires existing CO alarms whenever a permit is issued. Need to delete in USBC? Is there a consensus to delete? **(page 36)**
30. USBC/MHSR: Review what is under Work Group 2 on clarifying duties and what regulations are enforced more clearly and will be part of specialized training for installers and inspectors. **(page 38)**
31. Loudoun fire official asked about prohibiting new GP truss system. Wouldn't be able to do so unless deemed not structurally safe. Lightweight framing issue. **(page 52)**
32. Gray water and rainwater harvesting discussion and moving appendix into the IRC? **(no handout)**
33. IRC chapter 11 differences between IRC and IECC? **(no handout)**
34. Other IRC changes that should be reviewed? **(no handout)**

Sprinkler discussion: this will be held at the April 9th meeting but then carried over for decision on consensus at the May 13th: (page 40)

IRC 313.1, R313.2 Sprinklers: Mandated January 1, 2011 for 13D or prescriptive IPC tables. No incentives except for townhomes from two hours to one hour fire wall. What to do with duplexes - one hour or two hours? Proponents withdrew code change for incentives and optional, saying that would be a matter for local and state adoptions. What to do with MHSR for manufactured homes? Fire coalition, DHCD and DPOR agreed that now plumbers can do limited systems, 20 heads or less off domestic water supply. Should they be able to do if more than 20 heads using prescriptive and 13D has to be sprinkler contractor? Cost \$1.61 to \$3.00 or more such as in rural areas? Hook-up fees can be zero or several thousand dollars. Is there a consensus to move forward, amend or delete?

Staff will delete January 2011 date from the code change as the BHCD needs to set that date not the ICC/IRC. IRC 313 Sprinklers options: do as in IRC; do incentive based mandate or as an option where installed; could consider incentives for emergency egress (in USBC), smoke alarms not in bedrooms, glazing allowed 3-5 feet, IFC appendices less fire flow, fewer fire hydrants or reduced widths for fire access roads that are done today

in localities by proffers or local fire codes. Could mandate for only townhomes with or without incentives. Could do a limited area sprinkler option for say 20 heads or less in areas where majority of fire start such as kitchens, bedrooms and family rooms. In smaller homes under 2,000 feet, 20 heads might be all that is necessary.

Passive option might be allowed as exception to mandated sprinklers. So with arc-fault devices, CO alarms, new fire proof cigarettes, require walls and floor ceiling systems to be 5/8th Type X sheetrock, door closers at garage and bedroom doors, rated garage and bedroom doors of ¾ hour as some non-sprinkled options?

Virginia fire data and national data: Last eight years, VDFP shows averages 38 deaths per year and two firefighter deaths with most in 35 jurisdictions. Smoke detectors 63% and sprinklers 69% effective and together 83% for life safety. One jurisdiction, Fairfax, had 24 deaths or average three per year so would new arc fault devices or fire proof cigarettes at some future date alone reduce deaths by one or two as smoking and electrical are in the top five causes? Would mandating, not allowing local option, to install smoke detectors save lives? Need to look at the 35 communities for more details such as where did they occur, what was the age of homes, where there elderly living alone and other human factors. Cooking fires were either the first or second leading cause and fires mostly occurred from 4:00 p.m. to 1:00 a.m.

Work Group 4's next meeting will be May 13, 2009 at 9:30 a.m. at DHCD, 501 North 2nd Street, Richmond, VA in the 1st 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, 1st 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, 1st 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), 1st 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 16th or December 21st, 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 18th or 25th, 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 - 1st 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 1st 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, 1st floor.

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

November 16th or December 21st, 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 18th or 25th, 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

From: Rodgers, Emory
Sent: Wednesday, December 10, 2008 5:02 PM
To: Wallace, Clinton; Eubank, Paula; Hodge, Vernon; Brock, Larry
Cc: Robertson, Roger
Subject: FW: Minimum Fire Separation Distance - Townhouses

Before sending input. Roger your thoughts?

From: Jason Gill [mailto:JGill@ecfp.com]
Sent: Wednesday, December 10, 2008 4:42 PM
To: Rodgers, Emory
Cc: Mike Hayes; Scott McGehee; koleary@jdlaw.com; Bob Caputo
Subject: Minimum Fire Separation Distance - Townhouses

Mr. Rodgers,

Thank you for taking the time to speak with me this afternoon regarding the above. After our conversation, I spoke with Bolman Bowles, Deputy Building Official for Henrico County and informed him that you share our opinion that the porches for the townhouses in question do not require sprinkler protection or any other provisions other than the one-hour fire-resistive construction on the underside of the porches as prescribed in the VA amendments to the IRC, section R302.1. He has requested that you confirm your opinion in writing so that they may consider this during the review of the code modification request that we plan to submit.

To confirm the specifics, below is a list of the facts:

- 1) Townhouses are built in accordance with IRC, 2003
- 2) Sprinklers were provided in the townhouses in accordance with NFPA 13D, 1999 ed.
- 3) Sprinklers were proffered in the planning of the townhouses, but no "trade-offs" were taken.
- 4) All townhouses have smoke detectors that tie into a common local alarm for the entire complex.
- 5) The porches in question are built basically directly to the lot line, leaving little to no fire separation.
- 6) A one-hour ceiling was installed in the porches.
- 7) The townhouses are "Zero Lot Line" townhouses with a rated separation wall.
- 8) The porches are open on three sides.
- 9) The porches are attached to the building using a ledger beam, bolted to the exterior wall. The porches do not share common floor joists/framing with the interior of the townhouse.

Per our conversation, you agreed with me that it is not the intent of ICC or VA DHDC to require any further protection from what has been provided. Since the porches are "projections" extending from an unrated wall, perpendicular to the line used to determine the fire separation distance, no additional protection is required.

We agreed that we have provided a much higher level of protection for these townhouses than prescribed by IRC and the VA amendments by installing sprinklers and a common local alarm. Essentially the base concern is that a fire originating within one townhouse may spread to an adjacent townhouse using the porches as a conduit. Since we have provided sprinkler protection inside the buildings, the exposing risk has been greatly reduced.

I understand that your confirmation would not be considered a formal interpretation or ruling from your Agency. I am not sure if policy even allows you to confirm our conversation. We are just working diligently toward an amiable resolution to allow the future owners to close on several of these townhouses by the end of the week. Your confirmation of our conversation may help expedite approval of the code modification request.

Thank you again for your time. If any of the above is incorrect, please let me know.

Respectfully,

Public Comment:

Rebecca C. Quinn, CFM, RCQuinn Consulting, Inc., representing the Department of Homeland Security/Federal Emergency Management Agency, requests Approval as Modified by this Public Comment.

Modify proposal as follows:

AG101.2.2 Pools located where floodways have not been designated. Where pools are located where design flood elevations are specified but floodways have not been designated, the applicant shall provide a floodway analysis that demonstrates that the proposed pool documentation shall be submitted to the building official, which demonstrates that the cumulative effect of the proposed pool, when combined with all other existing and anticipated flood hazard area encroachment, will not increase the design flood elevation more than 1 foot (305 mm) at any point within the jurisdiction.

(Portions of proposal not shown remain unchanged)

Commenter's Reason: It is accurate that pools can be built to avoid blocking floodwater, and the exception in AG101.2 allows pools to be installed outside of designated floodways without further consideration of impacts because such impacts have already been accounted for in the floodway analyses. However a small percentage of floodplains where FEMA has specified Base Flood Elevations do not have designated floodways.

Pools, especially above-ground pools and pools that involve fill, can block floodwater and cause waters to rise higher if they are placed in areas with effective flow (effective flow areas the areas that pass the greatest volumes of water, typically with higher velocities). The requirement to consider the impacts of development on flood heights where floodways have not been designated is consistent with the National Flood Insurance Program, the IRC R324.1.3.2, and the IBC.

This proposal as modified by this public comment replaces the phrase considered to be vague with a statement that a floodway analysis is required to determine impacts. Floodway analyses have been performed for decades. Commercial software packages for these analyses are readily available and FEMA provides software and technical guidance at www.fema.gov/plan/prevent/fhm/frm_soft.shtm#1.

The scoping statement of Appendix G, AG101.1, establishes which pools are required to comply with the provisions of the appendix. This code change does not alter which pools are regulated and which are unregulated.

Final Action: AS AM AMPC___ D

RB222-07/08
AG103.3 (New), AG108.1 (New)

Proposed Change as Submitted:

Proponent: Rebecca C. Quinn, RC Quinn Consulting, Inc., representing the US Department of Homeland Security, Federal Emergency Management Agency

Add new text as follows:

AG103.3 Pools in flood hazard areas. In flood hazard areas established by Table R301.2(1), pools in coastal high hazard areas shall be designed and constructed in conformance with ASCE 24.

Add standard to Section AG108 as follows:

ASCE
24-05 Flood Resistant Design and Construction

Reason: The purpose of this code change proposal is to address installation of swimming pools in or on the lot of a one- or two-family dwelling if the location of the proposed swimming pool is in a coastal high hazard areas (V Zone). Coastal high hazard areas are areas where wave heights are predicted to exceed 3 feet during the base flood. Breaking waves impart dynamic loads on structures, including above-ground pools and in-ground pools in soils that are subject to scour and erosion. ASCE 24 specifies that pools are to be designed to withstand flood-related loads and load combinations. If pools are structurally connected to buildings, the pools are to be designed to function as a continuation of the building (see R324.3.3). The regulations of the National Flood Insurance Program require that all development be designed and adequately anchored to prevent flotation, collapse, or lateral movement resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy (44 C.F.R. 60.3(a)(3)(i)). This code change does not alter the scope of Appendix G.

Cost Impact: The code change proposal will not increase the cost of construction (more than 20,000 local jurisdictions already participate in the NFIP).

Analysis: Review of proposed new standard ASCE 24-05 indicated that, in the opinion of ICC Staff, the standard did comply with ICC standards criteria.

Committee Action:

Disapproved

Committee Reason: This proposal does not differentiate between a regulated and unregulated pool. All pools would have to comply with ASCE 24, including the portable pools.

Assembly Action:

None

Individual Consideration Agenda

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

Public Comment:

Rebecca C. Quinn, CFM, RCQuinn Consulting, Inc., representing the Department of Homeland Security/Federal Emergency Management Agency, requests Approval as Submitted.

Commenter's Reason: The scoping statement of Appendix G, AG101.1, differentiates between those pools subject to the requirements of Appendix G and those that are not. Therefore, it is not necessary for every provision in the Appendix to distinguish between those pools that are regulated and those that are not regulated by Appendix G. This code change does not require all pools coastal high hazard areas (V Zones) to comply with ASCE 24; it applies only to those pools that are subject to the requirements of the Appendix.

Coastal high hazard areas (V Zones) are areas where wave heights are predicted to exceed 3 feet during the base flood. Breaking waves impart dynamic loads on structures, including above-ground pools and in-ground pools in soils that are subject to scour and erosion. ASCE 24 specifies that pools are to be designed to withstand flood-related loads and load combinations. If pools are structurally connected to buildings, the existing text at R324.3.3 requires the pools to be designed to function as a continuation of the building. For dwellings in V Zones, note that in the 2007 cycle the IRC was modified to permit use of ASCE 24 as an alternative to the V Zone requirements of R324.3.

Final Action: AS AM AMPC ____ D

RB227-07/08, Part I

AG 106.1, AG106.2, AG106.3, AG106.4, AG106.4.1, AG106.4.2, AG106.4.3, AG106.4.4, AG106.4.5, AG106.5, AG106.6, AG 108;

Proposed Change as Submitted:

Proponent: Lorraine Ross, Intech Consulting, Inc., representing the Association of Pool and Spa Professionals

PART I – IRC

1. Delete and substitute as follows:

~~**AG106.1 General.** Suction outlets shall be designed to produce circulation throughout the pool or spa. Single outlet systems, such as automatic vacuum cleaner systems, or multiple suction outlets, whether isolated by valves or otherwise, shall be protected against user entrapment.~~

~~**AG106.1 Suction entrapment avoidance.** Pools, spas, hot tubs, catch basins and other similar bather accessible bodies of water associated with swimming pool construction shall be designed to produce circulation throughout the body of water and provide means to protect against user suction entrapment in accordance with ANSI/APSP 7.~~

2. Delete without substitution:

~~**AG106.2 Suction fittings.** Pool and spa suction outlets shall have a cover that conforms to ANSI/ASME A112.19.8M, or an 18 inch×23 inch (457mmby 584 mm) drain grate or larger, or an approved channel drain system.~~

~~**Exception:** Surface skimmers~~

~~**AG106.3 Atmospheric vacuum relief system required.** Pool and spa single or multiple outlet circulation systems shall be equipped with atmospheric vacuum relief should grate covers located therein become missing or broken. This vacuum relief system shall include at least one approved or engineered method of the type specified herein, as follows:~~

- ~~1. Safety vacuum release system conforming to ASME A112.19.17; or~~
- ~~2. An approved gravity drainage system.~~

~~**AG106.4 Dual drain separation.** Single or multiple pump circulation systems shall be provided with a minimum of two suction outlets of the approved type. A minimum horizontal or vertical distance of 3 feet (914 mm) shall separate the outlets. These suction outlets shall be piped so that water is drawn through them simultaneously through a vacuum relief protected line to the pump or pumps.~~

arnham

From: Brenda Masters
Sent: Friday, September 19, 2008 9:58 AM
To: Don Farnham
Subject: FW: 03 IRC R401.3 (PG)

Thank you,

Brenda

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

From: Phillip Grankowski [mailto:pgrankowski@iccsafe.org]
Sent: Friday, September 19, 2008 9:51 AM
To: Brenda Masters
Cc: Lis Valdemarsen
Subject: RE: 03 IRC R401.3 (PG)

September 19, 2008

Brenda Masters
1207 Rosenetah Rd
Richmond, VA 23230
brenda_masters@keybuild.com

RE: Section R401.3 of the 2003 International Residential Code for
One- and Two-Family Dwellings

Dear Ms. Masters:

This staff opinion is in response to your correspondence, dated September 11, 2008, regarding the above referenced code. It is our understanding that you want to know if Section 403.1 applies to drainage of the entire lot or the surface drainage around the foundation.

As indicated in the 2003 IRC Commentary, along with the proper support for a structure through the foundation system, adequate preparation of the building site is necessary to keep water drainage away from the supporting foundations. Proper site drainage is an important element in preventing wet basements, damp crawl spaces, eroded banks, and possible failure of a foundation system. A detailed treatment of drainage design is beyond the scope of the code which only provides rough guidelines for areas where a more comprehensive set of grading regulations does not exist. Consideration of drainage patterns, drainage devices (i.e., gutters and downspouts), soil erosion, graded slopes, swales, ground frost, moisture conditions, soil type, geological features, geographic conditions and other related design issues shall be subject to the approval of the authority having jurisdiction.

This opinion is based on the information which you have provided. We have made no independent effort to verify the accuracy of this information nor have we conducted a review beyond the scope of your question. As this opinion is only advisory, the final decision is the responsibility of the designated authority charged with the administration and enforcement of this code.

Sincerely,

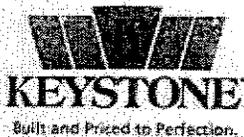
Phillip Grankowski
Senior Technical Staff

International Code Council, Inc.
Chicago District Office
4051 West Flossmoore Road

Supporting Statement:

Rationale for Revision:

- Hazard is not defined. A hazard with regard to what?
- Local interpretation of hazard can include anything negative that occurs on a property, whether related to building code or not.
- Can be used improperly to turn two year statute of limitations into two year warranty period.
- Local application of code to “any disturbed area” represents improper extension of building code into matters unrelated to building or structure.
- ICC states that “...a detailed treatment of drainage design is beyond the scope of the code...” and that “...consideration of drainage patterns...shall be subject to the approval of the authority having jurisdiction.” (see attached)
- Drainage, erosion, etc. may be subjects for other local ordinances, but not the building code.
- Drainage, erosion, etc. are impacted by natural phenomena and owner activities after closing.



TD
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November 17, 2008

Mr. William Dupler, Building Official
Ms. Tara McGee, Assistant County Attorney
Chesterfield County
9901 Lori Road, Suite 503
Chesterfield, VA 23832

Dear Mr. Dupler and Ms. McGee:

Thank you both for your time and assistance on our recent Notices of Defect or Violation (Notices) concerning Building Code Issues. I know that Teresa Dowdy is continuing to work with the County on the resolution of several specific matters.

We now turn our attention to efforts to ensure our Code compliance in the future. During our October 28, 2008 meeting we expressed concern with certain aspects of the County's compliance efforts, particularly those related to drainage. We understand the County's position to be as follows:

- The provisions regarding drainage in Chapter 4 "Foundations", Section R401.3, of the 2003 International Residential Code are applied to "any disturbed area" on a lot, regardless of the proximity to or effect upon a foundation.
- The County building inspector has the discretion to cite a builder as the responsible party for a building code violation for an unlimited amount of time after closing for ANY grading condition or change in grading condition to the extent that it impacts surface drainage ANYWHERE in the disturbed area. There are no objective criteria for determining whether the builder is "at fault" for any such condition. The Building Inspector conducts an investigation and makes a decision on the responsible party based on the results of that investigation.
- Erosion issues occurring outside the disturbed area are not building code issues.
- Builders are to take comfort in the fact that prior to litigation the County Attorney's office would want to establish that the builder is responsible for any such condition. If the County Attorney is unable to assemble evidence which reasonably supports builder responsibility, the matter would not be pursued in court.

We have done additional research on the Code and believe that, while the County's "disturbed area" definition may be appropriate in certain cases, it will not be in others. This is particularly the case on lots where a large area has been cleared, for example, for septic system installation. As we noted in our responses to two recent Notices, we asked

the International Code Council, Inc. (ICC) whether R401.3 applied to drainage of the entire lot or the surface drainage around the foundation. Phillip Grankowski of the ICC's Senior Technical Staff advised us that:

- "...adequate preparation of the building site is necessary to keep water drainage away from the supporting foundations..."
- "...proper site drainage is an important element in preventing wet basements, damp crawl spaces, eroded banks and possible failure of the foundation system..."
- "...a detailed treatment of drainage design is beyond the scope of the code..."
- "...consideration of drainage patterns...shall be subject to the approval of the authority having jurisdiction..."

We also contacted the Technical Assistance Services Office (TASO) of the Virginia Department of Housing and Community Development (DHCD). As you know, DHCD is responsible for administering Virginia Uniform Statewide Building Code. TASO's Alan McMahan, Codes Service Specialist, provided responses to our questions concerning Section R401.3 as follows:

1. Is the hazard referred to only a hazard with regard to the foundation? To the extent a "hazard" created by surface drainage has no impact on the ability of the foundation to function in accordance with Code, does this section apply?

"Answer: With respect to the part 1 of this question, it is my opinion that the intent of Section 401.3 is to assure proper drainage away from foundation walls to prevent wet basements, damp crawl spaces, eroded banks, and possible failure of a foundation system. As to part 2 of the question, my opinion would be "maybe." It really depends on many things like the size and slope of the lot, the design of the site drainage plan, the surrounding geography, geological features, the amount of fill on the property, other buildings on the property, and the access to a point of collection (i.e. storm sewer), all of which could impact the structural performance of the building.

For your information, the 2003 IRC Commentary explains that "one of the most important considerations is the arrangement of structures on a building site in a manner that retains natural drainage patterns and minimizes the alteration or disturbance to existing grades." If done correctly, "the result will be a reduction of ground surface stabilization problems and opportunities for differential settlement through the reduction in the use of fills."

2. If this sentence was intended to apply to all surface drainage, why is it included in the Foundation section that specifically limits itself to the design and construction of foundations?

"Answer: In my opinion, it's included in Chapter 4 because surface runoff/drainage, whether it is directed towards the structure or not, could affect the performance of a structure's foundation. Frankly, each building site has to be evaluated based on its own unique situation."

3. A Virginia locality has determined that the 1st sentence of Section R401.3 is intended to be applied to all disturbed areas on a construction site, regardless of the proximity to or affect upon a foundation. In that case a depression holding standing water ("hazard") in a disturbed area 100 yards downhill from any foundation would be deemed to be a building code violation. Has such an interpretation ever been affirmed or rejected?

"Answer: I can find nothing related to your issue in any of the binding formal interpretations issued by the State Building Code Technical Review Board."

After careful consideration of these responses, we conclude that the Code applies to drainage issues only to the extent that they could reasonably have a negative impact on the structural performance of the building, i.e., the foundation. Of course, in the case of all violations the appropriate responsible party must be identified. As a result of the foregoing, it is our plan to follow the following procedures with regard to future Notices:

- Respond appropriately to any Notices relating to drainage matters where: (a) we could reasonably be considered the responsible party, and (b) the condition could reasonably have a negative impact on the foundation.
- Oppose and appeal any Notices relating to drainage matters for which we could NOT reasonably be considered the responsible party. (It is our hope that, in the future, adequate investigation by the Building Inspector will limit the number of cases in this category.)
- Oppose and appeal any Notices relating to drainage matters that could NOT be reasonably anticipated to have a negative impact on the foundation. *These are not Building Code issues.*
- In questionable cases, we may retain a qualified engineer to give us an opinion on the matter under consideration.

On a somewhat related matter, we do not believe it is appropriate for the County to share information about a particular code situation with an unrelated party. Ms. Kindervater's October 31, 2008 letter (copy attached) regarding the deferral of several appeals was sent to both the Fairlamb and the Harris. In the future we would appreciate separate notices being sent only to the appropriate parties on each matter.

Please feel free to contact me if you have any further questions or comments.

Sincerely,

A handwritten signature in black ink, appearing to read "D. Jones", with a long horizontal flourish extending to the right.

Douglas S. Jones
Manager
Keystone-RM, LLC

cc: Teresa Dowdy

	BUILDING DEVELOPMENT POLICIES AND PROCEDURES ADMINISTRATIVE/GENERAL	Effective Date: DRAFT
		Supersedes Policy Dated: N/A
	1.13.5 Soils – Expansive Soil	Issued by: Eric M. Mays, P.E. Building Official

Scope

This policy is to clarify the definition of Expansive Soil to be used in the determination of suitable soils (e.g. in situ and structural fill) for building pads and foundation backfill.

