AGENDA

DHCD COMBINED WORKGROUP MEETING
2015 Code Change Cycle

August 17, 2016 at 9:30 a.m.

Virginia Housing Center

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2. Additional Discussion

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3. Adjournment

C-103.3(2) cdpVA-15

Proponent : College Laboratory Sub-workgroup (of DHCD's Workgroup Two) DHCD Staff Contact: Vernon.Hodge@dhcd.virginia.gov

2012 Virginia Construction Code

103.3 Change of occupancy. No change of occupancy shall be made in any structure when the current USBC requires a greater degree of accessibility, structural strength, fire protection, means of egress, ventilation or sanitation. When such a greater degree is required, the owner or the owner's agent shall comply with the following:

1. When involving Group I-2 or I-3, written application shall be made to the local building department for a new certificate of occupancy and the new certificate of occupancy shall be obtained prior to the new use of the structure. When impractical to achieve compliance with this code for the new occupancy classification, the building official shall consider modifications upon application and as provided for in Section 106.3. In addition, the applicable accessibility provisions of Section 1012.8 of Part II of the *Virginia Uniform Statewide Building Code*, also known as the "*Virginia Rehabilitation Code*," or the "VRC" shall be met.

Exception: This section shall not be construed to permit noncompliance with any applicable flood load or flood-resistant construction requirements of this code.

2. In other than Group I-2 or I-3, the provisions of the VRC for change of occupancy shall be met.

103.3.1 Group B teaching and research laboratories. Where the use of new or different hazardous materials or a change in the amount of hazardous materials in existing Group B teaching and research laboratories in educational occupancies above the 12th grade would constitute a change of occupancy, Section 302.6 of the VRC shall be permitted to be used as an acceptable alternative to compliance with change of occupancy requirements to permit the increased amounts of hazardous materials stipulated without the laboratories being classified as Group H.

SECTION 202 DEFINITIONS

CHEMICAL FUME HOOD. A ventilated enclosure designed to contain and exhaust fumes, gases, vapors, mists and particulate matter generated within the hood.

LABORATORY SUITE. A fire-rated enclosed laboratory area that will provide one or more laboratory spaces, within a Group B educational occupancy, that are permitted to include ancillary uses such as offices, bathrooms, and corridors that are contiguous with the laboratory area, and are constructed in accordance with section 427.3.

TEACHING AND RESEARCH LABORATORY. A building or portion of a building where hazardous materials are stored, used and handled for the purpose of testing, analysis, teaching, research or developmental activities on a nonproduction basis rather than in a manufacturing process.

2015 International Building Code

(As Part of the 2015 Virginia Construction Code)

[F] 414.2 Control areas. *Control areas* shall comply with Sections 414.2.1 through 414.2.5 and the *International Fire Code*.

Exception: Higher education teaching and research laboratories shall be permitted to comply with Section 427.

SECTION 427 HIGHER EDUCATION LABORATORIES

427.1 Scope. Group B teaching and research laboratories in educational occupancies above the 12th grade complying with the requirements of this section shall be permitted to comply with Tables 427.3, 427.4(1), or 427.4(2) without requiring classification as a Group H occupancy. Except as specified in this section, such laboratories shall comply with all applicable provisions of this code. In addition, as set out in Section 5001.7 of the SFPC, approval under this section is contingent upon operational requirements in the SFPC being complied with and maintained.

427.2 Application. The provisions of this section shall be applied as exceptions or additions to applicable requirements of this code.

427.3 Laboratory suite construction. Where laboratory suites are provided, they shall be constructed in accordance with this section. The number of laboratory suites and percentage of maximum allowable quantities of hazardous materials in laboratory suites shall be in accordance with Table 427.3.

427.3.1 Separation from adjacent areas. Laboratory suites shall be separated from other portions of the building in accordance with the most restrictive of either (i) Table 427.3 with fire barriers constructed in accordance with Section 707 and horizontal assemblies constructed in accordance with Section 711, or (ii) Section 508.4. Where individual laboratories within a laboratory suite are separated from each other, the separation shall consist of one-hour fire barriers.

Exception: Where an individual laboratory suite occupies more than one story, the fire resistance rating of intermediate floors contained within the laboratory suite shall comply with the requirements of this code.

427.3.2 Separation from other laboratory suites. Laboratory suites shall be separated from other laboratory suites in accordance with Table 427.3.

427.3.3 Floor assembly fire resistance. The floor assembly supporting the laboratory suite and the construction supporting the floor of the laboratory suite shall have a fire resistance rating of not less than 2 hours.

Exception: The floor assembly of the laboratory suite and the construction supporting the floor of the laboratory suite are allowed to be 1-hour fire resistance rated in buildings of Types IIA, IIIA and VA construction, provided that the building is 3 or fewer stories.

427.3.4 Maximum number. The maximum number of laboratory suites per floor shall be

in accordance with Table 427.3. Where a building contains both laboratory suites complying with Section 427.3 and control areas complying with Section 414.2, the total number of laboratory suites and control areas shall not exceed the maximum number of laboratory suites in accordance with Table 427.3.

427.3.5 Standby or emergency power. Standby or emergency power shall be provided in accordance with Section 414.5.2 where laboratory suites are located above the sixth story above grade plane or located in a story below grade plane.

427.3.6 Ventilation. Ventilation shall be in accordance with the International Mechanical Code. The design and installation of ducts from chemical fume hoods shall be in accordance with NFPA 91.

427.3.7 Liquid tight floor. Portions of the laboratory suite where hazardous materials are present shall be provided with a liquid tight floor.

427.3.8 Automatic fire sprinkler systems. Buildings shall be equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.

427.3.9 Automatic fire alarm and detection system. Laboratory suites shall be equipped throughout with an automatic fire detection system in accordance with Section 907.2. The building shall be equipped throughout with an automatic fire alarm system in accordance with Section 907.2.

427.3.10 Percentage of maximum allowable quantity in each laboratory suite. The percentage of maximum allowable quantities in each laboratory suite shall be in accordance with Table 427.3.

TABLE 427.3
DESIGN AND NUMBER OF LABORATORY SUITES PER FLOOR

Floor Level		Percentage of the Maximum Allowable Quantity per Lab Suite[a]	Number of Lab Suites per Floor	Fire-Resistance Rating for Fire Barriers in Hours[b]
Above Grade Plane	21+	5	1	2
	16-20	25	1	2
	11-15	50	1	2
	7-10	50	2	2
	4-6	75	4	1
	3	100	6	1
	1-2	100	8	1
Below Grade Plane	1	75	4	1
	2	50	2	1
	Lower than 2	Not Allowed	Not Allowed	Not Allowed

a. Percentage shall be of the maximum allowable quantity per control area shown in Tables 307.1(1) and 307.1(2), with all increases allowed in the notes to those tables.
b. Fire barriers shall include walls, floors and ceilings necessary to provide separation from other portions of the building.

427.4 Teaching and research laboratories utilizing control areas. Group B teaching and research laboratories in educational occupancies above the 12th grade utilizing control areas are permitted to increase amounts of hazardous materials stipulated in 414.2 without the laboratories being classified as Group H. The percentage of maximum allowable quantities of hazardous materials per control area and the number of control areas permitted at each floor level within a building shall be permitted to comply with Table 427.4(1) in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or shall be permitted to comply with Table 427.4(2) in buildings not equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. In addition, as set out in Section 5001.7 of the SFPC, approval under this section is contingent upon operational requirements in the SFPC being complied with and maintained.

TABLE 427.4(1)
DESIGN AND NUMBER OF CONTROL AREAS IN BUILDINGS EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH SECTION 903.3.1.1 WITH GROUP B TEACHING AND RESEARCH LABORATORIES IN EDUCATIONAL OCCUPANCIES ABOVE THE 12TH GRADE

Floor Level		**Percentage of the Maximum Allowable Quantity per Control Area[a]**	**Number of Control Areas per Floor**	**Fire-Resistance Rating for Fire Barriers and Horizontal Assemblies in Hours[b]**
Above Grade Plane	Higher than 20	5	1	2
	11-20	10	1	2
	7-10	25	2	2
	4-6	50	2	2
	3	75	3	1
	1-2	100	4	1
Below Grade Plane	1	75	3	1
	2	50	2	1
	Lower than 2	Not Allowed	Not Allowed	Not Allowed

a. Percentage shall be of the maximum allowable quantity per control area shown in Tables 307.1(1) and 307.1(2), with all increases allowed in the notes to those tables.
b. Separation shall include fire barriers and horizontal assemblies as necessary to provide separation from other portions of the building.

TABLE 427.4(2)
DESIGN AND NUMBER OF CONTROL AREAS IN BUILDINGS NOT EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH SECTION 903.3.1.1 WITH GROUP B TEACHING AND RESEARCH LABORATORIES IN EDUCATIONAL OCCUPANCIES ABOVE THE 12TH GRADE

	Percentage of the Maximum Allowable Quantity	**Number**	**Fire-Resistance Rating for Fire Barriers and**

Floor Level		per Control Area[a]	of Control Areas per Floor	Horizontal Assemblies in Hours[b]
Above Grade Plane	Higher than 9	5	1	2
	7-9	10	2	2
	4-6	25	2	2
	3	75	2	1
	1-2	100	4	1
Below Grade Plane	1	75	3	1
	2	50	2	1
	Lower than 2	Not Allowed	Not Allowed	Not Allowed

a. Percentage shall be of the maximum allowable quantity per control area shown in Tables 307.1(1) and 307.1(2), with all increases allowed in the notes to those tables.
b. Separation shall include fire barriers and horizontal assemblies as necessary to provide separation from other portions of the building.

427.4.1 Separation requirements. Control areas shall be separated from each other and from other non-control areas by fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both.

427.4.2 Fire-resistance-rating requirements. The required fire-resistance rating for fire barriers shall be in accordance with Table 427.4(1) in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or in accordance with Table 427.4(2) in buildings not equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. The floor assembly of the control area and the construction supporting the floor of the control area shall have a fire-resistance rating in accordance with Table 427.4(1) in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or in accordance with Table 427.4(2) in buildings not equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

Exception: The floor assembly of the control area and the construction supporting the floor of the control area are allowed to be 1-hour fire resistance rated in buildings of Types IIA, IIIA and VA construction, provided that the building is 3 or fewer stories.

427.4.3 Standby or emergency power. Standby or emergency power shall be provided where control areas are located above the sixth floor level above grade plane or located in a floor level below grade plane.

427.4.4 Restricted materials in storage and use. Where approved by the building official, the storage and use of the following hazardous materials prohibited by Table 307.1.1 in buildings not equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, shall be allowed within a control area at 25% of Table 307.1.1 limits for a building equipped throughout with an automatic sprinkler system:

1. Pyrophorics
2. Class 4 Oxidizers

No additional quantity increases shall be allowed. All such materials shall be stored and used in accordance with Section 5001.7 of the SFPC.

427.4.5 Automatic fire alarm and detection system. The building shall be equipped throughout with an automatic fire alarm system in accordance with Section 907.2 and control areas where hazardous materials are used or stored shall be equipped throughout with an automatic fire detection system in accordance with Section 907.2.

427.4.6 Ventilation. Ventilation shall be in accordance with the International Mechanical Code.

[F] 907.2.2 Group B. An automatic fire alarm and detection system shall be provided in Group B occupancies where an increase in hazardous materials is allowed in accordance with Section 427. A manual fire alarm system shall be installed in Group B occupancies where one of the following conditions exists:

1. The combined Group B *occupant load* of all floors is 500 or more.
2. The Group B *occupant load* is more than 100 persons above or below the lowest *level of exit discharge*.
3. The *fire area* contains an ambulatory care facility.

Exception: Manual fire alarm boxes are not required where the building is equipped throughout with an *automatic sprinkler system* installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

CHAPTER 35 REFERENCED STANDARDS

NFPA 45-15 Standard on Fire Protection for Laboratories Using Chemicals
NFPA 91-15 Standard for Exhaust Systems for Air Conveying of Vapors, Mists, and Particulate Solids

2015 International Existing Building Code

(As Part of the 2015 Virginia Rehabilitation Code)

302.6 Change of occupancy in existing Group B teaching and research laboratories. Where the use of new or different hazardous materials or a change in the amount of hazardous materials in existing Group B testing and research laboratories in educational occupancies above the 12th grade would constitute a change of occupancy, this section shall be permitted to be used as an acceptable alternative to compliance with change of occupancy requirements to permit the increased amounts of hazardous materials stipulated without the laboratories being classified as Group H. In addition, as set out in Section 5001.7 of the SFPC, approval under this section is contingent upon operational requirements in the SFPC being complied with and maintained.

302.6.1 Hazardous materials in existing Group B teaching and research laboratories. The percentage of maximum allowable quantities of hazardous

materials per control area and the number of control areas permitted at each floor level within an existing building shall be permitted to comply with Table 302.6.1(1) in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 of the VCC or shall be permitted to comply with Table 302.6.1(2) in buildings not equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 of the VCC.

TABLE 302.6.1(1)
DESIGN AND NUMBER OF CONTROL AREAS IN EXISTING BUILDINGS EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH SECTION 903.3.1.1 OF THE VCC WITH GROUP B TEACHING AND RESEARCH LABORATORIES IN EDUCATIONAL OCCUPANCIES ABOVE THE 12TH GRADE

Floor Level		**Percentage of the Maximum Allowable Quantity per Control Area[a]**	**Number of Control Areas per Floor**	**Fire-Resistance Rating for Fire Barriers and Horizontal Assemblies in Hours[b]**
Above Grade Plane	Higher than 20 10-20 7-9 4-6 3 2 1	5 10 25 50 75 100 100	1 1 2 2 2 3 4	2 2 2 2 1 1 1
Below Grade Plane	1 2 Lower than 2	75 50 Not Allowed	3 2 Not Allowed	1 1 Not Allowed

a. Percentage shall be of the maximum allowable quantity per control area shown in Tables 307.1(1) and 307.1(2) of the VCC, with all increases allowed in the notes to those tables.
b. Separation shall include fire barriers and horizontal assemblies as necessary to provide separation from other portions of the building.

TABLE 302.6.1(2)
DESIGN AND NUMBER OF CONTROL AREAS IN EXISTING BUILDINGS NOT EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH SECTION 903.3.1.1 OF THE VCC WITH GROUP B TEACHING AND RESEARCH LABORATORIES IN EDUCATIONAL OCCUPANCIES ABOVE THE 12TH GRADE

	Percentage of the Maximum Allowable Quantity	**Number of Control Areas per**	**Fire-Resistance Rating for Fire Barriers and**

Floor Level		per Control Area[a]	Floor	Horizontal Assemblies in Hours[b]
Above Grade Plane	Higher than 9 7-9 4-6 3 2 1	5 10 25 75 100 100	1 2 2 2 3 4	2 2 2 1 1 1
Below Grade Plane	1 2 Lower than 2	75 50 Not Allowed	3 2 Not Allowed	1 1 Not Allowed

a. Percentage shall be of the maximum allowable quantity per control area shown in Tables 307.1(1) and 307.1(2) of the VCC, with all increases allowed in the notes to those tables.
b. Separation shall include fire barriers and horizontal assemblies as necessary to provide separation from other portions of the building.

302.6.1.1 Automatic fire alarm and detection systems. An automatic fire alarm system shall be provided throughout the building in accordance with Section 907 of the VCC. An automatic fire detection system shall be provided in the control area in accordance with Section 907 of the VCC where pyrophics or Class 4 oxidizers are used and the building is not equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 of the VCC.

302.6.1.2 System supervision and monitoring. Automatic fire detection systems shall be electronically supervised and monitored by an approved supervising station or, where approved, shall initiate an audible and visual signal at a constantly attended on-site location.

CHAPTER 16 REFERENCED STANDARDS

NFPA 45-15 Standard on Fire Protection for Laboratories Using Chemicals

2015 International Fire Code

(As Part of the 2015 Virginia Statewide Fire Prevention Code)

CHEMICAL FUME HOOD. A ventilated enclosure designed to contain and exhaust fumes, gases, vapors, mists and particulate matter generated within the hood.

LABORATORY SUITE. A fire-rated enclosed laboratory area that will provide one or more laboratory spaces, within a Group B educational occupancy, that are permitted to include ancillary uses such as offices, bathrooms, and corridors that are contiguous with

the laboratory area, and are constructed in accordance with Section 427.3 of the VCC.

SPECIAL EXPERT. An individual who has demonstrated qualifications in a specific area, outside the practice of architecture or engineering, through education, training and experience.

TEACHING AND RESEARCH LABORATORY. A building or portion of a building where hazardous materials are stored, used and handled for the purpose of testing, analysis, teaching, research or developmental activities on a nonproduction basis rather than in a manufacturing process.

5001.7 Operational requirements for Group B teaching and research laboratories. Teaching and research laboratories in Group B educational occupancies above the 12th grade utilizing Section 427 of the VCC or Section 302.6 of the VRC shall comply with this section and other applicable requirements of this code. In the case of conflicts between the requirements of Section 427 of the VCC or Section 302.6 of the VRC and provisions of this code other than those set out in this section, Section 427 of the VCC or Section 302.6 of the VRC, as applicable, shall govern.

5001.7.1 Chemical safety reviews. Operating and emergency procedures planning and documentation shall be as set out in Sections 5001.3.3.11 through 5001.3.3.17. Such documentation shall be prepared by laboratory safety personnel or special experts, and shall be made available in the workplace for reference and review by employees. Copies of such documentation shall be furnished to the fire code official for review upon request.

5001.7.2 Hazardous materials handling. Receiving, transporting on site, unpacking and dispensing of hazardous materials shall be carried out by persons trained in proper handling of such materials and shall be performed in accordance with Chapters 50 through 67, as applicable.

5001.7.3 Hazard identification signage. Warning signs for other than building components shall be provided in accordance with Section 5003.5.

5001.7.4 Maintenance of equipment, machinery and processes. Maintenance of equipment, machinery and processes used with hazardous materials shall comply with Section 5003.2.6.

5001.7.5 Time sensitive materials. Containers of materials that have the potential to become hazardous during prolonged storage shall be dated when first opened, and shall be managed in accordance with NFPA 45 Section 8.2.4.4.1.

5001.7.6 Maintenance of storage, dispensing, use and handling requirements. Storage, dispensing, use and handling requirements in the VCC or VRC shall be maintained. Operational requirements not affecting the manner of construction shall comply with this chapter and Chapters 51 through 67, as applicable.

5001.7.7 Hazardous wastes. Storage, dispensing, use and handling of hazardous waste shall comply with this chapter and Chapters 51 through 67, as applicable.

5001.7.8 Container Size. The maximum container size for all hazardous materials shall be 5.3 gallons for liquids, 50 pounds for solids, 100 cf. for health hazard gases per table 5003.1.1(2) and 500 cf. for all other gases in accordance with Table 5003.1.1(1).

Exception: Hazardous waste collection containers, for other than Class I and Class II flammable liquids, are permitted to exceed 5.3 (20L) gallons where approved.

5001.7.9 Density. Quantities of Class I, II & IIIA combustible or flammable liquids in storage and use within control areas or laboratory suites shall not exceed 8 gallons (30 liters) per 100 square feet of floor area, with not more than 4 gallons (15 liters) per 100 square foot being in use. Quantities of Class I flammable liquids in storage and use shall not exceed 4 gallons per 100 sf of floor area with not more than 2 gallons (7.5 liters) being in use. The maximum in use in open systems is limited to 10% of these quantities. Densities shall be reduced by 25 percent on the 4th through 6th floor levels above grade plane of the building and 50% above the 6th floor level. The density is to be reduced to 50% of these values for buildings that are not protected throughout with an approved automatic fire sprinkler system. Regardless of the density, the maximum allowable quantity per control area or laboratory suite shall not be exceeded.

Exception: Density limits may be exceeded in designated hazardous waste collection areas or rooms within a control area or laboratory suite, but stored quantities shall not exceed the maximum allowable quantity per laboratory suite or control area.

5001.7.10 Restricted materials in storage. Storage of pyrophorics and Class 4 oxidizers prohibited by Table 5003.1.1(1) in existing buildings not equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 of the VCC shall be allowed within a control area at 25 percent of the limits in Table 5003.1.1(1) for a building equipped throughout with an automatic sprinkler system, with no additional increases allowed, provided that such materials are stored in accordance with all of the following:

1. Containers shall be completely sealed and stored according to the manufacturer's recommendations.

2. Storage shall be within approved hazardous materials storage cabinets in accordance with Section 5003.8.7, or shall be located in an inert atmosphere glove box in accordance with NFPA 45 Section 7.11.

3. The storage cabinet or glove box shall not contain any storage of incompatible materials.

5001.7.11 Restricted materials in use. Use of pyrophorics and Class 4 oxidizers prohibited by Table 5003.1.1(1) in existing buildings not equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 of the VCC shall be allowed within a control area at 25 percent of the limits in Table 5003.1.1(1) for buildings equipped throughout with an automatic sprinkler system, with no additional increases allowed, provided that such materials are used in accordance with all of the following:

1. Use shall be within an approved chemical fume hood listed in accordance with UL 1805, or in an inert atmosphere glove box in accordance with NFPA 45 Section 7.11, or other approved equipment designed for the specific hazard of the material.

2. Combustible materials shall be kept at least two feet (0.610 m) away from the work area, except for those items directly related to the research.

3. A portable fire extinguisher appropriate for the specific material shall be provided

within 20 feet of the use in accordance with Section 906.

CHAPTER 80 REFERENCED STANDARDS

NFPA 45-15 Standard on Fire Protection for Laboratories Using Chemicals
UL 1805-2002 Standard for Laboratory Hoods and Cabinets

Reason:

DHCD Staff Note: Changes to the proposal subsequent to the July 20, 2016 Workgroup Two meeting are outlined in the document below:

Changes to Proposal

This proposed code change attempts to address the limiting factors of MAQs within facilities (via the use of control areas) by answering the following questions:

1. How do we increase MAQs beyond those already allowed while still incorporating an acceptable level of safety, protection, and/or fire resistance ratings?

2. How do we apply these requirements to existing buildings?

3. How do we accomplish the first two without a large re-write of the code (i.e., Group L) or relying on a standard that may not be completely written in enforceable terms (i.e., NFPA 45)?

The answer to question #1 above is to allow for an increased number of control areas – which would in effect, allow for increased MAQs per floor level. Providing an acceptable level of safety is addressed by limiting this change to apply only to Group B labs and by considering the following:

- in Group B laboratories, the use of hazardous chemicals is generally limited to small quantities used on a short-term basis and in operations where the chemicals and procedures change frequently. 29 CFR 1910.1450, which is referred to as the 'Laboratory Standard' requires the development and implementation of a formal, written, and employee-accessible program, referred to as a Chemical Hygiene Plan (CHP), where this plan must be capable of protecting employees (and users) from health hazards associated with hazardous chemicals used in the laboratory, and
- where research funding is obtained from Agencies such as the National Institute of Health (NIH), development of a Chemical Hygiene Plan for Laboratory operations is already a requirement, and
- in such Group B labs, the students and faculty tend to be more careful in their handling of hazardous materials, and
- the students tend to be better educated and more closely supervised, and
- such facilities tend to undergo more inspections, and
- many Group B facilities (i.e., higher education) have dedicated departments whose mission is to ensure proper procedures and safety precautions are adhered to and implemented.

The level of protection and fire resistance ratings are addressed by requiring a minimum 2-hour enclosure from the 3rd floor level and higher (4th floor level or higher is allowed now). Also, since control areas are required to be compartmentalized and completely enclosed (all sides, top, and bottom), any additional control areas allowed under this code change proposal would be required to be completely separated from the remainder of the facility and from other control areas.

It has been said that approximately 90% of the current higher education laboratory facilities are 4 stories or less – including new and existing buildings, so the number of facilities this code change would affect would potentially be a smaller percentage (since the major benefit is for buildings 4 stories and higher).

Per the VDFP fire data "Tally" charts (http://vdfp.virginia.gov/fire_data_statistics/index.htm), within

the last ten years, when it comes to laboratories there have been:

- 0.03% frequency percentage of calls,
- zero deaths (civilian or fire fighters),
- two injuries (to fire fighters), and
- minimal property damage (approximately $230,000 over the 10-year period with $200,000 of that in one year alone - 2005).

Empirical data suggests that laboratories (including Group B higher education) appear to be relatively safe occupancies. The imposition of additional performance-based safety requirements in the SFPC where increased quantities will be allowed to be used further enhance the safety of operations using hazardous materials.

The answer to question #2 above is to allow existing facilities to benefit from the Virginia amendments and thus, existing Group B laboratories could utilize the proposed amendments included in this code change proposal, rather than be evaluated under the building code in which it was constructed.

If you accept the answers to #1 and #2, then the answer to question #3 above could be accomplished by adding a new subsection to 414.2 in the VCC and a new subsection 302.6 in the VRC.

The new definitions are provided to better describe what a "testing and research lab" is and also mimic the language use in 2015 IMC 510.1.

NATIONAL IFC WORKGROUP SUPPORTING STATEMENT: [copied verbatim without any edits and therefore, refers to information that is not a part of this code change proposal, but still conveys the conceptual approach]

There is quite possibly no industry more important to lives across the world than higher education academic institutions. The advance of technologies, science, medicine and our know ledge of the world often relies on having vibrant and successful academic institutions.

These academic institutions often have chemistry, biology, medical, engineering and other laboratories where hazardous materials are used. The IFC does not specifically address teaching and research laboratories, so users must try to apply general hazardous materials provisions, which oftentimes are not appropriate for specialized academic laboratory settings. The following is a list of several conditions typically present in academic laboratories

that make them unique:

1. Lower chemical density in individual research laboratories. In a teaching and research environment, there are often many small laboratories within a building that are using small quantities of hazardous materials in each location. Individually, they do not store or use a large quantity of hazardous materials, but together, they may often exceed the maximum allow able quantities for the control area. This lower chemical density often mitigates the overall risk, but the IFC currently has no provisions to recognize this condition.

2. Ongoing staff oversight from "Special Experts" in laboratory safety. Many higher education institutions have a full cadre of faculty and staff with chemical expertise. These "Special Experts" often include, but are not limited to: Fire Marshals, Industrial Hygienists, Radiation Safety Officers, Biological Safety Officers, Chemical Hygiene Officers and Environmental Health and Safety Officers. These individuals are an integral part of the preparation/review of laboratory safety documentations, as w ell as regularly scheduled safety audits. Fire and life safety expertise and oversight on our campuses is continually increasing with the addition of these highly capable professionals.

3. Limited, or "directed", funding stream s. Also unique to academic institutions are the funding sources for research. In a "non-profit" teaching and research environment, the majority of research is funded through grants and endowments. Unfortunately, many grants only support the costs of research personnel and equipment, not structural upgrades to accommodate newer research processes.

4. Mixed-use occupancies. A typical university science building will house laboratories, office

space, storerooms, classrooms and lecture halls. The current limits on hazardous materials are so restrictive on upper floors that many universities are forced to locate classrooms and lecture halls on the upper floors so that they can take full advantage of the hazardous materials quantities allowed on the lower floors. This results in moving large numbers of students through hallways, past laboratories to get to the upper floors. They will also have to exit back down the same routes in the event of an emergency.

This proposal introduces a post-secondary academic laboratory chapter to address these unique circumstances. University fire and life safety professionals from across the United States have collaborated on writing this chapter. Conscientious effort has been made to balance the proposed IFC modifications with enhanced administrative, emergency planning and structural provisions.

This chapter also introduces some important provisions from NFPA 45, Fire Protection for Laboratories. Although the IFC references many national standards on specific topics, there are no such references currently for laboratories. This standard contains many laboratory specific requirements and design professionals rely heavily upon this national standard for current laboratory designs.

Specifically, the chapter addresses three primary needs: 1) increasing general laboratory safety requirements, 2) increasing MAQ's in large or multi-story laboratories, or laboratories located in multi-story buildings and, 3) allowing very small quantities of currently prohibited hazardous materials in non-sprinklered laboratory buildings. A brief description of each is as follows:

1. Increased general laboratory safety requirements: This proposal introduces a post-secondary academic laboratory chapter in to the IFC. Currently, there is no teaching/research laboratory specific chapter in the IFC, and there are no references to NFPA 45 (Fire Protection for Laboratories). This new chapter fills a much needed gap in the IFC, and provides for enhanced safety requirements in these academic laboratories.

2. Control Area Limitations: As post-secondary campuses across the world grow to meet increasing populations, they often are landlocked, and require that new buildings are built taller and/or larger. This is particularly true in large metropolitan areas. The current "Control Area" restrictions in the ICC codes severely restrict functioning laboratories on upper floor levels or in larger buildings.

In response to this critical issue, numerous jurisdictions have adopted state or local amendments to allow for greater numbers of control areas and larger percentages of MAQs in academic and /or non-production laboratories. Such jurisdictions include California, Arizona, Minnesota, Seattle and New York City. One of the primary purposes of this proposal is to provide standardized model code language to address this topic.

This chapter provides an alternate design approach for such scenarios where traditional control area limitations are not feasible, and where building Group H-Occupancies is not possible. The "Laboratory Suite" concept gives users an option to allow more flexibility in hazardous materials use, in exchange for additional administrative and structural safeguards, while still remaining a "B" occupancy.

3. Non-Sprinklered Limitations: There are thousands of existing post-secondary academic institutions, with some dating back to 1800's, where retrofitting automatic sprinklers is not practical. This proposal addresses a critically important issue to selected laboratories in existing, non-sprinklered buildings, who need very small quantities of materials that have blanket restrictions in non-sprinklered buildings. This proposal provides a limited exception to allow very small quantities of such materials when specific mitigation controls are provided.

PART 1 REASON:

Section 3801. Provides general scoping information. It clarifies that the chapter applies to both existing laboratories in existing buildings and new laboratories as referenced in the sections.

The definition used for laboratories mirrors the definition found in the International Mechanical Code, with the addition of language to clarify that the chapter is limited to "Laboratories in higher education institutions beyond the 12th grade".

Section 3802. Provides definitions for new terms introduced in this chapter. The term "Special Expert" is in the International Performance Code in the appendix. It was utilized in this chapter to reflect the high level of faculty and staff safety professionals available at many academic

institutions.

Section 3803. Requires additional safety pre-planning for all laboratories or laboratory suites utilizing this chapter, also consistent with laboratory safeguards found in NFPA 45. Enhanced safety requirements found in this section include:

1. New hazard analysis documentation shall include: Process Hazard Analysis, Pre-startup Safety Review, Operating and Emergency Procedures, Management of Change, Accident Procedures, Consequence Analysis and Safety Audits. Requires that such documentation shall be submitted to the fire code official. (IFC Section 5001).

2. Time-sensitive materials shall be dated and pro-actively managed. (NFPA 45).

3. Maximum container size of Class I flammable liquids is 5.3 gallons. (NFPA 45).

4. Density of Class I flammable liquids in storage and use shall be no greater than 8 gallons per 100 square feet of floor area. (NFPA45).

Section 3804. Provides the "Laboratory Suite" design option in addition to traditional control area options. Enhanced safety requirements in this section include:

1. All of those listed above in Section 3803.

2. Rated fire barriers for compartmentation of laboratory suites within buildings.

3. In laboratories above the 6th story, or in a story below grade plane, requirements for standby or emergency power for safety-related equipment and enhanced automatic sprinkler protection.

4. Automatic sprinkler design and density exceeding that which would be required by NFPA 45.

If the vertical fire barrier between lab suites is required to be two-hour rated, a fire rated duct enclosure, UL listed duct wrap, or multiple building shafts is required. Footnote c in the table allows the vertical fire barriers between laboratory suites on a floor to be one-hour rated because of the reduced quantities of hazardous materials in each laboratory suite on the floors above the 6th story, and additional safety provisions in Chapter 38 which apply to all laboratories utilizing this chapter. In addition, chemical exhaust ducts routed through the one-hour rated barriers would be permitted to be installed without fire dampers, where the duct needs to be routed to the nearest chemical exhaust shaft. Fire dampers are not installed in laboratory exhaust ducts to maintain exhaust ventilation in laboratories in the event of a fire. In the IBC, Section 714.1.1 and Section 717.5.2, Exception 3; and IMC 607.5.5 allow exhaust system ducts to penetrate fire rated barriers and fire rated shafts without a fire damper. These provisions carry significant importance and allow multiple laboratory suites per floor of a building. The footnote has no effect on other provisions of the code and does not change the structural fire resistance requirements of IBC Chapter 6, or the continuity requirements of IBC Chapter 7.

Historical fire data over the last 25 years has shown that the vast majority of laboratory fires do not typically extend beyond the area, or even the room of origin. This is primarily due to the limited quantities of hazardous materials in use, and the following safety features that are incorporated into laboratory designs:

1. Ventilation systems provide large volumes of airflow through laboratories to continuously remove hazardous vapors, fumes and gases.

2. Fume hoods provide local ventilation control for containment and removal of hazardous vapors, fumes and gases during the use of hazardous materials.

3. Automatic fire sprinkler systems can confine the fires to the room of origin

4. Fire alarm systems provide prompt notification to building occupants and/or emergency responders.

All of these structural safety features are required in some combination in laboratories utilizing this chapter, as well as the additional NFPA 45 requirements for monitoring of time-sensitive materials, limitations on container sizes and limiting the density of flammable liquids over the floor area of laboratory space.

Section 3805. Provides and clarifies general hazardous materials requirements for non-sprinklered laboratories. Provides an option to allow for very small quantities of prohibited materials in non-sprinklered laboratories. Enhanced safety requirements in this section include:

1. All of those listed above in Section 3803.

2. Enhanced storage requirements in accordance with NFPA 45.

3. Prohibition of storage of any incompatible materials.

4. Use of hazardous materials use must be in a chemical fume hood, glove box or other approved laboratory equipment designed for the specific hazard.

5. The work area must be free of all unnecessary combustible materials.

6. There must be an appropriate extinguishing media located within 20 feet.

Section 3806. Provides requirements for existing laboratories in existing sprinklered buildings. Enhanced safety requirements in this section include all of those in Section 3803, including complete hazard analysis and safety audits, and limits on container sizes for all hazardous materials and density limits on flammable liquids.

PART 2 REASON:

Modifies IBC 414.2 to identify that "Laboratory Suites" are an exception to traditional control area provisions.

PART 3 REASON:

Modifies IFC 604.2 to identify that "Laboratory Suites" require emergency or standby power.

PART 4 REASON:

Adds NFPA 45 as recognized standard.

This chapter was written and reviewed by a national taskforce made up of fire and life safety professionals from colleges, universities, municipal fire organizations and private industry across the United States. Taskforce members are individuals representing their own institutions, as well as members who were assigned participants by national college and university safety associations.

National endorsements:

Campus Safety, Health, and Environmental Management Association (CSHEMA)

This proposal [their proposal is similar (e.g., uses the new IBC but existing NFPA 45 concept of laboratory suites), but not identical to this code change proposal (e.g., which uses the existing IBC concept of control areas] is submitted by the ICC Fire Code Action Committee (FCAC). The FCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes with regard to fire safety and hazardous materials in new and existing buildings and facilities and the protection of life and property in wildland urban interface areas. In 2014 and 2015 the Fire-CAC has held 5 open meetings. In addition, there were numerous conference calls, Regional Work Group and Task Group meetings for the current code development cycle, which included members of the committees as well as any interested parties, to discuss and debate the proposed changes. Related documentation and reports are posted on the FCAC website

Cost Impact: Although the cost of construction may increase (because you would be constructing more control areas that are separated by fire barriers and horizontal assemblies), such Group B laboratories may be in a much better position to apply for research grants and funding, and could possibly attract the top students and faculty that might otherwise go to other universities or businesses.

Workgroup Recommendation

Workgroup 2 Recommendation Recommendation: Consensus for Approval

Workgroup 2 Reason: Kenny Payne spoke-approved at the national level by the fire officials-work group pretty much agrees with this proposal.
Vernon Hodge stated after talking with Zack Adams and Chris Raha, only substantiated changes

are needed and the comments can be placed in cdpVA.

Rick Witt stated that this is just an option since it is not mandated. I support this issue and there seems to be consensus and sees no reason why not to move this forward.

Board Decision

None

C-103.3(2) cdpVA-15

C-104.3 cdpVA-15

Proponent : William Andrews , Representing City of Richmond's Fire Marshal's office (william.andrews@richmondgov.com)

2012 Virginia Construction Code

104.3 Installation or modifications of fire protection systems. The building official shall notify the local fire official when the installation of a fire protection system in a new building is approved and when issuing an approval for altering, disabling or removing of a fire protection system in an existing building.

Reason: Fire officials are responsible for applying the fire code on maintenance and periodic testing of the fire protection systems, plus local fire officials coordinate emergency responses to sites (including state). Local fire officials need to learn when a building official approve installing, disabling or removing fire alarms, sprinkler system, and other fire protection systems (including for renovation or demolition). The building official is the best source for properly authorizing substantial changes to fire protection systems, thus to notify local fire official. If code leaves responsibility on contractor and property owners, often their getting permits from the building official consider comply with code, resulting in fire official not notified. State and local building officials need to keep local fire official updated when approving substantial changes of fire protection systems within that fire official's emergency response area.

DHCD Staff Note: The proponent modified the proposal after the second WG2 meeting (July 20, 2016) to add a new provision to Chapter 1 of the VCC. A link to the proposal reviewed by WGs 1 and 2 is below:

Prior Proposal

Cost Impact: No cost impact for construction. Minimal time and effort by building official's office to communicate information to the fire official.

Workgroup Recommendation

Workgroup 2 Recommendation Recommendation: Consensus for Disapproval

Workgroup 2 Reason: 1st WG 2 meeting: This will return with collaborative efforts, Jaunna will work with Mr Andrews to tweak. Pending
2nd WG 2 meeting:

Reason: Fire officials are responsible for applying the fire code on maintenance and periodic testing of the fire protection systems, plus local fire officials coordinate emergency responses to sites (including state). Local fire officials need to learn when a building official approve installing, disabling or removing fire alarms, sprinkler system, and other fire protection systems (including for renovation or demolition). The building official is the best source for properly authorizing substantial changes to fire protection systems.

William Andrews gave an overview of his proposal. Same language as in previous workgroups.

Johnna Grizzard stated she had sent some suggestions, however, she never received an answer.

Kenney Payne suggested it needed rewording.

Rick Witt said we are not installing. He supports making this pending and doesn't think it is

necessary. You can't change behavior.

Emory Rodgers said disabling or removing is approved under the USBC, then the fire code requires if you put it out of service to notify them. He suggested moving forward as non-consensus. This has been placed in 2 workgroups for comments.

William Lloyd said to move this forward, it is a reasonable requirement. It reminds the building official, if you are going to take out a fire protection system, you need to let the fire department know. It takes the burden off of the individual that owns the building.

Brian Gordon stated we are supporting this concept, without addressing some of the issues, we would not support as consensus.

Glenn Dean said he disagrees with Bill, the building official doesn't own the fire system.

Cindy Davis – **Move forward as consensus for disapproval.**

Robby Dawson asked if we change language, what would happen to it?

Cindy Davis stated it would be a change that we would consider again.

DHCD Staff Note: The proponent modified the proposal after the second WG2 meeting (July 20, 2016) to create a new provision in Chapter 1 of the VCC. The proposal reviewed by WGs 1 and 2 is in the "Attachments" section of this proposal and linked to the reason statement.

Workgroup 1 Recommendation Recommendation: Non-Consensus Final

Workgroup 1 Reason: Needs work. Proponent to come back with revised language based on workgroup feedback.

Board Decision

None

C-104.3 cdpVA-15

C-105.2.1.1 cdpVA-15

Proponent : Debra McMahon (debra.mcmahon@fairfaxcounty.gov)

2012 Virginia Construction Code

105.2.1.1 Qualifications of paraprofessional A paraprofessional shall have at least one year of experience and general knowledge in at least one of the following areas: building construction, building, fire or housing inspections; plumbing, electrical or mechanical trades or fire protection, elevator, property maintenance work or customer service/administrative skills. Any combination of education and experience that would confer equivalent knowledge and ability shall be deemed to satisfy this requirement. Additional qualification and certification requirements may be determined by the locality.

SECTION 202 DEFINITIONS

Definitions PARAPROFESSIONAL. Any person employed by or under an extended contract to a local building department or local enforcing agency for enforcing the USBC such as permit technicians, engineering technicians, administrative assistants and engineering aides who review, process and issue building or trade permits.

Reason: The purpose of this proposed code addition is to get permit technicians recognized for their technical expertise on a state level. Permit technicians are responsible for reviewing, processsing and issuing build/trade permits per the provisions of the Virginia Construction Code. They are responsible for ensuring that minimum submission requirements are met based on each individual jurisdiction requirements. Often times, permit technicians are required to do cursory reviews of architectural and trade plan requiring skills equal to *technical assistants.*

Cost Impact: NONE

Workgroup Recommendation

Workgroup 1 Recommendation Recommendation: Pending

Workgroup 1 Reason: None

Board Decision

None

CB-202(2) cdpVA-15

Proponent : Kenney Payne, Representing AIA-VA
(kpayne@moseleyarchitects.com)

2015 International Building Code

SECTION 202 DEFINITIONS

AREA, BUILDING.
The aggregate *gross floor area* ~~*included within surrounding*~~of all~~*exterior walls*~~ *stories*~~(or *exterior walls* and *fire walls*) exclusive~~ of ~~vent~~a~~*shafts* and *courts*~~*building*~~. Areas of the building not provided with surrounding walls shall be included in the building area if such areas are included within the horizontal projection of the roof or floor above.~~

FLOOR AREA, GROSS.
The floor area per *story* within the inside perimeter of the *exterior walls* and *fire walls* of the building under consideration, exclusive of vent *shafts*, *shafts*~~and~~with no openings, interior or exterior*courts*, and the upper volume of multi-story spaces, without deduction for *corridors*, *stairways*, elevator *shafts*, *ramps*, closets, the thickness of interior *walls*, columns or other features. The floor area of a *building*, or portion thereof, not provided with surrounding *exterior walls* shall be the usable area under the horizontal projection of the roof or floor above. ~~The gross floor area shall not include *shafts* with no openings or interior *courts*.~~

Reason:
BUILDING AREA:

"Building area" was intended only for calculations involving allowable area. However, when the actual words are applied to "real" buildings, it becomes questionable. Is the current BUILDING AREA definition equivalent to the aggregate FLOOR AREA? No. FLOOR AREA can actually **exceed** the BUILDING AREA! How is that possible?

- BUILDING AREA can be bounded by exterior walls or fire walls
- FLOOR AREA is bounded by exterior walls only – not fire walls

Is it the intent to have a FLOOR AREA that is larger than the BUILDING AREA? If not, then the following should be considered:

- Floor area of a building should not cross fire walls
- It does not make sense that an entire building's area could be less than the same building's floor area
- The fire wall breaks the structure into more than one building
- See the definition's "of the building under consideration"
    - All calculations are per building, not per multi-building structure

Also, under a strict reading of the BUILDING AREA definition, and because the term is not tied to a "floor," we would need to count the "air" of

- The upper areas of an Atrium as BUILDING AREA
- The upper areas of a gymnasium as BUILDING AREA
- It includes grass, hedges, mulch beds, outside air, and water features - if under the projection of the flor or roof above

- An indoor 3-story mall could be 600,000 SF instead of the more accurate 400,000 SF
- Consider a 4-story building with a projecting roof
    - Not only would we have to count the grass and bushes, but the outside air above the bushes for 4 stories

But, when determining occupant loads, we do not count the upper interior "air" or outside air, bushes, grass, water, or mulch beds. That's part of the problem with the BUILDING AREA definition; it does not relate itself to the floor plate at all.

Another potential issue - Level 3 alterations of the VRC are tied to BUILDING AREA; therefore, it is imperative that this definition be coordinated and consistent with the intent of what is or is not actual BUILDING AREA.

Perhaps a better approach would be to relate BUILDING AREA to FLOOR AREA. Thus, the proposed new definitions. "Aggregate' would require adding all the GROSS FLOOR AREAS together to come up with a BUILDING AREA. Note the definition of GROSS FLOOR AREA includes a definition that is similar to the current BUILDING AREA definition, so the terms are not deleted, they are just relocated. It also addresses the issue regarding bushes, grass, water, and outside air for multiple stories. It also helps when defined terms use other defined words within their definition - which both of the proposed new definitions include.

GROSS FLOOR AREA:

GROSS FLOOR AREA should be defined on a floor-by-floor basis – thus the need to add "per *story*" – not as a total BUILDING AREA – as it could currently be interpreted. The last sentence of the current definition was incorporated into the body of the "what it does not include." "Upper volume of multi-story spaces" was added to avoid adding the upper "air" to the GROSS FLOOR AREA (e.g., an atrium, upper "air" of a gymnasium, auditorium, or an interior mall). Although maybe implied, we believe it is better to clarify that elevator shafts are not deducted.

Cost Impact: Regarding BUILDING AREA: Construction costs **could be REDUCED** because the BUILDING AREA would no longer include outside air or inside upper air – that could otherwise confuse a contractor when bidding a project and seeing the escalated building area on the drawings.

Regarding GROSS FLOOR AREA: Construction costs **could be REDUCED** if it is interpreted similarly as the current BUILDING AREA definition – thus potentially inflating the GROSS FLOOR AREA which also could inflate the potential occupant load and thus means of egress, plumbing fixtures, and everything else that is based on occupant loads.

Workgroup Recommendation

Workgroup 2 Recommendation Recommendation: Pending

Workgroup 2 Reason: Reason: "Building area" was intended only for calculations involving allowable area. However, when the actual words are applied to "real" buildings, it becomes questionable. Is the current BUILDING AREA definition equivalent to the aggregate FLOOR AREA? No. FLOOR AREA can actually exceed the BUILDING AREA!
Kenney Payne gave an overview of his proposal.

Comments:

Andrew Milliken asked where in these building codes does this apply? What scope is involved and what courts have been exempted before now?

Kenney Payne stated his agreement. In revised floor area definition, the floor area will stop. Upper volume of multi-story spaces are now in this proposal.

Glenn Dean asked Kenney if he had considered advancing this to ICC?

Kenney Payne stated he had not.

William Lloyd asked if the floor area calculated as floor space no matter how many stories?

Sean Farrell asked if changing the scope from building footprint to a total building area was consistent with the national approach? He stated it was just an observation.

Glenn Dean stated he had reservations.

Richard Potts – **Move forward as pending to carry over**

Board Decision

None

CB-202(2) cdpVA-15

CB-303.1.1 cdpVA-15

Proponent : Kenney Payne, Representing AIA-VA (kpayne@moseleyarchitects.com)

2015 International Building Code

303.1.1 Small buildings and tenant spaces. A building or tenant space used for assembly purposes with an *occupant load* of less than 50 persons shall be permitted to be classified as a Group B occupancy.

303.1.2 Small assembly spaces. The following rooms and spaces shall ~~not~~be permitted to be classified as ~~Assembly~~Group B occupancies or as part of that occupancy:

1. A room or space used for assembly purposes with an *occupant load* of less than 50 persons and ~~accessory~~ ancillary to another occupancy ~~shall be classified as a Group B occupancy or as part of that occupancy~~.
2. A room or space used for assembly purposes that is less than 750 square feet (70 m^2) in area and ~~accessory~~ ancillary to another occupancy ~~shall be classified as a Group B occupancy or as part of that occupancy~~.

Reason: Although it was discussed to consider going back to the 2009 IBC format where these subsections were handled as exceptions, we decided against that approach. Although it may not seem like it, it is the opinion of AIA-VA to try to be as consistent with the I-codes as possible, and if proposing changes, try to work with the existing formatting as much as possible unless a different format enhances the code change. In this case, there are no substantive changes other than deleting the "shall" provision and substituting "permitted", thus a complete reformatting was not considered beneficial in this instance.

Regarding 303.1.1:

The section requires one to classify such occupancies as 'B'. Doing so, could potentially require more plumbing fixtures compared to classifying such occupancies as 'A.' Why not allow the designer/owner some flexibility and allow classification as either an 'A' or 'B'? The 2009 IBC handled such spaces as an "exception," so the designer/owner had an option of whether to use the exception and classify such spaces as 'B' or keep them classified as 'A'.

The 2009 IBC code text was as follows:

Exceptions:

1. A building or tenant space used for assembly purposes with an *occupant load* of less than 50 persons shall be classified as a Group B occupancy.

2. A room or space used for assembly purposes with an *occupant load* of less than 50 persons and accessory to another occupancy shall be classified as a Group B occupancy or as part of that occupancy.

3. A room or space used for assembly purposes that is less than 750 square feet (70 m2) in area and accessory to another occupancy shall be classified as a Group B occupancy or as part of that occupancy.

4 and 5. Not a part of this code change.

Regarding 303.1.2:

This may be conflicting. The charging paragraph says "shall not be classified as Assembly" yet both #1 and #2 allows the classification of such rooms or spaces as "part of that occupancy" – does the word "that" refer to 'A' or 'B'? If it could be interpreted ot mean 'A' then that appears to be in conflict with the charging paragraph.

Why not allow the designer/owner some flexibility and allow classification as either an 'A' or 'B'? The 2009 IBC handled such spaces as an "exception," so the designer/owner had an option of whether to use the exception and classify such spaces as 'B' or keep them classified as 'A'.

The use of the term "accessory" oftentimes leads to confusion and/or inconsistent interpretations. "Accessory," to some, means the 10% rule. Per the Commentary, this is clearly not the case. However, the Commentary is not code. The use of the term "ancillary" is more appropriate and eliminates the possible confusion and application of the 10% rule (the term "ancillary" is used throughout the IBC already, including IBC 508.2).

Cost Impact: May actually REDUCE costs as they relate to the number of minimum plumbing fixtures that may otherwise be required if a space or small building were required to be classified as Group B in lieu of Group A.

Workgroup Recommendation

Workgroup 2 Recommendation Recommendation: Pending

Workgroup 2 Reason: Reason: The section is under the "Assembly" group, yet it is written as if it was an exception and requires one to classify such occupancies as "B". Doing so, could potentially require more plumbing fixtures compared to classifying such occupancies as "A". Why not allow the designer/owner some flexibility and allow classification as either an "A" or "B"? The 2009 IBC handled such spaces as an "exception" so the designer/owner had an option of whether to use the exception and classify such spaces as "B" or keep them classified as "A".
Kenney Payne - gave an overview of proposal and asked that we delete 303.4 for today.

Comments:

Chris Snidow stated this should be an option. The change from occupancy to use.

Cindy Davis said we could leave accessory or subordinate and hope that accessory was understood.

William King asked what the occupancy would be in 303.1.2 Group B. He didn't feel it was clear.

Johnna Grizzard mentioned she supported this, just like the same issue with 303.3.

George Hollingsworth said he would support this change, it takes some of the confusion out. He suggested occupant load 50 or less.

Chris Snidow also suggested use.

Kenney Payne stated he was happy making this change if everyone was ok with it.

Chris Philips stated accessory is a relationship to the space. He recommended the language in 508.2 ancillary.

Kenney Payne stated he agreed with this.

Cindy Davis - **move forward as pending**

Board Decision

None

CB-303.1.1 cdpVA-15

CB-304.1.1 cdpVA-15

Proponent : William King, Representing DBHDS Ad-Hoc Group (william.king@alexandriava.gov)

2012 Virginia Construction Code

304.1.1 Day support and day treatment facilities Day support and day treatment facilities licensed by Virginia Department of Behavioral Health & Development Services shall be classified as Group B occupancy when the following conditions are satisfied:

1. Participants who may require physical assistance from staff to respond to an emergency situation shall be located on the *level of exit discharge*.

Any change in elevation within the *exit access* on the *level of exit discharge* shall be made by means of a *ramp* or sloped walkway.

Reason: This proposal was created by a work-group including representatives from the Virginia Department of Behavioral Health & Development Services (DBHDS) to address concerns on classification that have arisen with the location of licensed Day Support and Day Treatment facilities. These facilities provide treatment for individuals within the community as opposed to larger centralized locations. This distributed network of facilities were established to make these resources more readily available to those that require them.
The attached .pdfs contain information on the use of the Day Support and Day Treatment facilities per their licensing and the checklist used by DBHDS for site visits.

Attachments:

https://va.cdpaccess.com/proposal/fileupload/get/65

https://va.cdpaccess.com/proposal/fileupload/get/66

Cost Impact: This proposal will not increase the cost of construction.

Workgroup Recommendation

Workgroup 2 Recommendation Recommendation: Pending

Workgroup 2 Reason: 1st WG 2 comments: Mr Dean concerned with technical requirements with in the use group but is not against the proposal. Modifications will be made to this proposal and will come back for next workgroup meeting. Pending

2nd WG 2 comments:

Reason: This proposal was created by a work-group including representatives from the Virginia Department of Behavioral Health & Development Services (DBHDS) to address concerns on classification that have arisen with the location of licensed Day Support and Day Treatment facilities.

William King gave an overview of the proposal.

Comments:

Glenn Dean believed this deals with technical and format issues. He stated day support and day treatment are not defined terms in the building code, however, ambulatory health care is included

in the code.

William Lloyd stated a need for a definition in chapter 2 that parallels that type of occupancy. Other than that, he thought it was awesome.

Johnna Grizzard didn't believe that not having a definition was going to be a deal breaker.

Kris Bridges asked if we could import DBHS definition of day support and day treatment?

Robbie Dawson asked for an example of people who would be at a day support facility?

Johnna Grizzard gave an overview as day support is intellectually disabled (mentally retardation); day treatment is adolescence that are emotionally disturbed.

Robbie Dawson asked how they are classified now? These are two different challenges and populations and they are grouping them into the same I-4 group?

Johnna Grizzard stated that day support is really a grey area. She doesn't see any problem with grouping them together. They are on the first floor and have no egress problems.

George Hollingsworth believes the ramp slope needs clarification.

Glenn Dean also believes this is a grey area, it feels like going in areas unintended.

Sean Farrell suggested it looks to him like an I-4, custodial care? Wouldn't this be a subsection of I?

William Andrews stated it is classified to B.

Chris Snidow stated that if the walkway is less than 1-20 slope, it becomes a ramp.

Andrew Milliken asked if we were talking about a small facility?

Johnna Grizzard stated she was on the workgroup. It is restricted Can you have a two story facility? You have to trust the occupant on this. There is more damage not to have any kind of provisions.

Rick Witt stated he would support moving forward as pending.

Cindy Davis - **Move forward as pending to answer questions raised today.**

Chris Snidow asked if there was anything in the Rehab code to address this?

Ron Clements stated he would support as pending.

Board Decision

None

CB-304.1.1 cdpVA-15

Public Comments for CB-304.1.1 cdpVA-15 : CB-304.1.1 (NEW)-KING294

William King

Public Comments for Proposal Id : 294

1 Comment(s)

By **William King**
08-05-2016 15:04:59

Modifiy this proposal to include a third condition.

3. To be located more than three stories above grade the building must be fully sprinklered.

CB-717.5.3 cdpVA-15

Proponent : Richard Grace (richard.grace@fairfaxcounty.gov); Shawn Strausbaugh (plumbers96@yahoo.com)

2015 International Building Code

717.5.3 Shaft enclosures. Shaft enclosures that are permitted to be penetrated by ducts and air transfer openings shall be protected with *approved* fire and smoke *dampers* installed in accordance with their listing.

- **Exceptions:**
    1. Fire and smoke dampers are not required where steel exhaust subducts extend at least 22 inches (559 mm) vertically in exhaust shafts, provided there is a continuous airflow upward to the outside.
    2. *Firedampers* are not required ~~at~~where penetrations ~~of shafts where any~~are tested in accordance with ASTM E 119 as part of the ~~following criteria are met:~~fire-resistance-rated assembly.
    3. ~~*Smoke*~~*Fire and smoke dampers* are not required~~ at penetrations of shafts~~ where ducts are used as part of an *approved*~~ mechanical~~ smoke-control system~~ designed~~ in accordance with Section 909~~ and where the *smoke damper* will interfere with the operation of the smoke control system~~.
    4. ~~*Smoke*~~*Fire and smoke dampers* are not required ~~at penetration of~~where the penetrations are in parking garage exhaust or supply shafts~~ in parking garages~~ that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.
    5. ~~*Fire dampers* and *combination fire/smokedampers* are not required in kitchen and clothes dryer exhaust systems where installed in accordance with the *International Mechanical Code*.~~
    6. ~~In Group B and R occupancies~~Smoke dampers are not required where the building is equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1~~, *smokedampers* are not required at penetrations of shafts where all of the following criteria are met:~~.

2015 International Mechanical Code

[BF] 607.5.5 Shaft enclosures. Shaft enclosures that are permitted to be penetrated by ducts and air transfer openings shall be protected with *approved* fire and smoke dampers installed in accordance with their listing.

- **Exceptions:**
    1. ~~In Group B~~Fire and~~ R occupancies equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 of the *International Building Code*,~~ smoke dampers are not required ~~at penetrations of shafts~~ where~~ kitchen, clothes dryer, bathroom and toilet room exhaust openings with~~ steel exhaust subducts~~, having a minimum thickness of 0.0187 inch (0.4712 mm) (No. 26 gage),~~ extend

~~not less than~~at least 22 inches (559 mm) vertically ~~and the~~in exhaust ~~fan at the upper terminus~~shafts, provided there is ~~powered continuously in accordance with the provisions of Section 909.11 of the *International Building Code*, and maintains air flow~~a continuous airflow upward to the ~~outdoors~~outside.

2. Fire dampers are not required ~~at~~where penetrations ~~of shafts where any~~are tested in accordance with ASTM E 119 as part of the ~~following apply:~~fire-resistance-rated assembly.
3. Fire ~~dampers~~ and ~~combination fire/~~smoke dampers are not required ~~in kitchen and clothes dryer exhaust systems installed~~where ducts are used as part of an approved smoke-control system in accordance with ~~this code.~~Section 909.
4. ~~Smoke~~Fire and smoke dampers are not required ~~at~~where the penetrations ~~of~~are in parking garage exhaust or supply shafts ~~in parking garages~~ that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.
5. Smoke dampers are not required ~~at penetrations of shafts~~ where ~~ducts are used as part of~~the building is equipped throughout with an ~~*approved* mechanical smoke control~~automatic sprinkler system ~~designed~~ in accordance with Section ~~909 of the *International Building Code* and where the smoke damper will interfere with the operation of the smoke control system~~903.3.1.1.

Reason: We are submitting this proposal for only the simple reason that we have adopted this requirement through the USBC technical amendment process since the adoption of the International Building Codes (starting with edition 2000). It is not clear why this was not included/adopted in the 2012 edition of the Virginia Construction Code (VCC), other than it was an oversight. The language contained in the 2012 edition of the VCC is significant in that, for example, it requires combination fire/smoke dampers where previously only fire dampers were required. There was no reason statement submitted for eliminating this long-standing language/requirement, and I have no stake in either direction that it goes; only wanted to bring it to the attention of those technical experts qualified to make this decision.

Cost Impact: Decreases the cost of construction by eliminating certain smoke damper requirements.

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Board Decision

None

CB-717.5.3 cdpVA-15

CB-906.1 cdpVA-15

Proponent : Jim Tidwell, Representing Fire Equipment Manufacturers' Association (jimtidwell@tccfire.com)

2012 Virginia Construction Code

906.1 Where required. Portable fire extinguishers shall be installed in the following locations.

1. In Groups A, B, E, F, H, I, M, R-1, R-4, and S occupancies.

   Exceptions~~s~~:

   ~~1.In Groups A, B, and E occupancies equipped throughout with quick response sprinklers, portable fire extinguishers shall be required only in locations specified in Items 2 through 6.~~

   ~~2.~~ In Group I-3 occupancies, portable fire extinguishers shall be permitted to be located at staff locations and the access to such extinguishers shall be permitted to be locked.

(remainder of section unchanged)

2012 Virginia Statewide Fire Prevention Code

906.1 Where required. Portable fire extinguishers shall be installed in the following locations.

1. In Groups A, B, E, F, H, I, M, R-1, R-4, and S occupancies.

   Exceptions~~s~~:

   ~~1.In Groups A, B, and E occupancies equipped throughout with quick response sprinklers, portable fire extinguishers shall be required only in locations specified in Items 2 through 6.~~

   ~~2.~~ In Group I-3 occupancies, portable fire extinguishers shall be permitted to be located at staff locations and the access to such extinguishers shall be permitted to be locked.

(remainder of section unchanged)

Reason: The Virginia Building and Fire Codes require portable fire extinguishers in almost all occupancies (A, B, E, F, H, I, M, R-1, R-4, and S). However, the code provides an exception for three occupancies if they are equipped with quick response sprinklers (A, B, and E). The reason for this exception is unknown, and has no known data to support it. This proposed code change would remove the exception, which is consistent with the action of the ICC in the 2012 and 2015 model codes.
Portable fire extginguishers are an important and cost effective layer of fire protection. This

change is consistent with the International Building Code Requirements in the 2012 and 2015 editions. There is a plethora of data available to support this change, including the following:

If there is any question as to whether the citizenry in the United States is acting early to extinguish incipient fires, the report of the U.S. Consumer Products Safety Commission should put those doubts to rest. According their report, only 5-10 percent of fires are reported to fire departments in the U.S. This is a clear indication that people are extinguishing fires rather than just calling the fire department. We submit that, since people are, in fact, extinguishing fires in their incipient stage on a very regular basis, the code should provide for the proper tools to do so - that is, maintain the requirements for portable extinguishers. According this report, people used portable extinguishers on 371,000 residential fires in the U.S. annually. In this same report, the agency stated that extinguishers were effective in 80 percent of the cases where they were used. The entire 234 page report, published in 2009, can be found at https://www.cpsc.gov/PageFiles/105297/UnreportedResidentialFires.pdf.

The NFPA report on fires in sprinklered buildings published in 2010 states that, in fires reported in buildings equipped with sprinkler systems, the fire didn't grow large enough to activate the sprinklers in 65 percent of the cases (page 11). For Assemblies, the percentage was 68%; for educational occupancies, the percentage was 83% and for offices (Group B), the percentage was 75%. Based upon this data, Virginia has chosen to reduce the number of portable extinguishers in occupancies where the statistics show they can be of above average benefit. The fires cited in this report were large enough to be reported to the fire department; the sprinkler systems were operational and would have activated if the fire had grown larger, but were extinguished or otherwise mitigated prior to sprinkler activation. This report verifies that people are intervening when a fire is small, saving the property owner(s) substantial sums of money by putting the fire out before it grows larger, doing more damage. and before sprinklers activate. Some if these fires are extinguished using fire extinguishers; others are being extinguished with makeshift means. Extinguishers are the appropriate tool to use on incipient fires, and are far safer than other means that may be employed. Providing portable fire extinguishers in facilities greatly enhances safety, including the safety of those who choose to extinguish a fire in its incipient phase; extinguishers should be required in all buidlings.

Cost is always a consideration when determining whether fire protection should be provided. Portable fire extinguishers are, without a doubt, one of the most cost effective layers of fire protection available. A life cycle cost analysis was conducted in 2014 by Richard Bukowski, P.E, then working for RJA. In that study, the actual cost of portable extinguishers in several facilities was used to determine the real-world cost of these devices. Using 12 facilities, and the costs of initial purchase, installation, monthly and annual maintenance, as well as all associated maintenance required by NFPA-10 (the standard referenced in ICC Codes) was compiled and analyzed. According to this study, the actual costs of portable extinguishers in these facilities ranged from $.015 (one and one half cent) to $.04 (four cents) per square foot per year. His study also states that, if a facility was able to utilize the minimum number of extinguishers required by the Codes based upon coverage of an area, the costs would be between $.005 (one half cent) and $.01 (one cent) per square foot per year.

I would challenge anyone to document any layer of fire safety with such a small cost that returns such a great benefit.

Code Committees have rightly demanded data to support decisions related to code changes. I am unaware of a single data point for the removal of portable extinguisher requirements from the code; however, there is abundant data to support requiring these devices througout buildings and facilities.

Attachments:

NFPA Sprinkler Report

Fact Sheet

Cost Impact: This change will increase the cost of construction in Groups A, B, and E occupancies that are equipped with quick response sprinklers. The cost increase is between a half cent per square foot per year to approximately 4 cents per square foot per year, depending upon the type of extinguisher chosen, the contractor used, the floorplan of the building, etc. The savings in fire damage should more than offset this low cost.