Definitions

A. Expansive Soil is defined by the International Building Code and International Residential Code as:

“Expansive soils. Soils meeting all four of the following provisions shall be considered expansive, except that tests to show compliance with Items 1, 2 and 3 shall not be required if the test prescribed in Item 4 is conducted:

1. Plasticity index (PI) of 15 or greater, determined in accordance with ASTM D 4318.
2. More than 10 percent of the soil particles pass a No. 200 sieve (75 µm), determined in accordance with ASTM D 422.
3. More than 10 percent of the soil particles are less than 5 micrometers in size, determined in accordance with ASTM D 422.
4. Expansion index greater than 20, determined in accordance with ASTM D 4829.”

B. Plasticity Index Corrected

$$PI_{cor} = PI \times \frac{(\% \text{ Passing No. 40 Sieve})}{100}$$

C. Expansion Index Corrected

$$EI_{cor} = EI \times \frac{(\% \text{ Passing No. 4 Sieve})}{100}$$

D. Liquid Limit – The water content corresponding to the behavior change between the liquid and plastic state of silt or clay soil, determined in accordance with ASTM D 4318.

Policy

If the Plasticity Index of the soil is 20 or less (e.g. $PI \leq 20$) and the Liquid Limit is 45 or less (e.g. $LL \leq 45$), the Plasticity Index Corrected (PI_{cor}) or the Expansion Index Corrected (EI_{cor}) may be substituted in the definition of Expansive Soil.

Reason: The code change updates the existing wood structural panel wall sheathing table to include requirements for winds regions having a basic wind speed of 85 mph or greater.

The proposed table is an abbreviated version of a similar table that was adopted into the IBC last cycle and is available in the IBC 2007 Supplement in Section 2304.6.1.

The current Table R602.2(3) in the IRC that gives recommended minimum panel thicknesses for wall panel sheathing. To be more precise, it is OK most of the time but in higher wind regions (still within the range of the IRC) the panel thicknesses and orientations recommended in the table and footnotes may not provide the minimum protection to the home and inhabitants that is currently required in Section R301.2.

Recent analysis conducted by the APA staff indicates that in the extreme wind regions covered by the IRC (less than 110 mph) and with more severe exposures (C and D) the minimum thicknesses recommendations given in Table R603.2(3) – Wood Structural Panel Wall Sheathing – are insufficient in thickness and attachment. The proposed table provides the requirements to ensure that this important part of the structural system is correct. The analysis considered panel bending, stiffness, nail withdrawal and nail head pull through as well as the wind pressure requirements of Section R301.2.

Note that the impact to most will be minimal because the most commonly used wood structural panel sheathing thickness in the US is 7/16". As can be seen in the proposed table this sheathing thickness is satisfactory for winds up to 110 mph in all but Exposure D conditions. Most builders will only see the requirement for 8d nails as a change, and this is already the nail required for roof sheathing applications.

The change also proposes a corresponding editorial changes to references in R602.10.3 and adds a footnote to the appropriate cell in the fastening table, Table R602.3(1) – continued, that directs the user to the new table for panel thickness, fastener selection and spacing in winds regions having a basic wind speed of 85 mph or greater.

Cost Impact: The code change proposal will increase the cost of construction in high wind areas. No additional sheathing will be required but in areas of high wind sheathing up to 7/16" may be required as well as 8d nails. Please note that 7/16" sheathing is the most popular thickness of wall sheathing used in the US and in many areas the shift to 8d nails is all that will be seen as a change in practice. As such, the impact on cost will be minimal in most areas.

Committee Action:

Approved as Modified

Modify proposal as follows:

R602.3 Design and Construction. Exterior walls of wood-frame construction shall be designed and constructed in accordance with the provisions of this chapter and Figures R602.3(1) and R602.3(2) or in accordance with AF&PA's NDS. Components of exterior walls shall be fastened in accordance with Table R602.3(1) through R602.3(4). Exterior walls covered with foam plastic sheathing shall be braced in accordance with Section R602.10. Structural sheathing shall be fastened directly to structural framing members. Exterior wall coverings sheathing shall be capable of resisting wind pressures listed in Table R301.2(2). When wood structural panels are used as the exterior wall covering meeting Table R301.2(2), the maximum wind speeds permitted for exterior walls covered with wood structural panel sheathing are listed in Table R602.3(3).

(Portions of proposal not shown remain unchanged.)

Committee Reason: This change provides a much needed requirement for the correct size of wood structural panels in higher wind and exposures in the wind regions covered by the IRC. The modification clarifies that this applies to exterior wall coverings.

Assembly Action:

None

Individual Consideration Agenda

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

Public Comment 1:

Jay Crandell, P.E., ARES Consulting, representing Foam Sheathing Coalition, requests Approval as Modified by this Public Comment.

Further modify proposal as follows:

R602.3 Design and Construction. Exterior walls of wood-frame construction shall be designed and constructed in accordance with the provisions of this chapter and Figures R602.3(1) and R602.3(2) or in accordance with AF&PA's NDS. Components of exterior walls shall be fastened in accordance with Table R602.3(1) through R602.3(4). Exterior walls covered with foam plastic sheathing shall be braced in accordance with Section R602.10. Structural sheathing shall be fastened directly to structural framing members. Exterior wall coverings shall be capable of resisting wind pressures listed in Table R301.2(2). When wood structural panels are used as the exterior wall covering meeting Table R301.2(2), the maximum wind speeds permitted are listed in Table R602.3(3). Maximum wind speeds for exterior walls covered with foam sheathing shall comply with Table R602.3(4). Where foam sheathing is applied over wood structural panels or other solid substrate capable of separately resisting the required wind pressure, Table R602.3(4) shall not apply. Foam sheathing shall be protected with an exterior covering installed in accordance with Section R703.

Add new table as follows:

TABLE R602.3(4)
MAXIMUM WIND SPEED (mph – 3 SECOND GUST) PERMITTED FOR FOAM SHEATHING
USED TO RESIST WIND PRESSURE ON EXTERIOR WALLS^{1,2}

Foam Sheathing Material ³	Foam Sheathing Nominal Thickness (in) ³	Maximum Wind Speed (mph) – Exposure B ^{4,5}			
		Walls with Interior Finish ⁶		Walls without Interior Finish	
		16"oc framing	24"oc framing	16"oc framing	24"oc framing
EPS	3/4" (unfaced)	115	NP	95	NP
	1" (unfaced)	130	105	130	85
	≥1-1/2" (unfaced)	130	130	130	125
Polyisocyanurate	1/2" (faced)	130	90	110	NP
	3/4" (faced)	130	120	130	100
	1" (faced)	130	130	130	120
	≥1-1/2" (faced)	130	130	130	130
XPS	1/2" (faced)	130	90	115	NP
	3/4" (unfaced)	120	NP	100	NP
	1" (unfaced)	130	110	130	90
	≥1-1/2" (unfaced)	130	130	130	130

For SI: 1 inch = 25.4 mm, 1 mile per hour = 1.609 km/h

NP = not permitted

- Foam sheathing panels shall be permitted to be oriented parallel or perpendicular to framing members.
- Foam sheathing panels shall be attached to framing in accordance with manufacturer recommendations and covered with exterior cladding installed in accordance with Section R703.
- Foam sheathing shall meet or exceed the following material standards: Expanded Polystyrene (EPS) – ASTM C578 (Type II, min.), Polyisocyanurate – ASTM C1289 (Type I, min.), and extruded polystyrene (XPS) – ASTM C578 (Type X, min.). Polyisocyanurate sheathing shall be faced on both sides. XPS sheathing less than 3/4" thick shall have an approved facer on both sides. Table requirements for EPS of all thicknesses and XPS products 3/4" thick and greater are based on unfaced foam sheathing. For faced or unfaced foam sheathing products of any type or thickness, approved manufacturer data shall be permitted in lieu of the table values.
- For wind Exposure C, multiply tabulated wind speed by 0.85.
- Table values have been limited to 130 mph maximum wind speed. For greater wind speed conditions, use of approved manufacturer data shall be permitted.
- Interior finish shall comply with Section R702.

(Portions of proposal not shown remain unchanged)

Commenter's Reason: RB131 as published in the ROH appropriately requires all wall coverings to be designed to resist wind pressure. However, the RB131 proposal omits prescriptive solutions for all sheathing types except wood structural panels. Therefore, this public comment includes appropriate prescriptive requirements for foam sheathing. Because negative suction pressures are resisted by the siding and foam sheathing assembly (see approved RB186 published in the ROH and a separate public comment on RB195 requesting FAH approval), proposed Table R602.3(4) addresses positive pressure resistance of the foam sheathing. The wind pressure resistance of foam sheathing is based on certified full-scale (4'x8' panel) testing conducted at the NAHB Research Center, Inc and applies a safety factor of 2.0. The design wind speed data (without rounding or capping values) is shown in the table below for informational purposes. This proposal is needed to avoid exclusion of foam sheathing products due to the incompleteness of RB131 and to ensure that adequate wind pressure performance of foam sheathing is achieved.

TABLE (Actual design values based on test data – not rounded or capped as in the proposal)
MAXIMUM WIND SPEED (mph – 3 SECOND GUST) PERMITTED FOR FOAM SHEATHING
USED TO RESIST WIND PRESSURE ON EXTERIOR WALLS^{1,2}

Foam Sheathing Material ³	Foam Sheathing Nominal Thickness (in)	Maximum Wind Speed (mph) – Exposure B ⁴			
		Walls with Interior Finish ⁵		Walls without Interior Finish	
		16"oc framing	24"oc framing	16"oc framing	24"oc framing
EPS	3/4"	116	77	97	65
	1"	155	103	130	86
	≥1-1/2"	225	150	188	126
ISO	1/2"	133	89	112	74
	3/4"	181	121	152	101
	1"	214	142	179	119
	≥1-1/2"	237	158	198	132
XPS	1/2"	138	92	115	77
	3/4"	122	81	102	68
	1"	162	108	136	90
	≥1-1/2"	229	153	192	128

Public Comment 2:

Gary J. Ehrlich, P.E., National Association of Home Builders (NAHB), requests Approval as Modified by this Public Comment.

Further modify proposal as follows:

R602.3 Design and Construction. Exterior walls of wood-frame construction shall be designed and constructed in accordance with the provisions of this chapter and Figures R602.3(1) and R602.3(2) or in accordance with AF&PA's NDS. Components of exterior walls shall be fastened in accordance with Table R602.3(1) through R602.3(4). ~~Exterior walls covered with foam plastic sheathing shall be braced in accordance~~

RB173-07/08, Part I

R613.2, R613.3, R613.4, R613.4.1, R613.4.2 (New), Chapter 43 (New); IBC 1405.12.2, 1405.12.3 (New), 1405.12.4 (New), 1405.12.4.1 (New), 1405.12.4.2 (New), Chapter 35 (New)

Proposed Change as Submitted:

Proponent: Paul Heilstedt, Chair for the Code Technology Committee

PART I – IRC

1. Revise as follows:

R613.2 Window sills. In dwelling units, where the opening of an operable window is located more than 72 inches (1829 mm) above the finished grade or surface below, the lowest part of the clear opening of the window shall be a minimum of 24 inches (610 mm) above the finished floor of the room in which the window is located. Glazing between the floor and 24 inches (610 mm) shall be fixed or have openings through which a 4-inch-diameter (102 mm) sphere cannot pass.

Exceptions:

1. Windows whose openings will not allow a 4-inch-diameter (102 mm) sphere to pass through the opening when the opening is in its largest opened position.
2. Openings that are provided with window fall prevention devices guards that comply with R613.3 ASTM F-2006 or F 2090.
3. Openings that are provided with fall prevention devices that comply with ASTM F 2090 or screens that comply with SMA 6001.
4. Windows that are provided with opening limiting devices that comply with Section R613.4.

R613.3 Window fall prevention devices. Window fall prevention devices and window guards, where provided, shall comply with the requirements of ASTM F 2090.

R613.4 Window opening limiting devices. When required elsewhere in this code, window opening limiting devices shall comply with the provisions of this section.

R613.4.1 General requirements. Window opening limiting devices shall be self acting and shall be positioned so as to prohibit the free passage of a 4.0-in. (102-mm) diameter rigid sphere through the window opening when the window opening limiting device is installed in accordance with the manufacturer's instructions.

(Renumber subsequent sections)

2. Add new text as follows:

R613.4.2 Operation for Emergency Escape. Window opening limiting devices shall be designed with release mechanisms to allow for emergency escape through the window opening without the need for keys, tools or special knowledge. Window opening limiting devices shall comply with all of the following:

1. Release of the window opening-limiting device shall require no more than 15 lbf (66 N) of force.
2. The window opening limiting device release mechanism shall operate properly in all types of weather.
3. Window opening limiting devices shall have their release mechanisms clearly identified for proper use in an emergency.
4. The window opening limiting device shall not reduce the minimum net clear opening area of the window unit below what is required by Section R310.1.1 of the code.

3. Add standard to Chapter 43 as follows:

SMA 6001-2002 Specifications for Metal Protection Screens

Reason: The ICC Board established the ICC Code Technology Committee (CTC) as the venue to discuss contemporary code issues in a committee setting which provides the necessary time and flexibility to allow for full participation and input by any interested party. The 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 twelve meetings - all open to the public.

This proposed change is a result of the CTC's investigation of the area of study entitled "Child Window Safety". The scope of the activity is noted as:

To study the incidence and mechanisms of falls from open windows by children and to investigate the necessity and suitability of potential safeguards and/or revisions to the current codes.

The CTC established a study group to review available materials on the issue of child falls through windows. It became readily apparent that public education is a key consideration in reducing the number of falls by children through windows. As far as the code is concerned, the group focused on two possible means of addressing this issue. The two being:

- Window screens
- Window fall prevention devices

This proposal provides both options, in the form of exceptions to the minimum sill height requirements in the code.

Window screens: ANSI/SMA 6001 is a standard entitled "Specifications for Metal Protection Screens." As noted in Section 2.1 of the standard, "This specification provides, definitions, methods of test, and performance requirements for metal protection screens designed and manufactured primarily for installation in window openings for the purpose of providing security for the building occupants by restraining of deterring forced entry and by protecting the window from vandalism". While not specifically noting the screens use as a barrier to restrain a child, the study group concluded that they key considerations is that of providing some type ob barrier. Screens designed in accordance with this standard are classified under the following classes:

- Light: Load resistance between 30 – 75 pounds
- Medium: Load resistance between 75 - 150 pounds.
- Heavy: Load resistance between 150 – 300 pounds.

Window fall prevention devices: ASTM F 2090 is a standard entitled "Window Fall Prevention Devices with Emergency Escape (Egress) Release Mechanisms". As noted in Section 1.1 of the standard, "This specification establishes requirements for devices intended to address the risk of injury and death associated with accidental falls from windows by children five years old and younger. The key operational constraint of devices which comply with this standard is compliance with Section 4.1, which states: "Window fall prevention devices shall be constructed so as to prohibit the free passage of a 4.0 in diameter rigid sphere at any point, during or after testing as specified in Section 8, when the window fall prevention device is installed in accordance with the manufactures instructions.

Proposed Section R 613.4 and 1405.12.4.2, including Items 1 – 3, is a codified version of Sections 4.1, 4.3.2, 4.3.4 of ASTM F 2090. Item 4 is primarily a reminder that full compliance with Section R 310.1.1 is required for all emergency escape and rescue openings of the window serves such purpose.

Cost Impact: The code change will increase the cost of construction if the devices are used.

PART I – IRC

Committee Action:

Disapproved

Committee Reason: The standard is not ready at this time. It is unknown how many windows on the market that can meet this. The proponent should work with industry and bring this back. Also, it is not clear if Section R613.4.2 applies to all windows.

Assembly Action:

None

Individual Consideration Agenda

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

Public Comment 1:

Paul Heilstedt, PE, FAIA, Chair, representing ICC Code Technology Committee (CTC), requests Approval as Modified by this Public Comment.

Modify proposal as follows:

R613.2 Window sills. In dwelling units, where the opening of an operable window is located more than 72 inches (1829 mm) above the finished grade or surface below, the lowest part of the clear opening of the window shall be a minimum of 24 3/8 inches (610 mm) above the finished floor of the room in which the window is located. Glazing between the floor and 24 3/8 inches (610 mm) shall be fixed or have openings through which a 4-inch-diameter (102 mm) sphere cannot pass.

Exceptions:

1. Windows whose openings will not allow a 4-inch-diameter (102 mm) sphere to pass through the opening when the opening is in its largest opened position.
2. Openings that are provided with window fall prevention devices that comply with R613.3.
3. Openings that are provided with fall prevention devices that comply with ASTM F 2090 or screens that comply with SMA 6001.
4. Windows that are provided with opening limiting devices that comply with Section R613.4.

(Portions of proposal not shown remain unchanged)

Commenter's Reason: The intent of RB 173 is clearly to provide safety mechanisms to reduce the possibility of children falling through a window. The CTC has determined that this can be realized in the code in three ways: window fall prevention devices; window opening control devices; or reducing the possibility by increasing the minimum sill height. CTC has submitted two public comments which deal with the fall prevention devices and window opening control devices. The purpose of this public comment is to reduce the potential hazard by increasing the sill height from 24 inches to 36 inches.

Public Comment 3:

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

Commenter's Reason: The Committee correctly disapproved this proposal. In addition to the Committee Reason cited, this proposal is inconsistent with the recommendation of the ICC Code Technology Committee (CTC) (<http://www.iccsafe.org/cs/cc/ctc/Carbon.html>):

"Recommendation: The CTC recommendation is: There has not been sufficient justification presented to the CTC to mandate carbon monoxide alarms in new and existing residential type occupancies...In making this recommendation, the CTC notes the importance of and the need for compliance with the applicable code provisions for equipment maintenance and compliance with equipment installation instructions to control the hazards associated with CO emissions."

No testimony was provided that would refute the CTC recommendation. If the proponents believe that this is a matter requiring ICC code coverage, they should take this up with the CTC for further consideration.

Final Action: AS AM AMPC___ D

**RB72-07/08
R313.1**

Proposed Change as Submitted:

Proponent: Shane M. Clary, Bay Alarm Company; Thomas P. Hammerberg, Automatic Fire Alarm Association, Inc.

Revise as follows:

R313.1 Smoke detection and notification. All smoke alarms shall be listed in accordance with UL 217 and installed in accordance with the provisions of this code and the household fire warning equipment provisions of NFPA 72.

Household fire alarm systems installed in accordance with NFPA 72 that include smoke alarms, or a combination of smoke detector and audible notification device installed as required by this section for smoke alarms, shall be permitted. The household fire alarm system shall provide the same level of smoke detection and alarm as required by this section for smoke alarms ~~in the event the fire alarm panel is removed or the system is not connected to a central station.~~ Where a household fire warning system is installed, it shall become a permanent fixture of the occupancy and owned by the homeowner. The household fire warning system shall not be leased.

Reason: The current provisions of Section R313.1 regarding household fire warning systems are not technically possible. The smoke detectors and any notification appliances receive their power from the Fire Alarm Control Unit (FACU). Removing the FACU will completely disable the system. It is my understanding that this is indeed the concern by some on allowing the use of a systems approach as opposed to the use of smoke alarms. By requiring the system to become a permanent fixture of the occupancy and not be leased, will prevent the system from being removed due to nonpayment.

For larger homes, the only possible way to provide detection is through the use of a household fire warning system. NFPA 72, National Fire Alarm Code, has limits as to the number of smoke alarms that may be interconnected. Section 11.8.2.2 of the 2006 edition allows only twelve smoke alarms to be interconnected if the interconnecting means is not supervised. Up to forty-two smoke alarms may be interconnected if they are supervised.

A number of homeowners prefer that their household fire warning systems be monitored by a supervising station. The listing of UL 217 smoke alarms prohibits them from being monitored.

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

Committee Action: Disapproved

Committee Reason: The committee indicated that they preferred the existing code text over the proposed language. The committee felt that the proposal needed some work overall, however a fire warning system "owned by the homeowner" was considered to be a good beginning to a solution to issues with the smoke detection and notification code section.

Assembly Action: None

Individual Consideration Agenda

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

Public Comment 1:

Robert J. Davidson, Davidson Code Concepts, LLC, representing New Jersey Burglar and Fire Alarm Association, requests Approval as Modified by this Public Comment.

Modify proposal as follows:

R313.1 Smoke detection and notification. All smoke alarms shall be listed in accordance with UL 217 and installed in accordance with the provisions of this code and the household fire warning equipment provisions of NFPA 72.

Household fire alarm systems installed in accordance with NFPA 72 that include smoke alarms, or a combination of smoke detector and audible notification device installed as required by this section for smoke alarms, shall be permitted. The household fire alarm system shall provide the same level of smoke detection and alarm as required by this section for smoke alarms. Where a household fire warning system is installed using a combination of smoke detector and audible notification device(s), it shall become a permanent fixture of the occupancy and owned by the homeowner. The household fire warning system shall not be leased. The system shall be monitored by an approved supervising station and be maintained in accordance with NFPA 72.

Commenter's Reason: The proposed modification eliminates a technical flaw in the current language of Section R313.1. Currently the code allows the use of an NFPA 72 system employing a combination of smoke detectors and audible notification devices, but then requires that the system function if the fire alarm panel (FAP) is removed. The systems cannot function without the FAP, so in effect the existing language states you can use the NFPA 72 system, but you can't use it.

The modified language embraces the committee's recommendation that "owned by the homeowner" be a good beginning and adds additional language that will ensure system reliability by requiring the owner to have the system electronically monitored and maintained in accordance with the referenced standard.

It must be recognized that existing smoke alarms on the market have a limitation on how many devices can be connected together on a single circuit. As a result, larger homes being built cannot comply with the current code language mandating that smoke alarm technology be used. The option for a properly maintained NFPA 72 system comprised of smoke detectors and audible notification appliances is a necessary change to the code.

Public Comment 2:

Thomas P. Hammerberg, Automatic Fire Alarm Association, Inc., requests Approval as Modified by this Public Comment.

Richard M. Simpson, representing National Fire and Burglar Association (NBFAA), requests Approval as Modified by this Public Comment.

Replace proposal as follows:

R313.1 Smoke detection and notification. All smoke alarms shall be listed in accordance with UL 217 and installed in accordance with the provisions of this code and the household fire warning equipment provisions of NFPA 72.

Household fire alarm systems installed in accordance with NFPA 72 that include smoke alarms, or a combination of smoke detector and audible notification device installed as required by this section for smoke alarms, shall be permitted. The household fire alarm system shall provide the same level of smoke detection and alarm as required by this section for smoke alarms ~~in the event the fire alarm panel is removed or the system is not connected to a central station.~~ Where a household fire warning system is installed as a primary form of smoke detection and notification, it shall be owned by the homeowner making it a permanent fixture of the occupancy and continue to provide smoke detection and notification at the premises if the remote monitoring function is disabled by the supervising station. Such systems shall be listed by a nationally recognized testing laboratory (NRTL) that is OSHA accredited to test and certify to ANSI/UL 268 and installed and maintained in accordance with NFPA 72.

Commenter's Reason: The committee's reason for disapproving Code Change proposal RB72-07/08 is they preferred the existing code text over the proposed language. The committee indicated that the proposal needed some work overall, however a fire warning system "owned by the homeowner" was considered to be a good beginning to a solution to issues with smoke detection and notification code section".

Concern has been raised by some AHJ's that household fire alarm systems may be remotely disabled by the central station or have the control panel physically removed if the homeowner fails to pay the monitoring fee thereby leaving the premises without smoke detection and notification. This may be true of leased systems, but is not true for household fire warning systems that are purchased and owned by the homeowner. If the household fire alarm system is owned by the homeowner and the homeowner fails to pay the supervising station for the remote monitoring function it will result in disablement of the remote monitoring function only. The smoke detection and notification at the premises including the control panel and interconnection of smoke detectors is fully maintained.

The effectiveness of nationally recognized industry consensus standards is that they are designed to ensure that products and technologies meet crucial product performance requirements and installation standard. The current provisions of section R313.1 of the 2006 edition of the IRC preclude the reliable, proven and tested technologies of household fire alarm systems even though they meet three nationally recognized industry consensus standards:

1. ANSI/UL 268 (Standard for Smoke Detectors for Fire Alarm Signaling Systems)
2. ANSI/UL 985 (Standard for Household Fire Warning System Units)
3. ANSI/NFPA 72 (National Fire Alarm Code)

Household fire systems using ANSI/UL 268 smoke detectors connected to an ANSI/UL 985 control panel are required to be equipped with a rechargeable battery that keeps the household fire alarm system operating during a power outage and is monitored 24/7 by a supervising station. During a power outage condition the standby-by capability of the control panel permits it to communicate the power loss to the central station as well as providing smoke detection and notification at the premises. When the primary power is restored the control panel will fully recharge the standby battery. An added feature of a fire warning system is that the interconnecting wiring to smoke detectors and notification appliances is supervised such that a wiring fault results in a trouble signal at the premises and the remote monitoring station.

The performance and reliability of household fire alarm systems is extremely high if they are installed and maintained in accordance with the NFPA 72.

In that regard the current language of R313.1 needs to be amended to will allow household fire alarm systems to be installed as the primary form of smoke detection, if the household fire alarm system is owned by the homeowner as a permanent fixture and installed in accordance with nationally recognized product performance and installation standards.

Rodgers, Emory

From: Mark Cline [mcline@co.northampton.va.us]
Sent: Thursday, August 14, 2008 10:22 PM
To: Rodgers, Emory
Subject: Re: R301.1.3 engineered designed homes, decks, screen portches for 110 zone

Hi Emory,

I am glad that Mr. Tarr was able to speak with you. We here on the shore have been aware that the IRC and wall bracing sections of the USBC/VCC require engineering in the 110 MPH zone. In Northampton Co. we have been kicking around the idea of a blanket type code mode that would allow homes to be built if they followed a "prescription" of solid sheathing, braced interior walls, 1/2 inch anchor bolts imbedded 16 inches with large washers, hurricane ties. This would be an alternative to engineering and would be available for all 1 & 2 family dwellings built more than 1500 feet from tidal salt water.

I haven't formalized this plan, David Fluhart and I have been thinking about it and what the implications would be. We are thinking of having a pre-prepared booklet with the last page being a code mod that the applicant could tear off and submit.

Any thoughts?

I am not sure just what Cherri is doing in Va Beach, but I am pretty sure that not every SFD is engineered.

BTW - I didn't see David Fluhart (Accomac County) or Doug Smith (Cape Charles) on your email - "copies to:" list, so I have forwarded copies to them - hope that was OK.

Mark Cline
Northampton County

On 14 Aug 2008, at 12:38, Rodgers, Emory wrote:

> Today, I spoke with a builder from Chincoteague, Mr. Jerry Tarr,
> regarding engineered designs for homes, decks and porches. He has a
> letter from an engineer on the way that he hopes might result in some
> relief for the eastern shore and has done research for 30 years of
> hurricanes for the eastern shore to bolster his case for only being in
> the 100mph zone despite the IRC map.

>
>
> I explained the code change process that will commence in late 2009.
> I noted for southwest Virginia the BHCD approved an amendment that for
> all practical purposes took an area greater than the eastern shore
> from the 110 zone to 90mph except for two mountains over 4,000 feet.
> This will be on our 2009 USBC list of items to review.

>
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> His 1st recommendation is for the Virginia localities on the eastern
> shore to be assigned to the 100mph zone. I explained that the wind
> map was based on consensus and was based on federal input, the
> insurance industry, code officials and other parties so it wasn't done
> without a great amount of thought and in an open inclusive process.

>
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> He builds large custom homes and entry level homes. I suggested he
> approach the Tidewater Homebuilders. He is not a member though. I
> suggested that he contact Region 8 folks to meet and explain his

> concerns and recommendations. I would recommend that the eastern
> shore building officials coordinate and help arrange a meeting or
> presentation at an upcoming Region 8 meeting.

>
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> Mr. Tarr also liked the idea to have considered other options that
> include some exception for decks and porches under a certain square
> footage; that a home under 2,000s.f. with 15% or less glazing would
> only follow the wall bracing requirements allowed or pick the most
> stringent and use that method; and, that required engineering on
> partial element of a home such as where one wall is most all glazing.

>
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> He is building a 3200s.f. home with one wall having more than 50%
> glazing and readily accepts engineering for that wall. He spent \$4200
> for the engineering and the paradox is the home is on piers and the
> house engineered design has more connections and bolting than the pier
> foundation and attached whalers. A deck engineered design cost \$600.
> There are few engineers on Eastern Shore with the closest in
> Salisbury, Md. He believes some exception for decks and porches needs
> to be made. With the down turn in building for smaller homes these
> extra costs are passed onto the buyer making affordable housing an
> issue.

>
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> He will be sending his ideas and concerns on R301.3 to his delegates
> and the Governor seeking relief. I did explain the USBC provides the
> building officials a great deal of authority for approving alternate
> methods of construction and approving modifications on a case-by-case
> basis especially for decks and porches. I explained that the building
> official can do interpolation of the maps although it is clear the
> eastern shore is in the 110 or greater wind zone. He could also
> submit his engineered analysis and research on storms/hurricanes to
> seek other solutions besides engineered designs.

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>

8-27-08

Dear Mr. Anthes:

I appreciate your letter dated August 17, 2008 regarding the 2003 and 2006 International Residential Code (IRC) wind zones for the eastern shore of Virginia.

First, I welcome your input and area of expertise and as we gear up towards the 2009 Uniform Statewide Building Code (USBC) in the last half of 2009, it would be great if you might avail yourself to provide insight and recommendations as we review this matter for the 2009 USBC and for the 2012 IRC code development cycles.

Virginia was one of the first states in 1972 to adopt and mandate a state building code based on the model codes and their consensus based process. Virginia is an active participant at the national level so if there is a need to amend the IRC our building officials with support from builders and design professionals are well positioned to submit code changes. Related to the eastern shore, our Board of Housing and Community Development amended the IRC to allow 90m.p.h as the wind zone for our very large special wind region in southwest Virginia this past year.

As you may well know, FEMA and other federal agencies, along with the design community, the insurance industry and experts like yourself, crafted a new measurement method for the wind zones and made more stringent the structural wall bracing requirements and the impact resistance of glazing for wind-borne debris. It is certainly appropriate for Mr. Tarr, the builder of your home, and yourself to ask the questions and to raise the concerns that you posed in your letter.

Since the USBC/IRC clearly allows interpolation to be made by the building officials and in the IRC Section 301.2.1 there is reference to some industry designs, our USBC already then provides a great deal of discretion for the local building officials to grant modifications based on factors that you have raised on the past 50 year history and the barrier island protection. The building officials could accept such factors and agree on a prescriptive wall bracing and anchoring design for the eastern shore. Other options to keep engineering costs down would be to accept an engineered for a range of model homes built to a certain set of parameters. At the same time building officials, builders or design professionals could develop and collaborate on code changes for our 2009 USBC that will get underway in the last half of 2009 and to be completed by the end of 2010. These code changes could then be vetted next year with the stakeholders for a consensus technical amendment.

You mentioned in your letter that porches and decks over 256 square feet also had to be designed by a design professional. I am unclear as to where that requirement comes from in the IRC. We will try to work with the building officials on the eastern shore on this issue where a common sense approach could be reached for decks and porches.

Again, we appreciate your interest and technical advice. I am asking the building officials in the tidewater and eastern shore area to formulate what they might see as a reasonable and technically sound approach over the concerns you raise on the cost to engineer large homes with lots of glazing versus a starter home with limited glazing and size where the engineer costs might be an issue. On the other hand federal studies done for Congress say that for every one dollar spent on mitigation there is a 4 dollar payback in reduced property damage.

Should you have further questions, please free to contact me at 804-372-7151 or email emory.rodgers@dhce.virginia.gov.

Sincerely;

Err
Dd dhcd

CC:
Vernon Hodge
Dave Fluhart BO southhampton
Mark Cline BO accomac
Ken Lewis BO chincoteaque
Cheri Hainer
Lynn Underwood
John Glover
Roger Robertson
Steve Shapiro
Bill Dupler
Clifton Wallace
Paula Eubank

Rodgers, Emory

From: Rodgers, Emory
Sent: Thursday, August 14, 2008 12:39 PM
To: Hodge, Vernon; John Glover; 'Clements, Ron'; Rick Witt; Steve Shapiro; Cheri Hainer; Underwood, Lynn; 'Mike Toalson'; Roger Robertson; Mike Redifer; 'kenny@chincoteague-virginia.gov'; Robert Smalley; 'mcline@co.northampton.va.us'
Cc: Wallace, Clinton; Eubank, Paula; Brock, Larry; Bill Dupler; Foley, Brian; 'Bajnai, Charles'
Subject: R301.1.3 engineered designed homes, decks, screen portches for 110 zone

Today, I spoke with a builder from Chincoteague, Mr. Jerry Tarr, regarding engineered designs for homes, decks and porches. He has a letter from an engineer on the way that he hopes might result in some relief for the eastern shore and has done research for 30 years of hurricanes for the eastern shore to bolster his case for only being in the 100mph zone despite the IRC map.

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He builds large custom homes and entry level homes. I suggested he approach the Tidewater Homebuilders. He is not a member though. I suggested that he contact Region 8 folks to meet and explain his concerns and recommendations. I would recommend that the eastern shore building officials coordinate and help arrange a meeting or presentation at an upcoming Region 8 meeting.

Mr. Tarr also liked the idea to have considered other options that include some exception for decks and porches under a certain square footage; that a home under 2,000s.f. with 15% or less glazing would only follow the wall bracing requirements allowed or pick the most stringent and use that method; and, that required engineering on partial element of a home such as where one wall is most all glazing.

He is building a 3200s.f. home with one wall having more than 50% glazing and readily accepts engineering for that wall. He spent \$4200 for the engineering and the paradox is the home is on piers and the house engineered design has more connections and bolting than the pier foundation and attached whalers. A deck engineered design cost \$600. There are few engineers on Eastern Shore with the closest in Salisbury, Md. He believes some exception for decks and porches needs to be made. With the down turn in building for smaller homes these extra costs are passed onto the buyer making affordable housing an issue.

He will be sending his ideas and concerns on R301.3 to his delegates and the Governor seeking relief. I did explain the USBC provides the building officials a great deal of authority for approving alternate methods of construction and approving modifications on a case-by-case basis especially for decks and porches. I explained that the building official can do interpolation of the maps although it is clear the eastern shore is in the 110 or greater wind zone. He could also submit his engineered analysis and research on storms/hurricanes to seek other solutions besides engineered designs.

2008 NATIONAL ELECTRICAL CODE
State and Local Adoptions
As of May 1, 2008

Based on information from the NEMA Field Representatives, the following states and local jurisdictions have adopted the 2008 NEC as of May 1, 2008:

State Adoptions:

- Idaho (effective July 1, 2008)
- Iowa (effective January 1, 2009)
- Massachusetts
- New Mexico (effective July 1, 2008)
- North Carolina
- North Dakota
- Oregon
- South Dakota (effective July 1, 2008)
- Texas (effective Oct. 1, 2008)
- Utah (effective January 1, 2009)

Local Adoptions:

- Johnson City, Tennessee
- Montgomery, Alabama
- Shelby County, Alabama



"Let the Code Decide"
OHIO CHAPTER
International Association of
Electrical Inspectors

Understanding the Cost Impact of the 2008 NEC

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 Thomas E. Moore
- Education Chairman**
 Michael G. Mihalisin
- Historian**
 Oran P. Post

The impact of additional Arc-Fault Circuit Interrupters and the new Tamper Resistant Receptacles in the 2008 NEC has prompted controversy driven by the misunderstood cost impact of moving from the 2005 NEC to the 2008 NEC. The NEC provides for the safe use of electricity from fire and shock. Technology over the years has enhanced that protection with minimal cost impact. Circuit breakers protect the home from overloaded circuits to prevent fires and GFCIs are well recognized in the safe use of electricity to protect us and our children from shock hazards. The GFCI entered the home in the 1970s, AFCIs became part of the NEC in the 1999 NEC and the tamper resistant receptacle in the 2008 NEC.

We will show that the impact of adding AFCI protection and Tamper Resistant Receptacles will have minimal impact on affordable housing. Keep in mind the NEC establishes the requirements for the safe electrical operation of a home. Additional circuits that include extra lighting, specific known loads, or a desire to separate circuits for isolation purposes is an additional cost that may be incurred that is once again not driven by the NEC. The additional lighting loads or appliances are not code driven, they are upgrades similar to windows, roofing configuration, or brick vs siding.

This report has been prepared by the following Ohio Chapter Board of Director Members; Oran P. Post, Electrical Inspector for the City of Tallmadge, Ohio and Thomas E. Moore, Electrical Inspector for the City of Beachwood, Ohio and Tim McClintock, Building Official/Electrical Inspector for Wayne County, Ohio. All three Board Members have extensive experience with the code development process.

This report provides an impact statement based entirely on the 2008 NEC requirements for three different homes. The first is a 900 sq ft home to help understand the impact to affordable housing. The other two homes are typical size homes and will include a 1700 sq ft home and a 2100 sq ft home.

The findings are based on prices obtained at a local electrical distributor and other verifiable resources as follows:

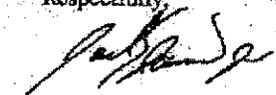
Combination AFCI	\$36.34
Standard Receptacle	\$.50
Tamper Resistant Receptacle	\$1.25
Standards GFCI Receptacle	\$8.00
Tamper Resistant Receptacle with GFCI	\$14.85

Results

900 sqft Home	\$160.18 for 900 sq. ft. dwelling unit or \$.18/sq. ft.
1700 sqft Home	\$205.27 for 1700 sq. ft. dwelling unit or \$.12/sq. ft.
2100 sqft Home	\$241.36 for 2100 sq. ft. dwelling unit or \$.11/sq. ft.

The 2008 NEC impact is minimal at less than a 20 cents per sq ft.

Respectfully,


 Jack Jamison, President

***Cost Analysis for a new dwelling based on the minimum 2008 NEC requirements (1700 Sq Ft)**

2008 NEC Code Section	Description of Code Requirement	Total Required Branch Circuits/Devices	Cost per 2008 NEC	Cost per 2008 NEC	Cost Difference
220.12, Table 220.12 & 220.14(J)	1700 sq. ft. X 3VA = 5100 VA/120 Volts = 42.5/15 Amps = 2.8 or 3 circuits. 2 general purpose 15 Ampere circuits which includes family rooms, dining rooms, living rooms, porches, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallway, or similar rooms or areas is required.	3	\$3.25	\$36.34	\$66.18
210.52(A), 220.12, & 220.14(J)	Dining room circuit is required to be on one of the two required 20 amp small appliance branch circuits.	1	\$25.00 ¹	\$36.34	\$11.34
210.52(C), 210.11(C)(1), 220.14(J), & 406.11	2 Kitchen small appliance branch circuits supplying 2 Tamper Resistant GFCI Receptacles serving the kitchen countertop.	2	\$8.00	\$14.85	\$13.70
210.52(C), 210.11(C)(1), 220.14(J), & 406.11	2 Kitchen small appliance branch circuits supplying 8 Tamper Resistant receptacles located as required by 210.52(B)(1)	6	\$5.00	\$12.25	\$6.00
210.52(D), 210.11(C)(3), 220.14(J), & 406.11	1 Tamper Resistant GFCI receptacle required for bathroom	1	\$8.00	\$14.85	\$6.85
210.52(G), 220.14(J), & 406.11	1 Tamper Resistant GFCI receptacles required for detached garages & unattached garages with power.	1	\$8.00	\$14.85	\$6.85
210.52(E), 220.14(J), & 406.11	2 Tamper Resistant/Weather Resistant receptacles (from a rear of Dwelling)	2	\$3.50	\$7.03	\$13.06 ²
210.52(G), 220.14(J), & 406.11	1 Tamper Resistant GFCI required for unfinished basements	1	\$8.00	\$14.85	\$6.85
210.52(F), 210.11(C)(2), 220.14(J), & 406.11	1 Tamper Resistant GFCI installed for the laundry within 6 feet of laundry sink	1	\$8.00	\$14.85	\$6.85
210.52(A), 220.12, 220.14(J), & 406.11	which includes family rooms, dining room, living room, porches, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallway, or similar rooms or areas	46	\$5.50	\$11.25	\$34.50
TOTAL					\$205.27

Footnotes

- Standard AFCI breakers as required by the 2008 NEC
- Alternative method protecting outdoor receptacles fed from basement GFCI receptacle

\$205.27 for 1700 sq. ft. dwelling unit is a cost of \$.12/sq. ft.
 Not a whole lot to pay for safety!
 Any extra wiring or devices above and beyond this is the choice of the builder and not mandated by the NEC
 *Prices obtained from **Left Electric Supply** (see attached quote), **Lovas, & Home Depot**

This analysis is based on 2-wire home runs for branch circuits. The following consists of alternative wiring methods and their respective prices:
 250ft NM-B-14/2-2-CU-WG.....\$114.66
 250ft NM-B-14/3-CU-WG.....\$75.87
 250ft NM-B-14/2-CU-WG.....\$54.13

***Cost Analysis for a new dwelling based on the minimum 2008 NEC requirements (2100 Sq ft)**

2008 NEC Code Section	Description of Code Requirement	Total Required Branch Circuit/Devices	Cost per 2005 NEC	Cost per 2008 NEC	Cost Difference
220.12, Table 220.12 & 220.14(J)	2100 sq. ft. X 3VA = 6300 VA/120 Volts = 52.5/1.5 Amps = 3.5 or 4 circuits. 2 general purpose 15 Ampere circuits which includes family rooms, dining rooms, living rooms, porches, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, or similar rooms or areas is required.	4	\$3.25	\$36.34	\$99.27
210.52(A), 220.12, & 220.14(J)	Dining room circuit is required to be on one of the two required 20 amp small appliance branch circuits.	1	\$3.25	\$36.34	\$11.34
210.52(C), 210.11(C)(1), 220.14(J), & 406.11	2 Kitchen small appliance branch circuits supplying 2 Tamper Resistant GFCI Receptacles serving the kitchen countertop.	2	\$8.00	\$14.85	\$13.70
210.52(C), 210.11(C)(1), 220.14(J), & 406.11	2 Kitchen small appliance branch circuits supplying 8 Tamper Resistant receptacles located as required by 210.52(B)(1)	6	\$5.00	\$1.25	\$6.00
210.52(D), 210.11(C)(3), 220.14(J), & 406.11	1 Tamper Resistant GFCI receptacle required for bathrooms	2	\$8.00	\$14.85	\$6.85
210.52(G), 220.14(J), & 406.11	1 Tamper Resistant GFCI receptacles required for attached garages & unattached garages with power.	1	\$8.00	\$14.85	\$6.85
210.52(B), 220.14(J), & 406.11	2 Tamper Resistant/Weather Resistant receptacles (front & rear of Dwelling)	2	\$5.00	\$7.03	\$13.062
210.52(G), 220.14(J), & 406.11	1 Tamper Resistant GFCI required for unfinished basements	1	\$8.00	\$14.85	\$6.85
210.52(F), 210.11(C)(2), 220.14(J), & 406.11	1 Tamper Resistant GFCI installed for the laundry within 6 feet of laundry sink	1	\$8.00	\$14.85	\$6.85
210.52(A), 220.12, 220.14(J), & 406.11	which includes family rooms, dining rooms, living rooms, porches, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, or similar rooms or areas	50	\$5.00	\$1.25	\$37.50
TOTAL				\$241.36	

Footnotes

- Standard AFCI breakers as required by the 2005 NEC
- Alternative method protecting outdoor receptacles fed from basement GFCI receptacle

This analysis is based on 2-wire home runs for branch circuits. The following consists of alternative wiring methods and their respective prices:
 250ft NM-B-14/2-2-CL-WG.....\$114.66
 250ft NM-B-14/3-CL-WG.....\$75.87
 250ft NM-B-14/2-CL-WG.....\$54.13

\$241.36 for 2100 sq. ft. dwelling unit is a cost of \$.11 /sq. ft.
 Not a whole lot to pay for safety!
 Any extra wiring or devices above and beyond this is the choice of the builder and not mandated by the NEC.
 *Prices obtained from **Leaf Electric Supply** (see attached quote), **Lavers, & Home Depot**



Fact Sheet

Arc-Fault Circuit Interrupters

What are Arc-Fault Circuit Interrupters (AFCIs)?