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Board Decision

None

CB-906.1 cdpVA-15

CB-1023.5 cdpVA-15

Proponent : Kenney Payne, Representing AIA-VA (kpayne@moseleyarchitects.com)

2015 International Building Code

1023.5 Penetrations. Penetrations into or through *interior exit stairways* and *ramps* are prohibited except for equipment and ductwork necessary for independent ventilation or pressurization, sprinkler piping, standpipes, electrical raceway for fire department communication systems and electrical raceway serving the *interior exit stairway* and *ramp* and terminating at a steel box not exceeding 16 square inches (0.010 m^2). Such penetrations shall be protected in accordance with Section 714. There shall not be penetrations or communication openings, whether protected or not, between adjacent *interior exit stairways* and *ramps*.

Exceptions:

1. Membrane penetrations shall be permitted on the outside of the *interior exit stairway* and *ramp*. Such penetrations shall be protected in accordance with Section 714.3.2.

2. Structural members other than columns which are part of the *primary structural frame* and structural members which are *secondary members*, where such structural members are protected in accordance with Section 714, shall be permitted to penetrate into or through an *interior exit stairway* enclosure or a *ramp* enclosure.

Reason: Structural framing is allowed to penetrate through other rated assemblies, including rated corridor walls, shafts, and other fire barriers and rated construction (e.g., those elements governed by Chapter 6) or penetrate into, including fire walls. Otherwise, each stairway enclosure would be its own "mini-building" with independent structural framing which is not required by code. There is no code requirement for such enclosures to be constructed as independent - only that they be enclosed with fire barriers.

This proposal would be consistent with what is allowed under 2015 IBC 713.8 for shaft enclosures: "Structural elements, such as beams or joists, where protected in accordance with Section 714 shall be permitted to penetrate a shaft enclosure."

DHCD Staff Note: Proposal was modified after the July 20, 2016 workgroup meeting. The original proposal was withdrawn and replaced with this proposal. The original proposal with workgroup comments may be viewed here: Original Proposal

Cost Impact: Clarifying that primary and secondary structural framing can penetrate such enclosures will result in COST SAVINGS because otherwise, the structure within the stairway and its enclosure would need to be constructed almost like a fire wall.

Workgroup Recommendation

Workgroup 2 Recommendation Recommendation: Pending

Workgroup 2 Reason: Reason: Generally, exceptions to exceptions are not a good idea ("are prohibited except" and then there is an "Exception" to the charging paragraph). Sentences that have more than a few commas (run on sentence) oftentimes require re-reading to make sure the meaning is understood and properly interpreted.
Kenney Payne stated he would like to withdraw his previous proposal, CB-202(2) and gave an overview of this proposal.

Comments:

Bob Adkins stated he loudly speaks against this code change.

Andrew Milliken stated he agreed, he is against this also.

Chris Snidow asked if it would be different if #7 was removed?

Jeff Morrow said the thing that seems to be missing is the serving of the stairway. With the wording we have now, we can run sprinkler piping on through one wall in the stairway into another wall, so we are penetrating the stairway again. It should be limited to stairway.

Ron Clements stated the building code does not require an exit stair shaft to be structurally independent.

Chris Snidow stated as a structural engineer, if it's not necessary to be structurally independent, then you can bare structural streaming off it.

Kenney Payne stated you can and to be honest we do. We have been told that we cannot penetrate that membrane.

Sean Farrell said whatever penetrated it had to serve it and terminate within it. The language no longer states that.

Bob Adkins added the membrane penetrations needed to be protected. The more he reads this, the more confused he gets.

Cindy Davis – **Move forward as non-consensus with more work on it.**

Board Decision

None

CB-1023.5 cdpVA-15

CB-2308.4.1.1 cdpVA-15

Proponent : Matthew Hunter, Representing American Wood Council (mhunter@awc.org); John Catlett, Representing American Wood Council (Jcatlett@awc.org)

2015 International Building Code

TABLE 2308.4.1.1(1)
HEADER AND GIRDER SPANS[a, b] FOR EXTERIOR BEARING WALLS (Maximum spans for Douglas Fir-Larch, Hem-Fir, Southern Pine and Spruce-Pine-Fir[b] and required number of jack studs)

GIRDERS AND HEADERS SUPPORTING	SIZE	GROUND SNOW LOAD (psf)[e]																	
		30						50						70					
		Building width[c] (feet)																	
		~~20~~12		~~28~~24		36		~~20~~12		~~28~~24		36		12		24		36	
		Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]
Roof and ceiling	1-2×6	4-0	1	3-1	2	2-7	2	3-5	1	2-8	2	2-3	2	3-0	2	2-4	2	2-0	2
	1-2×8	5-1	2	3-11	2	3-3	2	4-4	2	3-4	2	2-10	2	3-10	2	3-0	2	2-6	3
	1-2×10	6-0	2	4-8	2	3-11	2	5-2	2	4-0	2	3-4	2	4-7	2	3-6	3	3-0	3
	1-2×12	7-1	2	5-5	2	4-7	3	6-1	2	4-8	3	3-11	3	5-5	2	4-2	3	3-6	3
	2-2×4	~~3-6~~4-0	1	~~3-2~~3-1	1	~~2-10~~2-7	1	~~3-2~~3-5	1	~~2-9~~2-7	1	~~2-6~~2-2	1	3-0	1	2-4	1	2-0	1
	2-2×6	~~5-5~~6-0	1	~~4-8~~4-7	1	~~4-2~~3-10	1	~~4-8~~5-1	1	~~4-1~~3-11	1	~~3-8~~3-3	2	4-6	1	3-6	2	2-11	2
	2-2×8	~~6-10~~7-7	1	~~5-11~~5-9	~~2~~1	~~5-4~~4-10	2	~~5-11~~6-5	~~2~~1	~~5-2~~5-0	2	~~4-7~~4-2	2	5-9	1	4-5	2	3-9	2
	2-2×10	~~8-5~~9-0	~~2~~1	~~7-3~~6-10	2	~~6-6~~5-9	2	~~7-3~~7-8	2	~~6-3~~5-11	2	~~5-7~~4-11	2	6-9	2	5-3	2	4-5	2
	2-2×12	~~9-9~~10-7	2	~~8-5~~8-1	2	~~7-6~~6-10	2	~~8-5~~9-0	2	~~7-3~~6-11	2	~~6-6~~5-10	2	8-0	2	6-2	2	5-2	3
	3-2×8	~~8-4~~9-5	1	~~7-5~~7-3	1	~~6-8~~6-1	1	~~7-5~~8-1	1	~~6-5~~6-3	~~2~~1	~~5-9~~5-3	2	7-2	1	5-6	2	4-8	2
	3-2×10	~~10-6~~11-3	1	~~9-1~~8-7	~~2~~1	~~8-2~~7-3	2	~~9-1~~9-7	~~2~~1	~~7-10~~7-4	2	~~7-0~~6-2	2	8-6	1	6-7	2	5-6	2
	3-2×12	~~12-2~~13-2	~~2~~1	~~10-7~~10-1	2	~~9-5~~8-6	2	~~10-7~~11-3	2	~~9-2~~8-8	2	~~8-2~~7-4	2	10-0	2	7-9	2	6-6	2
	4-2×8	~~9-2~~10-11	1	8-4	1	~~7-8~~7-0	1	~~8-4~~9-4	1	~~7-5~~7-2	1	~~6-8~~6-0	1	8-3	1	6-4	1	5-4	2
	4-2×10	~~11-8~~12-11	1	~~10-6~~9-11	1	~~9-5~~8-4	~~2~~1	~~10-6~~11-1	1	~~9-1~~8-6	~~2~~1	~~8-2~~7-2	2	9-10	1	7-7	2	6-4	2
	4-2×12	~~14-11~~15-3	1	~~12-2~~11-8	~~2~~1	~~10-11~~9-10	2	~~12-2~~13-0	~~2~~1	~~10-7~~10-0	2	~~9-5~~8-5	2	11-7	1	8-11	2	7-6	2
	1-2×6	3-3	1	2-7	2	2-2	2	3-0	2	2-4	2	2-0	2	2-9	2	2-2	2	1-10	2
	1-2×8	4-1	2	3-3	2	2-9	2	3-9	2	3-0	2	2-6	3	3-6	2	2-9	2	2-4	3
	1-2×10	4-11	2	3-10	2	3-3	3	4-6	2	3-6	3	3-0	3	4-1	2	3-3	3	2-9	3
	1-2×12	5-9	2	4-6	3	3-10	3	5-3	2	4-2	3	3-6	3	4-10	3	3-10	3	3-3	4

Roof, ceiling and one center-bearing floor	2-2×4	3-13-3	1	2-92-6	1	2-52-2	1	2-93-0	1	2-52-4	1	2-22-0	1	2-8	1	2-2	1	1-10	1
	2-2×6	4-64-10	1	4-03-9	1	3-73-3	2	4-14-5	1	3-73-6	2	3-33-0	2	4-1	1	3-3	2	2-9	2
	2-2×8	5-96-1	21	5-04-10	2	4-64-1	2	5-25-7	2	4-64-5	2	4-13-9	2	5-2	2	4-1	2	3-6	2
	2-2×10	7-07-3	2	6-25-8	2	5-64-10	2	6-46-8	2	5-65-3	2	5-04-5	2	6-1	2	4-10	2	4-1	2
	2-2×12	8-18-6	2	7-16-8	2	6-55-8	2	7-47-10	2	6-56-2	2	5-95-3	3	7-2	2	5-8	2	4-10	3
	3-2×8	7-27-8	1	6-36-0	21	5-85-1	2	6-57-0	21	5-85-6	2	5-14-8	2	6-5	1	5-1	2	4-4	2
	3-2×10	8-99-1	21	7-87-2	2	6-116-1	2	7-118-4	21	6-116-7	2	6-35-7	2	7-8	2	6-1	2	5-2	2
	3-2×12	10-210-8	2	8-118-5	2	8-07-2	2	9-29-10	2	8-07-8	2	7-36-7	2	9-0	2	7-1	2	6-1	2
	4-2×8	8-18-10	1	7-36-11	1	6-75-11	1	7-58-1	1	6-66-4	1	5-115-5	2	7-5	1	5-11	1	5-0	2
	4-2×10	10-110-6	1	8-108-3	2	8-07-0	2	9-19-8	21	8-07-7	2	7-26-5	2	8-10	1	7-0	2	6-0	2
	4-2×12	11-912-4	21	10-39-8	2	9-38-3	2	10-711-4	2	9-38-11	2	8-47-7	2	10-4	2	8-3	2	7-0	2
Roof, ceiling and one clear span floor	1-2×6	2-11	2	2-3	2	1-11	2	2-9	2	2-1	2	1-9	2	2-7	2	2-0	2	1-8	2
	1-2×8	3-9	2	2-10	2	2-5	3	3-6	2	2-8	2	2-3	3	3-3	2	2-6	3	2-2	3
	1-2×10	4-5	2	3-5	3	2-10	3	4-2	2	3-2	3	2-8	3	3-11	2	3-0	3	2-6	3
	1-2×12	5-2	2	4-0	3	3-4	3	4-10	3	3-9	3	3-2	4	4-7	3	3-6	3	3-0	4
	2-2×4	2-82-11	1	2-42-3	1	2-11-10	1	2-72-9	1	2-32-1	1	2-01-9	1	2-7	1	2-0	1	1-8	1
	2-2×6	3-114-4	1	3-53-4	2	3-02-10	2	3-104-1	21	3-43-2	2	3-02-8	2	3-10	1	3-0	2	2-6	2
	2-2×8	5-05-6	2	4-44-3	2	3-103-7	2	4-105-2	2	4-24-0	2	3-93-4	2	4-10	2	3-9	2	3-2	2
	2-2×10	6-16-7	2	5-35-0	2	4-84-2	2	5-116-1	2	5-14-9	2	4-74-0	32	5-9	2	4-5	2	3-9	3
	2-2×12	7-17-9	2	6-15-11	32	5-54-11	3	6-107-2	2	5-115-7	32	5-44-8	3	6-9	2	5-3	3	4-5	3
	3-2×8	6-36-11	21	5-55-3	2	4-104-5	2	6-16-5	21	5-35-0	2	4-84-2	2	6-1	1	4-8	2	4-0	2
	3-2×10	7-78-3	2	6-76-3	2	5-115-3	2	7-57-8	2	6-55-11	2	5-95-0	2	7-3	2	5-7	2	4-8	2
	3-2×12	8-109-8	2	7-87-5	2	6-106-2	2	8-79-0	2	7-57-0	2	6-85-10	2	8-6	2	6-7	2	5-6	3
	4-2×8	7-28-0	1	6-36-1	21	5-75-1	2	7-07-5	1	6-15-9	2	5-54-10	2	7-0	1	5-5	2	4-7	2
	4-2×10	8-99-6	21	7-77-3	2	6-106-1	2	8-78-10	21	7-56-10	2	6-75-9	2	8-4	1	6-5	2	5-5	2
	4-2×12	10-211-2	2	8-108-6	2	7-117-2	2	9-1110-5	2	8-78-0	2	7-86-9	2	9-10	2	7-7	2	6-5	2

		GROUND SNOW LOAD (psf)[e]		

GIRDERS AND HEADERS SUPPORTING	SIZE	30						50						70					
		Building width[c] (feet)																	
		2012		2824		36		2012		2824		36		12		24		36	
		Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]
Roof, ceiling and two center-bearing floors	1-2×6	2-8	2	2-1	2	1-10	2	2-7	2	2-0	2	1-9	2	2-5	2	1-11	2	1-8	2
	1-2×8	3-5	2	2-8	2	2-4	3	3-3	2	2-7	2	2-2	3	3-1	2	2-5	3	2-1	3
	1-2×10	4-0	2	3-2	3	2-9	3	3-10	2	3-1	3	2-7	3	3-8	2	2-11	3	2-5	3
	1-2×12	4-9	3	3-9	3	3-2	4	4-6	3	3-7	3	3-1	4	4-3	3	3-5	3	2-11	4
	2-2×4	2-72-8	1	2-32-1	1	2-01-9	1	2-6	1	2-22-0	1	1-111-8	1	2-5	1	1-11	1	1-7	1
	2-2×6	3-94-0	21	3-33-2	2	2-112-8	2	3-83-9	21	3-23-0	2	2-102-7	2	3-7	1	2-10	2	2-5	2
	2-2×8	4-95-0	2	4-24-0	2	3-93-5	2	4-74-10	2	4-03-10	2	3-83-3	2	4-7	2	3-7	2	3-1	2
	2-2×10	5-96-0	2	5-14-9	2	4-74-0	32	5-8	2	4-114-6	2	4-53-10	3	5-5	2	4-3	2	3-8	3
	2-2×12	6-87-0	2	5-105-7	32	5-34-9	3	6-66-8	2	5-95-4	3	5-24-6	3	6-4	2	5-0	3	4-3	3
	3-2×8	5-116-4	21	5-25-0	2	4-84-3	2	5-96-0	21	5-14-9	2	4-74-1	2	5-8	2	4-6	2	3-10	2
	3-2×10	7-37-6	2	6-45-11	2	5-85-1	2	7-1	2	6-25-8	2	5-74-10	2	6-9	2	5-4	2	4-7	2
	3-2×12	8-58-10	2	7-47-0	2	6-75-11	2	8-28-5	2	7-26-8	2	6-55-8	3	8-0	2	6-4	2	5-4	3
	4-2×8	6-107-3	1	6-05-9	21	5-54-11	2	6-85-11	1	5-105-6	2	5-34-8	2	6-7	1	5-2	2	4-5	2
	4-2×10	8-48-8	21	7-46-10	2	6-75-10	2	8-28-3	2	7-26-6	2	6-55-7	2	7-10	2	6-2	2	5-3	2
	4-2×12	9-810-2	2	8-68-1	2	7-86-10	2	9-59-8	2	8-37-8	2	7-56-7	2	9-2	2	7-3	2	6-2	2
Roof, ceiling, and two clear-span floors	1-2×6	2-3	2	1-9	2	1-5	2	2-3	2	1-9	2	1-5	3	2-2	2	1-8	2	1-5	3
	1-2×8	2-10	2	2-2	3	1-10	3	2-10	2	2-2	3	1-10	3	2-9	2	2-1	3	1-10	3
	1-2×10	3-4	2	2-7	3	2-2	3	3-4	3	2-7	3	2-2	4	3-3	3	2-6	3	2-2	4
	1-2×12	4-0	3	3-0	3	2-7	4	4-0	3	3-0	4	2-7	4	3-10	3	3-0	4	2-6	4
	2-2×4	2-12-3	1	1-8	1	1-61-4	21	2-02-3	1	1-8	1	1-51-4	21	2-2	1	1-8	1	1-4	2
	2-2×6	3-13-4	21	2-82-6	2	2-42-2	2	3-03-4	2	2-72-6	2	2-32-2	2	3-3	2	2-6	2	2-1	2
	2-2×8	3-104-3	2	3-43-3	2	3-02-8	32	3-104-3	2	3-43-3	2	2-112-8	32	4-1	2	3-2	2	2-8	3
	2-2×10	4-95-0	2	4-13-10	32	3-83-2	3	4-85-0	2	4-03-10	32	3-73-2	32	4-10	2	3-9	3	3-2	3
	2-2×12	5-65-11	32	4-94-6	3	4-33-9	3	5-55-11	32	4-84-6	3	4-23-9	3	5-8	2	4-5	3	3-9	3
	3-2×8	4-105-3	21	4-24-0	2	3-93-5	2	4-95-3	2	4-14-0	2	3-83-5	2	5-1	2	3-11	2	3-4	2
	3-2×10	5-116-3	2	5-14-9	2	4-74-0	32	5-106-3	2	5-04-9	2	4-64-0	32	6-1	2	4-8	2	4-0	3

	3-2×12	~~6-10~~7-5	2	~~5-11~~5-8	~~3~~2	~~5-4~~4-9	3	~~6-9~~7-5	2	~~5-10~~5-8	~~3~~2	~~5-3~~4-9	3	7-2	2	5-6	3	4-8	3
	4-2×8	~~5-7~~6-1	~~2~~1	~~4-10~~4-8	2	~~4-4~~3-11	2	~~5-6~~6-1	~~2~~1	~~4-9~~4-8	2	~~4-3~~3-11	2	5-11	1	4-7	2	3-11	2
	4-2×10	~~6-10~~7-3	2	~~5-11~~5-6	2	~~5-3~~4-8	2	~~6-9~~7-3	2	~~5-10~~5-6	2	~~5-2~~4-8	2	7-0	2	5-5	2	4-7	2
	4-2×12	~~7-11~~8-6	2	~~6-10~~6-6	2	~~6-2~~5-6	~~3~~2	~~7-9~~8-6	2	~~6-9~~6-6	2	~~6-0~~5-6	~~3~~2	8-3	2	6-4	2	5-4	3

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 0.0479 kPa.

a. Spans are given in feet and inches.

b. Spans are based on minimum design properties for No. 2 grade lumber of Douglas Fir-Larch, Hem-Fir, Southern Pine, and Spruce-Pine Fir. ~~No. 1 or better grade lumber shall be used for Southern Pine.~~

c. Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.

d. NJ - Number of jack studs required to support each end. Where the number of required jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.

e. Use 30 psf ground snow load for cases in which ground snow load is less than 30 psf and the roof live load is equal to or less than 20 psf.

f. Spans are calculated assuming the top of the header or girder is laterally braced by perpendicular framing. Where the top of the header or girder is not laterally braced (e.g. cripple studs bearing on the header), tabulated spans for headers consisting of 2x8, 2x10, or 2x12 sizes shall be multiplied by 0.70 or the header shall be designed.

TABLE 2308.4.1.1(2)

HEADER AND GIRDER SPANS[a, b] FOR INTERIOR BEARING WALLS (Maximum spans for Douglas Fir-Larch, Hem-Fir, Southern Pine and Spruce-Pine-Fir[b] and required number of jack studs)

HEADERS AND GIRDERS SUPPORTING	SIZE	BUILDING Width[c] (feet)					
		~~20~~12		~~28~~24		36	
		Span[e]	NJ[d]	Span[e]	NJ[d]	Span[e]	NJ[d]
One floor only	2-2 × 4	~~3-1~~4-1	1	~~2-8~~2-10	1	~~2-5~~2-4	1
	2-2 × 6	~~4-6~~6-1	1	~~3-11~~4-4	1	3-6	1
	2-2 × 8	~~5-9~~7-9	1	~~5-0~~5-5	~~2~~1	4-5	2
	2-2 × 10	~~7-0~~9-2	~~2~~1	~~6-1~~6-6	2	~~5-5~~5-3	2
	2-2 × 12	~~8-1~~10-9	~~2~~1	~~7-0~~7-7	2	6-3	2
	3-2 × 8	~~7-2~~9-8	1	~~6-3~~6-10	1	5-7	~~2~~1
	3-2 × 10	~~8-9~~11-5	1	~~7-7~~8-1	~~2~~1	~~6-9~~6-7	2
	3-2 × 12	~~10-2~~13-6	~~2~~1	~~8-10~~9-6	2	~~7-10~~7-9	2
	4-2 × 8	~~9-0~~11-2	1	~~7-8~~7-11	1	~~6-9~~6-5	1
	4-2 × 10	~~10-1~~13-3	1	~~8-9~~9-4	1	~~7-10~~7-8	~~2~~1
	4-2 × 12	~~11-9~~15-7	1	~~10-2~~11-0	~~2~~1	~~9-1~~9-0	2
Two floors	2-2 × 4	~~2-2~~2-7	1	~~1-10~~1-11	1	1-7	1
	2-2 × 6	~~3-2~~3-11	~~2~~1	~~2-9~~2-11	2	2-5	2
	2-2 × 8	~~4-1~~5-0	~~2~~1	~~3-6~~3-8	2	~~3-2~~3-1	2
	2-2 × 10	~~4-11~~5-11	2	~~4-3~~4-4	2	~~3-10~~3-7	~~3~~2
	2-2 × 12	~~5-9~~6-11	2	~~5-0~~5-2	~~3~~2	~~4-5~~4-3	3
	3-2 × 8	~~5-1~~6-3	~~2~~1	~~4-5~~4-7	2	~~3-11~~3-10	2
	3-2 × 10	~~6-2~~7-5	~~2~~1	~~5-4~~5-6	2	~~4-10~~4-6	2
	3-2 × 12	~~7-2~~8-8	2	~~6-3~~6-5	2	~~5-7~~5-4	~~3~~2
	4-2 × 8	~~6-1~~7-2	1	~~5-3~~5-4	~~2~~1	~~4-8~~4-5	2
	4-2 × 10	~~7-2~~8-6	~~2~~1	~~6-2~~6-4	2	~~5-6~~5-3	2

	4-2 × 12	~~8-4~~10-1	~~2~~1	~~7-2~~7-5	2	~~6-5~~6-2	2

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. Spans are given in feet and inches.

b. Spans are based on minimum design properties for No. 2 grade lumber of Douglas Fir-Larch, Hem-Fir, Southern Pine, and Spruce-Pine Fir. ~~No. 1 or better grade lumber shall be used for Southern Pine.~~

c. Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.

d. NJ - Number of jack studs required to support each end. Where the number of required jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.

e. Spans are calculated assuming the top of the header or girder is laterally braced by perpendicular framing. Where the top of the header or girder is not laterally braced (e.g. cripple studs bearing on the header), tabulated spans for headers consisting of 2x8, 2x10, or 2x12 sizes shall be multiplied by 0.70 or the header shall be designed.

Reason: The update of Table 2308.4.1.1(1) Girder Spans and Header Spans for Exterior Bearing Walls is proposed. Updated spans address use of Southern Pine No. 2 in lieu of Southern Pine No. 1. Footnote "f" is added to clarify that header spans are based on laterally braced assumption such as when the header is raised. For dropped headers consisting of 2x8, 2x10, or 2x12 sizes that are not laterally braced, a factor of 0.7 can be applied to determine the spans or alternatively the header or girder can be designed to include any adjustment for potential buckling. Laterally braced (raised) and not laterally braced (dropped) header conditions and building widths for which header spans are tablulated represent the same conditions used to develop header span tables in the Wood Frame Construction Manual (WFCM).

The update of Table 2308.4.1.1(2) Girder Spans and Header Spands for Interior Bearing Walls is proposed. Updated spans address use of Southern Pine No. 2 in lieu of Southern Pine No. 1. Footnote "e" is added to clarify that header spans are based on laterally braced assumption such as when the header is raised. For dropped headers consisting of 2x8, 2x10, or 2x12 sizes that are not laterally braced, a factor of 0.7 can be applied to determine the spans or alternatively the header or girder can be designed to include any adjustment for potential buckling. Laterally braced (raised) and not laterally braced (dropped) header conditions and building widths for which header spans are tablulated represent the same conditions used to develop header span tables in the Wood Frame Construction Manual (WFCM).

Cost Impact: Increased cost may be associated with reduced spans that result from the not laterally braced condition and application of footnote f (in Table 2308.4.1.1(1)) or e (in Table 2308.4.1.1(2)). Due to smaller building width column (12'), permissible use of Southern Pine No. 2, and the laterally braced assumption for tabulated spans, there are also cases where this change will not increase the cost of construction and may reduce the cost of construction.

Workgroup Recommendation

Workgroup 2 Recommendation Recommendation: Consensus for Approval

Workgroup 2 Reason: Reason: The update of Table 2308.4.1(1) Girder Spans and Header Spans for Exterior Bearing Walls is proposed. Updated spans address use of Southern Pine No. 2 in lieu of Southern Pine No. 1. Footnote "f" is added to clarify that header spans are based on laterally braced assumption such as when the header is raised.
Comments: None

Cindy Davis - **Moving forward as consensus**

Workgroup 3 Recommendation: None

Workgroup 3 Reason: None

Board Decision

None

CB-2308.4.1.1 cdpVA-15

CR-R602.7 cdpVA-15

Proponent : Matthew Hunter, Representing American Wood Council (mhunter@awc.org); John Catlett, Representing American Wood Council (Jcatlett@awc.org)

2015 International Residential Code

TABLE R602.7(1)
GIRDER SPANS[a] AND HEADER SPANS[a] FOR EXTERIOR BEARING WALLS (Maximum spans for Douglas fir-larch, hem-fir, southern pine and spruce-pine-fir[b] and required number of jack studs)

GIRDERS AND HEADERS SUPPORTING	SIZE	GROUND SNOW LOAD (psf)[e]																	
		30						50						70					
		Building width[c](feet)																	
		~~20~~12		~~28~~24		36		~~20~~12		~~28~~24		36		~~20~~12		~~28~~24		36	
		Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]
Roof and ceiling	1-2×6	4-0	1	3-1	2	2-7	2	3-5	1	2-8	2	2-3	2	3-0	2	2-4	2	2-0	2
	1-2×8	~~4-6~~5-1	~~1~~2	~~3-10~~3-11	~~1~~2	~~3-5~~3-3	~~1~~2	~~3-9~~4-4	~~1~~2	~~3-2~~3-4	~~1~~2	2-10	2	—3-10	—2	—3-0	—2	—2-6	—3
	1-2×10	~~5-8~~6-0	~~1~~2	~~4-11~~4-8	~~1~~2	~~4-4~~3-11	~~1~~2	~~4-9~~5-2	~~1~~2	~~4-1~~4-0	~~1~~2	~~3-7~~3-4	2	—4-7	—2	—3-6	—3	—3-0	—3
	1-2×12	~~6-11~~7-1	~~1~~2	~~5-11~~5-5	2	~~5-3~~4-7	~~2~~3	~~5-9~~6-1	2	4-8	~~2~~3	~~3-8~~3-11	~~2~~3	—5-5	—2	—4-2	—3	—3-6	—3
	2-2×4	~~3-6~~4-0	1	~~3-2~~3-1	1	~~2-10~~2-7	1	~~3-2~~3-5	1	~~2-9~~2-7	1	~~2-6~~2-2	1	~~2-10~~3-0	1	~~2-6~~2-4	1	~~2-3~~2-0	1
	2-2×6	~~5-5~~6-0	1	~~4-8~~4-7	1	~~4-2~~3-10	1	~~4-8~~5-1	1	~~4-1~~3-11	1	~~3-8~~3-3	2	~~4-2~~4-6	1	~~3-8~~3-6	2	~~3-3~~2-11	2
	2-2×8	~~6-10~~7-7	1	~~5-11~~5-9	~~2~~1	~~5-4~~4-10	2	~~5-11~~6-5	~~2~~1	~~5-2~~5-0	2	~~4-7~~4-2	2	~~5-4~~5-9	~~2~~1	~~4-7~~4-5	2	~~4-1~~3-9	2
	2-2×10	~~8-5~~9-0	~~2~~1	~~7-3~~6-10	2	~~6-6~~5-9	2	~~7-3~~7-8	2	~~6-3~~5-11	2	~~5-7~~4-11	2	~~6-6~~6-9	2	~~5-7~~5-3	2	~~5-0~~4-5	2
	2-2×12	~~9-9~~10-7	2	~~8-5~~8-1	2	~~7-6~~6-10	2	~~8-5~~9-0	2	~~7-3~~6-11	2	~~6-6~~5-10	2	~~7-6~~8-0	2	~~6-6~~6-2	2	~~5-10~~5-2	3
	3-2×8	~~8-4~~9-5	1	~~7-5~~7-3	1	~~6-8~~6-1	1	~~7-5~~8-1	1	~~6-5~~6-3	~~2~~1	~~5-9~~5-3	2	~~6-8~~7-2	1	~~5-9~~5-6	2	~~5-2~~4-8	2
	3-2×10	~~10-6~~11-3	1	~~9-1~~8-7	~~2~~1	~~8-2~~7-3	2	~~9-1~~9-7	~~2~~1	~~7-10~~7-4	2	~~7-0~~6-2	2	~~8-2~~8-6	~~2~~1	~~7-0~~6-7	2	~~6-4~~5-6	2
	3-2×12	~~12-2~~13-2	~~2~~1	~~10-7~~10-1	2	~~9-5~~8-6	2	~~10-7~~11-3	2	~~9-2~~8-8	2	~~8-2~~7-4	2	~~9-5~~10-0	2	~~8-2~~7-9	2	~~7-4~~6-6	2
	4-2×8	~~9-2~~10-11	1	8-4	1	~~7-8~~7-0	1	~~8-4~~9-4	1	~~7-5~~7-2	1	~~6-8~~6-0	1	~~7-8~~8-3	1	~~6-8~~6-4	1	~~5-11~~5-4	2
	4-2×10	~~11-8~~12-11	1	~~10-6~~9-11	1	~~9-5~~8-4	~~2~~1	~~10-6~~11-1	1	~~9-1~~8-6	~~2~~1	~~8-2~~7-2	2	~~9-5~~9-10	~~2~~1	~~8-2~~7-7	2	~~7-3~~6-4	2
	4-2×12	~~14-11~~5-3	1	~~12-2~~11-8	~~2~~1	~~10-11~~9-10	2	~~12-2~~13-0	~~2~~1	~~10-7~~10-0	2	~~9-5~~8-5	2	~~10-11~~11-7	~~2~~1	~~9-5~~8-11	2	~~8-5~~7-6	2
	1-2×6	3-3	1	2-7	2	2-2	2	3-0	2	2-4	2	2-0	2	—2-9	—2	—2-2	—2	—1-10	—2
	1-2×8	~~3-11~~4-1	~~1~~2	~~3-5~~3-3	~~1~~2	~~3-0~~2-9	~~1~~2	~~3-7~~3-9	~~1~~2	3-0	2	~~2-8~~2-6	~~2~~3	—3-6	—2	—2-9	—2	—2-4	—3
	1-2×10	~~5-0~~4-11	2	~~4-4~~3-10	2	~~3-10~~3-3	~~2~~3	4-6	2	~~3-11~~3-6	~~2~~3	~~3-4~~3-0	~~2~~3	—4-1	—2	—3-3	—3	—2-9	—3
	1-					~~4-2~~3-								—4-		—3-			