The 2008 *National Electrical Code® (NEC®)* requirement for AFCI protection considerably expands this fire prevention technology to the majority of circuits installed in new and renovated homes. The type of AFCI currently available commercially is a next-generation circuit breaker that not only provides the conventional safety functions, but its advanced design also rapidly detects potentially dangerous arcs and disconnects power in the circuit before a fire can start. Fire safety officials throughout the U.S. endorse AFCIs as a significant step forward in electrical fire safety.

Why should they be installed in homes?

AFCIs will save lives and make homes safer. According to the U.S. Fire Administration, each year home electrical problems cause about 70,000 fires, resulting in 485 deaths and \$868 million in property loss.

Why mandate AFCIs for newer homes when statistics show the majority of problems have occurred in older homes?

Fire safety officials recommend the use of AFCIs in all dwellings. While it is true that fire statistics in many cases are derived from older dwellings, damage to appliance cords or to wires hidden in a wall can occur regardless of the home's age. In addition, incorrectly performed electrical installations can occur in both new and old homes. As technology evolves and the *NEC* is revised, the enhanced level of safety is typically required only in new construction that is subject to the latest adopted edition. Homes wired per the 2008 *NEC* will have the majority of their circuits protect by AFCIs for the life of the electrical system.

How do you know AFCIs will prevent fires and save lives?

Since 1999, AFCIs have been thoroughly field-tested. Underwriters Laboratories, the National Association of State Fire Marshals (NASFM), the U.S. Consumer Product Safety Commission, and many other experts have found AFCIs to be reliable and effective. By eliminating a significant source of electrically related fires, future statistics will demonstrate a reduction in fires of electrical origin.

Are AFCIs expensive?

The cost of the enhanced protection is directly related to the size of the dwelling and the number of circuits installed. Current retail prices of AFCI-type circuit breakers at several national building supply chains are in the range of \$35 to \$40 per unit. Even for larger homes with more circuits, the cost increase is insignificant compared to the total cost of the home, particularly when the increased level of safety is factored.

Do AFCIs interfere with smoke alarms and appliances, and trip unnecessarily?

AFCIs do not interfere with power supply reliability. These state-of-the-art devices identify problems that current circuit breakers are not designed to protect against, which can result in what appears to be an unexplained circuit breaker trip. By actually identifying these problems, residents are safer.

What is the *NEC*?

The *NEC* is the *National Electrical Code*. The *NEC's* mission is to provide practical safeguards from the hazards that arise from using electricity. It is the most widely adopted safety code in the United States and the world, and it is the benchmark for safe electrical installations. The *NEC* is an evolving document, developed through an open consensus process. A new edition is issued every three years.

For more information, visit www.nfpa.org.



Tamper-Resistant Electrical Receptacles

What are tamper-resistant electrical receptacles and what is the new requirement?

The 2008 *National Electrical Code® (NEC®)* will require new and renovated dwellings to have tamper-resistant (TR) receptacles. These receptacles have spring-loaded shutters that close off the contact openings, or slots, of the receptacles. When a plug is inserted into the receptacle, both springs are compressed and the shutters then open, allowing for the metal prongs to make contact to create an electrical circuit. Because both springs must be compressed at the same time, the shutters do not open when a child attempts to insert an object into only one contact opening, and there is no contact with electricity. Tamper-resistant receptacles are an important next step to making the home a safer place for children.

Why require tamper-resistant electrical receptacles?

Each year, approximately 2,400 children suffer severe shock and burns when they stick items into the slots of electrical receptacles. It is estimated that there are six to 12 child fatalities a year related to this.

If homeowners do not have children, are TR receptacles required?

Yes. Owners or tenants of homes and apartments change frequently. In addition, exposure to electrical shock and burn accidents are not limited to a child's own home. Children visit homes of relatives and friends who don't have children of their own. This requirement ensures all new homes and apartments are safe for children, whether the home is their own or they are there on a temporary basis.

Do TR receptacles require greater insertion strength than standard receptacles?

TR receptacles require comparable force to other receptacles. The insertion force may vary depending on the newness of the device to the shape or style of the plug being inserted.

Are TR receptacles costly?

No. The projected cost of a TR receptacle adds about \$0.50 to the cost of an unprotected receptacle. Based on current statistics, the average home has about 75 receptacles resulting in an overall added cost of under \$40. This amount may vary slightly based on the type and style of TR receptacle used. This minimal increase in cost buys a significant increase in electrical safety for children.

Shouldn't people accept responsibility for their children and teach their children not to stick items in receptacles?

Accidents involving children and receptacles cannot be blamed entirely on poor parenting. They involve people who look away for a moment, only to face undue tragedy and pain as the result of a child's curiosity. The *NEC's* mission is to provide electrical safety in the home. TR receptacles are a simple and easy way to protect children from serious injuries that continue to happen every year.

Why are TR receptacles preferred over products such as receptacles with caps or with sliding receptacle covers?

Receptacle caps may be lost and also may be a choking hazard for some ages. Children can learn to defeat sliding receptacle covers when they watch their parents. TR receptacles provide security against the insertion of objects other than cord plugs into the energized parts.

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advantages of the construction industry using this type of construction but also relates the dangers to fire fighters, "The Illinois Fire Service Institute, at the University of Illinois, conducted tests to help determine the structural stability of sample floor systems. These studies suggest that engineered wooden I-beams can fail in as little as 4 minutes and 40 seconds under controlled test conditions". The report also states that weakened floors are difficult to detect from above as the floor surface may appear intact.

On November 16, 2007, NIOSH released report F2007-07. In this Fire Fighter Death in the Line-of-Duty report, NIOSH recommends "building code officials and local authorities having jurisdiction should consider modifying the current codes to require that lightweight trusses are protected with a fire barrier on both the top and the bottom". The report further states "In this incident, the floor trusses for the first floor did not have any protection on the bottom cord, which immediately exposed the trusses to fire in the basement. Unfinished basements are very common throughout the country. Basements typically house additional fire exposures such as alternative heating sources, hot water heaters, clothes dryers, etc.. It is critical for trusses and lightweight engineered wood I-beams that are used in a load-bearing assembly to be protected with a thermal barrier such as gypsum wallboard. The function of the thermal barrier is a critical factor in the fire performance of the assembly".

In April, 2005, NIOSH released their report "Preventing Injuries and Deaths of Fire Fighters due to Truss System Failures". In their release they recommended the placement of a labeling system on buildings to indicate the type of construction. While this recommendation will probably not be acceptable to residents of a one or two family home, we can mandate that they increase the protection of the construction type to provide increased safety to the residents and the responding fire fighters.

1. National Institute for Occupational Safety and Health Report F206-26, July, 2007.
2. National Institute for Occupational Safety and Health Report F2007-12, May, 2008.
3. National Institute for Occupational Safety and Health Report F206-24, September, 2007.
4. National Institute for Occupational Safety and Health Report F2007-07, November, 2007.
5. National Institute for Occupational Safety and Health Alert, "Preventing Injuries and Deaths of Fire Fighters due to Truss System Failures".

Final Action: AS AM AMPC___ D

RB71-07/08

R313, R313.1.1 (New), R313.1.2 (New), R313.1.3 (New). Chapter 43 (New)

Proposed Change as Submitted:

Proponent: Roger R. Evans, Park City Municipal Corporation, representing Utah Chapter of ICC

1. Revise section title as follows:

SECTION R313 SMOKE ALARMS

2. Add new text as follows:

R313.1.1 Carbon monoxide alarms. In new construction, dwelling units within which fuel-fired appliances are installed shall be provided with an approved carbon monoxide alarm installed outside of each separate sleeping area in the immediate vicinity of the bedroom(s).

R313.1.2 Where required-existing dwellings. In existing dwellings, where interior alterations, repairs, fuel-fired appliance replacements or additions requiring a permit occur, or where one or more sleeping rooms are added or created, carbon monoxide alarms shall be provided in accordance with Section 313.1.1.

R313.1.3 Alarm requirements. The required carbon monoxide alarms shall be clearly audible in all bedrooms over background noise levels with all intervening doors closed. Carbon monoxide alarms shall be listed as complying with UL 2034 and shall be installed in accordance with this code and the manufacturer's installation instructions.

(Renumber subsequent sections)

3. Add standard to Chapter 43 as follows:

UL
2034-96 Standard for Single and Multiple Station Carbon Monoxide Alarms

Reason: According to the Journal of the American Medical Association (JAMA), carbon monoxide is the leading cause of accidental poisoning deaths in America. Over 1,500 people die annually due to accidental carbon monoxide exposure and an additional 10,000 seek medical attention. www.homesafe.com

Cost Impact: The code change proposal will increase the cost of construction from between \$50.00 to \$300.00 per dwelling unit.

Analysis: Review of proposed new standard UL 2034-96 indicated that, in the opinion of ICC Staff, the standard did comply with ICC standards for Section 3.6.3.1.

Committee Action:

Disapproved

Committee Reason: The committee felt that based upon the CTC recommendations and the insufficient amount of technical support on carbon monoxide detectors they still should not be mandated in the code. Further the committee urged industry to address the issues of reliability and false positive indications and bring the proposal back again.

Assembly Action:

None

Individual Consideration Agenda

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

Public Comment 1:

Richard J. Roberts, Professional Alarm Services Organization of North America (PASONA), requests Approval as Submitted.

Commenter's Reason: The committee's reason for disapproving Code Change Proposal RB71-07/08 is they believed there was insufficient amount of technical data to support the mandatory installation of CO alarms and urged industry to address the issues of reliability and false positive indications. It should be noted there is a study dated 12/22/04 conducted by Underwriters Laboratory (UL) that provides technical data reliability and false alarm immunity of CO alarms. The five-year UL study, Carbon Monoxide (CO) Alarm Field Study, was designed to evaluate the effectiveness of CO alarms. The study concluded that CO alarms provide effective signaling protection to the users should there be a fatal concentration of CO and they generally do not false alarm in the field. A copy of the report is available from UL upon request.

The study involved the random collection of over 100 CO alarms from U.S retail stores and manufacturer locations by the UL Field Services staff and representing three types of sensor technologies: (1) electrochemical, (2) biomemetic, and (3) semiconductor. All CO alarms collected were UL Listed in accordance with the Standard for Single and Multiple Station Carbon Monoxide Alarms, UL2034. Initial sensitivity tests were recorded and the alarms were then distributed to UL staff for installation in their homes and the alarm's installed locations were noted. At the specified frequencies UL staff returned their assigned CO alarms for sensitivity testing. Throughout the entire survey program a few units experienced early/delayed signals during the sensitivity tests, but all of these CO alarms would provide effective signaling protection to the users should there be a fatal concentration of CO and they generally do not false alarm in the field. A copy of the report is available from UL..

The UL study provides the technical data requested by the committee. As such the committee should approve Code Change Proposal RB71-07/08 as submitted.

Public Comment 2:

Salvatore DiCristina, Code Solutions, Inc., requests Approval as Modified by this Public Comment.

Modify proposal as follows:

**SECTION R313
ALARMS**

R313.1.1 Carbon monoxide alarms. In new construction, dwelling units within which fuel-fired appliances are installed or have attached garages shall be provided with an approved carbon monoxide alarm installed outside of each separate sleeping area in the immediate vicinity of the bedrooms.

R313.1.2 Where required-existing dwellings. In existing dwellings within which fuel-fired appliances exist or have attached garages, where interior alterations, repairs, fuel-fired-appliance replacements or additions work requiring a permit occurs, or where one or more sleeping rooms are added or created, carbon monoxide alarms shall be provided in accordance with Section 313.1.1.

R313.1.3 Alarm requirements. The required carbon monoxide alarms shall be clearly audible in all bedrooms over background noise levels with all intervening doors closed. Single station carbon monoxide alarms shall be listed as complying with UL 2034 and shall be installed in accordance with this code and the manufacturer's installation instructions.

(Renumber subsequent sections)

UL

2034-96 2008 Standard for Single and Multiple Station Carbon Monoxide Alarms

Commenter's Reason: The industry has addressed the issue of reliability by updating the requirements of the UL 2034 standard. All carbon monoxide detectors available today meet the update requirements which eliminated the false positive indications that occurred when carbon monoxide detectors were first brought to market in the 1990's. The State of New Jersey has had regulations mandating the installation of carbon monoxide alarms in all new and existing residential occupancies since 1992. The state implemented a reporting program at that time to identify reliability and false positive indication problems and there have been no problems identified in over 10 years.

Carbon monoxide poisonings leading to injury or death is well documented and the only way to protect the occupants from this odorless and tasteless product of combustion is through the installation of detectors complying with today's standards.

The proposal has been modified to add the requirement for the installation of carbon monoxide alarms for dwelling units with attached garages, to simplify when existing dwellings need to comply, to allow the installation of single station carbon monoxide alarms and to reference the latest version of the UL standard.

Rodgers, Emory

From: Mays, Eric M. [emays@pwcgov.org]
Sent: Thursday, October 23, 2008 9:04 AM
To: Brian Smith; Lynch, Paul M.; john.orrison@herndon-va.gov; david.cooper@fauquiercounty.gov; BOrr@CULPEPERCOUNTY.GOV; dmitchel@loudoun.gov; Muste, George; Wilson, Andrew; jannine.pennell@alexandriava.gov; david.janifer@dc.gov; Elizabeth Wells; Shahriar Amiri; cmajowka@arlingtonva.us; tharrison@arlingtonva.us; schoi@arlingtonva.us; John.Catlett@alexandriava.gov; Doug Fraser; linda.frye@dumfriesvirginia.org; Gregg.Fields@alexandriava.gov; Steve Shapiro (Steve Shapiro); Dupler, Bill; Roger Robertson (Roger Robertson); Revels, Greg; Underwood, Lynn; chainer@vbgov.com; Richard Bartell (E-mail)
Cc: Rodgers, Emory; Hugh, Wade
Subject: Residential Brick Veneer Inspections?

Prince William County has had two recent cases of improper installation of brick veneer that has resulted in water intrusion into houses. The citizen dialogue has elevated to the Prince William Board of County Supervisors and DHCD on behalf of the Governor.

I would really appreciate if you can let me know whether or not your jurisdiction performs Residential Brick Veneer Inspections. If yes, what is the extent, timing and items inspected.

For your information, following is the most recent email I sent to the Prince William Board of County Supervisors.

Thanks in advance for your help.

Eric

From: Mays, Eric M.
Sent: Wednesday, October 22, 2008 10:08 PM
To: Ferguson, Carol
Cc: Hugh, Wade; Horton, Ross G.; Roltsch, Susan L.; BOCS; Chambers, Scott A.; Mockaitis, Gail; Gerhart, Craig S.
Subject: RE: Leaking Homes in Woodbridge, VA (Belmont Bay) 22191

Carol:

I wanted to follow-up on your additional questions relative to the Inspections Process.

The Virginia Uniform Statewide Building Code (VUSBC), Section 113.3 Minimum Inspections specifies the minimum inspections that are to be conducted at specific milestones during the construction process:

113.3 Minimum inspections. The following minimum inspections shall be conducted by the building official when applicable to the construction or permit:

1. Inspection of footing excavations and reinforcement material for concrete footings prior to the placement of concrete.
2. Inspection of foundation systems during phases of construction necessary to assure compliance with this code.
3. Inspection of preparatory work prior to the placement of concrete.
4. Inspection of structural members and fasteners prior to concealment.
5. Inspection of electrical, mechanical and plumbing materials, equipment and systems prior to concealment.
6. Inspection of energy conservation material prior to concealment.
7. Final inspection.

A Residential Brick Veneer Inspection is not mandated by the VUSBC. The Building Development staff does not currently conduct a Residential Brick Veneer Inspection, and I am not aware of any Virginia jurisdiction that requires such an inspection. However, I will contact other Northern Virginia jurisdictions to confirm.

If a Residential Brick Veneer Inspection is mandated, it will require a very resource intense process. Multiple inspections will have to be conducted as each brick veneer wall is constructed to confirm: proper air gap; weather-resistant sheathing paper; brick ties; interior flashing; and weep holes. This will require the mason to stop their work approximately every 4 to 8 feet of wall height to allow for an inspection before continuing the work and concealing those items in the lower part of the wall. For a two story house with a brick veneer front, 3 additional inspections would be required. If the brick veneer was installed on the entire house, 12 to 16 additional inspections would be required. This inspection process would significantly slow down the progress of the mason's work and add cost to the inspections process.

Based on Mr. Iavecchia's case and one other case in the Gainesville District, I have instructed the Inspectors to start verifying that the weep holes are installed in the proper locations with the proper spacing during the Residential Close-In Inspections and Residential Final Inspections. However, this will not confirm whether or not the concealed items were properly installed.

Please let me know if you have any additional questions.

Thanks,
Eric

Rodgers, Emory

From: Mays, Eric M. [emays@pwcgov.org]
Sent: Wednesday, January 21, 2009 11:52 AM
To: Underwood, Lynn
Cc: Collins, James L.; jbaker@roanokecountyva.gov; samiri@arlingtonva.us; John Glover; Pylant, Ray; Tomberlin, Guy; Lynch, Paul M.; Dupler, Bill; Roger Robertson (Roger Robertson); WittR@chesterfield.gov; Richard Bartell (E-mail); chainer@vbgov.com; Farrell, Sean; Stan Massie (Stan Massie); ccook@blacksburg.gov; kcline@rockinghamcountyva.gov; Justin Biller; emckin@arlingtonva.us; Rodgers, Emory; all56@co.henrico.va.us; JMITCHE1@loudoun.gov; mclift@co.kinggeorge.state.va.us; Steve Shapiro (Steve Shapiro); kbridges@ci.martinsville.va.us; ralston.mcinnis@norfolk.gov; mredifer@nngov.com; John.Catlett@alexandriava.gov
Subject: VBCOA Board Meeting - Residential Sprinkler Discussion

Lynn:

I need to attend the TRB meeting this Friday, and I won't be able to attend the VBCOA Board of Directors Meeting.

In talking with Jim Collins, I understand you have several VBCOA members that are looking at participating in the Residential Sprinkler Ad Hoc Committee being formed by VFPA.

Since I cannot attend the VBCOA Board of Directors Meeting, I at least wanted to voice my opinion.

My professional view of the Residential Sprinkler initiative is fire suppression saves lives, but I do not support the current proposal as written. My specific concerns are:

- **Tradeoffs Potentially Increase the Hazard in Residential Construction**

I disagree with the tradeoffs where the passive fire protection or fire rating requirements for interior and/or exterior walls are being reduced in exchange for the fire suppression system.

Prince William County currently has between 6000 and 7000 foreclosed houses (single family detached and townhouses) where the water service has been turned off. If a fire starts in one of these houses, it will spread more quickly with any reduction in required fire ratings.

As a Building Official, I would argue this isn't only a reduction in safety, but I would have to consider whether or not I am required to vacate the adjacent or adjoining dwelling/building when the water service is turned off.

- **Fire Suppression Systems have to be maintained.**

There must be a mandatory maintenance inspection program to accompany the requirement to install Residential Sprinklers. Otherwise, the systems will degrade over time and will not perform. If the tradeoffs are allowed, this will create even a more dangerous situation.

- **Limited Fire Suppression without Tradeoffs: A Possible Win-Win Solution**

I believe the current published NFPA Standards for Residential Sprinklers do not provide an optimal solution for this problem in terms of balancing safety, cost and long term maintenance. Captain Ray Scott (Retired PWC FMO) previously proposed an optimal solution that I believe would be a win-win for all the interested parties.

Captain Scott's proposal was to require the installation of a Limited Fire Suppression System in houses that focused only on the areas with the greatest fire hazard (e.g. kitchen, utility room and mechanical room). In the Limited System the fire sprinklers would be installed directly on the potable water lines in the house. The water meter and water lines would not have to be increased in size. The normal movement of water through the potable water lines would minimize the problems with standing water in fire suppression

lines. The plumber could actually install the pipe and sprinkler head during the normal construction sequence, which negates the need for an additional trade specialist and coordination. This would in turn allow the Building Departments to inspect the installation as part of the normal Plumbing Inspection instead of requiring an additional Fire Suppression Inspection. This would create an affordable solution and increase public safety.

I understand the devil is in the details, and a lot would need to be done flush out this concept. However, I believe as a concept, using Limited Fire Suppression in residential construction without tradeoffs offers a more viable solution.

I am truly concerned if the current proposal contained in the 2009 IRC moves forward, there will be significant push back that will hurt the goal of making residential buildings safer through the installation of active fire suppression. Fire suppression saves lives, and we all need to work to develop a solution that can be accepted by all of the stakeholders to make this a reality.

Thanks,
Eric

12.8.08

To: Proponents, Opponents and Undecided Stakeholders
From: Emory Rodgers, DHCD
Subject: IRC Sprinklers

IRC Work Group 4 meets April 9, 2009. Here are some thoughts to help provide a framework for discussion and possible consensus. Data collection will be important as will looking at options, incentives, cost and the impact of other measures approved in the 2006 and 2009 I-codes/NEC and state legislation on fire-proof cigarettes.

Data: National and State

1. 5-years data comparing NFPA and Virginia data for deaths and injuries of residents/firefighters, property losses and age demographics.

- Deaths have averaging around 3,000 residents of which some 2400 are 1&2 family dwellings. Confirm these and does Virginia fall above, same or below national average that would be around 48 deaths per state.
- Demographics on age such as 55 or over, under 55 and under 6 years of age. This can help identify prevention and educational options.
- Dwelling age pre-1972, pre-1996 and post-1996. Could have the USBC assisted in a decline of fires based on increased life safety and property protection measures and where there remains gaps that proponents say answer is sprinklers and opponents say answer maybe smoke detectors, education, arc-fault devices, etc. Should the 1st effort still be on new versus older homes or smaller homes such as 1500 s.f. or less mandated since owners of larger homes have the income resources to do sprinklers as an option?

2. Virginia Data:

- Smoke detectors present, operable or not operable. Will this data shed any light on effectiveness to save lives or injuries? Will it provide an option where public and private entities can partner to have existing homes obtain smoke detectors?
- What is response times 10 minutes or less, 20 minutes or less and over 20 minutes to discern relationship to above data on deaths and property losses and value of sprinklers or other passive options. How would have sprinklers assisted or other options? Breakout of fires in urban, suburbs and rural? Define areas likely to be more of a problem?
- List the 5-7 major causes such as stove, smoking, kids with matches, candles, electrical, malfunctioning appliances or arson. Location of ignition kitchen, bedroom, family rooms, basement.
- Other applicable data? How many homes are being sprinkled and is it increasing? Example townhomes wanting 200s.f. in attic sprinkled have to be sprinkled or are large mansions over 4500sf. now being sprinkled? How many builders and fire service members have sprinklers? Sprinkler contractors should have data and

maybe some building departments and survey VFPA, fire chiefs, fire marshals, HBAV and firefighters.

3. Cost:

- \$1.61 used as average based on study of 10 localities. Hard to apply when adopting statewide? Is comparable data for Maryland over \$2.00 better for Northern Virginia and urban areas with similar size homes, styles/layouts and labor costs? If homes remain at 2200sf average still in range of \$3500 to \$5,000? Rural homes on wells may have more value to be sprinkled with longer response time, but impact on affordability with higher installation costs where \$3,000 can be problematic with income levels. Will need to do manufactured housing and modular too? Tanks can be only 200-300 gallons but where place them into small home slab on grade or crawlspace?

4. How does this discussion interface or not with other code changes mandated into the IRC/NEC and state law?

- Fire safe cigarettes now mandated so how will this negate and reduce deaths as claimed by proponents since it is one of the leading causes of fires?
- 2003 USBC required arc-fault devices in bedrooms and now 2006/2008 NEC mandates for entire dwelling unit. How will these impact deaths/injuries/property damages? Proponents cited from 400 to 600 deaths per year.

5. Mandates, Options and Incentives:

- IRC mandatory requirements no changes with only incentive for townhomes from 2 to 1 hour. Based on views expressed to date there is no consensus. Code change required to delete or unless directed by BHCD Codes and Standards to do so.
- ICC option with incentives and to be “where installed” pulled so no vote but could be considered in USBC process. Building officials were more supportive of this route as 1st step. USBC has already incentive for basement and not have emergency egress windows. Consider mandatory from IRC with incentives from glazing, arc-fault devices, smoke detectors, CO alarms, etc.
- Do townhomes and duplexes only with incentives such as the rating reduction; glazing at 3-10 feet; smoke detectors each floor but not each sleeping area and inside each bedroom; SFPC limits on access roads, longer fire hydrant distances and fire flows decreased that is allowed under design options.
- Do mandates but not where there are wells or for manufactured housing or under some square footage threshold.
- Passive option as one ICC code change wanted to have floors and ceilings rated so why not have 5/8 type x sheetrock all walls and ceilings with ½ or ¾ rated garage, basement and bedroom doors with closers, CO alarm on floor of fuel fired appliances, arc-fault devices as sprinklers or this option?

As all can see, if there is some willingness to compromise, then there are some available options to move the life safety and property protection ball down the field. Remember 20 years ago we were far from where we are today and even the USBC doesn't require a sprinkler in very small R-2's where there is insufficient water pressure or supply? Is there a "Virginia Way" like we have done for so many BOCA/I-code changes and did in 2006 for I-3's and emergency communications?



Loudoun County, Virginia

www.loudoun.gov

Board of Supervisors

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December 2, 2008

Board of Housing and Community Development
The Jackson Center
501 North Second Street
Richmond, VA 23219-1321
Attention: Mr. Tom Fleury, Chairman

Dear Chairman Fleury,

Recent action by the voting members at the International Code Council (ICC) in Minneapolis, MN has resulted in a residential sprinkler requirement for all new one- and two- family homes and townhouses. The new residential sprinkler mandate will appear in the 2009 International Residential Code (IRC), which will be published by the end of Calendar Year 2008.

Within Virginia, these requirements are subject to review and adoption by the Commonwealth of Virginia's Board of Housing and Community Development (BHCD), as a component of the regular code update process. This review is slated to begin in March 2009.

It is the desire of the Loudoun County Board of Supervisors that the BHCD adopt the new residential sprinkler mandate when it updates the 2009 IRC for Virginia. Our local fire and building staff will be actively involved in supporting this important code change throughout the upcoming review period; and they will report back to the Board of Supervisors on the progress of this critical issue.

Residential sprinklers have long been advocated by the nation's fire service as a means to significantly reduce loss of life and injury in home fires. Whereas the requirement of smoke alarms in homes has resulted in a dramatic decline in residential fire deaths over the last three decades, more than 3,000 (2400) people die each year from home fires. Statistics show that a home fire occurs in the United States every 80 seconds, and residential sprinklers are the only fire protection technology that works to control the fire, reduce the production of deadly heat and fire gases, and provide occupants precious time to escape a potentially deadly environment. Recent studies have also demonstrated that residential sprinklers are much more affordable than in years past, especially when installed as part of new construction.

On behalf of the Board of Supervisors, I look forward to positive action by the BHCD toward the implementation of residential sprinkler requirements in Virginia. Please feel free to contact me if you have any questions concerning this issue.

Sincerely,

Scott K. York
Chairman, Loudoun County Board of Supervisors

RB66-07/08

R101.2, R301.1.3.1 (New), R313 (New), R317.2, R317.2.4, R310.1, AP102 (New), Chapter 43 (New)

Proposed Change as Submitted:

Proponent: Rick Morris, AvalonBay Communities, Inc.

1. Revise as follows:

R101.2 (Supp) Scope. The provisions of the *International Residential Code for One- and Two-family Dwellings* shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal and demolition of detached one- and two-family dwellings and townhouses not more than three stories above-grade in height with a separate means of egress and their accessory structures.

The provisions of this Code shall also apply to the construction, alteration, enlargement and replacement of townhouses not more than 4 stories above grade plane that are equipped throughout with an automatic sprinkler system installed in accordance with NFPA 13D.

Exception: Live/work units complying with the requirements of Section 419 of the *International Building Code* shall be permitted to be built as one- and two-family dwellings or townhouses. Fire suppression required by Section 419.5 of the *International Building Code* when constructed under the *International Residential Code for One- and Two-family Dwellings* shall conform to Section 903.3.1.3 of the *International Building Code*.

2. Add new text as follows:

R301.1.3 Engineered design. When a building of otherwise conventional construction contains structural elements exceeding the limits of Section R301 or otherwise not conforming to this code, these elements shall be designed in accordance with accepted engineering practice. The extent of such design need only demonstrate compliance of nonconventional elements with other applicable provisions and shall be compatible with the performance of the conventional framed system. Engineered design in accordance with the *International Building Code* is permitted for all buildings and structures, and parts thereof, included in the scope of this code.

R301.1.3.1 Townhouses four stories above grade plane. For structural design of townhouses four stories above grade plane, the structural provisions of the *International Building Code* for Group R-3 shall apply

3. Rename section and add new R313.1 as follows:

R313 **FIRE PROTECTION SYSTEMS AND SMOKE ALARMS**

R313.1 Fire protection systems. An approved automatic fire sprinkler system shall be installed in new townhouses in accordance with NFPA 13D, except as follows:

1. Where townhouses have separation walls designed based on R317.2, Exception 2, sprinklers shall be provided to protect exterior combustible balconies, decks, porches and ground floor patios located under such combustible projections. Exterior sprinklers and supply piping shall be protected from freezing where freeze protection is required by P2603.6. Where sidewall sprinklers are installed beneath exposed wood joists, sprinklers shall be permitted to be installed with deflectors located 1 inch (25 mm) to 6 inches (152 mm) below the joists, not to exceed a maximum distance of 14 inches (356 mm) below the deck.
2. Where townhouses with private garages have separation walls designed based on R317.2, Exception 2, fire sprinkler protection shall be provided in the garage. Sprinklers in garages shall be connected to a system that complies with NFPA 13D. Garage sprinklers shall be residential sprinklers or quick-response sprinklers, designed to provide a density of 0.05 gpm/ft². Garage doors shall not be considered as obstructions with respect to sprinkler placement.

(Renumber subsequent sections)

4. Revise as follows:

R317.2 Townhouses. Each townhouse shall be considered a separate building and shall be separated by fire-resistance-rated wall assemblies meeting the requirements of Section R302 for exterior walls.

Exceptions:

1. A common 2-hour fire-resistance-rated wall is permitted for townhouses if such walls do not contain plumbing or mechanical equipment, ducts or vents in the cavity of the common wall. Electrical installations shall be installed in accordance with Chapters 33 through 42. Penetrations of electrical outlet boxes shall be in accordance with Section R317.3.
2. A common 1-hour fire-resistance rated wall is permitted for townhouses equipped throughout with an automatic sprinkler system installed in accordance with R313.1. The wall shall be rated for fire exposure from both sides and shall extend to and be tight against exterior walls and the underside of the roof sheathing. Where roof surfaces adjacent to the wall are at different elevations, the rated wall shall continue to the upper roof sheathing.

5. Revise as follows:

R317.2.4 Structural independence. Each individual townhouse shall be structurally independent.

Exceptions:

1. Foundations supporting exterior walls or common walls.
2. Structural roof and wall sheathing from each unit may fasten to the common wall framing.
3. Nonstructural wall coverings.
4. Flashing at termination of roof covering over common wall.
5. Townhouses separated by a common 2-hour fire-resistance-rated wall as provided in Section R317.2.

6. Revise as follows:

R310.1 (Supp) Emergency escape and rescue required. Basements and every sleeping room shall have at least one operable emergency escape and rescue opening. Such opening shall open directly into a public street, public alley, yard or court. Where basements contain one or more sleeping rooms, emergency egress and rescue openings shall be required in each sleeping room. Where emergency escape and rescue openings are provided they shall have a sill height of not more than 44 inches (1118 mm) above the floor. Where a door opening having a threshold below the adjacent ground elevation serves as an emergency escape and rescue opening and is provided with a bulkhead enclosure, the bulkhead enclosure shall comply with Section R310.3. The net clear opening dimensions required by this section shall be obtained by the normal operation of the emergency escape and rescue opening from the inside. Emergency escape and rescue openings with a finished sill height below the adjacent ground elevation shall be provided with a window well in accordance with Section R310.2. Emergency escape and rescue openings shall open directly into a public way, or to a yard or court that opens to a public way.

Exceptions:

1. Basements used only to house mechanical equipment and not exceeding total floor area of 200 square feet (18.58 m²).
2. In dwelling units equipped throughout with an automatic sprinkler system installed in accordance with NFPA 13D.

7. Add new text as follows:

AP102 Fire flow. The fire-flow requirements for townhouses specified by IFC Appendix B, where adopted, shall be permitted to be reduced by 75% for buildings equipped throughout with an automatic sprinkler system installed in accordance with NFPA 13D.

Reason: This proposal would add a requirement for residential sprinkler systems to be installed in all new townhouses constructed under the *International Residential Code*, and it includes a package of sprinkler incentives that will help offset the added cost of sprinklers, as well as improve design flexibility. If a reasonable package of incentives can be offered by the code, it simply makes sense for multifamily developers to provide these systems to protect new townhouses.

It is well known that sprinklers are the best tool for providing firesafety in residential occupancies, and the concept of the code providing incentives to encourage the use of these systems in residential occupancies is already in use in the IBC. In fact, the IBC's incentive package provided a basis for major multifamily builders to not oppose the IBC requirement for all residential occupancies to be sprinklered when that issue was considered several years ago.

By accepting this code change, sprinkler protection for townhouses would become reasonably affordable to the builders who build townhouses and to the homeowners who buy them. As a result, we could take a significant step forward in improving life safety and reducing property losses in residential occupancies for decades to come.

The following is an explanation of each new proposed section relating to this sprinkler alternative for dwellings:

1. *Revise Section R101.2:* Typical townhouse construction is no more than 4 stories above grade plane. Presently when a developer goes from 3 to 4 stories above grade, the project is then required to be designed under the IBC. Covering townhouses up to 4 stories above grade plane in the IRC provides a significant incentive for developers. The impact on 4-story buildings would be significant enough to warrant installing sprinklers in 2- and 3-story buildings, which will gain far less benefit from this change, when one considers the overall package. The overall gain of having all townhouses equipped with fire sprinklers makes the allowance of 4-story townhouses under the IRC a worthwhile investment in safety.
2. *Add new Subsection R301.1.3.1 to the "Engineered design" requirement.* This new subsection will address the structural design requirements for townhouses built under the IRC that are 4 stories above grade. The existing structural requirements in the IRC are based on a maximum 3 stories above grade, and by referencing the IBC, proper design is assured.
3. *Rename Section R313 and add new Section R313.1:* This provides a charging requirement for providing residential sprinklers in accordance with NFPA 13D for townhouses. The two exceptions deal with issues not addressed by NFPA 13D, one is outside combustible decks and the other is private garages. The combustible deck sprinkler requirement is consistent with a similar provision to IBC Section 903.3.1.2.1, "Balconies and decks". Most likely a dry sidewall sprinkler supplied by a wet pipe sprinkler system would be used to comply with this exception. The garage sprinkler criteria are based on NFPA 13R Section 6.8.3.3. Dry pendent sprinklers supplied by a wet pipe sprinkler system would most likely be used to protect garages.
4. & 5. *Add new Exception #2 to R 317.2 and revise Exception #5 to R317.2.4:* This is a similar one hour exception that was in BOCA Code Section 310.5 Exception #2 for multiple single-family dwellings. That section of Code read: "In multiple single-family dwellings that are equipped throughout with an approved automatic sprinkler system installed in accordance with Section 906.2.3 (NFPA 13D), the fire-resistance rating between each dwelling unit shall not be less than 1 hour and shall be constructed as a fire partition."
6. *Add new Exception to Section R310.1:* The IRC already allows elimination of escape windows in Groups R-1, R-2, R-4 and I-1 occupancies (IBC Section 1026, Exception 1) based on the installation of fire sprinklers. NFPA Life Safety Code, also contains an NFPA 13D related exception to the escape window requirement for one- and two-family dwellings in Section 24.2.2.1.2(2).
7. *Revise Appendix P101:* The reduction in fire flow is similar to allowances granted by the IFC.

Cost Impact: The code change proposal may increase or decrease the cost of construction, depending on the value of sprinkler incentives versus the cost of adding sprinklers to a particular building.

Analysis: Review of proposed new standard NFPA 13D-07 indicated that, in the opinion of ICC Staff, the standard did comply with ICC standards criteria.

Committee Action:

Disapproved

Committee Reason: The committee felt that there was insufficient effective or substantial reason to move the sprinkler requirements out of Appendix P where it is now. The committee agreed that if the code is going to mandate sprinklers for new construction that it should apply to all structures in the scope of the International Residential Code not just townhouses in a piecemeal approach. The issues of fire flow and not wanting a direct reference to the International Fire Code were also issues in the committee's decision.

Assembly Action:

None

Individual Consideration Agenda

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

Public Comment:

George Martin, Howard County, Department of Licenses & Permits, representing Maryland Building Officials Association (MBOA), requests Approval as Modified by this Public Comment.

Steven L. McDaniel, CPCA, New York State Building Officials Conference, requests Approval as Modified by this Public Comment.

Rick Morris, AvalonBay Communities, Inc., requests Approval as Modified by this Public Comment.

Replace proposal as follows:

1. Add new section as follows:

R313 **FIRE SPRINKLER SYSTEM FOR TOWNHOUSES**

R313.1 Townhouse Fire Sprinklers. An automatic residential fire sprinkler system shall be installed in townhouses.

Exception: A sprinkler system shall not be required when additions or alterations are made to existing townhouses that do not have a fire sprinkler system installed.

R313.2 Design and installation. Automatic residential fire sprinkler systems for townhouses shall be designed and installed in accordance with P2904.

(Renumber subsequent sections)

2. Modify AP101 as follows:

AP101 Fire sprinklers. An approved automatic fire sprinkler system shall be installed in new one-and two-family dwellings and townhouses in accordance with P2904 NFPA 13D.

3. Modify exception as follows:

R317.2 Townhouses. Each townhouse shall be considered a separate building and shall be separated by fire-resistance-rated wall assemblies meeting the requirements of Section R302 for exterior walls.

Exception: A common 2 1-hour fire-resistance rated wall is permitted for townhouses if such walls do not contain plumbing or mechanical equipment, ducts or vents in the cavity of the common wall. The wall shall be rated for fire exposure from both sides and shall extend to and be tight against exterior walls and the underside of the roof sheathing. Electrical installations shall be installed in accordance with Chapters 33 through 42. Penetrations of electrical outlet boxes shall be in accordance with Section R317.3.

4. Modify exception 5 as follows:

R317.2.4 Structural independence. Each individual townhouse shall be structurally independent.

Exceptions:

1. Foundations supporting exterior walls or common walls.
2. Structural roof and wall sheathing from each unit may fasten to the common wall framing.
3. Nonstructural wall coverings.
4. Flashing at termination of roof covering over common wall.
5. Townhouses separated by a common 2 1-hour fire-resistance-rated wall as provided in Section R317.2.

Commenter's Reason (Martin): In 1989 the State of Maryland enacted House Bill 658, "Sprinkler Systems – Installation in New Construction", that required dormitories, hotels, lodging or rooming houses, multifamily residential dwellings **and townhouses** to be sprinklered. Therefore, since 1990, townhouses in Maryland have been sprinklered and being so has not been detrimental to the homebuilding industry, but has been a major success to saving lives over the past 18 years.

To address reasonable fire protection and affordable housing, many Maryland jurisdictions over the years have permitted townhouse separation of one hour with sprinklers installed in accordance with NFPA 13D. Therefore, based on our past success with sprinklered townhouses with one hour separations between the townhouses, MBOA is in support of mandatory sprinklers in townhouses with one hour dwelling unit separations.

The modifications in Items #1 & #2 will coordinate the IRC Committee approved Code Proposal RP3-07/08 (the prescriptive sprinkler design criteria that is now being placed in the body of the IRC) with this code change.

Commenter's Reason (McDaniel): Our Building Officials Association believes that fair and reasonable sprinkler package should be provided in the IRC to encourage the installation of residential sprinkler systems in townhouse in the IRC. This public comment provides a good beginning with a sprinkler alternative that we believe meet these criteria.

To address reasonable fire protection and affordable housing, many other jurisdictions throughout the country over the years have permitted townhouse separation of one hour with sprinklers installed in accordance with NFPA 13D. Therefore, based on these past successes with sprinklered townhouses with one hour separations between the townhouses, our building officials association is in support of mandatory sprinklers in townhouses with one hour dwelling unit separations.

The modifications in Items #1 & #2 will coordinate the IRC Committee approved Code Proposal RP3-07/08 (the prescriptive sprinkler design criteria that is now being placed in the body of the IRC) with this code change.

Commenter's Reason (Morris) AvalonBay originally submitted RB66-07/08 because we believe that a fair and reasonable sprinkler package should be provided in the IRC to encourage the installation of residential sprinkler systems in townhouses in the IRC. Contrary to the Committee's published reason for disapproval of RB66, there are numerous state and local building code amendments to the IRC throughout the U.S. where townhouses are require to be sprinklered, whereas detached single family homes are not, because it is considered the "first step" in eventually getting all residential uses sprinklered. In fact, even though the committee also disapproved RB65 for the same reason as this code proposal (RB66), there was an assembly vote on RB65 and it passed, over the disapproval of the committee. Therefore, clearly the ICC membership does see merit in the rationale for mandatory sprinkling of townhouses.

This public comment simplifies the original RB66. It provides a good beginning for a townhouse sprinkler requirement that AvalonBay believes would meet code officials' and townhouse builders/developers' criteria as fair, reasonable and economical.

To address reasonable fire protection and affordable housing, many other jurisdictions throughout the country over the years have permitted townhouse separation of one hour with sprinklers installed in accordance with NFPA 13D. Therefore, based on these past successes with sprinklered townhouses with one hour separations between the townhouses, AvalonBay is in support of mandatory sprinklers in townhouses with one hour dwelling unit separations.

The modifications in Items #1 and #2 will coordinate the IRC Committee approved Code Proposal RP3-07/08 (the prescriptive sprinkler design criteria that is now being placed in the body of the IRC) with this code change.

Final Action: AS AM AMPC___ D

Committee Action:**Disapproved**

Committee Reason: The committee felt that without mandatory language requiring sprinkler systems in the body of the code the trade off's offered by this code change don't belong. Further, the issues of outside wall protection and attic protection were a concern with this proposal. There was additional concern about trading off needed passive protection. Overall, the committee felt that there was insufficient effective or substantial reason to move the sprinkler requirements out of Appendix P where it is now. Keeping this in the appendix makes it available to jurisdictions that wish to take advantage of it and just because it is in the Appendix doesn't mean the provisions are hidden.

Assembly Action:**None***Individual Consideration Agenda*

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

Public Comment 1:

Robert F. Loeper, Jr., President, representing Region VII Chapter of ICC, requests Approval as Modified by this Public Comment.

George Martin, Howard County, Department of Licenses and Permits, representing Maryland Building Officials Association (MBOA), requests Approval as Modified by this Public Comment.

Steven L. McDaniel, CPCA, New York State Building Officials Conference, requests Approval as Modified by this Public Comment.

Rick Morris, AvalonBay Communities, Inc., requests Approval as Modified by this Public Comment.

Replace proposal as follows:

R302.1 Exterior walls. Construction, projections, openings and penetrations of exterior walls of dwellings and accessory buildings shall comply with Table R302.1(1); or for dwellings equipped throughout with an automatic sprinkler system installed in accordance with Section P2904, Table R302.1(2). These provisions shall not apply to walls, projections, openings or penetrations in walls that are perpendicular to the line used to determine the fire separation distance. Projections beyond the exterior wall shall not extend more than 12 inches (305 mm) into the areas where openings are prohibited.