Roof, ceiling and one center-bearing floor	2×12	5-105-9	2	4-94-6	23	10	23	5-55-3	2	4-2	23	3-43-6	23	10	—3	10	—3	—3-3	—4
	2-2×4	3-13-3	1	2-92-6	1	2-52-2	1	2-93-0	1	2-52-4	1	2-22-0	1	2-72-8	1	2-32-2	1	2-01-10	1
	2-2×6	4-64-10	1	4-03-9	1	3-73-3	2	4-14-5	1	3-73-6	2	3-33-0	2	3-94-1	21	3-3	2	2-112-9	2
	2-2×8	5-96-1	21	5-04-10	2	4-64-1	2	5-25-7	2	4-64-5	2	4-13-9	2	4-95-2	2	4-24-1	2	3-93-6	2
	2-2×10	7-07-3	2	6-25-8	2	5-64-10	2	6-46-8	2	5-65-3	2	5-04-5	2	5-96-1	2	5-14-10	2	4-74-1	32
	2-2×12	8-18-6	2	7-16-8	2	6-55-8	2	7-47-10	2	6-56-2	2	5-95-3	3	6-87-2	2	5-105-8	32	5-34-10	3
	3-2×8	7-27-8	1	6-36-0	21	5-85-1	2	6-57-0	21	5-85-6	2	5-14-8	2	5-116-5	21	5-25-1	2	4-84-4	2
	3-2×10	8-99-1	21	7-87-2	2	6-116-1	2	7-118-4	21	6-116-7	2	6-35-7	2	7-37-8	2	6-46-1	2	5-85-2	2
	3-2×12	10-210-8	2	8-118-5	2	8-07-2	2	9-29-10	2	8-07-8	2	7-36-7	2	8-59-0	2	7-47-1	2	6-76-1	2
	4-2×8	8-18-10	1	7-36-11	1	6-75-11	1	7-58-1	1	6-66-4	1	5-115-5	2	6-107-5	1	6-05-11	21	5-55-0	2
	4-2×10	10-110-6	1	8-108-3	2	8-07-0	2	9-19-8	21	8-07-7	2	7-26-5	2	8-48-10	21	7-47-0	2	6-76-0	2
	4-2×12	11-912-4	21	10-39-8	2	9-38-3	2	10-711-4	2	9-38-11	2	8-47-7	2	9-810-4	2	8-68-3	2	7-77-0	2
Roof, ceiling and one clear span floor	1-2×6	2-11	2	2-3	2	1-11	2	2-9	2	2-1	2	1-9	2	—2-7	—2	—2-0	—2	—1-8	—2
	1-2×8	3-63-9	12	3-02-10	12	2-82-5	13	3-53-6	12	2-112-8	12	2-72-3	23	—3-3	—2	—2-6	—3	—2-2	—3
	1-2×10	4-64-5	12	3-103-5	13	3-32-10	13	4-44-2	12	3-93-2	13	3-12-8	23	—3-11	—2	—3-0	—3	—2-6	—3
	1-2×12	5-65-2	12	4-24-0	23	3-33-4	23	5-44-10	23	3-113-9	23	3-13-2	24	—4-7	—3	—3-6	—3	—3-0	—4
	2-2×4	2-82-11	1	2-42-3	1	2-11-10	1	2-72-9	1	2-32-1	1	2-01-9	1	2-52-7	1	2-12-0	1	1-101-8	1
	2-2×6	3-114-4	1	3-53-4	2	3-02-10	2	3-104-1	21	3-43-2	2	3-02-8	2	3-63-10	21	3-13-0	2	2-92-6	2
	2-2×8	5-05-6	2	4-44-3	2	3-103-7	2	4-105-2	2	4-24-0	2	3-93-4	2	4-64-10	2	3-113-9	2	3-63-2	2
	2-2×10	6-16-7	2	5-35-0	2	4-84-2	2	5-116-1	2	5-14-9	2	4-74-0	32	5-65-9	2	4-94-5	2	4-33-9	3
	2-2×12	7-17-9	2	6-15-11	32	5-54-11	3	6-107-2	2	5-115-7	32	5-44-8	3	6-46-9	2	5-65-3	3	5-04-5	3
	3-2×8	6-36-11	21	5-55-3	2	4-104-5	2	6-16-5	21	5-35-0	2	4-84-2	2	5-76-1	21	4-114-8	2	4-54-0	2
	3-2×10	7-78-3	2	6-76-3	2	5-115-3	2	7-57-8	2	6-55-11	2	5-95-0	2	6-107-3	2	6-05-7	2	5-44-8	2
	3-2×12	8-109-8	2	7-87-5	2	6-106-2	2	8-79-0	2	7-57-0	2	6-85-10	2	7-118-6	2	6-116-7	2	6-35-6	23
	4-2×8	7-28-0	1	6-36-1	21	5-75-1	2	7-07-5	1	6-15-9	2	5-54-10	2	6-67-0	1	5-85-5	2	5-14-7	2
	4-2×10	8-99-6	21	7-77-3	2	6-106-1	2	8-78-10	21	7-56-10	2	6-75-9	2	7-118-4	21	6-116-5	2	6-25-5	2
	4-	10-211-	2	8-108-	2	7-117-	2	9-1110-	2	8-78-0	2	7-86-9	2	9-29-	2	8-07-7	2	7-26-5	2

	2×12	2		6		2		5						10					

GIRDERS AND HEADERS SUPPORTING	SIZE	GROUND SNOW LOAD (psf)[e]																	
		30						50						70					
		Building width[c](feet)																	
		~~20~~12		~~28~~24		36		~~20~~12		~~28~~24		36		~~20~~12		~~28~~24		36	
		Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]	Span[f]	NJ[d]
Roof, ceiling and two center-bearing floors	1-2×6	2-8	2	2-1	2	1-10	2	2-7	2	2-0	2	1-9	2	2-5	2	1-11	2	1-8	2
	1-2×8	3-5	2	2-8	2	2-4	3	3-3	2	2-7	2	2-2	3	3-1	2	2-5	3	2-1	3
	1-2×10	4-0	2	3-2	3	2-9	3	3-10	2	3-1	3	2-7	3	3-8	2	2-11	3	2-5	3
	1-2×12	4-9	3	3-9	3	3-2	4	4-6	3	3-7	3	3-1	4	4-3	3	3-5	3	2-11	4
	2-2×4	~~2-7~~2-8	1	~~2-3~~2-1	1	~~2-0~~1-9	1	2-6	1	~~2-2~~2-0	1	~~1-11~~1-8	1	~~2-4~~2-5	1	~~2-0~~1-11	1	~~1-9~~1-7	1
	2-2×6	~~3-9~~4-0	~~2~~1	~~3-3~~3-2	2	~~2-11~~2-8	2	~~3-8~~3-9	~~2~~1	~~3-2~~3-0	2	~~2-10~~2-7	2	~~3-5~~3-7	~~2~~1	~~3-0~~2-10	2	~~2-8~~2-5	2
	2-2×8	~~4-9~~5-0	2	~~4-2~~4-0	2	~~3-9~~3-5	2	~~4-7~~4-10	2	~~4-0~~3-10	2	~~3-8~~3-3	2	~~4-4~~4-7	2	~~3-9~~3-7	2	~~3-5~~3-1	2
	2-2×10	~~5-9~~6-0	2	~~5-1~~4-9	2	~~4-7~~4-0	~~3~~2	5-8	2	~~4-11~~4-6	2	~~4-5~~3-10	3	~~5-3~~5-5	2	~~4-7~~4-3	~~3~~2	~~4-2~~3-8	3
	2-2×12	~~6-8~~7-0	2	~~5-10~~5-7	~~3~~2	~~5-3~~4-9	3	~~6-6~~6-8	2	~~5-9~~5-4	3	~~5-2~~4-6	3	~~6-1~~6-4	~~3~~2	~~5-4~~5-0	3	~~4-10~~4-3	3
	3-2×8	~~5-11~~6-4	~~2~~1	~~5-2~~5-0	2	~~4-8~~4-3	2	~~5-9~~6-0	~~2~~1	~~5-1~~4-9	2	~~4-7~~4-1	2	~~5-5~~5-8	2	~~4-9~~4-6	2	~~4-3~~3-10	2
	3-2×10	~~7-3~~7-6	2	~~6-4~~5-11	2	~~5-8~~5-1	2	7-1	2	~~6-2~~5-8	2	~~5-7~~4-10	2	~~6-7~~6-9	2	~~5-9~~5-4	2	~~5-3~~4-7	2
	3-2×12	~~8-5~~8-10	2	~~7-4~~7-0	2	~~6-7~~5-11	2	~~8-2~~8-5	2	~~7-2~~6-8	2	~~6-5~~5-8	3	~~7-8~~8-0	2	~~6-9~~6-4	2	~~6-1~~5-4	3
	4-2×8	~~6-10~~7-3	1	~~6-0~~5-9	~~2~~1	~~5-5~~4-11	2	~~6-8~~5-11	1	~~5-10~~5-6	2	~~5-3~~4-8	2	~~6-3~~6-7	~~2~~1	~~5-6~~5-2	2	~~4-11~~4-5	2
	4-2×10	~~8-4~~8-8	~~2~~1	~~7-4~~6-10	2	~~6-7~~5-10	2	~~8-2~~8-3	2	~~7-2~~6-6	2	~~6-5~~5-7	2	~~7-7~~7-10	2	~~6-8~~6-2	2	~~6-0~~5-3	2
	4-2×12	~~9-8~~10-2	2	~~8-6~~8-1	2	~~7-8~~6-10	2	~~9-5~~9-8	2	~~8-3~~7-8	2	~~7-5~~6-7	2	~~8-10~~9-2	2	~~7-9~~7-3	2	~~7-0~~6-2	2
Roof, ceiling, and two clear-span floors	1-2×6	2-3	2	1-9	2	1-5	2	2-3	2	1-9	2	1-5	3	2-2	2	1-8	2	1-5	3
	1-2×8	2-10	2	2-2	3	1-10	3	2-10	2	2-2	3	1-10	3	2-9	2	2-1	3	1-10	3
	1-2×10	3-4	2	2-7	3	2-2	3	3-4	3	2-7	3	2-2	4	3-3	3	2-6	3	2-2	4
	1-2×12	4-0	3	3-0	3	2-7	4	4-0	3	3-0	4	2-7	4	3-10	3	3-0	4	2-6	4
	2-2×4	~~2-1~~2-3	1	1-8	1	~~1-6~~1-4	~~2~~1	~~2-0~~2-3	1	1-8	1	~~1-5~~1-4	~~2~~1	~~2-0~~2-2	1	1-8	1	~~1-5~~1-4	2
	2-2×6	~~3-1~~3-4	~~2~~1	~~2-8~~2-6	2	~~2-4~~2-2	2	~~3-0~~3-4	2	~~2-7~~2-6	2	~~2-3~~2-2	2	~~2-11~~3-3	2	~~2-7~~2-6	2	~~2-3~~2-1	2
	2-2×8	~~3-10~~4-3	2	~~3-4~~3-3	2	~~3-0~~2-8	~~3~~2	~~3-10~~4-3	2	~~3-4~~3-3	2	~~2-11~~2-8	~~3~~2	~~3-9~~4-1	2	~~3-3~~3-2	2	~~2-11~~2-8	3
	2-2×10	~~4-9~~5-0	2	~~4-1~~3-10	~~3~~2	~~3-8~~3-2	3	~~4-8~~5-0	2	~~4-0~~3-10	~~3~~2	~~3-7~~3-2	~~3~~2	~~4-7~~4-10	~~3~~2	~~4-0~~3-9	3	~~3-6~~3-2	3
	2-2×12	~~5-6~~5-11	~~3~~2	~~4-9~~4-6	3	~~4-3~~3-9	3	~~5-5~~5-11	~~3~~2	~~4-8~~4-6	3	~~4-2~~3-9	3	~~5-4~~5-8	~~3~~2	~~4-7~~4-5	3	~~4-1~~3-9	~~4~~3

	3-2×8	~~4-10~~5-3	~~2~~1	~~4-2~~4-0	2	~~3-9~~3-5	2	~~4-9~~5-3	2	~~4-1~~4-0	2	~~3-8~~3-5	2	~~4-8~~5-1	2	~~4-1~~3-11	2	~~3-8~~3-4	2
	3-2×10	~~5-11~~6-3	2	~~5-1~~4-9	2	~~4-7~~4-0	~~3~~2	~~5-10~~6-3	2	~~5-0~~4-9	2	~~4-6~~4-0	~~3~~2	~~5-9~~6-1	2	~~4-11~~4-8	2	~~4-5~~4-0	3
	3-2×12	~~6-10~~7-5	2	~~5-11~~5-8	~~3~~2	~~5-4~~4-9	3	~~6-9~~7-5	2	~~5-10~~5-8	~~3~~2	~~5-3~~4-9	3	~~6-8~~7-2	2	~~5-9~~5-6	3	~~5-2~~4-8	3
	4-2×8	~~5-7~~6-1	~~2~~1	~~4-10~~4-8	2	~~4-4~~3-11	2	~~5-6~~6-1	~~2~~1	~~4-9~~4-8	2	~~4-3~~3-11	2	~~5-5~~5-11	~~2~~1	~~4-8~~4-7	2	~~4-2~~3-11	2
	4-2×10	~~6-10~~7-3	2	~~5-11~~5-6	2	~~5-3~~4-8	2	~~6-9~~7-3	2	~~5-10~~5-6	2	~~5-2~~4-8	2	~~6-7~~7-0	2	~~5-9~~5-5	2	~~5-1~~4-7	2
	4-2×12	~~7-11~~8-6	2	~~6-10~~6-6	2	~~6-2~~5-6	~~3~~2	~~7-9~~8-6	2	~~6-9~~6-6	2	~~6-0~~5-6	~~3~~2	~~7-8~~8-3	2	~~6-8~~6-4	2	~~5-11~~5-4	3

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 0.0479 kPa.

a. Spans are given in feet and inches.

b. ~~No. 1 or better grade lumber shall be used for southern pine. Other tabulated values assume~~ Spans are based on minimum design properties for #2 grade lumber of Douglas Fir-Larch, Hem-Fir, Southern Pine, and Spruce-Pine-Fir.

c. Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.

d. NJ = Number of jack studs required to support each end. Where the number of required jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.

e. Use 30 psf ground snow load for cases in which ground snow load is less than 30 psf and the roof live load is equal to or less than 20 psf.

f. Spans are calculated assuming the top of the header or girder is laterally braced by perpendicular framing. Where the top of the header or girder is not laterally braced (e.g. cripple studs bearing on the header), tabulated spans for headers consisting of 2x8, 2x10, or 2x12 sizes shall be multiplied by 0.70 or the header or girder shall be designed.

TABLE R602.7(2)
GIRDER SPANS[a] AND HEADER SPANS[a] FOR INTERIOR BEARING WALLS (Maximum spans for Douglas fir-larch, hem-fir, southern pine and spruce-pine-fir[b] and required number of jack studs)

HEADERS AND GIRDERS SUPPORTING	SIZE	BUILDING Width[c](feet)					
		~~20~~12		~~28~~24		36	
		Span[e]	NJ[d]	Span[e]	NJ[d]	Span[e]	NJ[d]
One floor only	2-2 × 4	~~3-1~~4-1	1	~~2-8~~2-10	1	~~2-5~~2-4	1
	2-2 × 6	~~4-6~~6-1	1	~~3-11~~4-4	1	3-6	1
	2-2 × 8	~~5-9~~7-9	1	~~5-0~~5-5	~~2~~1	4-5	2
	2-2 × 10	~~7-0~~9-2	~~2~~1	~~6-1~~6-6	2	~~5-5~~5-3	2
	2-2 × 12	~~8-1~~10-9	~~2~~1	~~7-0~~7-7	2	6-3	2
	3-2 × 8	~~7-2~~9-8	1	~~6-3~~6-10	1	5-7	~~2~~1
	3-2 × 10	~~8-9~~11-5	1	~~7-7~~8-1	~~2~~1	~~6-9~~6-7	2
	3-2 × 12	~~10-2~~13-6	~~2~~1	~~8-10~~9-6	2	~~7-10~~7-9	2
	4-2 × 8	~~9-0~~11-2	1	~~7-8~~7-11	1	~~6-9~~6-5	1
	4-2 × 10	~~10-1~~13-3	1	~~8-9~~9-4	1	~~7-10~~7-8	~~2~~1
	4-2 × 12	~~11-9~~15-7	1	~~10-2~~11-0	~~2~~1	~~9-1~~9-0	2
Two floors	2-2 × 4	~~2-2~~2-7	1	~~1-10~~1-11	1	1-7	1
	2-2 × 6	~~3-2~~3-11	~~2~~1	~~2-9~~2-11	2	2-5	2
	2-2 × 8	~~4-1~~5-0	~~2~~1	~~3-6~~3-8	2	~~3-2~~3-1	2
	2-2 × 10	~~4-11~~5-11	2	~~4-3~~4-4	2	~~3-1~~03-7	~~3~~2
	2-2 × 12	~~5-9~~6-11	2	~~5-0~~5-2	~~3~~2	~~4-5~~4-3	3
	3-2 × 8	~~5-1~~6-3	~~2~~1	~~4-5~~4-7	2	~~3-11~~3-10	2
	3-2 × 10	~~6-2~~7-5	~~2~~1	~~5-4~~5-6	2	~~4-10~~4-6	2

	3-2 × 12	~~7-2~~8-8	2	~~6-3~~6-5	2	~~5-7~~5-4	~~3~~2
	4-2 × 8	~~6-1~~7-2	1	~~5-3~~5-4	~~2~~1	~~4-8~~4-5	2
	4-2 × 10	~~7-2~~8-6	~~2~~1	~~6-2~~6-4	2	~~5-6~~5-3	2
	4-2 × 12	~~8-4~~10-1	~~2~~1	~~7-2~~7-5	2	~~6-5~~6-2	2

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. Spans are given in feet and inches.

b. ~~No. 1 or better grade lumber shall be used for southern pine. Other tabulated values assume~~ Spans are based on minimim design properties for #2 grade lumber Douglas Fir-Larch, Hem-Fir, Southern Pine, and Spruce-Pine-Fir.

c. Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.

d. NJ = Number of jack studs required to support each end. Where the number of required jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.

e. Spans are calculated assuming the top of the header or girder is laterally braced by perpendicular framing. Where the top of the header or girder is not laterally braced (e.g. cripple studs bearing on the header), tablulated spans for headers consisting of 2x8, 2x10, or 2x12 sizes shall be multiplied by 0.70 or the header or girder shall be designed.

Reason: The update of Table R602.7(1) Girder Spans and Header Spans for Exterior Bearing Walls is proposed. Updated spans address use of Southern Pine No. 2 in lieu of Southern Pine No. 1. Footnote "f" is added to clarify that header spans are based on laterally braced assumption such as when the header is raised. For dropped headers consisting of 2x8, 2x10, or 2x12 sizes that are not laterally braced, a factor of 0.7 can be applied to determine the spans or alternatively the header or girder can be designed to include any adjustment for potential buckling. Laterally braced (raised) and not laterally braced (dropped) header conditions and building widths for which header spans are tablulated represent the same conditions used to develop header span tables in the Wood Frame Construction Manual (WFCM).

The update of Table R602.7(2) Girder Spans and Header Spands for Interior Bearing Walls is proposed. Updated spans address use of Southern Pine No. 2 in lieu of Southern Pine No. 1. Footnote "e" is added to clarify that header spans are based on laterally braced assumption such as when the header is raised. For dropped headers consisting of 2x8, 2x10, or 2x12 sizes that are not laterally braced, a factor of 0.7 can be applied to determine the spans or alternatively the header or girder can be designed to include any adjustment for potential buckling. Laterally braced (raised) and not laterally braced (dropped) header conditions and building widths for which header spans are tablulated represent the same conditions used to develop header span tables in the Wood Frame Construction Manual (WFCM).

Cost Impact: Increased cost may be associated with reduced spans that result from the not laterally braced condition and application of footnote f (in Table R602.7(1)) or e (in Table R602.7(2)). Due to smaller building width column (12'), permissible use of Southern Pine No. 2, and the laterally braced assumption for tabulated spans, there are also cases where this change will not increase the cost of construction and may reduce the cost of construction.

Workgroup Recommendation

Workgroup 2 Recommendation Recommendation: Consensus for Approval

Workgroup 2 Reason: Reason: The update of Table R602.7(1) Girder Spans and Header Spans for Exterior Bearing Walls is proposed. Updated spans address use of Southern Pine No. 2 in lieu of Southern Pine No. 1. Footnote "f" is added to clarify that header spans are based on laterally braced assumption such as when the header is raised.
Comments: None

Cindy Davis – **Moving forward as consensus**

Workgroup 3 Recommendation: None

Workgroup 3 Reason: None

Board Decision

None

CR-R602.7 cdpVA-15

CE-1301.1.1.1 cdpVA-15

Proponent : Andrew Grigsby (andrew@leap-va.org)

2012 Virginia Construction Code

(DHCD Staff Note: Proponent confirmed corresponding changes to be made to IRC energy provisions)

~~1301.1.1.1 Changes to the IECC.~~

~~The following changes shall be made to the IECC:~~

1. ~~Add Exception 3 to Section C402.4.5.2 to read:~~
    1.1. ~~(3.)Any grease duct serving a Type I hood installed in accordance with IMC Section 506.3 shall not be required to have a motorized or gravity damper.~~
2. ~~Change Section C402.4.8 to read:~~
3. ~~Add Exception 4 to Section C403.2.4.4 to read:~~
    3.1. ~~(4.)Any grease duct serving a Type I hood installed in accordance with IMC Section 506.3 shall not be required to have a motorized or gravity damper.~~
4. ~~Change the exception to Section C405.1 to read:~~
    - ~~**Exception:**Dwelling units within commercial buildings shall not be required to comply with Sections C405.2 through C405.5, provided that not less than 75 percent of the permanently installed luminaires, other than low voltage lighting, shall be fitted for, and contain only, high-efficacy lamps.~~
5. ~~Change Section C405.6 to read:~~
6. ~~Delete Section R401.3~~
7. ~~Change the ceiling *R*-value and wood frame wall *R*-value categories for climate zone "4 except Marine" in Table R402.1.1 to read:~~
8. ~~Change the ceiling *U*-factor and frame wall *U*-factor categories for climate zone "4 except Marine" in Table R402.1.3 to read:~~
9. ~~Change Sections R402.2.1 and R402.2.4 to read:~~
10. ~~Delete Section R402.3.6 and change Sections R402.4 and R402.4.1.1 to read:~~
11. ~~Change the title of the "Criteria" category of Table R402.4.1.1; change the "Walls," "Shower/tub on exterior wall" and "Fireplace" categories of Table R402.4.1.1, and add footnotes "b" and "c" to Table R402.4.1.1 to read:~~
12. ~~Change Section R402.4.1.2 and add Sections R402.4.1.2.1, R402.4.1.2.2 and R402.4.1.3 to read:~~
13. ~~Change Section R403.1.1 to read:~~
14. ~~Change Section R403.2.2 to read:~~
15. ~~Change Section R403.2.2.1 to read:~~
16. ~~Add Section R403.2.2.2 to read:~~
17. ~~Add Section R403.2.2.3 to read:~~
18. ~~Change Section R403.4.2 to read:~~
19. ~~Delete Table R403.4.2~~
20. ~~Change Section R403.6 to read:~~
21. ~~Change Section R404.1 to read:~~
22. ~~Change the "Glazing" and "Air exchange rate" categories of Table R405.5.2(1)~~

~~to read:~~

~~C402.4.8 Recessed lighting.~~~~Recessed luminaires installed in the building thermal envelope shall be sealed to limit air leakage between conditioned and unconditioned spaces. All recessed luminaires shall be IC-rated and labeled as having an air leakage rate or not more 2.0 cfm (0.944 L/s) when tested in accordance with ASTM E 283 at a 1.57 psf (75 Pa) pressure differential. All recessed luminaires installed in the thermal envelope shall be sealed with a gasket or caulk between the housing and interior wall or ceiling covering.~~

~~C405.6 Exterior lighting (Mandatory).~~~~All exterior lighting, other than low voltage landscape lighting, shall comply with Sections C405.6.1 and C405.6.2~~

- **~~Exception:~~**~~Where approved because of historical, safety, signage, or emergency considerations.~~

–

~~CEILING *R*-VALUE~~	~~WOOD FRAME WALL *R*-VALUE~~
~~38~~	~~15 or 13 + 1~~[h]

–

~~CEILING *U*-FACTOR~~	~~FRAME WALL *U*-FACTOR~~
~~0.030~~	~~0.079~~

~~R402.2.1 Ceilings with attic spaces.~~~~When Section R402.1.1 would require R-38 in the ceiling, installing R-30 over 100 percent of the ceiling area shall be deemed to satisfy the requirement for R-38 wherever the full height of uncompressed R-30 insulation extends over the wall top plate at the eaves. Similarly, when Section R402.1.1 would require R-49 in the ceiling, installing R-38 over 100 percent of the ceiling area shall be deemed to satisfy the requirement for R-49 wherever the full height of uncompressed R-38 insulation extends over the wall top plate at the eaves. This reduction shall not apply to the *U*-factor alternative approach in Section R402.1.3 and the total UA alternative in Section R402.1.4~~

~~R402.2.4 Access hatches and doors.~~~~Access doors from conditioned spaces to unconditioned spaces (e.g., attics and crawl spaces) shall be weatherstripped and insulated in accordance with the following values:~~

1. ~~Hinged vertical doors shall have a minimum overall R-5 insulation value;~~
2. ~~Hatches and scuttle hole covers shall be insulated to a level equivalent to the insulation on the surrounding surfaces; and~~
3. ~~Pull down stairs shall have a minimum of 75 percent of the panel area having R-5 rigid insulation.~~

~~Access shall be provided to all equipment that prevents damaging or compressing the insulation. A wood framed or equivalent baffle or retainer is required to be provided when loose fill insulation is installed, the purpose of which is to prevent the loose fill insulation from spilling into the living space when the attic access is opened and to provide a permanent means of maintaining the installed *R*-value of the loose fill insulation.~~

~~R402.4 Air leakage.~~~~The building thermal envelope shall be constructed to limit air~~

~~leakage in accordance with the requirements of Sections R402.4.1 through R402.4.4~~
~~R402.4.1.1 Installation (Mandatory).~~~~The components of the building thermal envelope as listed in Table R402.4.1.1 shall be installed in accordance with the manufacturer's instructions and the criteria listed in Table R402.4.1.1, as applicable to the method of construction. Where required by the code official, an approved third party shall inspect all components and verify compliance.~~

~~COMPONENT~~	~~CRITERIA[a,b]~~
~~Walls~~	~~Cavities within corners and headers shall be insulated by completely filling the cavity with a material having a minimum thermal resistance of R-3 per inch.~~ ~~The junction of the foundation and sill plate shall be sealed.~~ ~~The junction of the top plate and top of exterior walls shall be sealed.~~ ~~Exterior thermal envelope insulation for framed walls shall be installed in substantial contact and continuous alignment with the air barrier.~~ ~~Knee walls shall be sealed.~~
~~Shower/tub on exterior wall[c]~~	~~Exterior walls adjacent to showers and tubs shall be insulated, and an air barrier shall be installed on the interior side of the exterior wall, adjacent to the shower or tub.~~
~~Fireplace~~	~~An air barrier shall be installed on fireplace walls. Fireplaces shall have gasketed doors or tight fitting flue dampers.~~

~~b. Structural integrity of headers shall be in accordance with the applicable building code.~~

~~c. Air barriers used behind showers and tubs on exterior walls shall be of a permeable material that does not cause the entrapment of moisture in the stud cavity.~~

~~R402.4.1.2 Air sealing.~~~~Building envelope air tightness shall be demonstrated to comply with either Section R402.4.1.2.1 or R402.4.1.2.2~~
~~R402.4.1.2.1 Testing option.~~~~The building or dwelling unit shall be tested for air leakage. Testing shall be conducted with a blower door at a pressure of 0.2 inches w.g. (50 Pascals). Where required by the building official, testing shall be conducted by an approved third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the building official. Testing shall be performed at any time after creation of all penetrations of the building thermal envelope.~~
~~During testing:~~

1. ~~Exterior windows and doors and fireplace and stove doors shall be closed, but not sealed beyond the intended weatherstripping or other infiltration control measures;~~
2. ~~Dampers, including exhaust, intake, makeup air, backdraft and flue dampers, shall be closed, but not sealed beyond intended infiltration control measures;~~
3. ~~Interior doors, if installed at the time of the test, shall be open;~~
4. ~~Exterior doors for continuous ventilation systems and heat recovery ventilators shall be closed and sealed;~~
5. ~~Heating and cooling systems, if installed at the time of the test, shall be turned off; and~~
6. ~~Supply and return registers, if installed at the time of the test, shall be fully open.~~

~~**R402.4.1.2.2 Visual inspection option.**Building envelope tightness shall be considered acceptable when the items listed in Table R402.4.1.1, applicable to the method of construction, are field verified. Where required by the building official, an approved party, independent from the installer, shall inspect the air barrier. When this option is chosen, the dwelling unit shall be ventilated by mechanical means in accordance with Section 403 of the IMC.~~

~~**R402.4.1.3 Leakage rate (Prescriptive).**The building or dwelling unit shall have an air leakage rate not exceeding 5 changes per hour as verified in accordance with Section R402.4.1.2~~

~~**R403.1.1 Programmable thermostat.**The thermostat controlling the primary heating or cooling system of the dwelling unit shall be capable of controlling the heating and cooling system on a daily schedule to maintain different temperature set points at different times of the day. This thermostat shall include the capability to set back or temporarily operate the system to maintain zone temperatures down to 55°F (13°C) or up to 85°F (29°C). The thermostat shall initially be programmed with a heating temperature set point no higher than 70°F (21°C) and a cooling temperature set point no lower than 78°F (26°C).~~

~~**R403.2.2 Sealing (Mandatory).**Ducts, air handlers, and filter boxes shall be sealed. Joints and seams shall comply with either the IMC or the IRC, as applicable. Verification of compliance with this section shall be in accordance with either Section R403.2.2.1 or Section R403.2.2.2~~

- ~~**Exceptions:**~~
    1. ~~Air-impermeable spray foam products shall be permitted to be applied without additional joint seals.~~
    2. ~~Where a duct connection is made that is partially inaccessible, three screws or rivets shall be equally spaced on the exposed portion of the joint so as to prevent a hinge effect.~~
    3. ~~Continuously welded and locking-type longitudinal joints and seams in ducts operating at static pressures less than 2 inches of water column (500 Pa) pressure classification shall not require additional closure systems.~~

~~**R403.2.2.1 Testing option.**Duct tightness shall be verified by either of the following:~~

1. ~~Post-construction test: Total leakage shall be less than or equal to 6 cfm (169.9 L/min) per 100 square feet (9.29 m^2) of conditioned floor area when tested at a pressure differential of 0.1 inch w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test.~~
2. ~~Rough-in test: Total leakage shall be less than or equal to 5 cfm (141.5 L/min) per 100 square feet (9.29 m^2) of conditioned floor area when tested at a pressure differential of 0.1 inch w.g. (25 Pa) across the system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test. If the air handler is not installed at the time of the test, total leakage shall be less than or equal to 5 cfm (141.5 L/min) per 100 square feet (9.29 m^2) of conditioned floor area.~~
    - ~~**Exception:**The total leakage test is not required for ducts and air handlers located entirely within the building thermal envelope.~~

~~When this option is chosen, testing shall be performed by approved qualified individuals, testing agencies or contractors. Testing and results shall be as prescribed in Section R403.2.2 and approved recognized industry standards.~~

~~**R403.2.2.2 Visual inspection option.** In addition to the inspection of ducts otherwise required by this code, when the air handler and all ducts are not within conditioned space and this option is chosen to verify duct tightness, duct tightness shall be considered acceptable when the requirements of Section R403.2.2 are field verified.~~

~~**R403.2.2.3 Sealed air handler.** Air handlers shall have a manufacturer's designation for an air leakage of no more than 2 percent of the design air flow rate when tested in accordance with ASHRAE 193.~~

~~**R403.4.2 Hot water pipe insulation (Prescriptive).** Insulation for hot water pipe with a minimum thermal resistance (*R*-value) of R-3 shall be applied to the following:~~

1. ~~Piping larger than $^{3}/_{4}$ inch nominal diameter.~~
2. ~~Piping serving more than one dwelling unit.~~
3. ~~Piping located outside the conditioned space.~~
4. ~~Piping from the water heater to a distribution manifold.~~
5. ~~Piping located under a floor slab.~~
6. ~~Buried piping.~~
7. ~~Supply and return piping in recirculation systems other than demand recirculation systems.~~

~~**R403.6 Equipment and appliance sizing.** Heating and cooling equipment and appliances shall be sized in accordance with ACCA Manual S or other approved sizing methodologies based on building loads calculated in accordance with ACCA Manual J or other approved heating and cooling calculation methodologies.~~

- ~~**Exception:** Heating and cooling equipment and appliance sizing shall not be limited to the capacities determined in accordance with Manual S or other approved sizing methodologies where any of the following conditions apply:~~
    1. ~~The specified equipment or appliance utilizes multi-stage technology or variable refrigerant flow technology and the loads calculated in accordance with the approved heating and cooling methodology fall within the range of the manufacturer's published capacities for that equipment or appliance.~~
    2. ~~The specified equipment or appliance manufacturer's published capacities cannot satisfy both the total and sensible heat gains calculated in accordance with the approved heating and cooling methodology and the next larger standard size unit is specified.~~
    3. ~~The specified equipment or appliance is the lowest capacity unit available from the specified manufacturer.~~

~~**R404.1 Lighting equipment (Mandatory).** A minimum of 50 percent of the lamps in permanently installed luminaires shall be high-efficacy lamps or a minimum of 50 percent of the permanently installed luminaires shall contain only high-efficacy lamps.~~

- ~~**Exception:** Low voltage lighting shall not be required to utilize high-efficiency lamps.~~

~~BUILDING COMPONENT~~	~~STANDARD REFERENCE DESIGN~~	~~PROPOSED DESIGN~~
~~Glazing[a]~~	~~Total area[b] is 15% of the conditioned floor area.~~	~~As proposed~~
	~~Orientation: equally distributed to four cardinal compass orientations (N, E, S & W).~~	~~As proposed~~
	~~*U* factor: from Table N1102.1.3 (R402.1.3).~~	~~As proposed~~
	~~SHGC: From Table N1102.1.1 (R402.1.1) except that for climates with no requirement (NR) SHGC = 0.40 shall be used.~~	~~As proposed~~
	~~Interior shade fraction: 0.92 (0.21 x SHGC for the standard reference design)~~	~~0.92 (0.21 x SHGC as proposed)~~
	~~External shading: none.~~	~~As proposed~~
~~Air exchange rate~~	~~Air leakage rate of 5 air changes per hour at a pressure of 0.2 inches w.g (50 Pa). The mechanical ventilation rate shall be in addition to the air leakage rate and the same as in the proposed design, but no greater than $0.01 \times CFA + 7.5 \times (N_{br} + 1)$ where:~~	~~For residences that are not tested, the same air leakage rate as the standard reference design. For tested residences, the measured air exchange rate[c].~~
	~~*CFA* = conditioned floor area~~ ~~N_{br} = number of bedrooms~~ ~~Energy recovery shall not be assumed for mechanical ventilation.~~	~~The mechanical ventilation rate[d] shall be in addition to the air leakage rate and shall be as proposed.~~

Reason: During the last code update cycle, Virginia opted for a "go slow" approach and opted not to include the great majority of the efficiency gains obtained by the 2012 IECC. So our residential code is only very modestly more efficient than the 2009 IECC. It's time to get caught up. The 2015 IECC provides greater flexibility regarding methods of achieving compliance and actually is less stringent (moving from the 3ACH50 building air-tightness requirement to 5ACH50) - so meeting the 2015 code will be somewhat easier. These stricter energy codes are a good investment for homebuyers and renters of all income levels and promote quality and professionalism in the homebuilding industry.