Exceptions:

1. Detached tool sheds and storage sheds, playhouses and similar structures exempted from permits are not required to provide wall protection based on location on the lot. Projections beyond the exterior wall shall not extend over the lot line.
2. Detached garages accessory to a dwelling located within 2 feet (610 mm) of a lot line are permitted to have roof eave projections not exceeding 4 inches (102 mm).
3. Foundation vents installed in compliance with this code are permitted.

**TABLE R302.1(1)
EXTERIOR WALLS**

Exterior Wall Element		Minimum Fire-Resistance Rating	Minimum Fire Separation Distance
Walls	(Fire-resistance rated)	1 hour with exposure from both sides	0 feet
	(Not fire-resistance rated)	0 hours	5 feet
Projections	(Fire-resistance rated)	1 hour on the underside	2 feet
	(Not fire-resistance rated)	0	5 feet
Openings	Not allowed	N/A	< 3 feet
	25 % Maximum of Wall Area	0 hours	3 feet
	Unlimited	0 hours	5 feet
Penetrations	All	Comply with Section R317.3	< 5 feet
		None required	5 feet

N/A = Not Applicable

**TABLE R302.1(2)
EXTERIOR WALLS – DWELLINGS WITH FIRE SPRINKLERS**

Exterior Wall Element		Minimum Fire-Resistance Rating	Minimum Fire Separation Distance
Walls	(Fire-resistance rated)	1 hour with exposure to the fire from the outside	0 feet
	(Not fire-resistance rated)	0 hours	3 feet ¹
Projections	Fire-resistance rated	1 hour on the underside	2 feet ¹
	(Not fire-resistance rated)	0	3 feet
Openings	Not allowed	N/A	< 3 feet
	Unlimited	0	3 feet ¹
Penetrations	All	Comply with Section R317.3	< 3 feet
		None required	3 feet ¹

1. For residential subdivisions where all dwellings are equipped throughout with an automatic sprinkler systems installed in accordance with Section P2904, the fire separation distance for non-rated exterior walls and rated projections shall be permitted to be reduced to zero feet, and unlimited unprotected openings and penetrations shall be permitted, where the adjoining lot provides an open setback yard that is 6 feet or more in width on the opposite side of the property line.

R310.1 Emergency escape and rescue required. Basements and every sleeping room shall have at least one operable emergency and rescue opening. Such opening shall open directly into a public street, public alley yard or court. Where basements contain one or more sleeping rooms, emergency egress and rescue openings shall be required in each sleeping room, but shall not be required in adjoining areas of the basement. Where emergency escape and rescue openings are provided they shall have a sill height of not more than 44 inches (1118 mm) above the floor. Where a door opening having a threshold below the adjacent ground elevation serves as an emergency escape and rescue opening and is provided with a bulkhead enclosure, the bulkhead enclosure shall comply with Section R310.3. The net clear opening dimensions required by this section shall be obtained by the normal operation of the emergency escape and rescue opening from the inside. Emergency escape and rescue openings with a finished sill height below the adjacent ground elevation shall be provided with a window well in accordance with Section R310.2. Emergency escape and rescue openings shall open directly into a public way, or to a yard or court that opens to a public way.

Exceptions:

1. Basements used only to house mechanical equipment and not exceeding total floor area of 200 square feet (18.58 m2).
2. In dwelling units equipped throughout with an automatic sprinkler system installed in accordance with Section P2904.

Commenter's Reason (Bartell/Loeper): ICC Region 7 unanimously believes that fair and reasonable sprinkler alternatives should be provided in the IRC to encourage the installation of residential sprinkler systems. This public comment provides a good beginning with these two (2) sprinkler alternatives that we believe meet these criteria.

To address reasonable fire protection and affordable housing, there have been many jurisdictions over the years that have permitted the elimination of the bedroom emergency window (which is called the "secondary means of escape" under the NFPA 101, "Life Safety Code") in accordance with NFPA 101 Section 24.2.2.1.2 without any detriment to the safety of the occupants in these sprinklered dwellings. This window exception for sprinklers in one and two family dwellings has been in the Life Safety Code since the 1981 edition (over 9 editions and 27 years). In fact, in those jurisdictions that have permitted the use of this exception the great majority of bedroom designs have included the use of windows that meet the emergency window criteria and this exception has typically been used to accommodate specific design features or unusual circumstance. This truly does afford additional flexibility to the homebuilder or homeowner to utilize other types of windows and design features without the encumbrance of the minimum opening and height above the floor requirements, and, without any detriment to the safety of the occupants of these sprinklered dwellings.

In addition, the exterior wall provisions for sprinklered dwellings, is also a reasonable fire protection compensatory feature to provide and also addresses the affordable housing issue.

Additionally, the modifications in this public comment referencing Section P2904 will coordinate the IRC Committee approved Code Proposal RP3-07/08 (the prescriptive sprinkler design criteria that is now being placed in the body of the IRC) with this code change.

Commenter's Reason (Martin): In 1989 the State of Maryland enacted House Bill 658, "Sprinkler Systems – Installation in New Construction", that required dormitories, hotels, lodging or rooming houses, multifamily residential dwelling and townhouses to be sprinklered. Therefore, since 1990, townhouses in Maryland have been sprinklered and being so has not been detrimental to the homebuilding industry, but has been a major success in saving lives over the past 18 years.

In addition to the sprinkling of the above-noted residential occupancies by the State of Maryland, as of this year 79 out of 157 Maryland jurisdictions have mandatory sprinkling of one-and two family dwellings.

To address reasonable fire protection and affordable housing, many Maryland jurisdictions over the years have permitted the elimination of the bedroom emergency window (which is called the "secondary means of escape" under the NFPA 101, "Life Safety Code") in accordance with NFPA 101 Section 24.2.2.1.2 without any detriment to the safety of the occupants in these sprinklered dwellings. This window exception for sprinklers in one and two family dwellings has been in the Life Safety Code since the 1981 edition (over 9 editions and 27 years). In fact, just because jurisdictions permit this exception does not mean in the great majority of bedroom designs that no window is provided. It only provides additional flexibility to the homebuilder or homeowner to provide other types of windows that they desire without the encumbrance of the minimum opening and height above the floor requirement.

In addition, the exterior wall provisions for sprinklered dwellings, is also a reasonable fire protection compensatory feature to provide and also addresses the affordable housing issue.

Therefore, based on our past success with sprinkling one-and two dwellings in over half the jurisdictions in Maryland over the past 18 years, MBOA is in support of this public proposal to provide further incentives to encourage sprinkling of dwellings in the IRC.

The modifications in this public comment to reference Section P2904 will coordinate the IRC Committee approved Code Proposal RP3-07/08 (the prescriptive sprinkler design criteria that is now being placed in the body of the IRC) with this code change.

Commenter's Reason (McDaniel): Our Building Officials Association believes that fair and reasonable sprinkler alternatives should be provided in the IRC to encourage the installation of residential sprinkler systems in the IRC. This public comment provides a good beginning with two (2) sprinkler alternatives that we believe meet these criteria.

To address reasonable fire protection and affordable housing, there has been many jurisdictions over the years that have permitted the elimination of the bedroom emergency window (which is called the "secondary means of escape" under the NFPA 101, "Life Safety Code") in accordance with NFPA 101 Section 24.2.2.1.2 without any detriment to the safety of the occupants in these sprinklered dwellings. This window exception for sprinklers in one and two family dwellings has been in the Life Safety Code since the 1981 edition (over 9 editions and 27 years). In fact, just because jurisdictions permit this exception does not mean in the great majority of bedroom designs that no window is provided. It only provides additional flexibility to the homebuilder or homeowner to provide other types of windows meeting the light and ventilation requirements under the IRC Code Section R303 without the encumbrance of the minimum opening and height requirement above the floor of Section R310.2.

In addition, the exterior wall provisions for sprinklered dwellings, is also a reasonable fire protection compensatory feature to provide and also addresses the affordable housing issue.

In addition, the modifications in this public comment to reference Section P2904 will coordinate the IRC Committee approved Code Proposal RP3-07/08 (the prescriptive sprinkler design criteria that is now being placed in the body of the IRC) with this code change.

Commenter's Reason (Morris): After reading the Committee's published reason for disapproval and then watching the video of the actual public testimony on RB67-07/08 at <http://www.ircfiresprinkler.org/resources.htm>, I find the Committee's reason for turning down this reasonable sprinkler alternative package that was submitted by the International Association of Fire Chiefs, illogical and without reasonable merit. Based on the IAFC's written supporting statement and the public testimony give in support of this code proposal vs. the opposing testimony, there was more than adequate justification to approve this code proposal. This code proposal (RB67) does NOT mandate sprinklers, but only provided fair and reasonable "trade-offs" when sprinklers are installed.

AvalonBay believes that fair and reasonable sprinkler alternatives should be provided in the IRC to encourage the installation of residential sprinkler systems in the IRC. This public comment provides a good beginning with two (2) sprinkler alternatives that we believe meet this minimum criteria.

To address reasonable fire protection and affordable housing, there have been many jurisdictions over the years that her permitted the elimination of the bedroom emergency window (which is called the "secondary means of escape" under NFPA 101, "Life Safety Code") in accordance with NFPA 101, Section 24.2.2.1.2 without any detriment to the safety of the occupants in these sprinklered dwellings. This window exception for sprinklers in one and two family dwellings has been in the Life Safety Code since the 1981 edition (over 9 editions and 27 years). In fact, just because jurisdictions permit this exception does not mean in the great majority of bedroom designs that no window is provided. It only provides additional flexibility to the homebuilder or homeowner to provide other types of windows that they desire without the encumbrance of the minimum opening and height above the floor requirement.

In addition, the exterior wall provisions for sprinklered dwellings, is also a reasonable fire protection compensatory feature to provide and also addresses the affordable housing issue.

In addition, the modifications in this public comment to reference Section P2904 will coordinate the IRC Committee approved code proposal RP3-07/08 (the prescriptive sprinkler design criteria that is now being placed in the body of the IRC) with this code change.

Public Comment 2:

Crystal Feiser, representing West Virginia Code Officials Association, requests Disapproval.

Commenter's Reason: The Committee's action to disapprove this and all proposals to mandate sprinklers in the body of the IRC is correct and should not be overturned. The decision to require sprinklers should be left up to state and local jurisdictions. Appendix P can be adopted, if so desired. West Virginia will be forced to amend or delete the fire sprinkler requirements for the following reasons: water line size, pressure and lack of water availability.

Final Action: AS AM AMPC _____ D

RB68-07/08

R313.1 (New), Chapter 43 (New)

Proposed Change as Submitted:

Proponent: Sean DeCrane, Fire Department, Cleveland, OH, representing International Association of Fire Fighters, Local 93

1. Add new text as follows:

R313.1 Fire protection systems. One and two family dwellings that incorporate lightweight truss or engineered lightweight material such as wooden I-beams, cold form steel or trusses in the floor or ceiling areas shall have the floors/ceilings assemblies protected by a thirty (30) minute fire-rated barrier.

Exception: Where the building is protected with a sprinkler system designed to NFPA 13D.

(Renumber subsequent sections)

2. Add standard to Chapter 43 as follows:

NFPA

13D-07 Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes

Reason: On August 13, 2006 a Wisconsin fire fighter was killed, and a second fire fighter injured, when the floor they were operating on collapsed sending them into the basement. One fire fighter fell directly into the room of origin and was killed, the second fire fighter landed on the opposite side of a block wall and survived by shielding herself and making an escape through a rear window. They checked the floor to ensure it was safe and solid, just prior to collapse they heard a loud crack. T

The floor they were operating on was unprotected lightweight construction that collapsed without warning. In the ensuing investigation, the National Institute for Occupational Safety and Health released report F2006-26. One of the recommendations is to "modify current building codes to require that lightweight trusses be protected with a fire barrier". This should not only pertain to truss construction. There are additional forms of construction that can be determined to be lightweight, cold form steel, bar joists, wooden engineered I-beam, etc., the recent trend in residential construction is to use products that are financially beneficial. It is the belief of many of us in the fire service that as the industry engineers products to a more finite point we are losing our safety factors.

In April, 2005, NIOSH released their report "Preventing Injuries and Deaths of Fire Fighters due to Truss System Failures". In their release they recommended the placement of a labeling system on buildings to indicate the type of construction. While this recommendation will probably not be acceptable to residents of a one or two family home, we can mandate that they increase the protection of the construction type to provide increased safety to the residents and the responding fire fighters.

1. National Institute for Occupational Safety and Health Report F206-26. July, 2007.
2. National Institute for Occupational Safety and Health Alert, "Preventing Injuries and Deaths of Fire Fighters due to Truss System Failures".

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

Analysis: Review of proposed new standard NFPA 13D-07 indicated that, in the opinion of ICC Staff, the standard did comply with ICC standards criteria.

Committee Action:

Disapproved

Committee Reason: The committee indicated that the proposed language lacked the proper technical definition of lightweight materials. Further, the committee raised some issues with crawl spaces as they applied to the proposed text as it addressed floor or ceiling areas. There was insufficient technical justification specifically no time differences provided as they apply to lightweight trusses and lightweight material including wooden I-beams and cold formed steel or trusses to support 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:

Sean DeCrane, Fire Department, Cleveland, OH, representing International Association of Fire Fighters, requests Approval as Modified by this Public Comment.

Replace proposal as follows:

R313.1 Fire protection systems: One Family and Two Family Occupancies incorporating designed lightweight materials such as trusses or engineered lightweight material (including but not limited to wooden I-Beams, cold-form steel or light gauge bar joist trusses) in the structural floor or ceiling areas, shall protect the floors/ceilings areas with a barrier exhibiting a thirty (30) minute fire resistance on the underside of the floor/ceiling system.

Exception: If the underside of a floor system is a crawl space where no combustibles are stored.

(Renumber subsequent sections)

Commenter's Reason: On August 13, 2006 a Wisconsin fire fighter was killed, and a second fire fighter injured, when the floor they were operating on collapsed sending them into the basement. One fire fighter fell directly into the room of origin and was killed, the second fire fighter landed on the opposite side of a block wall and survived by shielding herself and making an escape through a rear window. They checked the floor to ensure it was safe and solid, just prior to collapse they heard a loud crack. T

The floor they were operating on was unprotected lightweight construction that collapsed without warning. In the ensuing investigation, the National Institute for Occupational Safety and Health released report F2006-26. One of the recommendations is to "modify current building codes to require that lightweight trusses be protected with a fire barrier". This should not only pertain to truss construction. There are additional forms of construction that can be determined to be lightweight, cold form steel, bar joists, wooden engineered I-beam, etc., the recent trend in residential construction is to use products that are financially beneficial. It is the belief of many of us in the fire service that as the industry engineers products to a more finite point we are losing our safety factors.

In their report 2007-12 released May 16, 2008, NIOSH recommended "Ensure fire fighters are trained for extreme conditions such as high winds and rapid fire progression associated with lightweight construction". They further stated, "In this era of new lightweight construction, training procedures covering strategy and tactics in extreme operations conditions, such as high winds and lightweight building construction (i.e. materials and design) are needed for all levels of fire fighters. Lightweight constructed buildings fail rapidly with little warning, complicating rescue efforts. The potential for fire fighters to become trapped or involved in a collapse may be increased. There are twenty-nine actions for fire fighters can take to protect themselves when confronted with buildings utilizing lightweight building components as structural members. They range from looking for signs or indicators that these materials are used in buildings (such as, newer structures, large unsupported spans, and heavy black smoke being generated) to getting involved in newer building code development".

On September 27, 2007 NIOSH released report 2006-24. The first recommendation of the report read "Ensure that fire fighters and incident commanders are aware unprotected pre-engineered I-joist floor systems may fail at a faster rate than solid wood joists when exposed to direct fire impingement, and they should plan interior operations accordingly". The discussion of the recommendation is quite lengthy but identifies the

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

~~**AP101 Fire sprinklers.** An approved automatic fire sprinkler system shall be installed in new one- and two-family dwellings and townhouses in accordance with Section 903.3.1 of the *International Building Code*.~~

Add standard to Chapter 43 as follows:

NFPA 13D-07 Installation of Sprinkler Systems in One- and Two-family Dwellings and Manufactured Homes

Commenter's Reason: As stated in the original proposal, ASPE is a firm believer that residential sprinkler systems should be installed in all residential buildings to provide life safety. The fire deaths and statistic regarding the performance of NFPA 13D systems clearly justifies the requirements for residential sprinklers for all new residential buildings.

ASPE can agree with the IRC Fire Sprinkler Coalition regarding the delay in enactment of the code requirement. While we believe this should happen immediately, it is recognized that it could take time to complete the training and education of all parties involved. Therefore, we in effect are suggesting the combination of the two proposed code changes RB63 and RB64.

The purpose of the code is to provide life safety protection to everyone. To provide this protection, residential sprinklers are a necessary component in building construction.

Public Comment 2:

Ronny J. Coleman, Retired California State Fire Marshal, representing Fire Sprinkler Coalition, requests Approval as Modified by this Public Comment.

Replace proposal as follows:

SECTION R313
SPRINKLER PROTECTION

R313.1 Required Installation. Effective January 1, 2011, a residential fire sprinkler system shall be installed in one- and two-family dwellings and townhouses.

Exception: A residential fire sprinkler system shall not be required for additions or alterations to existing buildings that are not already provided with a residential fire sprinkler system.

R312.2 Design and Installation. Residential fire sprinkler systems shall be designed and installed in accordance with Section P2904 or NFPA 13D.

(Renumber subsequent sections)

Delete IRC Appendix P without substitution:

APPENDIX P
FIRE SPRINKLER SYSTEM

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

~~**AP101 Fire sprinklers.** An approved automatic fire sprinkler system shall be installed in new one- and two-family dwellings and townhouses in accordance with Section 903.3.1 of the *International Building Code*.~~

Add standard to Chapter 43 as follows:

NFPA 13D-07 Installation of Sprinkler Systems in One- and Two-family Dwellings and Manufactured Homes

Commenter's Reason: It is important to point out that there was no comprehensive debate on this proposal at the hearing in Palm Springs. The IRC Fire Sprinkler Coalition (www.IRCFireSprinkler.org) and many others chose to forgo debate since it was clear, based on committee actions on prior proposals, that the committee would not accept any proposal having to do with residential sprinklers.

When RB64 was called to the floor, there were only 10 committee members present (other than the chairman), and 4 of these individuals were appointed by the National Association of Home Builders. Given NAHB's well-known policy of opposing residential sprinklers, passage of RB64 would have required a unanimous vote of the remaining 6 members. Such a requirement, the threshold of unanimity among committee members who don't have a pre-determined vote, to pass a code change is inconsistent with the concept of consensus code making, and it deprecates ICC's code-making process. Accordingly, the committee vote lacks merit and should be ignored.

We ask the ICC membership to support this public comment based on the overwhelming evidence that has been presented in support of residential sprinklers over the past few years. The reason statement provided with the original RB64 proposal and the reason statements provided with many other proposals this year clearly make the case that residential sprinklers represent the best way to achieve a sustainable and long-term reduction in residential fire losses.

We know that: 1) the residential fire problem is not limited to older homes, 2) the residential fire problem cannot be solved with smoke alarms, 3) more firefighters are killed fighting fires in dwellings than in any other occupancy, and 4) residential sprinklers represent a cost effective solution to America's residential fire problem. These conclusions are clearly documented in publicly available reports.

We also know that consumers are accepting residential sprinklers as an important feature in new home construction in increasing numbers. This comes as no surprise because the IBC requires EVERY other residential occupancy built today to have sprinklers, and it simply makes sense that renters who live in sprinklered apartments will want to move into sprinklered homes.

While NAHB suggests that sprinklers should remain a "choice" for new homeowners, the concept of choice has two significant flaws. First, it's common knowledge that major home builders won't offer sprinklers even if the owner wants them installed, so home buyers who want sprinklers are simply told that they're not offered as an option. Second, why should the first home buyer be given the right to choose whether a home gets a fire sprinkler system, on behalf of all future homeowners, their families, and the community who ultimately assumes responsibility for providing fire protection for unsprinklered properties? This simply makes no sense.

The fact that the National Association of Home Builders is the only national organization to oppose the adoption of residential sprinklers as a mainstream feature in new home construction is very telling, and we are optimistic that ICC's membership will make the decision that the time has finally come for all homes to be sprinklered. It seems that everyone agrees that we'll eventually get there, so what are we waiting for?

Final Action: AS AM AMPC _____ D

RB65-07/08

R325 (New), Chapter 43 (New)

Proposed Change as Submitted:

Proponent: Jim Jorgensen/Greg Reed, City of Lenexa, KS

1. Add new section as follows:

SECTION R325 **AUTOMATIC SPRINKLER SYSTEM**

R325.1 Fire protection systems. An automatic residential fire sprinkler system shall be installed in new townhouses in accordance with NFPA 13D.

2. Add standard to Chapter 43 as follows:

NFPA

13D-07 Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes

Reason: Townhouses present a unique fire protection and property protection issues for fire departments and owners of connected townhouses. With separate ownerships townhouses are uniquely affected by fires in adjacent units even if the fire does not breach the two hour walls separating the units. After a severe fire the structure is open to the elements and subject to damage from water intrusion and other effects. These detrimental effects contribute to ongoing damage of adjacent townhouses since the process for repair may take an extended period of time. Legal issues may further complicate the repair process. Adding sprinklers will minimize the extent of damage so that repairs are easier to complete and the time of exposure of adjacent units to adverse affects is minimized.

Significant documentation was provided RB114-06/07 to show that non-sprinkled dwellings are a major contributing factor to the amount of property damage and loss of life from fires. Sprinkling is now required for all multi-family dwellings and townhouses should be treated in a similar manner.

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

Analysis: Review of proposed new standard NFPA 13D-07 indicated that, in the opinion of ICC Staff, the standard did comply with ICC standards criteria.

Committee Action:

Disapproved

Committee Reason: The committee felt that there was insufficient effective or substantial reason to move the sprinkler requirements out of Appendix P where it is now. The committee agreed that if the code is going to mandate sprinklers for new construction that it should apply to all structures in the scope of the *International Residential Code* not just townhouses in a piecemeal approach.