DHCD Staff Note: There are five attachments in the proposal file. Links to them are below:

Attachment 1

Attachment 2

Attachment 3

Attachment 4

Attachment 5

Cost Impact: If we split the difference betweent the very low DOE estimate and the very high NAHB estimate, a smart homebuilder should be able to comply with this code for less than $4K in the "average" home.

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Workgroup 3 Recommendation: None

Workgroup 3 Reason: None

Board Decision

None

CE-1301.1.1.1 cdpVA-15

CE-C402.4.3 cdpVA-15

Proponent : Eric Lacey, Representing Responsible Energy Codes Alliance (eric@reca-codes.com)

2015 International Energy Conservation Code

TABLE C402.4
BUILDING ENVELOPE FENESTRATION MAXIMUM *U*-FACTOR AND SHGC REQUIREMENTS

CLIMATE ZONE	1		2		3		4 EXCEPT MARINE		5 AND MARINE 4		6		7		8	
Vertical fenestration																
***U*-factor**																
Fixed fenestration	0.50		0.50		0.46		0.38		0.38		0.36		0.29		0.29	
Operable fenestration	0.65		0.65		0.60		0.45		0.45		0.43		0.37		0.37	
Entrance doors	1.10		0.83		0.77		0.77		0.77		0.77		0.77		0.77	
SHGC																
SHGC	0.25		0.25		0.25		0.40		0.40		0.40		0.45		0.45	
~~SHGC~~																
~~Orientation[a]~~	~~SEW~~	~~N~~	~~SEW~~	~~N~~	~~SEW~~	~~N~~	~~SEW~~	~~N~~	~~SEW~~	~~N~~	~~SEW~~	~~N~~	~~SEW~~	~~N~~	~~SEW~~	~~N~~
~~PF~~	~~0.25~~	~~0.33~~	~~0.25~~	~~0.33~~	~~0.25~~	~~0.33~~	~~0.40~~	~~0.53~~	~~0.40~~	~~0.53~~	~~0.40~~	~~0.53~~	~~0.45~~	~~NR~~	~~0.45~~	~~NR~~
~~0.2 ≤ PF~~	~~0.30~~	~~0.37~~	~~0.30~~	~~0.37~~	~~0.30~~	~~0.37~~	~~0.48~~	~~0.58~~	~~0.48~~	~~0.58~~	~~0.48~~	~~0.58~~	~~NR~~	~~NR~~	~~NR~~	~~NR~~
~~PF ≥ 0.5~~	~~0.40~~	~~0.40~~	~~0.40~~	~~0.40~~	~~0.40~~	~~0.40~~	~~0.64~~	~~0.64~~	~~0.64~~	~~0.64~~	~~0.64~~	~~0.64~~	~~NR~~	~~NR~~	~~NR~~	~~NR~~
Skylights																
U-factor	0.75		0.65		0.55		0.50		0.50		0.50		0.50		0.50	
SHGC	0.35		0.35		0.35		0.40		0.40		0.40		NR		NR	

NR = No requirement, PF = Projection factor.

a. "N" indicates vertical fenestration oriented within 45 degrees of true north. "SEW" indicates orientations other than "N." For buildings in the southern hemisphere, reverse south and north. Buildings located at less than 23.5 degrees latitude shall use SEW for all orientations.

C402.4.3 Maximum U-factor and SHGC. The maximum *U*-factor and solar heat gain coefficient (SHGC) for fenestration shall be as specified in Table C402.4.

The window projection factor shall be determined in accordance with Equation 4-5.

$PF = A/B$ **(Equation 4-5)**

where:

PF = Projection factor (decimal).

A = Distance measured horizontally from the furthest continuous extremity of any overhang, eave or permanently attached shading device to the vertical surface of the glazing.

B = Distance measured vertically from the bottom of the glazing to the underside of the overhang, eave or permanently attached shading device.

Where different windows or glass doors have different *PF* values, they shall each be evaluated separately.

Where the fenestration projection factor for a specific vertical fenestration product is greater than or equal to 0.2, the required maximum SHGC from Table C402.4 shall be adjusted by multiplying the required maximum SHGC by the multiplier specified in Table C402.4.3 corresponding with the orientation of the fenestration product and the projection factor.

TABLE C402.4.3

SHGC ADJUSTMENT MULTIPLIERS		
PROJECTION FACTOR	**ORIENTED WITHIN 45 DEGREES OF TRUE NORTH**	**ALL OTHER ORIENTATIONS**
0.2 ≤ PF < 0.5	1.1	1.2
PF ≤ 0.5	1.2	1.6

Reason: The purpose of this proposed code change is to maintain the calculation of projection factor and the simple SHGC requirement that is currently being enforced in Virginia. **The result of this proposal will be to maintain exactly the same fenestration SHGC and trade-off ability permitted in the current Virginia commercial energy code, or "business as usual" on commercial fenestration SHGC**.

Without this proposal, the next edition of Virginia's energy code would be *less efficient* than the current edition, since it would allow higher SHGCs than what the current code allows, *even where there is no overhang at all*. There is no justifiable reason why fenestration SHGC should be less efficient going forward – in fact, SHGC has a substantial impact on overall energy efficiency in Virginia, particularly in commercial buildings.

This proposal will maintain the simplicity and efficiency of the current Virginia energy code carrying forward identical fenestration SHGC requirements into the next edition.

Cost Impact: This proposal will not increase the cost of construction.

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Board Decision

None

CE-C402.4.3 cdpVA-15

CE-R402.1.1(2) cdpVA-15

Proponent : Eric Lacey (eric@reca-codes.com)

2012 Virginia Energy Conservation Code

TABLE R402.1.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR[b]	SKYLIGHT[b] *U*-FACTOR	GLAZED FENESTRATION SHGC[b,e]	CEILING *R*-VALUE	WOOD FRAME WALL *R*-VALUE	MASS WALL *R*-VALUE[i]	FLOOR *R*-VALUE	BASEMENT[c] WALL *R*-VALUE	SLAB[d] *R*-VALUE & DEPTH	CRAWL SPACE[c] WALL *R*-VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.35	0.55	0.25	38	20 or 13+5[h]	8/13	19	5/13[f]	0	5/13
4 except Marine	0.35	0.55	0.40	38	20~~15~~ or 13+5~~13+1~~[h]	8/13	19	10 /13	10, 2 ft	10 /13
5 and Marine 4	0.32	0.55	NR	49	20 or 13+5[h]	13/17	30[g]	15/19	10, 2 ft	15/19
6	0.32	0.55	NR	49	20+5 or 13+10[h]	15/20	30[g]	15/19	10, 4 ft	15/19
7 and 8	0.32	0.55	NR	49	20+5 or 13+10[h]	19/21	38[g]	15/19	10, 4 ft	15/19

For SI: 1 foot = 304.8 mm.

R402.1.3 U-factor alternative.
An assembly with a *U*-factor equal to or less than that specified in Table R402.1.3 shall be permitted as an alternative to the *R*-value in Table R402.1.1.

TABLE R402.1.3
EQUIVALENT U-FACTORS[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR	SKYLIGHT *U*-FACTOR	CEILING *U*-FACTOR	FRAME WALL *U*-FACTOR	MASS WALL *U*-FACTOR[b]	FLOOR *U*-FACTOR	BASEMENT WALL *U*-FACTOR	CRAWL SPACE WALL *U*-FACTOR
1	0.50	0.75	0.035	0.082	0.197	0.064	0.360	0.477
2	0.40	0.65	0.030	0.082	0.165	0.064	0.360	0.477
3	0.35	0.55	0.030	0.057	0.098	0.047	0.091[c]	0.136
4 except Marine	0.35	0.55	0.030	0.060~~0.079~~	0.098	0.047	0.059	0.065
5 and Marine 4	0.32	0.55	0.026	0.057	0.082	0.033	0.050	0.055

6	0.32	0.55	0.026	0.048	0.060	0.033	0.050	0.055
7 and 8	0.32	0.55	0.026	0.048	0.057	0.028	0.050	0.055

a. Nonfenestration *U*-factors shall be obtained from measurement, calculation or an approved source.

2012 Virginia Residential Code

TABLE N1102.1.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR[b]	SKYLIGHT[b] *U*-FACTOR	GLAZED FENESTRATION SHGC[b,e]	CEILING *R*-VALUE	WOOD FRAME WALL *R*-VALUE	MASS WALL *R*-VALUE[i]	FLOOR *R*-VALUE	BASEMENT[c] WALL *R*-VALUE	SLAB[d] *R*-VALUE & DEPTH	CRAWL SPACE[c] WALL *R*-VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.35	0.55	0.25	38	20 or 13 + 5[h]	8/13	19	5/13[f]	0	5/13
4 except Marine	0.35	0.55	0.40	38	20~~15~~ or 13 + 5~~1~~[h]	8/13	19	10 /13	10, 2 ft	10/13
5 and Marine 4	0.32	0.55	NR	49	20 or 13 + 5[h]	13/17	30[g]	15/19	10, 2 ft	15/19
6	0.32	0.55	NR	49	20 + 5 or 13 + 10[h]	15/20	30[g]	15/19	10, 4 ft	15/19
7 and 8	0.32	0.55	NR	49	20 + 5 or 13 + 10[h]	19/21	38[g]	15/19	10, 4 ft	15/19

For SI: 1 foot = 304.8 mm.

TABLE N1102.1.3
EQUIVALENT U-FACTORS[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR	SKYLIGHT *U*-FACTOR	CEILING *U*-FACTOR	FRAME WALL *U*-FACTOR	MASS WALL *U*-FACTOR[b]	FLOOR *U*-FACTOR	BASEMENT WALL *U*-FACTOR	CRAWL SPACE WALL *U*-FACTOR
1	0.50	0.75	0.035	0.082	0.197	0.064	0.360	0.477
2	0.40	0.65	0.030	0.082	0.165	0.064	0.360	0.477
3	0.35	0.55	0.030	0.057	0.098	0.047	0.091[c]	0.136
4 except Marine	0.35	0.55	0.030	0.060~~0.079~~	0.098	0.047	0.059	0.065
5 and Marine 4	0.32	0.55	0.026	0.057	0.082	0.033	0.050	0.055
6	0.32	0.55	0.026	0.048	0.060	0.033	0.050	0.055

7 and 8	0.32	0.55	0.026	0.048	0.057	0.028	0.050	0.055

a. Nonfenestration *U*-factors shall be obtained from measurement, calculation or an approved source.

Reason: This proposal would make Virginia's energy code consistent with the 2015 IECC requirements for wall insulation. The U.S. DOE found both the 2012 and 2015 IECC to be cost-effective for Virginia (*see* https://www.energycodes.gov/development/residential/iecc_analysis/), and improvements to the thermal building envelope are important to the long-term efficiency and cost-effectiveness of new buildings.

The wall insulation R-values in the 2015 IECC do not require the use of any specific product, and can be achieved with either 2X4 or 2X6 wall construction. The two values in the prescriptive R-value table are only two of many different options. For additional wall insulation options, builders can use one of several compliance paths, each of which provides multiple options and combinations for meeting the code requirements:

-
  -
    - The U-factor alternative table (R402.1.4)
    - The Total UA Alternative (R402.1.5)
    - U.S. DOE's REScheck software (www.energycodes.gov)
    - The Simulated Performance Alternative (R405)
    - The Energy Rating Index (R406)

Wall insulation is easiest (and most cost-effective) to install during construction. Given that there may only be limited opportunities to upgrade the walls in the future, it is important to construct well-insulated walls from the very beginning. Better-insulated buildings are clearly an investment in Virginia's energy future. We recommend maintaining consistency with the 2015 IECC requirements.

This proposal also updates the equivalent U-factors to be consistent with the 2015 IRC/IECC, which is important for builders and design professionals who intend to use DOE's free REScheck compliance software. Virginia's reduced insulation requirements, among other weakening amendments in the 2012 Uniform Code, have made compliance via REScheck problematic. We recommend that Virginia adopt Equivalent U-factor values that will be consistent with the latest version of the IECC, both to maximize cost-effective energy efficiency and to maintain consistency with leading software compliance programs.

Cost Impact: This proposal may increase the cost of construction, depending on the compliance option selected.

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Workgroup 3 Recommendation: None

Workgroup 3 Reason: None

Board Decision

None

CE-R402.1.1(2) cdpVA-15

CE-R402.1.1(3) cdpVA-15

Proponent : Eric Lacey, Representing Responsible Energy Codes Alliance (eric@reca-codes.com)

2012 Virginia Energy Conservation Code

TABLE R402.1.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR[b]	SKYLIGHT[b] *U*-FACTOR	GLAZED FENESTRATION SHGC[b,e]	CEILING *R*-VALUE	WOOD FRAME WALL *R*-VALUE	MASS WALL *R*-VALUE[i]	FLOOR *R*-VALUE	BASEMENT[c] WALL *R*-VALUE	SLAB[d] *R*-VALUE & DEPTH	CRAWL SPACE[c] WALL *R*-VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.35	0.55	0.25	38	20 or 13+5[h]	8/13	19	5/13[f]	0	5/13
4 except Marine	0.35	0.55	0.40	49~~38~~	15 or 13+1[h]	8/13	19	10 /13	10, 2 ft	10 /13
5 and Marine 4	0.32	0.55	NR	49	20 or 13+5[h]	13/17	30[g]	15/19	10, 2 ft	15/19
6	0.32	0.55	NR	49	20+5 or 13+10[h]	15/20	30[g]	15/19	10, 4 ft	15/19
7 and 8	0.32	0.55	NR	49	20+5 or 13+10[h]	19/21	38[g]	15/19	10, 4 ft	15/19

For SI: 1 foot = 304.8 mm.

TABLE R402.1.3
EQUIVALENT U-FACTORS[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR	SKYLIGHT *U*-FACTOR	CEILING *U*-FACTOR	FRAME WALL *U*-FACTOR	MASS WALL *U*-FACTOR[b]	FLOOR *U*-FACTOR	BASEMENT WALL *U*-FACTOR	CRAWL SPACE WALL *U*-FACTOR
1	0.50	0.75	0.035	0.082	0.197	0.064	0.360	0.477
2	0.40	0.65	0.030	0.082	0.165	0.064	0.360	0.477
3	0.35	0.55	0.030	0.057	0.098	0.047	0.091[c]	0.136
4 except Marine	0.35	0.55	0.026~~0.030~~	0.079	0.098	0.047	0.059	0.065
5 and Marine 4	0.32	0.55	0.026	0.057	0.082	0.033	0.050	0.055
6	0.32	0.55	0.026	0.048	0.060	0.033	0.050	0.055

7 and 8	0.32	0.55	0.026	0.048	0.057	0.028	0.050	0.055

a. Nonfenestration *U*-factors shall be obtained from measurement, calculation or an approved source.

2012 Virginia Residential Code

TABLE N1102.1.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR[b]	SKYLIGHT[b] *U*-FACTOR	GLAZED FENESTRATION SHGC[b,e]	CEILING *R*-VALUE	WOOD FRAME WALL *R*-VALUE	MASS WALL *R*-VALUE[i]	FLOOR *R*-VALUE	BASEMENT[c] WALL *R*-VALUE	SLAB[d] *R*-VALUE & DEPTH	CRAWL SPACE[c] WALL *R*-VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.35	0.55	0.25	38	20 or 13 + 5[h]	8/13	19	5/13[f]	0	5/13
4 except Marine	0.35	0.55	0.40	~~49~~38	15 or 13 + 1[h]	8/13	19	10 /13	10, 2 ft	10/13
5 and Marine 4	0.32	0.55	NR	49	20 or 13 + 5[h]	13/17	30[g]	15/19	10, 2 ft	15/19
6	0.32	0.55	NR	49	20 + 5 or 13 + 10[h]	15/20	30[g]	15/19	10, 4 ft	15/19
7 and 8	0.32	0.55	NR	49	20 + 5 or 13 + 10[h]	19/21	38[g]	15/19	10, 4 ft	15/19

For SI: 1 foot = 304.8 mm.

TABLE N1102.1.3
EQUIVALENT U-FACTORS[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR	SKYLIGHT *U*-FACTOR	CEILING *U*-FACTOR	FRAME WALL *U*-FACTOR	MASS WALL *U*-FACTOR[b]	FLOOR *U*-FACTOR	BASEMENT WALL *U*-FACTOR	CRAWL SPACE WALL *U*-FACTOR
1	0.50	0.75	0.035	0.082	0.197	0.064	0.360	0.477
2	0.40	0.65	0.030	0.082	0.165	0.064	0.360	0.477
3	0.35	0.55	0.030	0.057	0.098	0.047	0.091[c]	0.136
4 except Marine	0.35	0.55	0.026~~0.030~~	0.079	0.098	0.047	0.059	0.065
5 and Marine 4	0.32	0.55	0.026	0.057	0.082	0.033	0.050	0.055

6	0.32	0.55	0.026	0.048	0.060	0.033	0.050	0.055
7 and 8	0.32	0.55	0.026	0.048	0.057	0.028	0.050	0.055

a. Nonfenestration *U*-factors shall be obtained from measurement, calculation or an approved source.

Reason: The level of ceiling insulation required by the 2012 and 2015 *IECC* and *IRC* is most cost-effective when installed at initial construction, when equipment and laborers are already present. The only question is whether to install an additional amount of insulation in the attic (basically another 3.5 inches of blown-in insulation). The R-49 insulated attic will save approximately 1.6% more energy than the R-38 attic, every year over the 70-100 year expected lifetime of the home. The U.S. Department of Energy has found that ceiling insulation between R-38 and R-60 is cost-effective in Virginia's climate zone, and R-49 is well within that range.
*See*http://energy.gov/energysaver/articles/tips-insulation.
This proposal also updates the equivalent U-factors to be consistent with the 2015 IRC/IECC, which is important for builders and design professionals who intend to use DOE's free REScheck compliance software. Virginia's reduced insulation requirements, among other weakening amendments in the 2012 Uniform Code, have made compliance via REScheck problematic. We recommend that Virginia adopt Equivalent U-factor values that will be consistent with the latest version of the IECC, both to maximize cost-effective energy efficiency and to maintain consistency with leading software compliance programs.

Cost Impact: This proposal will increase the cost of construction. However, as noted above, this proposal is cost-effective to the consumer.

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Workgroup 3 Recommendation: None

Workgroup 3 Reason: None

Board Decision

None

CE-R402.1.1(3) cdpVA-15

CE-R402.3.6 cdpVA-15

Proponent : Eric Lacey, Representing Responsible Energy Codes Alliance (eric@reca-codes.com)

2012 Virginia Energy Conservation Code

R402.3.6 Replacement fenestration
~~(Section deleted)~~
Where a permit is required, where some or all of an existing fenestration unit is replaced with a new fenestration product, including sash and glazing, the replacement fenestration unit shall meet the applicable requirements for U-factor and SHGC as provided in Table R402.1.4.

2012 Virginia Residential Code

N1102.3.6 Replacement Fenestration Where a permit is required, where some or all of an existing fenestration unit is replaced with a new fenestration product, including sash and glazing, the replacement fenestration unit shall meet the applicable requirements for U-factor and SHGC as provided in Table R402.1.4.

2015 International Energy Conservation Code

R503.1.1.1 Replacement fenestration. Where a permit is required, where some or all of an existing fenestration unit is replaced with a new fenestration product, including sash and glazing, the replacement fenestration unit shall meet the applicable requirements for *U*-factor and SHGC as provided in Table ~~R402.1.2~~R402.1.4.

2015 International Residential Code

N1109.1.1.1 (R503.1.1.1) Replacement fenestration. Where a permit is required, where some or all of an existing fenestration unit is replaced with a new fenestration product, including sash and glazing, the replacement fenestration unit shall meet the applicable requirements for *U*-factor and SHGC as provided in Table ~~R402.1.2~~R402.1.4.

Reason: This proposal improves efficiency by clarifying that replacement fenestration must meet the same level of efficiency as fenestration used in new construction. This code requirement has been in the IECC for over a decade, and for good reason – about 3/4 of all windows installed in buildings every year are replacement windows. This is a rare opportunity to impact the efficiency of existing buildings – which represent 98-99% of buildings in any given year – by a substantial

amount. Code-compliant fenestration is widely available and clearly cost-effective, and there is no reason why Virginia homeowners should not have all the benefits of efficient replacement windows and doors.

In the previous code update cycle, there was some concern expressed about how (and whether) to apply this requirement if a permit is not required for window replacement. This proposal adds the conditional language: "Where a permit is required ..." to clarify that replacement fenestration is only required to meet the code requirements when a permit is required in Virginia. The language is otherwise identical to the requirement that has been in the IECC for several editions.

Cost Impact: This proposal will not impact the cost of construction, because it applies to replacement products in an existing building. It does not require the replacement of fenestration (which may be replaced for a number of reasons, only one of which is energy conservation). In those cases where a homeowner is already replacing fenestration in an existing building, this provision would require those fenestration products to meet the requirements of this code for new construction.

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Workgroup 3 Recommendation: None

Workgroup 3 Reason: None

Board Decision

None

CE-R402.3.6 cdpVA-15

CE-R402.4.1.2(1) cdpVA-15

Proponent : Andrew Grigsby (andrew@leap-va.org)

2012 Virginia Energy Conservation Code

(DHCD Staff Note: Proponent confirmed corresponding changes to be made to IRC energy provisions.)

R402.4.1.2 Airsealing.
Building envelope air tightness shall be demonstrated to comply with ~~either~~ Section R402.4.1.2.1 ~~or R402.4.1.2.2.~~

R402.4.1.2.2 Visual inspection option.
~~Building envelope tightness shall be considered acceptable when the items listed in Table R402.4.1.1, applicable to the method of construction, are field verified. Where required by the building official, an approved party, independent from the installer, shall inspect the air barrier. When this option is chosen, the dwelling unit shall be ventilated by mechanical means in accordance with Section 403 of the *International Mechanical Code.*~~

Add new standard(s) as follows: IECC2012, IECC 2015

Reason: There is no substitute for actual mechanical testing of the building. A visual inspection standard is no standard – as it cannot obtain a numerical value. Air leaks – even large ones – are not always observable during a visual inspection. It is precisely the hard-to-find leaks that are the problem. Most builders will address a visible hole. It is not difficult to build a tight house. But the only way to find the random problems is to test. One can only know the actual air changes per hour if we test. It is untenable to ask a building official to sign off on a CO - which is his statement to the buyer that reasonable effort has been made to confirm that the home meets the standards in the code - when he actually has no data on the homes air changes per hour - and that data is readily available. It makes the code official vulnerable to lawsuits. Montgomery County, VA has been requiring the blower door test for several years. Fourteen other states require it. This is a basic quality assurance test that is a win for quality and efficiency. It's not expensive. There are trained folks all over the state. Without the results of the blower door test, the ventilation system will either be over- or under- ventilating the home, resulting in either efficiency or health being compromised.

Cost Impact: $75-$200

Workgroup Recommendation

Workgroup 2 Recommendation Recommendation: Non-Consensus Final

Workgroup 2 Reason: Reason: There is no substitute for actual mechanical testing of the building. A visual inspection standard is no standard – as it cannot obtain a numerical value. Air leaks – even large ones – are not always observable during a visual inspection. It is precisely the hard-to-find leaks that are the problem. Most builders will address a visible hole. It is not difficult to build a tight house. But the only way to find the random problems is to test.
Andrew Grigsby gave overview of his proposal.

Comments:

Charles Cottrell stated that testing is very important. There is no human that can look at a house

to see how many air changes there are per hour. We owe it to the consumer.
Cindy Davis - **Move forward as non-consensus**, however, our group will work on this issue.

Workgroup 3 Recommendation: None

Workgroup 3 Reason: None

Board Decision

None

CE-R402.4.1.2(1) cdpVA-15

CE-R402.4.1.2(2) cdpVA-15

Proponent : Eric Lacey, Representing Responsible Energy Codes Alliance (eric@reca-codes.com)

2012 Virginia Energy Conservation Code

R402.4.1.2 Airsealing.
Building envelope air tightness shall be demonstrated to comply with ~~either~~ Section R402.4.1.2.1 ~~or R402.4.1.2.2~~.

~~**R402.4.1.2.2 Visual inspection option.** Building envelope tightness shall be considered acceptable when the items listed in Table R402.4.1.1, applicable to the method of construction, are field verified. Where required by the building official, an approved party, independent from the installer, shall inspect the air barrier. When this option is chosen, the dwelling unit shall be ventilated by mechanical means in accordance with Section 403 of the *International Mechanical Code.*~~

2012 Virginia Residential Code

N1102.4.1.2 (R402.4.1.2) Air sealing. Building envelope air tightness shall be demonstrated to comply with ~~either~~ Section N1102.4.1.2.1 ~~or N1102.4.1.2.2~~.

~~**N1102.4.1.2.2 (R402.4.1.2.2) Visual inspection option.** Building envelope tightness shall be considered acceptable when the items listed in Table N1102.4.1.1, applicable to the method of construction, are field verified. Where required by the building official, an approved party, independent from the installer, shall inspect the air barrier. When this option is chosen, whole-house mechanical ventilation shall be provided in accordance with Section M1507.3.~~

Reason: The 2012 and 2015 IECC both require every new home to be objectively tested for air leakage, and must achieve air leakage no higher than 3 ACH50. A home can be made tighter for relatively low cost, and the benefits are significant:

- Increased energy savings, by keeping the conditioned air inside the thermal envelope.
- Improved comfort, through reduced drafts.
- Improved air quality, by keeping out dust, car exhaust, insects, and other pollutants out of the home.

Air leakage testing will provide the builder (and ultimately the homeowner) not only information about the expected energy efficiency of the home, but whether the home will need mechanical ventilation in order to maintain proper indoor air quality.

A visual inspection simply cannot predict with enough accuracy what the air leakage rate is in a building. The vast majority of states that have adopted the 2012 or 2015 IECC require air leakage testing in every new home. Testing air leakage in every home is common-sense consumer protection that will provide energy conservation benefits over the lifetime of the home.

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

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Workgroup 3 Recommendation: None

Workgroup 3 Reason: None

Board Decision

None

CE-R402.4.1.2(2) cdpVA-15

CE-R403.2.2(1) cdpVA-15

Proponent : Andrew Grigsby (andrew@leap-va.org)

2012 Virginia Energy Conservation Code

(DHCD Staff Note: Proponent confirmed corresponding changes to be made to IRC energy provisions)

R403.2.2 Sealing (Mandatory).
Ducts, air handlers, and filter boxes shall be sealed. Joints and seams shall comply with either the *International Mechanical Code* or the *International Residential Code*, as applicable. Verification of compliance with this section shall be in accordance with ~~either~~ Section R403.2.2.1 ~~or R403.2.2.2.~~

- **Exceptions:**
    1. Air-impermeable spray foam products shall be permitted to be applied without additional joint seals.
    2. Where a duct connection is made that is partially inaccessible, three screws or rivets shall be equally spaced on the exposed portion of the joint so as to prevent a hinge effect.
    3. Continuously welded and locking-type longitudinal joints and seams in ducts operating at static pressures less than 2 inches of water column (500 Pa) pressure classification shall not require additional closure systems.

R403.2.2.2 Visual inspection option.
~~In addition to the inspection of ducts otherwise required by this code, when the air handler and all ducts are not within conditioned space and this option is chosen to verify duct tightness, duct tightness shall be considered acceptable when the requirements of Section R403.2.2 are field verified.~~

Add new standard(s) as follows: IECC 2012, IECC 2015

Reason: There is no substitute for a pressure test of the ductwork. Any person who actually has tested ductwork knows that, unless every inch of the entire duct system is readily visible, then only a mechanical test would have a hope of finding all of the leaks. It makes no sense to ask an inspector to crawl around the entire system hunting for leaks. Usually that's physically impossible. The only evaluation that gives results that can be compared against an objective standard is an actual pressure test. Otherwise, there is no standard. I have tested many systems that failed the pressure test. Some even fail it twice. It is untenable to ask a building official to sign off on a CO - which is his statement to the buyer that reasonable effort has been made to confirm that the home and its systems meet the standards in the code - when he actually has no data on how the duct system performs - and that data is readily available. It makes the code official vulnerable to lawsuits.

Cost Impact: $150 to $450 depending on home size

Workgroup Recommendation

Workgroup 2 Recommendation Recommendation: Non-Consensus Final

Workgroup 2 Reason: Reason: There is no substitute for a pressure test of the ductwork. Any person who actually has tested ductwork knows that, unless every inch of the entire duct system is readily visible, then only a mechanical test would have a hope of finding all of the leaks. It makes no sense to ask an inspector to crawl around the entire system hunting for leaks. Andrew Grigsby gave overview of this proposal.

Comments:

Mike Toalson said we don't believe this should be the minimum. The cost will increase when it is mandated. I will make the commitment to bring it back to our group in hopes that we can keep working on this.

Cindy Davis - **Move forward as non-consensus**

Workgroup 3 Recommendation Recommendation: Pending

Workgroup 3 Reason: Mr Grigsby spoke on his proposal-Walter (Danville) requires WHMV-states 600 dollar additional costs-Grigsby stated inaccurate statement-Gerber asked about whole house leakage-proposal is about duct leakage.-Toalson opposes-not enough time to review

Workgroup 4 Recommendation Recommendation: Pending

Workgroup 4 Reason: Toalson stated we need certified testers first at a resonable cost-Strausbaugh felt the language should not read "new"-Haywood states additional work load to locality. Witt concerned with reports being sent into locality-does not agree with the reason

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Board Decision

None

CE-R403.2.2(1) cdpVA-15

CE-R403.2.2(2) cdpVA-15

Proponent : Eric Lacey, Representing Responsible Energy Codes Alliance (eric@reca-codes.com)

2012 Virginia Energy Conservation Code

R403.2.2 Sealing (Mandatory). Ducts, air handlers, and filter boxes shall be sealed. Joints and seams shall comply with either the *International Mechanical Code* or the *International Residential Code*, as applicable. Verification of compliance with this section shall be in accordance with ~~either~~ Section R403.2.2.1 ~~or R403.2.2.2~~.

- **Exceptions:**
    1. Air-impermeable spray foam products shall be permitted to be applied without additional joint seals.
    2. Where a duct connection is made that is partially inaccessible, three screws or rivets shall be equally spaced on the exposed portion of the joint so as to prevent a hinge effect.
    3. Continuously welded and locking-type longitudinal joints and seams in ducts operating at static pressures less than 2 inches of water column (500 Pa) pressure classification shall not require additional closure systems.

~~**R403.2.2.2 Visual inspection option.** In addition to the inspection of ducts otherwise required by this code, when the air handler and all ducts are not within conditioned space and this option is chosen to verify duct tightness, duct tightness shall be considered acceptable when the requirements of Section R403.2.2 are field verified.~~

2012 Virginia Residential Code

N1103.2.2 (R403.2.2) Sealing (Mandatory). Ducts, air handlers, and filter boxes shall be sealed. Joints and seams shall comply with Section M1601.4.1of this code. Verification of compliance with this section shall be in accordance with ~~either~~ Section N1103.2.2.1 ~~or N1103.2.2.2~~.

- **Exceptions:**
    1. Air-impermeable spray foam products shall be permitted to be applied without additional joint seals.
    2. Where a duct connection is made that is partially inaccessible, three screws or rivets shall be equally spaced on the exposed portion of the joint so as to prevent a hinge effect.
    3. Continuously welded and locking-type longitudinal joints and seams in ducts operating at static pressures less than 2 inches of water column (500 Pa) pressure classification shall not require additional closure systems.

~~**N1103.2.2.2 (R403.2.2.2) Visual inspection option.** In addition to the inspection of ducts otherwise required by this code, when the air handler and all ducts are not within conditioned space and this option is chosen to verify duct tightness, duct tightness shall be considered acceptable when the requirements of Section N1103.2.2~~

~~are field verified.~~

2015 International Energy Conservation Code

R403.3.3 Duct testing and maximum leakage (Mandatory). ~~Ducts~~
The ductwork in a building or dwelling unit shall be tested for air leakage. The maximum total air leakage rate for ducts in any building or dwelling unit under any compliance path shall not exceed 8 cfm (226.5 L/min) per 100 square feet (9.29 m^2) of conditioned floor area. Testing shall be conducted at the rough-in stage or post-construction. Total duct leakage shall be measured with a pressure ~~tested to determine~~differential of 0.1 inch w.g. (25 Pa) across the entire system, including the manufacturer's air ~~leakage by one~~handler enclosure if installed at the time of the ~~following methods:~~

~~1. Rough-in test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the system, including the manufacturer's air handler enclosure if installed at the time of the test. All registers shall be taped or otherwise sealed during the test.~~
~~2. Postconstruction test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. Registers shall be taped or otherwise sealed during the test.~~
~~**Exception:** A duct air leakage test shall not be required where the ducts and air handlers are located entirely within the building thermal envelope.~~

test. All registers shall be taped or otherwise sealed during the test. Where required by the code official, testing shall be conducted by an approved third party.
A written report of the results of the test shall be signed by the party conducting the test and provided to the *code official*.

R403.3.4 Duct leakage (Prescriptive). The total leakage of the ducts, where measured in accordance with Section R403.3.3, shall be as follows:

1. Rough-in test: The total leakage shall be less than or equal to 4 cubic feet per minute (113.3 L/min) per 100 square feet (9.29 m^2) of conditioned floor area where the air handler is installed at the time of the test. Where the air handler is not installed at the time of the test, the total leakage shall be less than or equal to 3 cubic feet per minute (85 L/min) per 100 square feet (9.29 m^2) of conditioned floor area.
2. Postconstruction test: Total leakage shall be less than or equal to 4 cubic feet per minute (113.3 L/min) per 100 square feet (9.29 m^2) of conditioned floor area.

2015 International Residential Code

N1103.3.3 (R403.3.3) Duct testing and maximum leakage (Mandatory). ~~Ducts~~

The ductwork in a building or dwelling unit shall be ~~pressure~~ tested ~~to determine~~for air leakage. The maximum total air leakage ~~by one~~rate for ducts in any building or dwelling unit under any compliance path shall not exceed 8 cfm (226.5 L/min) per 100 square feet (9.29 m^2) of conditioned floor area. Testing shall be conducted at the rough-in stage or post-construction. Total duct leakage shall be measured with a pressure differential of 0.1 inch w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure if installed at the time of the ~~following methods:~~

~~1. Rough-in test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g.(25 Pa) across the system, including the manufacturer's air handler enclosure if installed at the time of the test. All registers shall be taped or otherwise sealed during the test.~~

~~2. Postconstruction test: Total leakage shall be measured with a pressure differential of 0.1 inch w.g.(25 Pa) across the entire system, including the manufacturer's air handler enclosure. Registers shall be taped or otherwise sealed during the test.~~

~~**Exception:** A duct air leakage test shall not be required where the ducts and air handlers are located entirely within the building thermal envelope.~~

test. All registers shall be taped or otherwise sealed during the test. Where required by the code official, testing shall be conducted by an approved third party.

A written report of the results of the test shall be signed by the party conducting the test and provided to the *code official*.

N1103.3.4 (R403.3.4) Duct leakage (Prescriptive). The total leakage of the ducts, where measured in accordance with Section R403.3.3, shall be as follows:

1. Rough-in test: The total leakage shall be less than or equal to 4 cubic feet per minute (113.3 L/min) per 100 square feet (9.29 m^2) of conditioned floor area where the air handler is installed at the time of the test. Where the air handler is not installed at the time of the test, the total leakage shall be less than or equal to 3 cubic feet per minute (85 L/min) per 100 square feet (9.29 m^2) of conditioned floor area.
2. Postconstruction test: Total leakage shall be less than or equal to 4 cubic feet per minute (113.3 L/min) per 100 square feet (9.29 m^2) of conditioned floor area.

Reason: This proposal would make the duct leakage test mandatory and at a tightness level consistent with the 2012/15 IECC. It would also establish a trade-off "backstop" for compliance via the performance path or the Energy Rating Index.

Proper design and sealing of ducts is crucial to energy efficiency, effective operation of heating and cooling equipment, and occupant comfort.

Duct tightness is key to delivering the air to the intended rooms. If 30% of the conditioned air is leaking into the furnace room (rather than reaching the bedrooms), occupants will adjust the thermostat until they are comfortable. This could be an enormous waste of energy. Ducts are not necessarily located inside conditioned space. Leaky ducts in the attic, for example, could be leaking significant amounts of conditioned air, costing a homeowner unnecessarily.

The duct tightness level in the 2015 IECC is the same as the 2012 IECC, except that in the 2015 IECC, builders can "trade off" duct efficiency for improvements in efficiency elsewhere in the home. While we believe that every home should have efficient ducts, in situations where builders cannot or choose not to achieve these requirements, builders have other options to achieve a similar level of energy savings through the performance path or Energy Rating Index. We believe it is reasonable to include a trade-off backstop to ensure that a reasonable level of duct tightness is maintained, even in a trade-off setting. That mandatory level is set at 8cfm – twice the level of leakage of the prescriptive requirement.

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

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Workgroup 3 Recommendation: None

Workgroup 3 Reason: None

Board Decision

None

CE-R403.2.2(2) cdpVA-15

CE-R404.1 cdpVA-15

Proponent : Emory Rodgers (errpp1242@verizon.net)

2012 Virginia Energy Conservation Code

R404.1 Lighting equipment (Mandatory).
A minimum of ~~50~~ 75 percent of the lamps in permanently installed luminaires shall be high-efficacy lamps or a minimum of ~~50~~ 75 percent of the permanently installed luminaires shall contain only high-efficacy lamps.

- **Exception:** Low-voltage lighting shall not be required to utilize high-efficiency lamps.

2012 Virginia Residential Code

N1104.1 (R404.1) Lighting equipment (Mandatory).
A minimum of 75 percent of the lamps in permanently installed luminaires shall be high-efficacy lamps or a minimum of 75 percent of the permanently installed luminaires shall contain only high-efficacy lamps.

Exception: Low-voltage lighting shall not be required to utilize high-efficiency lamps.

Reason: There is no need to retain the 2009 IRC 50% of lamps. The federal DOE requires manufacturers to only produce the high efficacy lamps. By the time the 2015 USBC is effective in 2018 and the one year grace period in 2019; all lamps will be high efficacy lamps.

Cost Impact: Federal mandate for these lights.

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Workgroup 3 Recommendation: None

Workgroup 3 Reason: None

Board Decision

None

CE-R405.5.2 cdpVA-15

Proponent : Eric Lacey, Representing Responsible Energy Codes Alliance (eric@reca-codes.com)

2012 Virginia Energy Conservation Code

(DHCD Staff Note: Proponent confirmed corresponding changes to be made to IRC energy provisions)

TABLE R405.5.2(1)
SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Above-grade walls	Type: mass wall if proposed wall is mass; otherwise wood frame. Gross area: same as proposed *U*-factor: from Table R402.1.3 Solar absorptance = 0.75 Remittance = 0.90	As proposed As proposed As proposed As proposed As proposed
Basement and crawl space walls	Type: same as proposed Gross area: same as proposed *U*-factor: from Table R402.1.3, with insulation layer on interior side of walls.	As proposed As proposed As proposed
Above-grade floors	Type: wood frame Gross area: same as proposed *U*-factor: from Table R402.1.3	As proposed As proposed As proposed
Ceilings	Type: wood frame Gross area: same as proposed *U*-factor: from Table R402.1.3	As proposed As proposed As proposed
Roofs	Type: composition shingle on wood sheathing Gross area: same as proposed Solar absorptance = 0.75 Emittance = 0.90	As proposed As proposed As proposed As proposed
Attics	Type: vented with aperture = 1 ft^2 per 300 ft^2 ceiling area	As proposed
Foundations	Type: same as proposed foundation wall area above and below grade and soil characteristics: same as proposed.	As proposed As proposed
Doors	Area: 40 ft^2 Orientation: North *U*-factor: same as fenestration from Table R402.1.3.	As proposed As proposed As proposed

Glazing[a]	Total area[b] = ~~is 15% of the conditioned floor area~~.	As proposed
	(a) The proposed glazing area, where the proposed glazing area is less than 15 percent of conditioned floor area (b) 15 percent of the conditioned floor area, where the proposed glazing area is 15 percent or more of the conditioned floor area	
	Orientation: equally distributed to four cardinal compass orientations (N, E, S & W).	As proposed
	U-factor: from Table N1102.1.3 (R402.1.3).	As proposed
	SHGC: From Table N1102.1.1 (R402.1.1) except that for climates with no requirement (NR) SHGC = 0.40 shall be used.	As proposed
	Interior shade fraction: 0.92-(0.21 x SHGC for the standard reference design)	0.92-(0.21 × SHGC as proposed)
	External shading: none	As proposed
Skylights	None	As proposed
Thermally isolated sunrooms	None	As proposed

Reason: Virginia currently assumes a fixed 15% fenestration area in its performance path, in direct conflict with every edition of the IECC since 2006 (and Virginia's previous Uniform Code). This results in an approximately **1.6% to 3.2% reduction in energy efficiency** for below-average glazed homes, as compared to a scenario in which Virginia applied the glazing area assumption as published in the IECC.
By establishing a fixed 15% fenestration area in the standard reference design, homes with less than 15% glazing in the actual design would be able to reduce (trade off) the efficiency measures in the rest of the home with the automatic free credit created by the difference in efficiency between the less efficient fenestration and more efficient opaque wall requirements. Virginia's current 15% fixed glazing area assumption results in a net reduction in energy efficiency, as compared to the performance compliance path applied in the IECC and in nearly every other state in the country.

To be clear, the 15% fixed glazing area is not "energy neutral," but rather an "energy efficiency negative" loophole for homes built with less than 15% fenestration area.
Under the 2015 IECC performance path methodology, a proposed design with 12% fenestration would be compared to a standard reference design with 12% fenestration – in other words the method would compare designs with the same area. However, under Virginia's current performance path, the standard reference design would remain at 15%, even if the proposed design included only 12% window area, permitting code users to reduce the efficiency of the fenestration, opaque envelope, or other measures without undertaking any offsetting improvement in efficiency.

The amount of fenestration specified for most buildings is likely to be driven by a variety of factors unrelated to energy efficiency, including design or cost considerations. We have seen no evidence that fenestration area is driven, to any significant degree, by energy efficiency in general, much less in order to obtain trade-off credit under the code. For multifamily or attached housing in particular, fenestration area will likely be limited by the location of the unit in the building or row, the orientation, or other factors. To set the fenestration area assumption at a fixed 15% for these homes creates a significant free ridership "credit" for low glazing area, even where a low glazing area would have existed anyway and higher glazing area would have been impractical or impossible.

Maintaining a reasonable level of efficiency in buildings with lower fenestration area percentages is especially important. Examples of homes with lower fenestration area include townhouses, condos, multifamily buildings, or low-income housing. Weaker thermal envelopes in homes that may be targeted to low-income populations could have an even bigger negative impact on the ability of owners or renters to pay monthly energy bills.

The current dynamic approach to setting fenestration area in the performance path has been successfully applied since the 2006 edition of the IECC, and has been adopted by nearly every other state that has adopted the IECC. We recommend adopting the performance path fenestration area assumption as published in the 2015 IECC to help ensure reasonable energy performance in homes with below-average fenestration area.

Cost Impact: This proposal will only increase the cost of construction to the extent that a builder would have used the fenestration area trade-off in the 2012 Virginia Energy Conservation Code to reduce the efficiency of the envelope in homes with less than 15% fenestration area.

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Workgroup 3 Recommendation: None

Workgroup 3 Reason: None

Board Decision

None

CE-R405.5.2 cdpVA-15

CE-R406.3 cdpVA-15

Proponent : Eric Lacey, Representing Responsible Energy Codes Alliance (eric@reca-codes.com)

2015 International Energy Conservation Code

R406.3 Energy Rating Index. The Energy Rating Index (ERI) shall be a numerical integer value that is based on a linear scale constructed such that the *ERI reference design* has an Index value of 100 and a *residential building* that uses no net purchased energy has an Index value of 0. Each integer value on the scale shall represent a 1-percent change in the total energy use of the rated design relative to the total energy use of the *ERI reference design*. The ERI shall consider all energy used in the *residential building*, and shall not consider or include the effect of any on-site power production.

R406.4 ERI-based compliance. Compliance based on an ERI analysis requires that the *rated design* be shown to have an ERI less than or equal to the appropriate value listed in Table R406.4 when compared to the *ERIreference design* without any credit for on-site power production.

2015 International Residential Code

N1106.3 (R406.3) Energy rating index. The Energy Rating Index (ERI) shall be a numerical integer value that is based on a linear scale constructed such that the *ERI reference design* has an Index value of 100 and a *residential building* that uses no net purchased energy has an Index value of 0. Each integer value on the scale shall represent a one percent change in the total energy use of the rated design relative to the total energy use of the *ERI reference design*. The ERI shall consider all energy used in the *residential building*, and shall not consider or include the effect of any on-site power production.

N1106.4 (R406.4) ERI-based compliance. Compliance based on an ERI analysis requires that the *rated design* be shown to have an ERI less than or equal to the appropriate value listed in Table N1106.4 when compared to the *ERIreference design*without any credit for on-site power production.

Reason: The purpose of this proposal is to clarify that the Energy Rating Index calculation does not include the impact of on-site power production, whether renewable or not. It also provides more specific guidance to software providers in order to help maintain consistency between software and code compliance on this particular issue.
The current plain language of Section R406 of the 2015 IECC does not permit the inclusion of electricity/power production in ERI calculations. The language establishing the ERI in Section R406 properly focuses on energy *use* and *loads*, not the *production* of energy. The methodology prescribed by the ERI provisions does not mention the use of renewable energy or other on-site energy production, and these issues were not reasonably analyzed or addressed during the 2015 IECC code development process.

However, some have suggested that because popular home energy rating software gives users the ability to include the impact of on-site power production in the calculation of energy ratings,

that the ERI should also include on-site power production. However, *the IECC must set the scope for compliance software*; an additional software option or capability cannot overwrite the provisions of the IECC. While in our view, the current code is clear, this code change proposal will address this issue head on and clarify with unequivocal language that regardless of the energy rating software used, the ERI calculation shall not include renewable or other on-site energy production. It should be noted that current software can still be used to calculate the ERI under this proposal, so long as no on-site power production is input into the calculation.

To allow unrestricted trade-offs for on-site power production could bring about several negative unintended consequences. The most significant problem would be a huge reduction in the efficiency of the home in favor of on-site power production. As an example of the potential impact, a recent report analyzed the enormous potential impact of solar photovoltaics on the HERS Index. *See* Residential Energy Services Network, Inc., *The Impact of Photovoltaic Arrays on the HERS Index* (2015), http://www.academia.edu/15036659/The_Impact_of_Photovoltaic_Arrays_on_the_HERS_Index. This report found that in most parts of the country, a 4 kW photovoltaic array could reduce a HERS Index Score by 20-40 points. Other analyses have found even larger potential reductions in the HERS Index Score. If the Uniform Code were amended to allow direct, unlimited trade-offs between a photovoltaic system and the efficiency of the thermal envelope, it would virtually eliminate the need to incorporate efficiency measures into the home to meet the code, wiping out many years of progress in improving the energy efficiency of homes in Virginia. This is fundamentally inconsistent with the scope and intent of the *IECC* and the Uniform Code, and it should not be permitted.

To begin allowing credit for electric generation to be considered for compliance calculations solely to replace critical energy efficiency measures will result in higher peak demands, less occupant comfort and substantial additional energy use given the much longer typical life of certain efficiency measures. Moreover, allowing credit for generation to be included in residential code compliance will substantially complicate the code and this compliance path. Some of the questions raised by such an approach include: (i) how to address energy sold back to the utility, (ii) treatment of the timing of the electricity production as compared to its use; (iii) whether there should be a minimum level of generation required; and (iv) how to ensure that the generation is permanent (including issues related to leasing, maintenance, equipment output over time, etc.). Finally, unlike conservation measures, generation is not integral to the building or its habitability and need not be in the purview of the building code – while generation can be attached to the building or located on the site, there is certainly no requirement that it be, unlike other building components or systems. If electric generation is to be included in the Uniform Code, it should be included explicitly and in a controlled manner, after a full discussion and debate -- residential energy code compliance should not be extended to cover electric generation through the backdoor of the ERI.

For all these reasons, we recommend that the Virginia Uniform Code be clarified to specifically exclude on-site power production from the ERI calculation.

Cost Impact: This proposal will not increase the cost of construction.

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Workgroup 3 Recommendation: None

Workgroup 3 Reason: None

Board Decision

None

CE-R406.3 cdpVA-15

CR-E3902.16(1) cdpVA-15

Proponent : Bryan Holland, Representing National Electrical Manufacturers Association (Bryan.Holland@NEMA.org)

2012 Virginia Residential Code

~~**E3902.12 Arc-fault protection of bedroom outlets.**~~
~~All branch circuits that supply 120-volt, single phase, 15-ampere and 20-ampere outlets installed in bedrooms shall be protected by a combination type arc-fault circuit interrupter installed to provide protection of the branch circuit.~~

- ~~**Exceptions:**~~
    1. ~~Where an outlet branch-circuit Type AFCI is installed at the first outlet to provide protection for the remaining portion of the branch circuit, the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet shall be installed with metal outlet and junction boxes and RMC, IMC, EMT, Type MC or steel armored Type AC cables meeting the requirements of Section E3908.8 .~~
    2. ~~Where an outlet branch-circuit Type AFCI is installed at the first outlet to provide protection for the remaining portion of the branch circuit, the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet shall be installed with metal or nonmetallic conduit or tubing that is encased in not less than 2 inches (51 mm) of concrete.~~
    3. ~~AFCI protection is not required for an individual branch circuit supplying only a fire alarm system where the branch circuit is wired with metal outlet and junction boxes and RMC, IMC, EMT or steel-sheathed armored cable Type AC, or Type MC meeting the requirements of Section E3908.8 .~~

2015 International Residential Code

E3902.16 Arc-fault circuit-interrupter protection. Branch circuits that supply 120-volt, single-phase, 15- and 20-ampere outlets installed in kitchens, family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreations rooms, closets, hallways, laundry areas and similar rooms or areas shall be protected by any of the following: [210.12(A)]

1. A listed combination-type arc-fault circuit interrupter, installed to provide protection of the entire branch circuit. [210.12(A)(1)]
2. A listed branch/feeder-type AFCI installed at the origin of the branch-circuit in combination with a listed outlet branch-circuit type arc-fault circuit interrupter installed at the first outlet box on the branch circuit. The first outlet box in the branch circuit shall be marked to indicate that it is the first outlet of the circuit. [210.12(A)(2)]
3. A listed supplemental arc protection circuit breaker installed at the origin of the branch circuit in combination with a listed outlet branch-circuit type arc-fault circuit interrupter installed at the first outlet box on the branch circuit where all of the following conditions are met:

3.1. The branch-circuit wiring shall be continuous from the branch-circuit overcurrent device to the outlet branch-circuit arc-fault circuit interrupter.
3.2. The maximum length of the branch-circuit wiring from the branch-circuit overcurrent device to the first outlet shall not exceed 50 feet (15.2 m) for 14 AWG conductors and 70 feet (21.3 m) for 12 AWG conductors.
3.3. The first outlet box on the branch circuit shall be marked to indicate that it is the first outlet on the circuit. [210.12(A)(3)]

4. A listed outlet branch-circuit type arc-fault circuit interrupter installed at the first outlet on the branch circuit in combination with a listed branch-circuit overcurrent protective device where all of the following conditions are met:
   4.1. The branch-circuit wiring shall be continuous from the branch-circuit overcurrent device to the outlet branch-circuit arc-fault circuit interrupter.
   4.2. The maximum length of the branch-circuit wiring from the branch-circuit overcurrent device to the first outlet shall not exceed 50 feet (15.2 m) for 14 AWG conductors and 70 feet (21.3 m) for 12 AWG conductors.
   4.3. The first outlet box on the branch circuit shall be marked to indicate that it is the first outlet on the circuit.
   4.4. The combination of the branch-circuit overcurrent device and outlet branch-circuit AFCI shall be identified as meeting the requirements for a system combination-type AFCI and shall be listed as such. [210.12(A)(4)]
5. Where metal outlet boxes and junction boxes and RMC, IMC, EMT, Type MC or steel-armored Type AC cables meeting the requirements of Section E3908.8, metal wireways or metal auxiliary gutters are installed for the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet, a listed outlet branch-circuit type AFCI installed at the first outlet shall be considered as providing protection for the remaining portion of the branch circuit. [210.12(A)(5)]
6. Where a listed metal or nonmetallic conduit or tubing or Type MC cable is encased in not less than 2 inches (50.8 mm) of concrete for the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet, a listed outlet branch-circuit type AFCI installed at the first outlet shall be considered as providing protection for the remaining portion of the branch circuit. [210.12(A)(6)]
   - **Exception:** AFCI protection is not required for an individual branch circuit supplying only a fire alarm system where the branch circuit is wired with metal outlet and junction boxes and RMC, IMC, EMT or steel-sheathed armored cable Type AC or Type MC meeting the requirements of Section E3908.8.

Reason: According to the U.S. Fire Administration's National Fire Incident Reporting System, an estimated 372,900 residential building fires were reported to fire departments within the United States each year between 2011-2013 and caused an estimated 2,530 deaths, 13,125 injuries and $7 billion in property loss. The report also indicated the second leading cause of residential fire death in 2013 was electrical malfunction. 84 percent of all electrical fires occurred in 1&2 family dwellings. The leading factors contributing to the ignition of residential building fires were due to electrical malfunction (41%), unspecified short-circuit arcing (25%), and short-circuit arcing from defective or worn insulation (12%). The statistics show that more than 8.4 percent of all electrical

fires occur in the kitchen and/or cooking area of a home, 4.5 percent in laundry areas, and another 7 percent involve appliances. [USFA Reports Attached]
These numbers hold true for the Commonwealth of Virginia. Between the years 2013-2015, an average of 230 residential fires each year were attributed to electrical distribution. This resulted in an average of 3 civilian deaths, 10 civilian injuries, and 9 fire service injuries. [VFIRS Annual Reports Attached]

Arc-Fault Circuit Interrupters (AFCI) were developed following an expressed need from the U.S. Consumer Products Safety Commission (CPSC) to prevent electrical fires. AFCI devices are certified to the UL 1699 product standard and are intended to mitigate the effects of arcing faults that may pose a risk of fire ignition under certain conditions if arcing persists. When unwanted arcing occurs, it generates high temperatures that can ignite nearby combustibles such as wood, paper, and carpets. Often this occurs in wiring behind walls or in places where the arcing cannot be easily detected. Typical household circuit breakers do not respond to early arcing and sparking conditions in home wiring. By the time a circuit breaker opens a circuit to defuse these conditions, a fire may already have begun. AFCI devices provide protection by detecting the presence of unwanted arcing in a wiring circuit and removing power from the circuit. The CPSC indicates AFCI protection could prevent more than 50 percent of electrical fires that occur each year.

Every AFCI device must meet the rigorous performance tests of the UL 1699 standard. This includes not less than (50) different tests to ensure safety from shock, electrocution, and fire. The standard also includes operational performance tests with not less than (4) different arc-fault simulations and not less than (8) unwanted tripping tests. The UL 1699 standard is fully harmonized with every lighting and appliance product standard. There is no operational conflict between AFCI devices and other electrical products. USFA statistics show overall trends for residential building electrical malfunction fires for the five-year period between 2007 and 2011 indicate a 14% decrease in fires, a 16% decrease in deaths, and a 13% decrease in dollar loss. This reduction in fire trends correlates with the requirement and expansion of AFCI protection in dwellings.

The homeowner's insurance industry supports and recommends the installation of AFCI protection at insured properties. The largest fire and casualty insurance carrier in the nation, State Farm Insurance, issued a letter in 2015 to the Governor of Michigan opposing proposed AFCI amendments to the state's electrical code. AFCI protection in accordance with the 2014 NEC / 2015 IRC is in effect in not less than (25) states across the nation. AFCI protection is supported and endorsed by the CPSC, USFA, IAEI, NFPA, NEMA, IBEW, IEC, NECA, IBHS, and FLASH.

Attachments:

https://va.cdpaccess.com/proposal/fileupload/get/82

https://va.cdpaccess.com/proposal/fileupload/get/83

https://va.cdpaccess.com/proposal/fileupload/get/84

https://va.cdpaccess.com/proposal/fileupload/get/85

https://va.cdpaccess.com/proposal/fileupload/get/86

Cost Impact: This proposal will increase the cost of construction. Under these provisions, a typical 2,500 sq.ft. dwelling would be required to have approximately 10-12 AFCI devices installed to protect the branch-circuits supplying the named rooms and spaces. This is an increase of 5-7 AFCI devices as compared to the current requirement for AFCI protection of bedroom circuits alone. The increased cost is the difference between a standard circuit breaker and an AFCI circuit breaker. The average cost of an AFCI circuit breaker in Virginia is approximately $45.00 each. The average cost of a standard circuit breaker in Virginia is approximately $15.00 each. This is a difference of $30 per device. A increase of 5-7 AFCI devices would result in an increase of $150.00 to $210.00 per dwelling. There is no increased cost of time or labor to install AFCI devices. The increased cost is minimal as compared to the loss from fires that could be prevented by AFCI protection.

Workgroup Recommendation

Workgroup 3 Recommendation: None

Workgroup 3 Reason: None

Workgroup 4 Recommendation Recommendation: Pending

Workgroup 4 Reason: Bryan Holland spoke in support of the arc fault breakers-2014 NEC extends arc fault to the kitchens-requesting the arc fault ammendment be removed and use the current NEC requirements. Proposal includes other industries comments. Toalson suggests that

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Board Decision

None

CR-E3902.16(1) cdpVA-15

CR-E3902.16(2) cdpVA-15

Proponent : Haywood Kines (hkines@pwcgov.org)

2012 Virginia Residential Code

~~**E3902.12 Arc-fault protection of bedroom outlets.**~~
~~All branch circuits that supply 120-volt, single phase, 15-ampere and 20-ampere outlets installed in bedrooms shall be protected by a combination type arc-fault circuit interrupter installed to provide protection of the branch circuit.~~

~~**Exceptions:**~~

1. ~~Where an outlet branch-circuit Type AFCI is installed at the first outlet to provide protection for the remaining portion of the branch circuit, the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet shall be installed with metal outlet and junction boxes and RMC, IMC, EMT, Type MC or steel armored Type AC cables meeting the requirements of Section E3908.8 .~~
2. ~~Where an outlet branch-circuit Type AFCI is installed at the first outlet to provide protection for the remaining portion of the branch circuit, the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet shall be installed with metal or nonmetallic conduit or tubing that is encased in not less than 2 inches (51 mm) of concrete.~~
3. ~~AFCI protection is not required for an individual branch circuit supplying only a fire alarm system where the branch circuit is wired with metal outlet and junction boxes and RMC, IMC, EMT or steel-sheathed armored cable Type AC, or Type MC meeting the requirements of Section E3908.8 .~~

2015 International Residential Code

E3902.16 Arc-fault circuit-interrupter protection. Branch circuits that supply 120-volt, single-phase, 15- and 20-ampere outlets installed in ~~kitchens, family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreations rooms, closets, hallways, laundry areas and similar rooms or areas~~ all dwelling units shall be protected by any of the following:

1. A listed combination-type arc-fault circuit interrupter, installed to provide protection of the entire branch circuit.

2. A listed branch/feeder-type AFCI installed at the origin of the branch-circuit in combination with a listed outlet branch-circuit type arc-fault circuit interrupter installed at the first outlet box on the branch circuit. The first outlet box in the branch circuit shall be marked to indicate that it is the first outlet of the circuit.

3. A listed supplemental arc protection circuit breaker installed at the origin of the branch circuit in combination with a listed outlet branch-circuit type arc-fault circuit

interrupter installed at the first outlet box on the branch circuit where all of the following conditions are met:

3.1 The branch-circuit wiring shall be continuous from the branch-circuit overcurrent device to the outlet branch-circuit arc-fault circuit interrupter.

3.2 The maximum length of the branch-circuit wiring from the branch-circuit overcurrent device to the first outlet shall not exceed 50 feet (15.2 m) for 14 AWG conductors and 70 feet (21.3 m) for 12 AWG conductors.

3.3 The first outlet box on the branch circuit shall be marked to indicate that it is the first outlet on the circuit.

4. A listed outlet branch-circuit type arc-fault circuit interrupter installed at the first outlet on the branch circuit in combination with a listed branch-circuit overcurrent protective device where all of the following conditions are met:

4.1 The branch-circuit wiring shall be continuous from the branch-circuit overcurrent device to the outlet branch-circuit arc-fault circuit interrupter.

4.2 The maximum length of the branch-circuit wiring from the branch-circuit overcurrent device to the first outlet shall not exceed 50 feet (15.2 m) for 14 AWG conductors and 70 feet (21.3 m) for 12 AWG conductors.

4.3 The first outlet box on the branch circuit shall be marked to indicate that it is the first outlet on the circuit.

5. Where metal outlet boxes and junction boxes and RMC, IMC, EMT, Type MC or steel-armored Type AC cables meeting the requirements of Section E3908.8, metal wireways or metal auxiliary gutters are installed for the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet, a listed outlet branch-circuit type AFCI installed at the first outlet shall be considered as providing protection for the remaining portion of the branch circuit.