Assembly Action:

Approved as Submitted

Individual Consideration Agenda

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

Final Action: AS AM AMPC _____ D

If the prescriptive provisions are in the plumbing code, the plumber can do the work in accordance with those provisions. The sprinkler contractor must install per NFPA.

Since we are currently in regulatory review, there will be some clarifying language proposed in the Board for Contractors Committee meeting Monday (10/27) to reinforce what is already in place (plumbers can perform whatever work is covered in the plumbing code). These regulations will most likely be adopted by the Board in December of this year.

Additionally, there will be a motion put forth on Monday to further reinforce that this is what the regulation currently allows.

Michael

From: Dupler, Bill [mailto:DuplerB@cnesterfield.gov]
Sent: Thursday, October 23, 2008 2:39 PM
To: Rodgers, Emory; Redifer, Michael D.; Dawson, Robbie
Cc: vpffld@aol.com; Witt, Rick; Wallace, Clinton; vpffld@aol.com
Subject: RE: Residential Sprinkler Meeting Notes

The question that Mike & I agreed he would resolve with Eric Olsen at DPOR is:

Will the definition of plumbing need to be revised or is it ok as is to allow plumbers to install residential sprinklers per the plumbing code ?

This needs to be asked first to make sure they agree given the various opinions we all have.

Then based upon that are there other issues such as can a plumber install sprinklers per NFPA 13D?

When I spoke to Eric he clearly stated that sprinkler installations were not plumbing under their regulations and they had an exception for limited area sprinkler systems. See the definitions below from the contractor regs, also note the reference to BOCA that needs updating. Under BOCA limited area sprinklers are systems complying with spacing limitations of NFPA 13 , with 20 or less sprinkler heads within one fire area. That's a pretty far stretch from the description of today's modern residential single family sprinkler systems.

"Fire sprinkler contracting" (Abbr: SPR) means that service which provides for the installation, repair, alteration, addition, testing, maintenance, inspection, improvement, or removal of sprinkler systems using water as a means of fire suppression when annexed to real property. This specialty does not provide for the installation, repair, or maintenance of other types of fire suppression systems. The PLB classification allows for the installation of limited area sprinklers as defined by BOCA. This specialty may engage in the installation of backflow prevention devices in the fire sprinkler supply main and sprinkler system when the installer has received formal vocational training approved by the board that included instruction in the installation of backflow prevention devices.

Plumbing contractors" (Abbr: PLB) means those individuals whose contracts include the installation, maintenance, extension, or alteration, or removal of all piping, fixtures, appliances, and appurtenances in connection with any of the following:

Backflow prevention devices

Boilers

Hot water baseboard heating systems

Hot water heaters

Hydronic systems

Limited area sprinklers (as defined by BOCA).

Process piping

Public/private water supply systems within or adjacent to any building, structure or conveyance

Sanitary or storm drainage facilities

Steam heating systems

Storage tanks incidental to the installation of related systems

Venting systems related to plumbing

These contractors also install, maintain, extend or alter the following:

Liquid waste systems

Sewerage systems

Storm water systems

Water supply systems

This classification does not provide for gas piping or the function of fire sprinkler contracting as noted above. A firm holding a plumbing license is responsible for meeting all applicable tradesman licensure standards.

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

From: Rodgers, Emory [mailto:Emory.Rodgers@dhcd.virginia.gov]

Sent: Thursday, October 23, 2008 1:51 PM

To: Redifer, Michael D.; Dawson, Robbie; Dupler, Bill

Cc: vpffld@aol.com; Witt, Rick; Wallace, Clinton; vpffld@aol.com

Subject: RE: Residential Sprinkler Meeting Notes

There seems now clarity to what we will be meeting on that maybe then will narrow down to a minimum regulatory changes. I like already that plumbers can now do the IPC/IRC that comes off the potable water supply. Sprinkler contractors have always done the 13D systems. So now can or should each be able to do the other system, and if yes, then do we require new licensing requirements and what might they be such as the plumbing contractor can do 13D if they have a Nicet 11 trade person and the sprinkler contractor can do the IPC system if they have a master plumber trade certificate holder?

The 13D system is a design system but I assume we would now allow and want it to be done off the potable water supply to avoid a separate line that substantially increases the costs?

From: Redifer, Michael D. [mailto:mredifer@nngov.com]

Sent: Thursday, October 23, 2008 12:57 PM

To: Dawson, Robbie; Dupler, Bill; Rodgers, Emory

Cc: vpffld@aol.com; Witt, Rick; Wallace, Clinton

Subject: RE: Residential Sprinkler Meeting Notes

Rodgers, Emory

From: Shahriar Amiri [Samiri@arlingtonva.us]
Sent: Wednesday, January 07, 2009 8:26 PM
To: Rodgers, Emory; Underwood, Lynn; Bill Dupler; Guy Tomberlin
Cc: John Glover; Collins, James L.; Joel Baker; Dawson, Robby; Ellis McKinney
Subject: RE: Ad Hoc Committee to recommend VBCOA position on Residential Sprinklers

Emory, All: I appreciate the concern of water purveyors. Just as a matter of background, when I was in Montgomery County, we invoked sprinkler requirements for townhomes and single-family detached units several years ago. WSSC which was the water purveyor and also the plumbing/gas code officials in both Montgomery and PG counties, argued that the 1-inch line meters are not reliable and that they would lose a lot of funds because of that inaccuracies. At the end, it ended up to be a non-issue. As we move through this process, I am more than happy to share some of those experiences, if it is helpful. I have numerous data on the cost of installation, what happens with well systems, or lack of water pressure, and what those cost implications are.

Sincerely,

Shahriar Amiri, CBO
Chief Building Official
Arlington County, Virginia
Department of Community Planning, Housing and Development
2100 Clarendon Blvd., Suite 800
Arlington, Virginia 22201
Voice: (703) 228-3848
TTY: (703) 228-4611
Fax: (703) 228-3777
samiri@arlingtonva.us

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From: Rodgers, Emory [mailto:Emory.Rodgers@dhcd.virginia.gov]
Sent: Wednesday, January 07, 2009 10:04 AM
To: Underwood, Lynn; Bill Dupler; Guy Tomberlin
Cc: John Glover; Collins, James L.; Joel Baker; Shahriar Amiri; Dawson, Robby; Rick Witt; Ellis McKinney
Subject: RE: Ad Hoc Committee to recommend VBCOA position on Residential Sprinklers

Some comments: The IRC work group meets April 9th and May 13th. the agenda goes out January 30th. I have the agenda attached at its present stage of item so you can see the sprinkler issues listed so far for the work group discussions. I understand too that some water providers are nervous about 1 inch meters as they aren't as reliable to record usage than 5/8 or 3/4 meters and there is some concern that these two smaller meters/lines will ensure operable sprinkler systems in some home configurations? I have attached schedules that will be reviewed with the BHCD on January 26th so changes could occur, but it gives you an idea that time is critical on the front end from March to July. The BHCD can elect not to alter the IRC leaving in the present requirements or consider code changes on sprinklers when they approved the proposed regulations in July/August, 2009. The BHCD would clearly say the matter is open until the public comment periods and public hearing are done in January of

would amend the MHSR in any case for 2009. Clinton could you check with HUD th: mandate sprinklers then automatically the MH-HUD homes get them too?

From: Dupler, Bill [mailto:DuplerB@chesterfield.gov]
Sent: Thursday, October 23, 2008 11:21 AM
To: Dawson, Robbie
Cc: Rodgers, Emory; vpffld@aol.com; Witt, Rick
Subject: RE: Residential Sprinkler Meeting Notes

Robbie, Art & Emory,

Sorry I was not able to attend the last meeting due to a conflict with a presentation I made at the VML annual meeting in Norfolk.

I have two items to add to your discussion:

DPOR licensing requirements for plumbers - I have spoken to Eric Olsen with DPOR about this, he is the senior staff member for the Board for Contractors. Our discussion centered around the licensing of plumbers to install residential sprinklers in single family dwellings in anticipation that residential sprinkler systems would be approved for inclusion in the plumbing code. These "how to" provisions paralleling the intent of NFPA 13D were added to the IPC. Currently plumbers are permitted by licensing regulations to install limited area sprinkler systems only, as you know these are defined as 20 heads or less by the USBC. He believed that the installation of residential sprinkler systems could be considered as plumbing if the DHCD was in the process of adopting these new code provisions in the plumbing code. He further indicated that allowing plumbers to install residential sprinkler systems as plumbing would likely require a change in their regulations and these changes to their regulations would take approx 2 years to accomplish.

Requirements for sprinklers in Manufactured Housing - I am advised by the folks in Maryland including John Bender (retired Maryland state fire marshal) that if a locality requires residential sprinklers in single family dwellings then the federal manufactured housing regulations have a clause that requires them to be installed in any mfgd. housing delivered to that locality. In Maryland this has been done on a community by community basis but it would apply on a state wide basis if Virginia were to adopt a residential sprinkler provision. In addition industrialized homes must comply with the Va USBC so these factory built (state labeled) homes would also require residential sprinklers if adopted. Given this I believe factory built housing is a non issue as this issue is resolved when a decision is made about site built housing .

At least that's one issue off of your list.

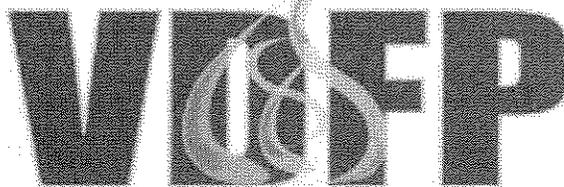
Hope this helps, I wish I could be at these meetings however I have an ICC conflict with Dec. 8th also.

Bill

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

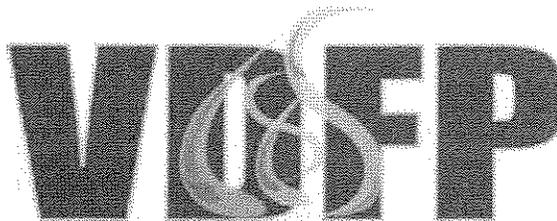
From: Dawson, Robbie
Sent: Wednesday, October 22, 2008 5:13 PM
To: Andy Aigner (aaigner@isleofwightus.net); Anne-Marie Loughran (aloughran@hampton.gov); Anthony Shultz (richsprink@aol.com); Art Lipscomb (vpffld@aol.com); Barrett Hardiman (bhardiman@hbav.com); Ben Barksdale (bbarks@arlingtonva.us); Bennie Russell (brussell@franklinva.org); Dave Creasy (david.creasy@richmondgov.com); David Seay (sea09@co.henrico.va.us); Dereck Baker (dbaker@fairfaxcounty.gov); Dupler, Bill; Ed Altizer (ed.altizer@vdfp.virginia.gov); Ed Rhodes (rcgva@comcast.net); Emory Rodgers (emory.rodgers@dhcd.virginia.gov); Ernie Little (elittle@pwgov.org); Gary Huffman (ghuffman@roanokecountyva.gov); Greg Beasley (gbeasley@iaff2803.org); James Humphrey (bhumphre@williamsburg.gov); Jim Dishner (dishnerj@yorkcounty.gov); John Huddle (jhuddle@rockinghamcountyva.gov); John Tunstall (jtunstall@ci.hopewellva.gov); Johnson, Keith [Keith.Johnson@fairfaxcounty.gov]; Keith Brower (kbrower@loudoun.gov); Larry Turner (lturner@ci.hopewellva.gov); Lyndon Loh (lloh@pwgov.org); Lynn Underwood (lynn.underwood@norfolk.gov); Mark Flynn

Virginia Residential Building Fires
 In 1-or-2 Family Dwellings
REPORTED FIRES PER YEAR



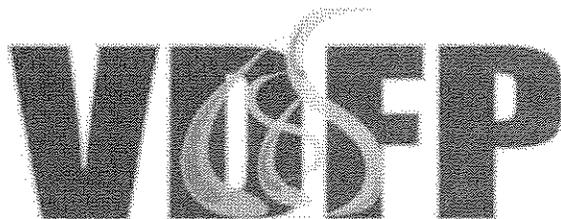
Year	#	%	RT Avg	%≤6	Loss Tot	Loss/Inc	Civ Inj	Civ Death	FS Inj	FS Death	Total Inj/Death	Inj/Death Per 1k Inc.
2000	3,777	8.8%	7:55	56.3%	\$48,155,163	\$12,750	194	26	107	0	327	87
2001	3,741	8.7%	7:52	56.9%	\$47,998,062	\$12,830	190	18	81	0	289	77
2002	4,718	11.0%	7:49	51.5%	\$76,796,666	\$16,277	249	24	112	0	385	82
2003	5,081	11.8%	7:48	49.3%	\$204,634,885	\$40,275	243	37	111	0	391	77
2004	5,070	11.8%	8:33	42.4%	\$87,499,919	\$17,258	234	71	96	1	402	79
2005	5,169	12.0%	8:02	42.5%	\$107,836,293	\$20,862	201	31	83	0	315	61
2006	5,362	12.4%	7:55	43.3%	\$190,120,899	\$35,457	202	40	80	0	322	60
2007	5,888	13.7%	8:00	42.2%	\$139,928,586	\$23,765	245	58	91	1	395	67
2008	4,266	9.9%	7:31	44.4%	\$92,299,311	\$21,636	159	36	81	0	276	65
Total	43,072	100.0%	7:57	47.0%	\$995,269,784	\$23,107	1,917	341	842	2	3,102	72

Virginia Residential Building Fires
 In 1-or-2 Family Dwellings
Reported Fires by Locality
 (Jan 2000-Sep 2008 Combined)



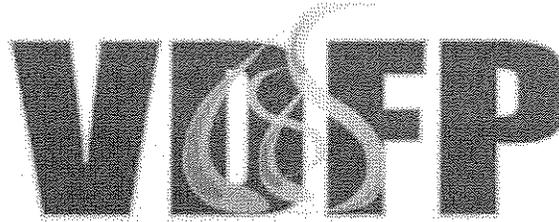
County/City	#	%	RT Avg	%≤6	Loss Tot	Loss/Inc	Civ Inj	Civ Fatal	FS Inj	FS Fatal	Total Inj/Death	Inj/Death Per 1k Inc.
Accomack County	337	0.8%	9:02	21.7%	\$5,944,760	\$17,640	4	2	0	0	6	18
Albemarle County	349	0.8%	9:41	20.1%	\$10,998,471	\$31,514	3	5	2	0	10	29
Alexandria	228	0.5%	4:13	89.9%	\$1,506,925	\$6,609	14	0	1	0	15	66
Alleghany County	152	0.4%	7:14	46.1%	\$2,228,740	\$14,663	1	0	2	0	3	20
Amelia County	44	0.1%	13:44	6.8%	\$1,761,600	\$40,036	0	0	0	0	0	0
Amherst County	265	0.6%	13:00	7.6%	\$1,997,860	\$7,539	9	0	3	0	12	45
Appomattox County	68	0.2%	11:46	8.8%	\$1,581,425	\$23,256	0	0	2	0	2	29
Arlington County	294	0.7%	5:54	66.4%	\$11,648,317	\$39,620	4	1	9	0	14	48
Augusta County	766	1.8%	10:27	17.3%	\$8,807,506	\$11,498	8	5	10	0	23	30
Bedford	183	0.4%	10:47	15.3%	\$2,365,100	\$12,924	0	0	0	0	0	0
Bedford County	313	0.7%	12:08	17.3%	\$4,111,701	\$13,136	1	3	0	0	4	13
Bland County	57	0.1%	18:17	10.5%	\$565,700	\$9,925	0	0	1	0	1	18
Botetourt County	147	0.3%	13:23	13.6%	\$611,350	\$4,159	0	2	1	0	3	20
Bristol	237	0.6%	4:09	81.4%	\$2,351,645	\$9,923	17	1	26	0	44	186
Brunswick County	147	0.3%	12:15	10.9%	\$2,071,350	\$14,091	0	0	0	0	0	0
Buchanan County	78	0.2%	17:50	9.0%	\$2,724,545	\$34,930	3	2	0	0	5	64
Buckingham County	90	0.2%	13:44	12.2%	\$423,500	\$4,706	0	1	0	0	1	11
Buena Vista	77	0.2%	6:19	44.2%	\$962,850	\$12,505	1	1	1	0	3	39
Campbell County	416	1.0%	11:11	17.8%	\$2,298,270	\$5,525	0	3	0	0	3	7
Caroline County	98	0.2%	12:46	6.1%	\$1,693,350	\$17,279	0	0	2	0	2	20
Carroll County	165	0.4%	12:20	5.5%	\$2,581,650	\$15,646	1	0	2	1	4	24
Charles City County	48	0.1%	15:04	4.2%	\$1,298,810	\$27,059	0	1	0	0	1	21
Charlotte County	68	0.2%	12:29	7.4%	\$2,061,235	\$30,312	0	1	1	0	2	29
Charlottesville	370	0.9%	4:55	75.1%	\$4,534,017	\$12,254	29	2	9	0	40	108
Chesapeake	1,482	3.4%	6:15	49.3%	\$27,607,978	\$18,629	112	6	25	0	143	96
Chesterfield County	1,571	3.6%	7:55	18.5%	\$28,002,405	\$17,825	110	12	25	0	147	94
Clarke County	139	0.3%	11:09	13.7%	\$1,919,780	\$13,811	3	0	2	0	5	36
Colonial Heights	155	0.4%	10:10	50.3%	\$1,358,685	\$8,766	9	2	6	0	17	110
Covington	101	0.2%	6:06	40.6%	\$1,088,854	\$10,781	7	1	7	0	15	149
Craig County	34	0.1%	7:51	41.2%	\$236,850	\$6,966	0	0	0	0	0	0
Culpeper County	193	0.4%	12:39	8.3%	\$6,368,852	\$32,999	2	1	1	0	4	21
Cumberland County	21	0.0%	10:14	38.1%	\$506,250	\$24,107	0	0	0	0	0	0
Danville	723	1.7%	4:48	79.9%	\$6,323,114	\$8,746	45	2	10	0	57	79
Dickenson County	117	0.3%	19:20	4.3%	\$2,892,720	\$24,724	2	1	10	0	13	111
Dinwiddie County	115	0.3%	12:53	17.4%	\$1,701,490	\$14,796	1	1	1	0	3	26
Emporia	48	0.1%	6:56	39.6%	\$830,500	\$17,302	0	0	0	0	0	0

Virginia Residential Building Fires
In 1-or-2 Family Dwellings
Reported Fires by Locality
(Jan 2000-Sep 2008 Combined)



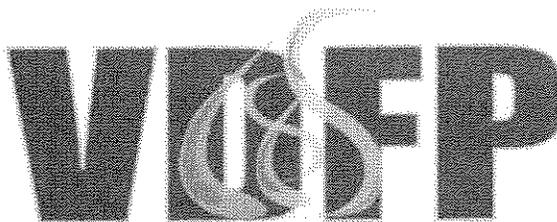
County/City	#	%	RT Avg	%≤6	Loss Tot	Loss/Inc	Civ Inj	Civ Fatal	FS Inj	FS Fatal	Total Inj/Death	Inj/Death Per 1k Inc.
Essex County	45	0.1%	11:36	15.6%	\$1,750,500	\$38,900	2	7	1	0	10	222
Fairfax	106	0.2%	8:39	81.1%	\$3,326,110	\$31,378	4	0	0	0	4	38
Fairfax County	3,623	8.4%	10:43	69.1%	\$134,750,299	\$37,193	132	24	62	0	218	60
Fauquier County	450	1.0%	11:12	18.3%	\$10,365,125	\$23,034	5	1	5	0	11	24
Floyd County	126	0.3%	15:27	6.3%	\$30,500	\$242	0	2	0	0	2	16
Fluvanna County	20	0.0%	8:21	40.0%	\$0	\$0	0	0	0	0	0	0
Franklin	151	0.4%	5:46	55.0%	\$1,495,310	\$9,903	2	2	1	0	5	33
Franklin County	443	1.0%	10:54	28.0%	\$7,996,310	\$18,050	10	5	6	0	21	47
Frederick County	651	1.5%	9:47	26.7%	\$3,367,186	\$5,172	8	1	11	0	20	31
Fredericksburg	116	0.3%	4:25	81.0%	\$1,666,799	\$14,369	4	1	2	0	7	60
Galax	180	0.4%	10:46	8.9%	\$1,013,550	\$5,631	0	0	1	0	1	6
Giles County	79	0.2%	8:43	27.8%	\$1,981,427	\$25,081	2	2	0	0	4	51
Gloucester County	312	0.7%	7:49	31.8%	\$14,033,707	\$44,980	15	2	7	0	24	77
Goochland County	163	0.4%	17:06	7.4%	\$1,089,656	\$6,685	5	2	0	0	7	43
Grayson County	137	0.3%	15:41	7.4%	\$24,040,050	\$175,475	0	0	0	0	0	0
Greene County	71	0.2%	11:35	19.7%	\$7,950	\$112	1	0	0	0	1	14
Halifax County	290	0.7%	8:11	43.1%	\$5,121,128	\$17,659	1	1	0	0	2	7
Hampton	891	2.1%	4:17	80.0%	\$10,095,269	\$11,330	47	2	13	0	62	70
Hanover County	464	1.1%	10:11	16.6%	\$7,072,697	\$15,243	7	0	13	0	20	43
Harrisonburg	27	0.1%	4:58	66.7%	\$93,205	\$3,452	0	0	0	0	0	0
Henrico County	1,900	4.4%	5:52	47.8%	\$34,214,671	\$18,008	124	8	43	0	175	92
Henry County	424	1.0%	10:54	20.3%	\$10,709,150	\$25,257	7	9	5	0	21	50
Hopewell	363	0.8%	4:33	76.6%	\$2,477,960	\$6,826	26	2	4	0	32	88
Isle of Wight County	181	0.4%	7:26	37.4%	\$3,062,237	\$16,918	4	2	6	0	12	66
James City County	424	1.0%	6:08	50.5%	\$10,807,821	\$25,490	18	3	12	0	33	78
King and Queen County	30	0.1%	8:56	14.8%	\$370	\$12	0	0	0	0	0	0
King George County	150	0.3%	11:14	18.0%	\$3,055,380	\$20,369	5	2	4	0	11	73
King William County	25	0.1%	12:10	4.0%	\$474,000	\$18,960	1	0	0	0	1	40
Lancaster County	21	0.0%	7:09	33.3%	\$571,000	\$27,190	0	0	0	0	0	0
Lee County	226	0.5%	12:18	7.1%	\$8,383,300	\$37,094	3	7	0	0	10	44
Lexington	45	0.1%	7:43	33.3%	\$1,816,774	\$40,373	0	0	0	0	0	0
Loudoun County	610	1.4%	7:39	37.1%	\$20,432,953	\$33,497	32	0	25	0	57	93
Louisa County	203	0.5%	11:56	11.4%	\$6,041,550	\$29,761	1	1	0	0	2	10
Lunenburg County	64	0.1%	8:35	48.4%	\$1,526,475	\$23,851	1	2	0	0	3	47
Lynchburg	725	1.7%	3:55	88.4%	\$5,413,160	\$7,466	30	4	22	0	56	77
Madison County	116	0.3%	6:55	51.7%	\$0	\$0	0	0	0	0	0	0