6. Where a listed metal or nonmetallic conduit or tubing or Type MC cable is encased in not less than 2 inches (50.8 mm) of concrete for the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet, a listed outlet branch-circuit type AFCI installed at the first outlet shall be considered as providing protection for the remaining portion of the branch circuit.

Exceptions:

1. AFCI protection is not required for an individual branch circuit supplying only a fire alarm system where the branch circuit is wired with metal outlet and junction boxes and RMC, IMC, EMT or steel-sheathed armored cable Type AC or Type MC meeting the requirements of Section E3908.8.

2. AFCI protection is not required for branch circuits feeding receptacles that are protected with ground-fault ciruit interrupter protection as required by Sections 3902.1 through 3902.10.

Reason:
According to the U.S. Fire Administration's National Fire Incident Reporting System, an estimated 372,900 residential building fires were reported to fire departments within the United States each year between 2011-2013 and caused an estimated 2,530 deaths, 13,125 injuries and $7 billion in property loss. The report also indicated the second leading cause of residential fire death in 2013 was electrical malfunction. 84 percent of all electrical fires occurred in 1&2 family dwellings. The leading factors contributing to the ignition of residential building fires were due to electrical malfunction (41%), unspecified short-circuit arcing (25%), and short-circuit arcing from defective or worn insulation (12%). The statistics show that more than 8.4 percent of all electrical fires occur in the kitchen and/or cooking area of a home, 4.5 percent in laundry areas, and another 7 percent involve appliances. [USFA Reports Attached]

These numbers hold true for the Commonwealth of Virginia. Between the years 2013-2015, an average of 230 residential fires each year were attributed to electrical distribution. This resulted in an average of 3 civilian deaths, 10 civilian injuries, and 9 fire service injuries. [VFIRS Annual Reports Attached]

Cost Impact: This proposal will increase the cost of construction. Under these provisions, a typical 2,500 sq.ft. dwelling would be required to have approximately 10-12 AFCI devices installed to protect the branch-circuits supplying the named rooms and spaces. This is an increase of 5-7 AFCI devices as compared to the current requirement for AFCI protection of bedroom circuits alone. The increased cost is the difference between a standard circuit breaker and an AFCI circuit breaker. The average cost of an AFCI circuit breaker in Virginia is approximately $45.00 each. The average cost of a standard circuit breaker in Virginia is approximately $15.00 each. This is a difference of $30 per device. A increase of 5-7 AFCI devices would result in an increase of $150.00 to $210.00 per dwelling. There is no increased cost of time or labor to install AFCI devices. The increased cost is minimal as compared to the loss from fires that could be prevented by AFCI protection.

Workgroup Recommendation

Workgroup 3 Recommendation: None

Workgroup 3 Reason: None

Board Decision

None

CR-E3902.16(2) cdpVA-15

CR-G2439.7.2 cdpVA-15

Proponent : Thomas Clark, Representing VPMIA & VBCOA PMG Committee (tdclark@pwcgov.org)

2015 International Residential Code

G2439.7.2 (614.8.2) Duct installation. Exhaust ducts shall be supported at ~~4-foot~~ 4 foot (1219 mm) intervals and secured in place. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. Ducts shall not be joined with screws or similar fasteners that protrude ~~more than 1/8 inch (3.2 mm)~~ into the inside of the duct.

Reason: The addition of screws or other fastners would cause lint to be trap and cause dryer vent fires.

Cost Impact: There is a cost savings for the installer of not having to secure venting and removing the fasteners for inspection propose.

Workgroup Recommendation

Workgroup 3 Recommendation: None

Workgroup 3 Reason: None

Board Decision

None

CR-G2439.7.2 cdpVA-15

CR-M1502.4.2 cdpVA-15

Proponent : Thomas Clark, Representing VPMIA & VBCOA PMG Committee (tdclark@pwcgov.org)

2015 International Residential Code

M1502.4.2 Duct installation. Exhaust ducts shall be supported at ~~intervals not to exceed 12 feet~~4 foot (~~3658~~1219 mm) intervals and shall be secured in place. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. ~~Exhaust duct joints shall be sealed in accordance with Section M1601.4.1 and shall be mechanically fastened.~~ Ducts shall not be joined with screws or similar fasteners that protrude ~~more than 1/8 inch (3.2 mm)~~ into the inside of the duct~~.~~

Reason: The addition of screws or other fastners would cause lint to be trap and cause dryer vent fires

Cost Impact: There is a cost savings for the installer of not having to secure venting and removing the fasteners for inspection propose.

Workgroup Recommendation

Workgroup 3 Recommendation: None

Workgroup 3 Reason: None

Board Decision

None

CR-M1502.4.2 cdpVA-15

CTG-614.8.2 cdpVA-15

Proponent : Thomas Clark, Representing VPMIA & VBCOA PMG Committee (tdclark@pwcgov.org)

2015 International Fuel Gas Code

[M] 614.8.2 Duct installation. Exhaust ducts shall be supported at ~~4 foot~~ 4 foot (1219 ~~mm) intervals~~mm)intervals and secured in place. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. Ducts shall not be joined with screws or similar fasteners that protrude ~~more than 1/8 inch (3.2 mm)~~ into the inside of the duct~~.~~

Reason: The addition of screws or other fastners would cause lint to be trap and cause dryer vent fires

Cost Impact: There is a cost savings for the installer of not having to secure venting and removing the fasteners for inspection propose.

Workgroup Recommendation

Workgroup 4 Recommendation: None

Workgroup 4 Reason: None

Board Decision

None

CTG-614.8.2 cdpVA-15

CTM-504.8.2 cdVA-15

Proponent : Thomas Clark, Representing VPMIA & VBCOA PMG Committee (tdclark@pwcgov.org)

2015 International Mechanical Code

504.8.2 Duct installation. Exhaust ducts shall be supported at ~~4-foot~~ 4 foot (1219 mm) intervals and secured in place. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. Ducts shall not be joined with screws or similar fasteners that protrude ~~more than $^{1}/_{8}$ inch (3.2 mm)~~ into the inside of the duct.

Reason: The addition of screws or other fastners would cause lint to be trap and cause dryer vent fires.

Cost Impact: There is a cost savings for the installer of not having to secure venting and removing the fasteners for inspection propose.

Workgroup Recommendation

Workgroup 4 Recommendation: None

Workgroup 4 Reason: None

Board Decision

None

CTM-504.8.2 cdVA-15

CR-P2602.3 cdpVA-15

2602.3 (New)

Proponent : Carl Dale (carl.dale@scc.virginia.gov)

2015 International Residential Code

2602.3 **Tracer Wire** P2602.3 Tracer Wire. Nonmetallic water piping that connects to public systems shall be locatable. An insulated copper tracer wire, 18 AWG minimum in size and suitable for direct burial or an equivalent product shall be utilized. The wire shall be installed in the same trench as the water piping and within 12 inches (305 mm) of the pipe and shall be installed to within five feet (1524 mm) of the building wall to the point where the building water intersects with the public water supply. At a minimum, one end of the wire shall terminate above grade to provide access to the wire in a location that is resistant to physical damage, such as with a meter vault or at the building wall.

Reason: In February 2014, a home exploded in Stafford County Virginia. The explosion was caused by damage to a nonmetallic water service utility line ("water lateral") that had not been installed with a tracer wire and had not been located prior to excavation. This excavation damaged the water lateral in the process of installing the natural gas utility service line. When the water was turned on for final occupancy permitting, the escaping water created an abrasive spray on the gas utility service line. The gas utility service line then ruptured due to the abrasive spray. Natural gas migrated into the home and found an ignition source which destroyed the home just days prior to occupancy.
The addition of a tracer wire requirement to non-metallic water piping in the Uniform Statewide Building Code ("USBC") will bring another layer of public safety inspection to construction sites across the Commonwealth. Local building inspectors would be empowered to inspect non-metallic water laterals for locatability as it pertains to the USBC at time of installation. These inspections would be similar to the inspection of non-metallic sewer utilities that are currently covered by the USBC.

Local building inspectors are regularly on-site at or near the time of installation of these water laterals during their construction. The building inspectors' ability to inspect/enforce this proposed requirement will minimize the chances of similar circumstances such as the Stafford explosion from occurring again by ensuring all non-metallic water laterals have tracer wires to facilitate excavators locating the water lateral for safe excavation around the water lateral.

This proposed change will also mirror the other requirements set forth in the Commonwealth under; § 56-257.1. "*Means of locating nonmetallic underground conduits*" and § 56-265.20:1. "*Locating nonmetallic underground utility lines*". It should also be noted that at least three municipalities, the Counties of Halifax[1], Loudoun[2], and the City of Charlottesville[3] in the Commonwealth, require non-metallic water laterals to have tracer wires on them.

[1] Halifax County Service Authority, "Minimum Requirements for Contractors performing work in relation to the Authority's Potable Water and Sanitary Sewer System", http://www.hcsa.us/files/HCSA-Tracer-Wire---General-Construction-Requirements.pdf (accessed December 16, 2014)

[2] Loudoun Water, "Letter to the Industry, February 10, 2011" Loudoun County http://www.loudounwater.org/uploadedFiles/Loudoun_Water/Developers_and_New_Construction/trace *(accessed December 16, 2014).*

[3] City of Charlottesville, *Potable Water and Sanitary Sewer Standard Specifications and Details*, (City of Charlottesville, January 2012) 24.

Cost Impact: The impact on both construction cost and time, along with the impact to the inspection process, would be minimal. Two large homebuilders in the Commonwealth have estimated total construction costs for installing tracer wire on water utility lines at .45 cents a foot for an estimated $25-30 per water service line installed. Currently during the new home construction process, sanitary sewer and water utilities are inspected at or near the same time for other USBC requirements. This inspection would only require a nominal amount of time for inspecting for the presence and type of a tracer wire on a water lateral that is already being inspected under other USBC requirements.

Workgroup Recommendation

Workgroup 3 Recommendation Recommendation: Non-Consensus Final

Workgroup 3 Reason: Proponent not present-Vernon explained the proposal-
Tracer wire on plastic water pipes.

John Ainslie – same with sewer pipes

No more discussion, No consensus

Workgroup 4 Recommendation: None

Workgroup 4 Reason: None

Board Decision

None

CR-P2602.3 cdpVA-15

CTP-603.3 cdpVA-15

Proponent : Carl Dale (carl.dale@scc.virginia.gov)

2015 International Plumbing Code

603.3 Tracer Wire 603.3 Tracer wire. Nonmetallic water piping that connects to public systems shall be locatable. An insulated copper tracer wire, 18 AWG minimum in size and suitable for direct burial or an equivalent product shall be utilized. The wire shall be installed in the same trench as the water piping and with-in 12 inches (305 mm) of the pipe and shall be installed to within five feet (1524 mm) of the building wall to the point where the building water intersects with the public water supply. At a minimum, one end of the wire shall terminate above grade to provide access to the wire in a location that is resistant to physical damage, such as with a meter vault or at the building wall.

Reason: In February 2014, a home exploded in Stafford County Virginia. The explosion was caused by damage to a nonmetallic water service utility line ("water lateral") that had not been installed with a tracer wire and had not been located prior to excavation. This excavation damaged the water lateral in the process of installing the natural gas utility service line. When the water was turned on for final occupancy permitting, the escaping water created an abrasive spray on the gas utility service line. The gas utility service line then ruptured due to the abrasive spray. Natural gas migrated into the home and found an ignition source which destroyed the home just days prior to occupancy.
The addition of a tracer wire requirement to non-metallic water piping in the Uniform Statewide Building Code ("USBC") will bring another layer of public safety inspection to construction sites across the Commonwealth. Local building inspectors would be empowered to inspect non-metallic water laterals for locatability as it pertains to the USBC at time of installation. These inspections would be similar to the inspection of non-metallic sewer utilities that are currently covered by the USBC.

Local building inspectors are regularly onsite at or near the time of installation of these water laterals during their construction. The building inspectors' ability to inspect/enforce this proposed requirement will minimize the chances of similar circumstances such as the Stafford explosion from occurring again by ensuring all non-metallic water laterals have tracer wires to facilitate excavators locating the water lateral for safe excavation around the water lateral.

This proposed change will also mirror the other requirements set forth in the Commonwealth under; § 56-257.1. "*Means of locating nonmetallic underground conduits*" and § 56-265.20:1. "*Locating nonmetallic underground utility lines*". It should also be noted that at least three municipalities, the Counties of Halifax[1], Loudoun[2], and the City of Charlottesville[3] in the Commonwealth, require non-metallic water laterals to have tracer wires on them.

[1] Halifax County Service Authority, "Minimum Requirements for Contractors performing work in relation to the Authority's Potable Water and Sanitary Sewer System", http://www.hcsa.us/files/HCSA-Tracer-Wire---General-Construction-Requirements.pdf (accessed December 16, 2014)

[2] Loudoun Water, "Letter to the Industry, February 10, 2011" Loudoun County http://www.loudounwater.org/uploadedFiles/Loudoun_Water/Developers_and_New_Construction/trace *(accessed December 16, 2014).*

[3] City of Charlottesville, *Potable Water and Sanitary Sewer Standard Specifications and Details*, (City of Charlottesville, January 2012) 24.

Cost Impact: The impact on both construction cost and time, along with the impact to the inspection process, would be minimal. Two large homebuilders in the Commonwealth have estimated total construction costs for installing tracer wire on water utility lines at .45 cents a foot for an estimated $25-30 per water service line installed. Currently during the new home construction process, sanitary sewer and water utilities are inspected at or near the same time for other USBC requirements. This inspection would only require a nominal amount of time for inspecting for the presence and type of a tracer wire on a water lateral that is already being inspected under other USBC requirements.

Workgroup Recommendation

Workgroup 3 Recommendation Recommendation: Non-Consensus Final

Workgroup 3 Reason: Gerber stated won't really help the issue-Emory stated talk to local water authority-
No support Consensus for disapproval

Workgroup 4 Recommendation Recommendation: Pending

Workgroup 4 Reason: Presentation provided by Mr Dale-impact cost is minimal-3 localities require this-tweaks needed to the language-accessible terminology needs work.VPMIA will work with proponent.

Board Decision

None

CTP-603.3 cdpVA-15

CR-R303.4 cdpVA-15

Proponent : Mike Moore (mmoore@newportventures.net)

2015 International Residential Code

R303.4 Mechanical ventilation. ~~Where the air infiltration rate of a *dwelling unit* is 5 air changes per hour or less where tested with a blower door at a pressure of 0.2 inch w.c (50 Pa) in accordance with Section N1102.4.1.2, the *dwelling unit*~~
Dwelling units shall be provided with ~~whole-house~~ mechanical ventilation in accordance with Section ~~M1507.3~~M1507.

Reason: Virginia already requires whole house mechanical ventilation for low-rise dwelling units in all cases unless a builder follows the performance path of the energy code, has a blower door test result greater than 5 ACH50, and is still able to meet the performance requirements of the code. Achieving compliance with the performance path while maintaining building air leakage greater than 5 ACH50 is very difficult to do in practice. And, reaching a building air leakage greater than 5 ACH50 is very difficult to achieve if the builder is following the IECC's mandatory air sealing checklist. Nevertheless, this loop hole establishes an unintended incentive for builders to build leaky to avoid costs associated with mechanical ventilation.
The code should be explicit and unconditional in its requirement to provide energy efficient homes with the tools necessary to achieve acceptable indoor air quality, including whole house mechanical ventilation and local exhaust. This proposal ensures that this message and requirement are clearly communicated and established.

Cost Impact: The intent of the 2012 and later versions of the model code is to require whole house mechanical ventilation for all tightly constructed dwelling units. So, no additional cost is assumed in this case. Regarding the local exhaust requirements (kitchen and bathroom) we estimate that over 90% of kitchens and bathrooms are already equipped with a bath fan or a kitchen hood/exhaust device. So again, the cost impact of this is expected to be minimal. Costs associated with negative health impacts of IAQ are far greater. The cost of asthma triggered by dampness and mold in U.S. residences has been estimated at $3.5 billion annually[1], and asthma now affects one in five Americans[2]. Even when you exclude radon and second hand smoke from the list of indoor pollutants, poor indoor air quality in U.S. residences is estimated to account for 14% of all years of life lost and years of disability associated with "noncommunicable and nonpsychiatric diseases."[3] Other studies estimate that the total costs associated with negative health effects of poor indoor air quality in U.S. residences exceeds $300 billion annually, which is over 10% of our nation's annual health care costs.[3,4,5,6,7]

References:

1. Mudarri, D. and W.J. Fisk. (2007). Public health and economic impacts of dampness and mold. Indoor Air 17:226-235.

2. Asthma and Allergy Foundation of America. "Asthma Facts and Figures" accessed from https://www.aafa.org/display.cfm?sub=42&id=8#_ftn1 on Dec 3, 2014.

3. Logue JM, Price PN, Sherman MH, and Singer BC. 2012. A Method to Estimate the Chronic Health Impact of Air Pollutants in U.S. Residences. Environmental Health Perspectives 120(2): 216-222.

4. Turner WJN, Logue JM, and Wray CP. 2012. Commissioning Residential Ventilation Systems: A Combined Assessment of Energy and Air Quality Potential Values.

5. Brown DW. 2008. Economic value of disability-adjusted life years lost to violence: estimates for WHO Member States. Rev. Panam Salud Publica, 24, 203-209.

6. Lvovsky K, Huges G, Maddison D, Ostro B, and Pearce D. 2000. Environmental costs of fossil fuels: a rapid assessment method with application to six cities. Washington,D.C.: The World Bank Environment Department.

7. Highfill T and Bernstein E. 2014. Using Disability Adjusted Life Years to Value the Treatment of Thirty Chronic Conditions in the U.S. from 1987-2010. U.S. Department of Commerce Bureau of Economic Analysis WP 2014-9.

Workgroup Recommendation

Workgroup 3 Recommendation: None

Workgroup 3 Reason: None

Board Decision

None

CR-R303.4 cdpVA-15

CR-R311.2.1 cdpVA-15

Proponent : Ronald Clements, Jr, Representing Interior passage sub-workgroup (clementsro@chesterfield.gov)

2012 Virginia Residential Code

~~**R311.2.1 Interior passage.**~~
~~Where a dwelling unit has both a kitchen and a living or entertainment area on the same level as the egress door required by Section R311.2, an interior passage route shall be provided from such egress door to the kitchen and the living or entertainment area and to at least one bedroom and at least one bathroom containing a water closet, lavatory and bathtub or shower, where such rooms are provided on that same level. Any doors or cased openings along such interior passage route providing access to the areas identified above shall comply with the following.~~

~~1. Cased openings shall provide a minimum 34-inch clear width.~~
1. ~~Doors shall be, at a minimum, nominal 34-inch doors.~~

~~**Exceptions:**~~

~~1. Where a door or cased opening, and its associated molding or trim, is at the end and facing the length of a hallway and the width of the hallway is not wide enough to accommodate such doors or cased openings.~~
~~2. Closet doors or cased openings.~~
~~3. Pantry door or cased openings.~~
~~4. Bathrooms accessed directly from a bedroom that is not required to comply with this section.~~

SECTIONR202 Living Area.

R202 living area. Space within a dwelling unit utilized for living and entertainment including family rooms, great rooms, living rooms, dens, media rooms and similar spaces.

SECTIONR329 Interior Passage

R329.1 General. This section applies to new dwelling units that have both a kitchen and a living area on the same floor level as the egress door required by Section R311.2. This section is not applicable to additions, reconstruction, alteration, or repair.

R329.2 Kitchen. One interior passage route from the egress door to the kitchen shall comply with R329.6.

R329.3 Living area. One interior passage route from the egress door to at least one living area shall comply with R329.6.

R329.4 Bedroom. Where the dwelling unit has a bedroom on the same floor level as the egress door, one interior passage route from the egress door to at least one bedroom shall comply with R329.6.

R329.5 Bathroom. Where a dwelling unit has a bathroom on that same floor level as the egress door, and the bathroom contains a water closet, lavatory, and bathtub or shower, one interior passage route from the egress door to at least one bathroom shall

comply with R329.6. Bathroom fixture clearances shall comply with R307 and access to fixtures is not required to comply with R329.6.

R329.6 Opening widths. Opening widths along the interior passage route required by this section shall comply with the following.

1. Cased openings shall provide a minimum 34 inch clear width.

2. Doors shall be a nominal 34 inch minimum width. Double doors are permitted to be used to meet this requirement.

Reason: At the DHCD Work Group 3 meeting held on May 10, 2016 a number of attendees expressed an interested in meeting separately to discuss drafting a code change to clarify the interior passage (R311.2.1) code section in the USBC. The intent was to clarify the code provisions and address some questions that had developed out of enforcement of the provisions. The intent was not to change the intent of the provisions. The meeting was held on June 23, 2016 in Chesterfield. This code change is the product of that meeting. All of the attendees are listed below and all attendees agree with this code change proposal:
Ron Clements, Chesterfield BI

Mike Eustey, Hanover BI

Eric Leatherby, DHCD

Mike Maenner, DHCD

Jason Laws, Chesterfield BI

James Cale, Chesterfield BI

Rick Witt, Chesterfield BI

Chuck Bajnai, Chesterfield BI

David Owens, Boone Homes/HBAV

Rick Napier, Napier Signature Homes/HBAV

Steven LHeureux, Commonwealth Architects'AIAVA

Ross Trimmer, NVR/Ryan Homes

Dave Kusti, NVR/Ryan Homes

Mike Toalson, HBAV

Chris Davis, Chesterfield BI

Emory Rodgers

Tyler Craddock, Virginia Manufactured and Modular Housing Industry

Tony Sabatini, Main Street Homes

Jeremy Sparks, Main Street Homes

Bob Allen, Henrico BI

John Cattlett, American Would Council

Living area definition- The interior passage must be provided to living areas but living areas are not defined. "Living spaces" is defined but it includes kitchens, bathrooms and bedrooms. This definition clarifies what "living area" includes for application of interior passage requirements.

Relocation of the section- We propose to relocate the section out of the R311 Means of Egress section because Interior passage is not a means of egress component. The interior passage provisions are to facilitate use of a dwelling by an occupant with mobility impairment. It is also not a full accessibility requirement; therefore we do not propose to place it in the accessibility section RB320. We have formatted the section into a stand-alone section 329. 329 was chosen

because it will not interfere with existing section numbering and it locates this Virginia specific provision with the other Virginia provisions at the end of chapter 3.

Reformat of the section- Many plan reviewers from multiple jurisdictions have struggled with the numerous qualifiers and variable requirements that are expressed in one long run-on sentence with confusing comma splices. To improve the readability and reduce misunderstanding this proposal divides the single section into multiple sub-sections specific to the various elements of the interior passage route.

R329.1 General-

Applicability-There is confusion regarding the base qualification to apply the section and how the required passage to various types of rooms is layered. Our interpretation is that the base requirement to provide an interior passage is triggered when the R311.2 egress door, and a living area, and kitchen (all three) are all provided and on the same floor level. If any of the three are on a different floor level, then the section does not apply. We also deleted "entertainment area" from the section and added into the new definition.

Alterations and additions**-** A significant area of confusion and variation in interpretation is the applicability of the requirement to reconstruction, alteration, repair and additions. The code section is silent on this issue. It is our understanding that it was not the intent to apply these provisions to existing dwelling units. VCC 103.4 and 103.5 state that the existing portions of the building not being altered cannot be required to comply with new provisions, so there is no way to require an interior passage to an altered or added on portion of a dwelling. This code change clarifies that the interior passage provisions only apply to newly constructed dwellings.

R329.2 Kitchen, R329.3 living area and R329.4 Bedroom. - These sections were just broken out into standalone sections.

R329.5 Bathroom- The significant clarification to the bathroom provisions was the inclusion of the last sentence in proposed section R329.5. There have been varied interpretations regarding doors to water closet and tub/shower compartments within the bathroom. If there is a door within the bathroom to a toilet compartment, must the door meet the 34" requirement? Our opinion is that the intent was to get the occupant into the bathroom but the passage stops at the door into the bathroom. Since R307 allows spaces in front of fixtures of 30", or less, 34" door openings within the bathroom would be of limited benefit.

R329.6 Opening widths. With the new format we propose to create a sub-section specific to the opening width requirements.

Item #2-There is confusion regarding double doors. The current text is specific to the doors, which shall be 34". This can be interpreted that a 60" door opening with double 30" doors would not be code compliant. The second sentence proposed permits double doors.

Exceptions-

Current exception 1 to R311.2.1 has been proposed for deletion. The unanimous consensus at the interior passage group meeting was to remove this very specific exception because it was very subjective in real world application. There is no definition of a "hallway" and the opinion was that the exception was not worth the trouble it created in application.

Current exceptions 2, 3 and 4 to R311.2.1 are proposed for deletion because they are not needed with the proposed format. Since the new wording is " one interior passage route from the egress door to… (the applicable area)", there is no confusion that doors along the route that are not part of the route "to" the area are not required to meet the minimum opening width. If passage through a door to the area is not required then the door does not need to meet the required width.

Cost Impact: There is no significant cost increase. There is the potential for a minor cost increase in limited cases where exception #1 is applicable.

Workgroup Recommendation

Workgroup 3 Recommendation: None

Workgroup 3 Reason: None

Board Decision

None

CR-R311.2.1 cdpVA-15

CR-R408.1 cdpVA-15

Proponent : Michael Eutsey (mjeutsey@hanovercounty.gov); Charles Bajnai (bajnaic@chesterfield.gov)

2012 Virginia Residential Code

R408.1 Ventilation~~.~~ Requirements

The under-floor space between the bottom of the floor joists and the earth under any building (except space occupied by a *basement*) shall have ventilation openings through foundation walls or exterior walls. The minimum net area of ventilation openings shall not be less than 1 square foot (0.0929 m^2) for each 150 square feet (14 m^2) of under-floor space area.The total area~~, unless~~ of ventilation openings is permitted to be reduced to 1/1500 of the under floor area where the ground surface is covered ~~by~~with a Class ~~1 vapor retarder material. When a Class 1~~I vapor retarder material ~~is used,~~and the ~~minimum net area~~required openings are placed so as to provide cross ventilation of ~~ventilation openings~~the space. The installation of operable louvers shall not be ~~less than 1 square foot (0.0929 m^2) for each 1,500 square feet (140 m^2) of under-floor space area~~permitted. One such ventilating opening shall be within 3 feet (914 mm) of each corner of the building.

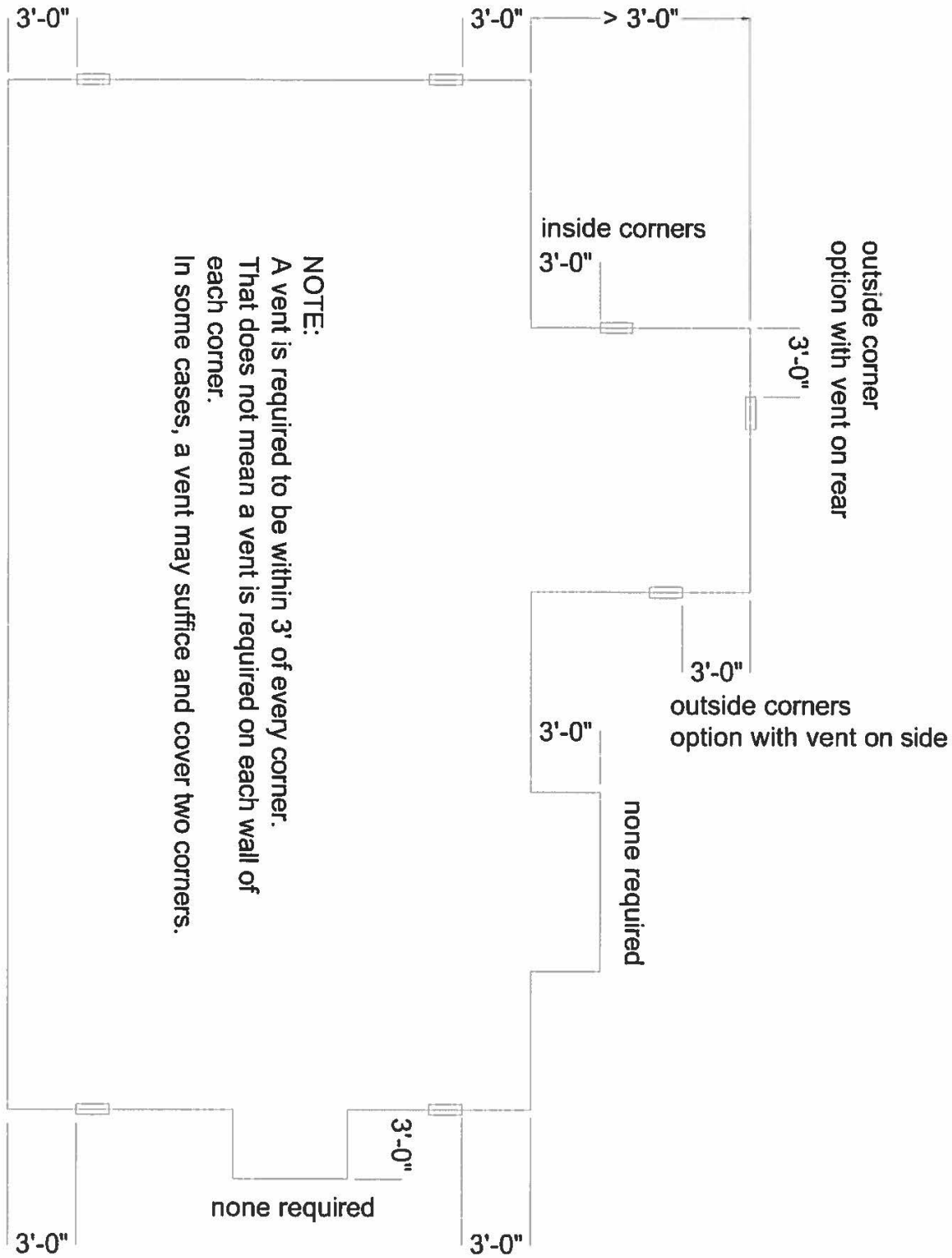
Exception Offsets in foundations that are 3 feet (914 mm) or less are not required to have ventilation regardless of length.

R408.2 Openings for under-floor ventilation.

~~The minimum net area of ventilation openings shall not be less than 1 square foot (0.0929 m^2) for each 150 square feet (14 m^2) of under-floor area. One ventilation opening shall be within 3 feet (915 mm) of each corner of the building.~~ Ventilation openings shall be covered for their height and width with any of the following materials provided that the least dimension of the covering shall not exceed ~~1/4~~ $^1/_4$ inch (6.4 mm):

1. Perforated sheet metal plates not less than 0.070 inch (1.8 mm) thick.
2. Expanded sheet metal plates not less than 0.047 inch (1.2 mm) thick.
3. Cast-iron grill or grating.
4. Extruded load-bearing brick vents.
5. Hardware cloth of 0.035 inch (0.89 mm) wire or heavier.
6. Corrosion-resistant wire mesh, with the least dimension being $^1/_8$ inch (3.2 mm) thick.
    -

Reason: The change in text for R408.1 now matches the VCC. The exception has been added to cover foundation offsets such as bumpouts created for a gas fireplace or a bay window.


outside corner
option with vent on rear
3'-0"
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inside corners
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outside corners
option with vent on side
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none required
3'-0"
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none required
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NOTE:
A vent is required to be within 3' of every corner.
That does not mean a vent is required on each wall of
each corner.
In some cases, a vent may suffice and cover two corners.

The deleted text in R408.2 is alraedy covered in Section R408.1.

Cost Impact: There will be no added cost of construction.

Workgroup Recommendation

Workgroup 3 Recommendation: None

Workgroup 3 Reason: None

Board Decision

None

CR-R408.1 cdpVA-15

CTG-310.1 cdpVA-15

Proponent : Bob Torbin (bob.torbin@omegaflex.net)

2015 International Fuel Gas Code

310.1 Pipe and tubing ~~other than CSST.~~ Each aboveground portion of a gas *piping* system ~~other than corrugated stainless steel tubing (CSST)~~ that is likely to become energized shall be electrically continuous and bonded to an effective ground-fault current path. Gas *piping* ~~other than CSST~~ shall be considered to be bonded where it is connected to appliances that are connected to the *equipment* grounding conductor of the circuit supplying that *appliance*. Corrugated Stainless steel tubing (CSST) piping systems listed with an arc resistant jacket or coating system in accordance with ANSI LC-1 shall comply with this section. Where any CSST segments of a piping system are not listed with an arc resistant jacket or coating system in accordance with ANSI LC-1, Section 310.1.1 shall apply.