Virginia Residential Building Fires
In 1-or-2 Family Dwellings
Reported Fires by Locality
(Jan 2000-Sep 2008 Combined)



County/City	#	%	RT Avg	%<=6	Loss Tot	Loss/Inc	Civ Inj	Civ Fatal	FS Inj	FS Fatal	Total Inj/Death	Inj/Death Per 1k Inc.
Manassas	169	0.4%	5:02	67.5%	\$3,661,455	\$21,665	17	0	3	0	20	118
Manassas Park	50	0.1%	3:20	80.0%	\$2,092,930	\$41,859	1	0	0	0	1	20
Martinsville	210	0.5%	4:13	79.0%	\$2,703,889	\$12,876	19	3	3	0	25	119
Mathews County	59	0.1%	8:17	11.9%	\$2,655,350	\$45,006	0	0	1	0	1	17
Mecklenburg County	474	1.1%	7:37	43.7%	\$4,082,145	\$8,612	2	7	4	0	13	27
Middlesex County	13	0.0%	17:05	0.0%	\$75,375,500	\$5,798,115	0	0	0	0	0	0
Montgomery County	351	0.8%	6:57	49.0%	\$3,924,355	\$11,180	2	3	1	0	6	17
Nelson County	89	0.2%	15:55	13.5%	\$1,809,700	\$20,334	0	3	0	0	3	34
New Kent County	51	0.1%	10:00	23.5%	\$5,700	\$112	0	0	0	0	0	0
Newport News	1,116	2.6%	4:44	68.8%	\$13,258,870	\$11,881	108	11	20	0	139	125
Norfolk	1,260	2.9%	3:53	91.3%	\$12,833,051	\$10,185	74	6	68	0	148	117
Northampton County	64	0.1%	10:34	20.3%	\$1,028,900	\$16,077	4	2	0	0	6	94
Northumberland County	48	0.1%	11:06	10.4%	\$1,850,450	\$38,551	1	1	0	0	2	42
Norton	21	0.0%	6:34	42.9%	\$47,500	\$2,262	0	0	0	0	0	0
Nottoway County	78	0.2%	7:37	33.3%	\$549,020	\$7,039	0	0	1	0	1	13
Orange County	136	0.3%	12:41	11.8%	\$2,124,220	\$15,619	2	0	1	0	3	22
Page County	190	0.4%	8:37	36.8%	\$2,430,200	\$12,791	4	0	0	0	4	21
Patrick County	111	0.3%	12:11	10.8%	\$3,023,520	\$27,239	1	3	0	0	4	36
Petersburg	620	1.4%	5:00	67.1%	\$5,421,666	\$8,745	71	13	14	0	98	158
Pittsylvania County	461	1.1%	10:49	13.7%	\$8,521,176	\$18,484	4	4	2	0	10	22
Poquoson	76	0.2%	3:44	85.5%	\$804,700	\$10,588	1	0	1	0	2	26
Portsmouth	966	2.2%	5:41	70.9%	\$11,188,075	\$11,582	11	7	10	0	28	29
Powhatan County	172	0.4%	10:48	19.8%	\$5,355,330	\$31,136	10	2	8	0	20	116
Prince Edward County	103	0.2%	9:48	11.7%	\$2,163,485	\$21,005	4	4	0	0	8	78
Prince George County	202	0.5%	9:54	18.3%	\$1,667,400	\$8,254	1	1	1	0	3	15
Prince William County	566	1.3%	6:28	46.1%	\$410,000	\$724	2	1	0	1	4	7
Pulaski County	285	0.7%	5:49	60.9%	\$5,805,807	\$20,371	6	3	6	0	15	53
Radford	90	0.2%	4:05	80.0%	\$1,557,272	\$17,303	2	4	0	0	6	67
Rappahannock County	96	0.2%	12:39	9.4%	\$2,859,607	\$29,788	0	1	0	0	1	10
Richmond	1,951	4.5%	5:27	78.4%	\$36,876,337	\$18,901	172	26	70	0	268	137
Richmond County	6	0.0%	10:20	16.7%	\$25,500	\$4,250	1	0	0	0	1	167
Roanoke	928	2.2%	4:31	80.4%	\$15,940,867	\$17,178	69	9	23	0	101	109
Roanoke County	418	1.0%	8:34	20.1%	\$6,214,973	\$14,868	11	2	13	0	26	62
Rockbridge County	200	0.5%	12:59	16.0%	\$1,732,450	\$8,662	0	1	1	0	2	10
Rockingham County	483	1.1%	11:02	16.8%	\$3,827,900	\$7,925	10	0	5	0	15	31
Russell County	75	0.2%	11:34	18.7%	\$1,188,150	\$15,842	0	1	0	0	1	13

Virginia Residential Building Fires
 In 1-or-2 Family Dwellings
Reported Fires by Locality
 (Jan 2000-Sep 2008 Combined)



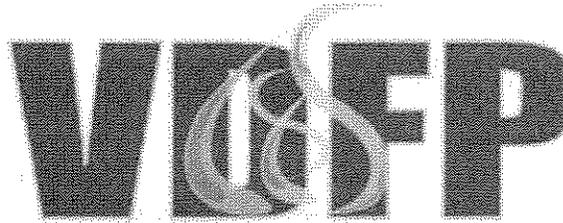
County/City	#	%	RT Avg	%<=6	Loss Tot	Loss/Inc	Civ Inj	Civ Fatal	FS Inj	FS Fatal	Total Inj/Death	Inj/Death Per 1k Inc.
Salem	117	0.3%	10:54	59.8%	\$1,202,208	\$10,275	7	1	6	0	14	120
Scott County	172	0.4%	13:53	18.0%	\$3,680,300	\$21,397	2	1	1	0	4	23
Shenandoah County	253	0.6%	12:34	18.2%	\$1,964,210	\$7,764	2	7	0	0	9	36
Smyth County	220	0.5%	10:46	19.1%	\$3,378,470	\$15,357	1	1	0	0	2	9
Southampton County	102	0.2%	9:51	13.7%	\$1,847,650	\$18,114	3	7	3	0	13	127
Spotsylvania County	658	1.5%	8:13	26.7%	\$137,217,579	\$208,537	28	3	16	0	47	71
Stafford County	246	0.6%	7:43	39.0%	\$3,898,426	\$15,847	5	0	2	0	7	28
Staunton	205	0.5%	4:19	77.0%	\$1,172,231	\$5,718	6	1	5	0	12	59
Suffolk	1,006	2.3%	5:23	63.6%	\$11,600,775	\$11,532	39	4	26	0	69	69
Surry County	31	0.1%	13:26	10.0%	\$796,850	\$25,705	0	1	2	0	3	97
Sussex County	83	0.2%	7:47	39.8%	\$1,860,600	\$22,417	1	2	2	0	5	60
Tazewell County	187	0.4%	8:49	28.3%	\$2,905,660	\$15,538	12	5	5	0	22	118
Virginia Beach	2,357	5.5%	7:40	29.6%	\$60,609,930	\$25,715	222	24	70	0	316	134
Warren County	95	0.2%	9:18	30.5%	\$1,367,190	\$14,391	5	3	4	0	12	126
Washington County	273	0.6%	12:13	7.7%	\$5,477,100	\$20,063	7	7	4	0	18	66
Waynesboro	197	0.5%	3:39	90.8%	\$1,838,668	\$9,333	10	3	4	0	17	86
Westmoreland County	110	0.3%	9:27	20.9%	\$1,919,240	\$17,448	1	0	2	0	3	27
Williamsburg	59	0.1%	4:26	78.0%	\$309,675	\$5,249	6	0	2	0	8	136
Winchester	223	0.5%	3:19	92.4%	\$1,433,965	\$6,430	18	0	9	0	27	121
Wise County	162	0.4%	9:41	34.0%	\$2,906,055	\$17,939	8	4	3	0	15	93
Wythe County	255	0.6%	9:44	22.4%	\$3,973,380	\$15,582	12	1	7	0	20	78
York County	325	0.8%	4:47	69.5%	\$4,640,438	\$14,278	29	0	11	0	40	123
Total	43,072	100.0%	7:57	47.0%	\$995,269,784	\$23,107	1,917	341	842	2	3,102	72

Virginia Residential Building Fires
Number of 1-or-2 Family Dwelling Fires
with Fire Confined to a Non-Combustible Container
 (Jan 2000 - Sep 2008 Combined)

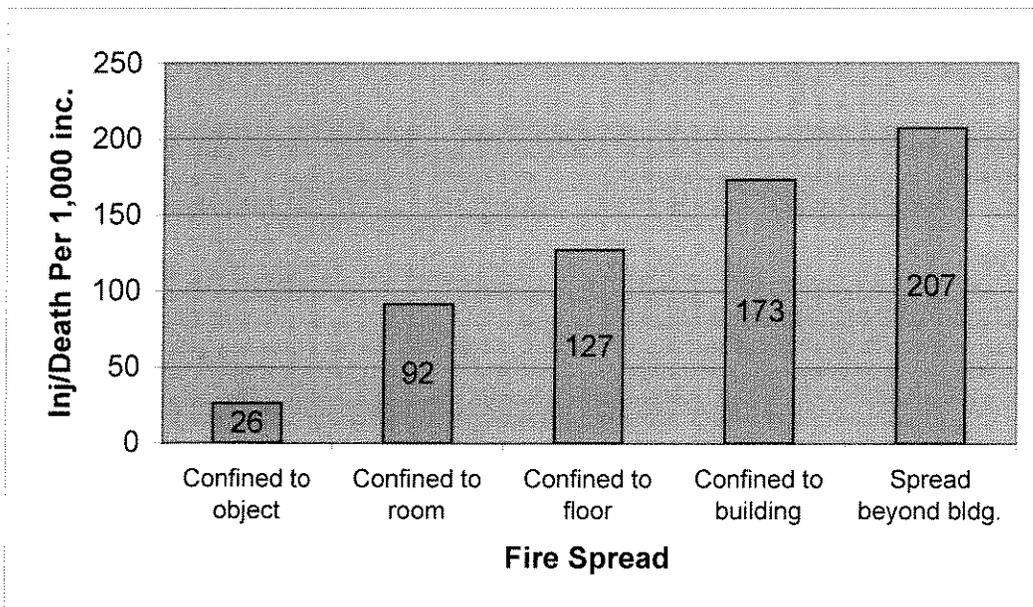


Confined/Non-Confined	#	%	RT Avg	%≤6	Loss Tot	Loss/Inc	Civ Inj	Civ Fatal	FS Inj	FS Fatal	Total Inj/Death	Inj/Death Per 1k Inc.
Building Fire - Not confined	30,189	70.1%	8:00	49.3%	\$988,709,796	\$32,751	1,749	340	824	2	2,915	97
Building Fire, Confined	12,883	29.9%	7:51	41.4%	\$6,559,988	\$509	168	1	18	0	187	15
Total	43,072	100.0%	7:57	47.0%	\$995,269,784	\$23,107	1,917	341	842	2	3,102	72

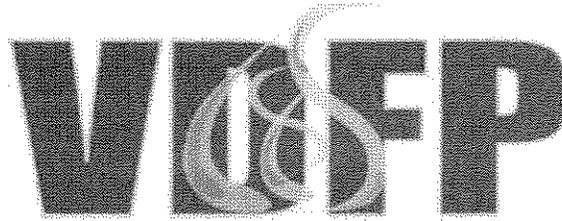
Virginia Residential Building Fires
 In 1-or-2 Family Dwellings
Extent of Fire Spread
 (Jan 2000 to Sep 2008 Combined)



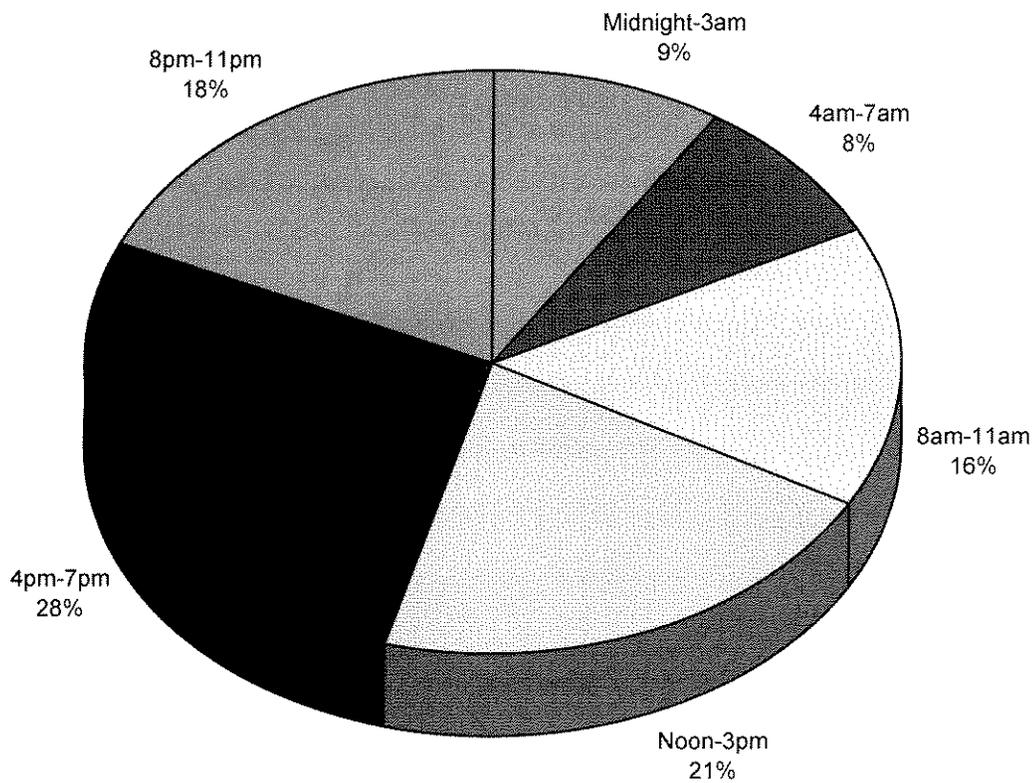
Fire Spread Group	#	%	RT Avg	%<=6	Loss Tot	Loss/Inc	Civ Inj	Civ Fatal	FS Inj	FS Fatal	Inj/Death	Inj/Death Per 1k Inc.
Blank	10,729	24.9%	7:48	44.1%	\$22,462,619	\$2,094	128	9	29	1	167	16
Confined to object	12,010	27.9%	7:38	44.6%	\$45,756,030	\$3,810	264	12	37	0	313	26
Confined to room	10,338	24.0%	6:48	55.0%	\$174,062,725	\$16,837	787	49	111	0	947	92
Confined to floor	2,230	5.2%	8:30	54.1%	\$73,650,025	\$33,027	172	30	82	0	284	127
Confined to building	6,442	15.0%	9:34	42.0%	\$558,842,329	\$86,750	475	187	454	1	1,117	173
Spread beyond bldg.	1,323	3.1%	11:41	41.5%	\$120,496,056	\$91,078	91	54	129	0	274	207
Total	43,072	100.0%	7:56	47.0%	\$995,269,784	\$23,107	1,917	341	842	2	3,102	72



Virginia Residential Building Fires
in 1-or-2 Family Dwellings
(Jan 2000- Sep 2008 Combined)



1-or-2 Family Dwelling Fires by Time of Day





Fire Data & Statistics

Fire Summary Data, Virginia, 2003 - 2008

Year	Number of Fires	Civilian Fire Deaths	Civilian Fire Injuries	Fire Service Deaths	Fire Service Injuries	Total Fire Dollar Loss
2008*	27,299	74	418	1	311	\$418,462,591
2007**	34,054	82	455	1	236	\$411,808,565
2006	31,538	96	436	0	297	\$253,711,953
2005	27,649	68	403	1	309	\$487,375,093
2004	26,453	120	506	1	247	\$218,672,354
2003	22,674	71	499	0	255	\$306,059,874

*Preliminary data as of 2/18/09

**Report date 05/19/08

Disclaimer - Source Virginia Fire Incident Reporting System - This information is subject to change as we continuously receive new data.

Additional Statistics:

2008 Statistics (Preliminary)

- 2008 Virginia Fire Dollar Loss and Property Saved
- 1-or-2 Family Dwelling Fire Study (Jan 2000 - Sep 2008)
- 2008 Virginia Fires Involving Lighters
- 2008 Summary by Incident Type.pdf
- 2008 Fire Department Incident Counts by County/City.pdf
- 2008 Fire Department Monthly Incident Counts.pdf
- 2008 Tally by Incident Type.pdf
- 2008 Tally by Property Use.pdf
- 2008 Residential Structure Fire Causes.pdf
- Virginia Civilian Fire Deaths, 2007-2008

2007 Statistics

- 2007 Virginia Fires Involving Lighters
- 2003-2007 High-Rise Building Fire Statistics.pdf
- 2007 Residential Structure Fire Causes.pdf
- 2007 Virginia Fire Incident Reporting System (VFIRS) Quick Facts.pdf
- 2007 Fire Department Monthly Incident Counts.pdf
- 2007 Summary by Incident Type.pdf

2006 Statistics

- 2006 VFIRS Participation by Locality.pdf
- 2006 Tally by Property Use .pdf
- 2006 Tally by Incident Type .pdf
- 2006 Carbon Monoxide Incidents by Locality.pdf
- 2006 Summary by Incident Type .pdf
- 2006 VFIRS Dashboard .pdf
- 2006 Residential Structure Fire Causes .pdf
- 2006 Fire Department Monthly Incident Counts .pdf
- 2006 Fire Department Incident Counts .pdf

2005 Statistics

- 2005 Monthly Incident Count.pdf
- 2005 Tally by Incident Type.pdf
- 2005 Tally by Property Use.pdf
- 2005 Summary by Incident Type.pdf
- 2005 - Fires in Virginia Nursing Homes and Care Facilities- .pdf
- 2000 -2005 VA Fire Deaths by Locality.pdf

[Click Here for Additional Statistics](#)

[Back to top](#)

Residential Structure Fire Causes

State: VA Report Period: 1/1/08 - 12/31/08

CODE	CATEGORY	FREQ	FREQ %	CIV DTHS	CIV DTHS %	CIV INUS	CIV INUS %	FF DTHS	FF DTH %	FF INUS	FF INUS %	PROP LOSS	PROP LOSS %	CONT LOSS	CONT LOSS %	TOTAL LOSS	TOT LOSS %
01	Incendary, Suspicious	313	4.17%	4	7.14%	10	3.04%	0	0.00%	16	14.41%	8,346,659	6.90%	1,682,750	5.21%	10,029,409	6.54%
02	Children Playing	28	0.37%	0	0.00%	4	1.22%	0	0.00%	0	0.00%	137,160	0.11%	35,890	0.11%	172,960	0.11%
03	Smoking	131	1.75%	1	1.79%	15	4.56%	0	0.00%	11	9.91%	2,095,690	1.73%	1,200,737	3.72%	3,296,427	2.15%
04	Heating	1,205	16.06%	0	0.00%	8	2.43%	0	0.00%	3	2.70%	2,703,847	2.23%	818,277	2.53%	3,522,124	2.30%
05	Cooking	2,356	31.44%	3	5.36%	108	32.83%	0	0.00%	6	5.41%	3,680,606	3.04%	1,053,711	3.26%	4,734,317	3.09%
06	Electrical Distribution	141	1.88%	3	5.36%	10	3.04%	0	0.00%	3	2.70%	3,905,047	3.23%	1,049,883	3.25%	4,954,930	3.23%
07	Appliances, Air Conditioning	211	2.81%	4	7.14%	25	7.60%	0	0.00%	2	1.80%	3,102,336	2.56%	1,315,660	4.08%	4,417,996	2.88%
08	Open Flame, Ember, Torch	355	4.73%	3	5.36%	27	8.21%	0	0.00%	3	2.70%	9,560,562	7.90%	3,201,732	9.92%	12,762,294	8.32%
09	Other Heat, Flame, Spark	230	3.07%	2	3.57%	7	2.13%	0	0.00%	3	2.70%	5,732,156	4.74%	1,454,438	4.51%	7,186,594	4.69%
10	Other Equipment	47	0.63%	1	1.79%	4	1.22%	0	0.00%	1	0.90%	2,527,180	2.09%	238,880	0.74%	2,766,060	1.80%
11	Natural	107	1.43%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	3,243,875	2.68%	1,207,385	3.74%	4,451,260	2.90%
12	Exposure	237	0.88%	0	0.00%	3	0.91%	0	0.00%	6	5.41%	5,210,206	4.30%	1,047,940	3.25%	6,258,146	4.08%
13	Unknown Cause	2,314	30.78%	35	62.50%	108	32.83%	0	0.00%	57	51.35%	70,816,362	58.49%	17,977,310	55.68%	88,793,672	57.90%
Totals		7,678	100.00%	56	100.00%	329	100.00%	0	100.00%	111	100.00%	121,061,686	100.00%	32,284,503	100.00%	153,346,189	100.00%