310.1.1 CSST~~.~~ without arc resistant jacket or coating system ~~Corrugated stainless steel tubing (~~
CSST~~)~~ gas *piping* systems and piping systems containing one or more segments of CSST not listed with an arc resistant jacket or coating system in accordance with ANSI LC-1 shall be bonded to the electrical service grounding electrode system or, where provided, the lightning protection grounding electrode system and shall comply with Sections 310.1.1.1 through 310.1.1.5.

2015 International Residential Code

G2411.1 (310.1) Pipe and tubing ~~other than CSST.~~ Each above-ground portion of a *gas piping system* ~~other than corrugated stainless steel tubing (CSST)~~ that is likely to become energized shall be electrically continuous and bonded to an effective ground-fault current path. *Gas piping* ~~other than CSST~~ shall be considered to be bonded where it is connected to *appliances* that are connected to the equipment grounding conductor of the circuit supplying that *appliance*. Corrugated stainless steel tubing (CSST) piping systems listed with an arc resistant jacket or coating system in accordance with ANSI LC-1 shall comply with this section. Where any CSST segments of a piping system are not listed with an arc resistant jacket or coating system in accordance with ANSI LC-1, Section G2411.1.1 shall apply.

G2411.1.1 (310.1.1) CSST without arc resistant jacket or coating system. ~~Corrugated stainless steel tubing (~~
CSST~~)~~ gas *piping* systems and piping systems containing one or more segments of CSST not listed with an arc resistant jacket or coating system in accordance with ANSI LC-1 shall be bonded to the electrical service grounding electrode system or, where provided, the lightning protection electrode system and shall comply with Sections G2411.1.1.1 through G2411.1.1.5.

Add new standard(s) as follows: ANSI LC-1-2014/CSA 6.26-2014 Fuel gas piping systems using corrugated stainless steel tubing

Reason:
The use of a CSST product with a protective, arc resistant jacket is an equivalent method of protection against electrical arcing damage caused by high voltage transient events such as lightning strikes. The protective jacket is designed to locally absorb and dissipate the arcing energy or conduct it away. The jacket, in essence, disrupts the focus of the arc and reduces the energy level below the threshold value that can cause a perforation of the tubing wall. This dynamic action is equally effective compared to the current CSST bonding method as confirmed by ICC ES PMG 1058. The protection against arcing is provided uniformly throughout the piping system, and is not affected by close proximity to other metallic systems that may not be similarly bonded.

The CSA Technical Sub-Committee for national consensus standard ANSI LC-1 (2014) added performance criteria for arc resistant jackets in 2014 which is why this standard reference was updated. These criteria provide the ability to determine if the CSST jacket can resist damage from transient arcing currents under conditions associated with lightning strikes. The ANSI LC-1 Standard defines the experimental means to determine whether the protective jacket provides resistance to damage from lightning strikes without the need for additional bonding as prescribed currently in G2411.1.1 of the 2015 edition of the International Residential Code and Section 310.1.1 of the International Fuel Gas Code. In addition, the ANSI LC-1 standard includes performance criteria for jacket wear/tear resistance, resistance to low temperature embrittlement, and resistance (of metallic components) to corrosion (when applicable). The ICC Evaluation Service has also performed an assessment of the arc resistant jacket technology, and has issued PMG listings for all three commercially available "black" CSST products.

In support of the 2015 edition of the NFPA 54 Code, extensive testing was performed under the management of the Gas Technology Institute to demonstrate the effectiveness of the prescribed method of bonding for CSST. That report was submitted and accepted by the NFGC Technical Committee in support of modifications made to the 2012 CSST bonding requirements. That same report (and test conditions) was used as the basis for a new study (performed by PowerCET) to examine the ability of the arc resistant jacket to provide the equivalent level of protection (or better) against arcing damage. That report is included with this proposal, and demonstrates that arc-resistant jackets will provide equal or better protection against lighting induced arcing as the bonding of standard CSST.

CSST with arc-resistant jacket has been commercially installed since 2004, and at the present time, three different (black-jacketed) products are commercially available. Field experience has been very favorable with over 125 million feet installed and only two confirmed cases of indirect or direct lightning damage to CSST piping systems using these black jackets. Currently, at least 15 states (as shown below) permit the installation of the arc resistant CSST without the need for additional bonding. Both conventional (yellow) and advanced (black) CSST products will continue to be commercially available and installed in new and existing buildings. Given that both methods of electrical protection of CSST systems have been demonstrated to be effective, they should be recognized and permitted in the Commonwealth of Virginia. The 2018 IFGC will include arc resistant CSST without the need for additional bonding when that language is extracted from the 2018 NFPA 54. We are asking that Virginia recognize those changes with the adoption of the 2015 IFGC.

States currently permitting black jacket CSST without additional bonding per Section 7.13.2:

Massachusetts	Oklahoma	Nebraska
Connecticut	Colorado	Montana
Rhode Island	New Jersey	Georgia
Wisconsin	North Dakota	Indiana
Michigan	Oregon	Maryland

Supporting Documentation:

http://media.iccsafe.org/cdpva/CSST_doc.pdf

Cost Impact: While arc-resistant CSST may cost 5-8 percent more per foot compared to conventional (yellow) CSST, there will be no negative cost impact to either the builder or the home owner. The additional cost of arc resistant CSST is offset by the savings associated with the cost of CSST bonding which includes two bonding clamps, 75-ft of #6 AWG copper conductor and the associated installation labor.

Workgroup Recommendation

Workgroup 4 Recommendation Recommendation: Pending

Workgroup 4 Reason: Torbin spoke on the code change proposal-Haywood asked about different fittings being used-Witt questioned language in NFPA 54 making it to the 2018 IFGC-Torbin stated will know in 2 weeks-Strausbaugh agreed

Workgroup 3 Recommendation Recommendation: Pending

Workgroup 3 Reason: Torbin not present-Dave Edler spoke for omegaflex-NFPA 54 committee has passed this up the ladder for approval for 2018 IFGC-LC1 should be followed by CSA6.6-Bartell asking why move forward until finalized with NFPA54-Gerber-field applied jacket? (No)

Board Decision

None

CTG-310.1 cdpVA-15

CTM-506.5.2 cdpVA-15

Proponent : Richard Grace (richard.grace@fairfaxcounty.gov) Representing the VPMIA and VBCOA PMG Committee

2012 Virginia Mechanical Code

SECTION 202 DEFINITIONS

Pollution Control Unit **POLLUTION CONTROL UNIT**

Manufactured equipment that is installed in a grease exhaust duct system for the purpose of extracting smoke, grease particles, and odors from the exhaust flow by means of a series of filters.

506.5.2 **Pollution Control Unit** **506.5.2 Pollution Control Units.**

The installation of pollution control units shall be in accordance with the manufacturer's installation instructions and all of the following:

1. Pollution control units shall be listed and labeled in accordance with UL 1978.
2. Fans serving pollution control units shall be listed and labeled in accordance with with UL 762.
3. Pollution control units shall be mounted and secured in accordance with the manufacturer's installation instructions and the International Building Code.
4. Pollution control units located indoors shall be listed and labeled for such use. Where enclosed duct systems, as required by Section 506.3.11, are connected to a pollution control unit, such unit shall be located in a room or space having the same fire-resistance rating as the duct enclosure. Access shall be provided for servicing and cleaning of the unit. The space or enclosure shall be ventilated in accordance with the manufacturer's installation instructions.
5. A clearance of not less than 18 inches (457 mm) shall be maintained between the pollution control unit and combustible material.
6. Roof mounted pollution control units shall be listed for exterior installation and shall be mounted not less than 18 inches (457 mm) above the roof.
7. Exhaust outlets for pollution control units shall be in accordance with Section 506.3.13.
8. An airflow differential pressure control shall be provided to monitor the pressure drop across the filter sections of a pollution control unit. When the airflow is reduced below the design velocity, the airflow differential pressure control shall activate a

visual alarm located in the area where cooking operations occur.
9. Pollution control units shall be provided with a factory installed fire suppression system.
10. Service space shall be provided in accordance with the manufacturer's instructions for
the pollution control unit and the requirements of Section 306.
11. Wash down drains shall discharge through a grease interceptor and shall be sized for the flow. Drains, shall be sealed with a trap or other approved means to prevent air bypass. Where a trap is utilized it shall have a seal depth that accounts for the system pressurization and evaporation between cleanings.
12. Protection from freezing shall be provided for the water supply and fire suppression systems where such systems are subject to freezing.
13. Duct connections to pollution control units shall be in accordance with Section 506.3.2.3. Where water splash or carryover can occur in the transition duct as a result of a washing operation, the transition duct shall slope downward toward the cabinet drain pan for a length not less than 18 inches (457 mm). Ducts shall transition to the full size of the units inlet and outlet openings.
14. Extra heavy duty appliance exhaust systems shall not be connected to pollution control units except where such units are specifically designed and listed for use with solid fuels.
15. Pollution control units shall be maintained in accordance with the manufacturer's instructions.

Reason: Pollution Control Units have been manufactured by numerous companies for several years. The desire to limit the amount of smoke, grease, and other particulate at the exhaust outlets of commercial cooking appliances has driven the use of these units as numerous entities are requiring these types of units to be installed. These unit and there minimum construction and installation standards need to be addressed in the mechanical code.

DHCD Staff Note: Proposal changed ownership after first Workgroup Four meeting. Prior proposal with workgroup recommendation is available below:

Prior Proposal

Cost Impact: Will not increase cost of construction. This code change in itself does not require the installation of a PCU, therefore there is no cost impact associated with this language. This code change merely provides minimum requirements if one choses to install a PCU.

Workgroup Recommendation

Workgroup 4 Recommendation Recommendation: Pending

Workgroup 4 Reason: Strausbaugh spoke on his proposal-was approved at the national level and will be in the 2018 IMC. Toalson speaks about cost impact? Strausbaugh stated this is not required to be installed-Toalson asked again for cost-Strausbaugh stated cost is no facto

Board Decision

None

CTM-506.5.2 cdpVA-15

CTM-607.6.2.2 cdpVA-15

Proponent : Thomas Clark, Representing VPMIA & VBCOA PMG Committee (tdclark@pwcgov.org)

2015 International Mechanical Code

607.6.2.2 **Equipment Shut Down** Where the radiation damper is not listed as a dynamic damper, the HVAC equipment must be effectively shut down to stop the air flow prior to the damper closing.
Methods to effectively shut down HVAC units can be any of the following:
1). Install duct detector in return duct
2). Interlock area smoke detector to HVAC equipment
3). Install a listed heat sensor in the return duct
4). Other listed devises approved by the Building Official

Add new standard(s) as follows: ANSI/UL 263
ANSI/UL 555C

Reason: The Fire performance measured by ANSI/UL 263 is based upon the assumption that air movement will be effectivelt stopped at the start of a fire

Cost Impact: Cost is based on method of shut down used.

Workgroup Recommendation

Workgroup 4 Recommendation: None

Workgroup 4 Reason: None

Board Decision

None

CTM-607.6.2.2 cdpVA-15

Public Comments for CTM-607.6.2.2 cdpVA-15 : CTM-607.6.2.2 (NEW)-CLARK498

Thomas Clark

Public Comments for Proposal Id : 498

2 Comment(s)

By **Robert Adkins**
08-04-2016 08:24:55

607.6.2.2 Equipment Shut Down Where the ceiling radiation damper are listed as static dampers, the HVAC equipment must be effectively shut down to stop the air flow prior to the damper closing.

By **Robert Adkins**
07-29-2016 14:00:52

This is aready a requirement of the damper listing but is missed in the field. All static dampers are assumed to close against no air flow.

CTS-305.2.4 cdpVA-15

Proponent : Robert Adkins, Representing Prince William County (radkins@pwcgov.org)

2015 International Swimming Pool and Spa Code

305.2.4 Mesh fence as a temporary barrier. *No change to text.*

Reason: To identify mesh barriers as temporary barriers and not permanent.

Cost Impact: There is no impact on the cost of construction

Workgroup Recommendation

Workgroup 3 Recommendation: None

Workgroup 3 Reason: None

Workgroup 4 Recommendation: None

Workgroup 4 Reason: None

Board Decision

None

CTS-305.2.4 cdpVA-15

F-112.2 cdpVA-15

Proponent : Richard Witt (wittr@chesterfield.gov)

2012 Virginia Statewide Fire Prevention Code

112.2 Membership.
The BFPCA shall consist of at least five members appointed by the local governing body and having terms of office established by written policy. Alternate members may be appointed to serve in the absence of any regular members and as such, shall have the full power and authority of the regular members. Regular and alternate members may be reappointed. Written records of current membership, including a record of the current chairman and secretary shall be maintained in the office of the local governing body. In order to provide continuity, the terms of the members may be of different length so that less than half will expire in any one-year period. The BFPCA shall meet ~~at least once annually~~ **as necessary** to assure a duly constituted board, appoint officers as necessary and receive such training on the code as may be appropriate or necessary from staff of the locality.

Reason: This change will bring consistency with the other codes that were modified to reflect the changed laguage during the last code cycle. In the previous cycle it was determined that it was best for individual localities to determine the frequency of their Local Appeals Board meetings based on the individual needs of the localities.

Cost Impact: This change could save localities money since most appeals Board members are reimbursed at some rate for their time and expenses.

Workgroup Recommendation

Workgroup 1 Recommendation: None

Workgroup 1 Reason: None

Board Decision

None

F-112.2 cdpVA-15

F-507.5.1 cdpVA-15

Proponent : Mike Toalson, Representing Home Builders Association of Virginia (mltoalson@hbav.com)

2012 Virginia Statewide Fire Prevention Code

507.5.1 Where required. Fire hydrant systems shall be located and installed as directed by the fire department, however, owners or developers shall not be required to bear the cost of improvements to existing fire hydrant systems when only constructing, altering or reconfiguring a single building served by the system. Fire hydrant systems shall conform to the written standards of the jurisdiction and the fire department.

Reason: Hydrant system upgrades or extensions are generally required or proferred when creating new subdivisions or in large commercial projects and the cost can be absorbed in the development costs. The cost of extending a hydrant system for a single building should not have to be borne by the owner or developer as it would prevent the project from moving forward.

Cost Impact: The proposal would not increase cost.

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Board Decision

None

F-507.5.1 cdpVA-15

F-703.1 cdpVA-15

Proponent : Zachary Adams (adamsz@vt.edu)

2015 International Fire Code

(OPTION ONE)

703.1 Maintenance. The required *fire-resistance rating* of fire-resistance-rated construction, including, but not limited to, walls, firestops, shaft enclosures, partitions, *smoke barriers*, floors, fire-resistive coatings and sprayed fire-resistant materials applied to structural members and fire-resistant joint systems, shall be maintained~~. Such elements shall be visually inspected by the *owner* annually and properly repaired, restored or replaced where damaged, altered, breached or penetrated. Records of inspections and repairs shall be maintained. Where concealed, such elements shall not be required to be visually inspected by the *owner* unless the concealed space is accessible by the removal or movement of a panel, access door, ceiling tile or similar movable entry to the space~~. Openings made therein for the passage of pipes, electrical conduit, wires, ducts, air transfer openings and holes made for any reason shall be protected with *approved* methods capable of resisting the passage of smoke and fire. Openings through fire-resistance-rated assemblies shall be protected by self- or automatic-closing doors of *approved* construction meeting the fire protection requirements for the assembly.

(OPTION TWO)

703.1 Maintenance. The required *fire-resistance rating* of fire-resistance-rated construction, including, but not limited to, walls, firestops, shaft enclosures, partitions, *smoke barriers*, floors, fire-resistive coatings and sprayed fire-resistant materials applied to structural members and fire-resistant joint systems, shall be maintained. Such elements shall be visually inspected by the *owner* annually and properly repaired, restored or replaced where damaged, altered, breached or penetrated. Records of inspections and repairs shall be maintained. Where concealed, such elements shall not be required to be visually inspected by the *owner* unless the concealed space is accessible by the removal or movement of a panel, access door, ceiling tile or similar movable entry to the space. Openings made therein for the passage of pipes, electrical conduit, wires, ducts, air transfer openings and holes made for any reason shall be protected with *approved* methods capable of resisting the passage of smoke and fire. Openings through fire-resistance-rated assemblies shall be protected by self- or automatic-closing doors of *approved* construction meeting the fire protection requirements for the assembly.

Exception: When approved by the Authority Having Jurisdiction, an inspection frequency other than annual may be established.

Reason:

While we agree it is imperative that the integrity of *fire-resistance construction* be maintained, to require an annual inspection imposes a substantial burden on the owner, especially where an extensive amount of square footage is occupied. Also, what tangible benefit does imposing an

annual inspection requirement achieve? Finally, it appears sections 108.1(1) of the VCC and 105.1 of the VRC would require any work affecting such construction must be performed under a permit and are subject to inspection by the code official and during which any needed repairs to this construction would be identified.

The "OPTION ONE" proposal reverts this section to the verbiage used in earlier versions in the IFC.

The "OPTION TWO" proposal provides for an inspection frequency other than annual with the approval of the Authority Having Jurisdiction. Allowing the Owner to establish an inspection frequency other than annual, with the approval of the AHJ, would significantly reduce the cost impact and resources required to comply with this code section. If the Owner mplements a program of inspection, oversight and controls on work that potentially impact fire-resistance rated construction which can be proven to be effective to the AHJ, this code change would allow such a program to essentially serve in lieu of the annual inspection requirements.

Cost Impact:

For the Option One proposal, this would remove a substantial financial burden from the Owner, who would need to have qualified persons perform these inspections and make any needed repairs in order to comply with section.

For the Option Two proposal, allowing the Owner to establish an inspection frequency other than annual, with the approval of the AHJ, would significantly reduce the cost impact and resources required to comply with this code section. If the Owner mplements a program of inspection, oversight and controls on work that potentially impact fire-resistance rated construction which can be proven to be effective to the AHJ, this code change would allow such a program to essentially serve in lieu of the annual inspection requirements.

Workgroup Recommendation

Workgroup 2 Recommendation Recommendation: Pending

Workgroup 2 Reason: Reason: While we agree it is imperative that the integrity of fire-resistance construction be maintained, to require an annual inspection imposes a substantial burden on the owner, especially where an extensive amount of square footage is occupied. Rick Witt gave an overview of the proposal on Zach's behalf. He stated the real issue is to maintain. He asked for this to be pending and he will help with working on the language.

Comments:

William Lloyd – This does need a re-write by qualified people.

Cindy Davis - **This will move forward as pending.**

Board Decision

None

F-703.4 cdpVA-15

Proponent : Justin Biller, Representing Self (jbbiller@carilionclinic.org)

2012 Virginia Statewide Fire Prevention Code

703.4 Testing.
Fire doors shall be inspected and functionally tested in accordance with NFPA 80 annually to confirm proper operation and full closure. Before testing, a visual inspection shall be performed to identify any damaged or missing parts that can create a hazard during testing or affect operation or resetting. A written record shall be maintained and be available to the *fire code official*.

Reason: In particular, Health Care Facilities in Virginia are facing enforcement of this requirement as part of ongoing licensure/funding through State enforcement of NFPA 101, *Life Safety Code*, so it is also important that these requirements are consistent with local fire prevention code enforcement as well throughout the Commonwealth. The 2012 ICC Fire Code Commentary implies that inspection is occurring in accordance with NFPA 80 and specific additional points of inspection are highlighted in section 703.2.2 and 703.2.3 in line with specific NFPA 80 requirements.

"*Openings in fire-resistance-rated assemblies must be protected to prevent the passage of fire. After opening protectives are installed and approved, they may become damaged, corroded or otherwise less effective than required. This section specifically requires that all opening protectives required by the IBC be maintained in compliance with NFPA 80 so that they can perform their intended function, which is to prevent the passage of smoke, fire or combustion products through openings in fire-resistance-rated walls, ceilings and shafts during a fire emergency. Sections 703.2.2 and 703.2.3 indicate specific points of inspection and enforcement regarding these doors. ...*"

The revised language in section 703.4 clarifies that the intent of 703.2 was for all fire doors (including swinging doors with fire door or builders hardware as designated by NFPA 80) to be inspected/tested in accordance with the provisions of NFPA 80. Prior to the 2007 edition of NFPA 80, the standard only required that fire doors and windows be inspected frequently. Requiring inspections "frequently" is not an enforceable provision. Building owners, fire door inspectors, and AHJs were unable to determine the intended frequency of the inspections. This language allowed for many fire doors to go un-inspected for too long, which risked their integrity and ability to properly protect the opening. For the 2007 edition of NFPA 80, the language was revised as part of new Chapter 5 and the required frequency for inspection of fire doors and windows was set at annually, and the assumption is that this has been enforced within the Commonwealth since the adoption of the 2009 Statewide Fire Prevention Code. Additional language is also provided to clarify the need for a visual inspection of the opening protective to be part of the functional testing required by this section, as prescribed in NFPA 80.

Additional Statement Submitted by Proponent

Cost Impact: This change is for clarification of requirements only with no impact to the cost of construction or ongoing operations and maintenance.

Workgroup Recommendation

Workgroup 1 Recommendation Recommendation: Pending

Workgroup 1 Reason:

March 27- Robby Dawson – If it goes forward in accordance with NFPA 80, that will be fine, I will reach out to Justin Biller.

July 7th-still pending

Workgroup 2 Recommendation Recommendation: Non-Consensus Final

Workgroup 2 Reason: 1st WG 2 meeting: Robby Dawson to reach out to the proponent. This proposal will be continued status "none"
2nd WG 2 meeting:

Reason: In particular, Health Care Facilities in Virginia are facing enforcement of this requirement as part of ongoing licensure/funding through State enforcement of NFPA 101, Life Safety Code, so it is also important that these requirements are consistent with local fire prevention code enforcement as well throughout the Commonwealth.

Justin Biller gave overview of his proposal to clarify this testing component.

Comments:

Robbie Dawson gave an overview of his suggested comment on cdpVA.

Justin Biller stated the issue is that 703.4 right now is only talking about horizontal vertical sliding doors. NFPA 80 deals with swinging doors as well.

William Lloyd said he thinks it is better suited in 703.2 that would relate to shutters, windows and swinging doors as well. Swinging doors do have to be inspected annually.

Rick Witt stated he didn't have any problems with where is trying to go, however, the language is not there. From the second sentence on is not required.

Justin Biller said it is inspected to NFPA80, we are not requiring additional inspections.

Rick Witt disagrees, he just went through an issue lately, the swinging doors were an issue at a church. Don't impart a new standard on something that is existing.

William Lloyd stated that NFPA80 has been in effect since the early 70's for windows, shutters and fire doors.

Cindy Davis – **Moving forward as non-consensus**

Board Decision

None

F-703.4 cdpVA-15

Public Comments for F-703.4 cdpVA-15 : F-703.4-BILLER172

James Dawson

Public Comments for Proposal Id : 172

1 Comment(s)

By **James Dawson**
07-07-2016 12:49:36

Based on WG 1 discussions, I offer the following alternative proposal for this change based on the 2015 edition of the IFC:

703.4 Testing. Horizontal and vertical sliding and rolling fire doors shall be inspected and tested annually in accordance with NFPA 80 to confirm proper operation and full closure. Records of inspections and testing shall be maintained and made available to the fire code official.

This preserves the desired outcome of original proponent and provides specific standards and guidance on how to conduct the specified testing and inspections consistent with other portions of this section.

F-1030.1 cdpVA-15

Proponent : Andrew Milliken, Representing Stafford County Fire Marshal's Office (amilliken@staffordcountyva.gov)

2015 International Building Code

1030.1 General. In addition to the *means of egress* required by this chapter, provisions shall be made for *emergency escape and rescue openings* in Group R-2 occupancies in accordance with Tables 1006.3.2(1) and 1006.3.2(2) ~~and~~, Group R-3 and R-4 occupancies. *Basements* and sleeping rooms below the fourth story above *grade plane* shall have at least one exterior *emergency escape and rescue opening* in accordance with this section. Where *basements* contain one or more sleeping rooms, *emergency escape and rescue openings* shall be required in each sleeping room, but shall not be required in adjoining areas of the *basement*. Such openings shall open directly into a *public way* or to a *yard* or *court* that opens to a *public way*.

- **Exceptions:**
    1. *Basements* with a ceiling height of less than 80 inches (2032 mm) shall not be required to have *emergency escape and rescue openings*.
    2. *Emergency escape and rescue openings* are not required from *basements* or sleeping rooms that have an *exit* door or *exit access* door that opens directly into a *public way* or to a *yard*, *court* or exterior exit balcony that opens to a *public way*.
    3. *Basements* without *habitable spaces* and having not more than 200 square feet (18.6 m^2) in floor area shall not be required to have *emergency escape and rescue openings*.

2015 International Fire Code

[BE] 1030.1 General. In addition to the *means of egress* required by this chapter, provisions shall be made for *emergency escape and rescue openings* in Group R-2 occupancies in accordance with Tables 1006.3.2(1) and 1006.3.2(2) ~~and~~, Group R-3 and R-4 occupancies. Basements and sleeping rooms below the fourth story above *grade plane* shall have at least one exterior *emergency escape and rescue opening* in accordance with this section. Where basements contain one or more sleeping rooms, *emergency escape and rescue openings* shall be required in each sleeping room, but shall not be required in adjoining areas of the basement. Such openings shall open directly into a *public way* or to a *yard* or *court* that opens to a *public way*.

- **Exceptions:**
    1. Basements with a ceiling height of less than 80 inches (2032 mm) shall not be required to have *emergency escape and rescue openings*.
    2. *Emergency escape and rescue openings* are not required from basements or sleeping rooms that have an *exit* door or *exit access* door that opens directly into a *public way* or to a *yard*, *court* or exterior exit balcony that opens to a *public way*.
    3. Basements without *habitable spaces* and having not more than 200

square feet (18.6 m^2) in floor area shall not be required to have *emergency escape and rescue openings*.

Reason: The intent of this proposal is to clarify that the requirements of emergency escape and rescue openings apply to R-4 occupancies. Section 310.6 of the 2012 Virginia Construction Code and 2015 International Building Code indicate that, "group R-4 occupancies shall meet the requirements for construction as defined for Group R-3, except as otherwise provided for in this code." Furthermore, section 403.9.3.6 of the 2012 Virginia Statewide Fire Prevention Code and 403.10.3.6 of the 2015 International Fire Code indicate that group R-4 occupancies shall include emergency escape and rescue windows as part of building evacuation proceedures. This propoal does not add any new requirements but rather simply clarifies that emergency escape openings are essential for effective evacuation from and are required for R-4 occupancies. It also helps to provide continuity between Virginia Construction Code requirements for egress and Fire Prevention Code requirements for evacuation.

Cost Impact: This proposal does not impact cost as it is only editorial and does not add any new requirements.

Workgroup Recommendation

Workgroup 2 Recommendation Recommendation: Pending

Workgroup 2 Reason: Reason: The intent of this proposal is to clarify that the requirements of emergency escape and rescue openings apply to R-4 occupancies.
Andrew Milliken gave an overview of his proposal.

Cindy Davis asked if everyone was in agreement with that intent to adding the R-4 language to this section?

Judy Hackler asked whether or not it would be a new classification or retrofit?

Cindy Davis – **Moving forward as pending.**

Board Decision

None

F-1030.1 cdpVA-15

F-2304.5 cdpVA-15

Proponent : James Dawson (dawsonj@chesterfield.gov)

2015 International Fire Code

2304.5 Refueling from tank vehicles. Dispensing of Class I, Class II, and Class III liquids from tank vehicles shall be in compliance with NFPA 30A and this section.

2304.5.1 Prohibited conditions. Delivery of Class I, Class II, and Class III liquids to the fuel tank of a highway vehicle directly from a tank vehicle, portable tank carried on a vehicle, or non-portable container is prohibited.

Exceptions:

1. The refueling of highway vehicles in an emergency.
2. the refueling of vehicles associated with an agricultural use when the fueling is conducted on such agricultural property with the owners consent.

Also note:

Add 2304.5 to the NFPA 30A referenced standards section of Chapter 60.

Reason: Mobile fueling operations have started in other states and have become a fire risk to the community. There are no operational permits required for these types of operations, the fueling takes place in locations that are not intended to be used as a fueling site and lack the basic fire and environmental safeguards required in stationary operations. These locations may be open parking lots, driveways, neighborhood streets, or covered parking decks and garages. Advertisements for these services outside of Virginia have shown fuel being carried in vehicles that carried no placarding, were unsecured in the vehicle, were carried in unlisted containers, and were transferred with unlisted and non-grounded systems. There were also no methods or mechanisms to stop the flow of fuels or contain spills if they occurred.

The International Fire Marshals Association and other safety organizations have identified the risks associated with on-demand fueling services and have submitted a change similar to the model code organizations including ICC and NFPA.

The Code of Virginia at 58.1-2272, the Virginia Fuels Tax Act, currently prohibits the deliver of motor fuels from a transport vehicle or truck to a highway vehicle with the same exceptions noted in this proposal. There are currently no know avenues for the state to enforce this provision, and considering the fact that it poses an increased fire risk in addition to the potential loss of tax revenue, it is logical for the fire code enforcement to regulate this hazardous activity. The penalties associated with a violation of 58.1-2272 are the same as with a violation of the Statewide Fire Prevention Code.

Cost Impact: There is no cost impact associated with this proposal.

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Board Decision

None

F-2304.5 cdpVA-15

F-5003.1.4 cdpVA-15

Proponent : James Dawson (dawsonj@chesterfield.gov)

2015 International Fire Code

5003.3.1.4 Responsibility for cleanup. The person, firm or corporation responsible for an unauthorized discharge shall institute and complete all actions necessary to remedy the effects of such unauthorized discharge, whether sudden or gradual, without cost to the jurisdiction. Where deemed necessary by the *fire code official*, cleanup can be initiated by the fire department or by an authorized individual or firm. Costs associated with such cleanup shall be ~~borne by~~the responsibility of the *owner*, operator or other person responsible for the unauthorized discharge.

NOTE: Owners and operators of certain underground and above ground petroleum storage tanks may have access to the Virginia Petroleum Storage Tank Fund for reimbursement of some cleanup costs associated with petroleum discharges from these tanks. See Article 10 of Title 62.1 (Section 62.1-44.34:10 et seq. of the Code of Virginia.

Reason: This proposal was developed in cooperation with Mike O'Conner and Renee Hooper of VA DEQ in response to concerns over the original change to 5003.3.1.4. This change makes it more clear that the funding source for the cleanup effort is irrelevant but the responsibility for the cleanup remains with the owner or operator of these facilities.
An informational note was added to inform the enforcement community of a state DEQ funding source that is available to certain operators of these facilities.

Cost Impact: There are no cost impacts associated with this change.

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Board Decision

None

F-5003.1.4 cdpVA-15

M-101.1 cdpVA-15

Proponent : VMC Rewrite Committee

DHCD Staff Contact: Vernon.Hodge@dhcd.virginia.gov

2012 Virginia Maintenance Code

101.1 VMC Rewrite Text of proposal.

Reason: As requested by the Board of Housing and Community Development, DHCD staff undertook a review of the Virginia Maintenance Code (VMC) to remove unenforceable construction provisions printed within the code. Current codes work from having to rely upon administrative provisions in Chapter 1 to supersede provisions in the International Codes, which are incorporated into the state regulations, but different than, or outside of the scope of, or in conflict with provisions of Chapter 1. DHCD established a committee of stakeholders involved in and affected by the VMC to collaborate on and review the draft rewrites. This VMC rewrite represents consensus among those involved. The changes are essentially editorial as they are just removing the unenforceable provisions from the International Property Maintenance Code (IPMC) and rewording administrative provisions in the IPMC to be consistent with the Chapter 1 language. It was noted that if client groups wanted to make substantive changes to the VMC, those would be submitted separately through Virginia's code change process.

Cost Impact: The proposal does not increase costs associated with the code as the changes are primarily editorial in nature.

Workgroup Recommendation

Workgroup 2 Recommendation Recommendation: Consensus for Approval

Workgroup 2 Reason: There was general agreement with the proposal.

Workgroup 1 Recommendation Recommendation: Pending

Workgroup 1 Reason: An overview was provided and attendees will provide feedback for the next workgroup.

Board Decision

None

Public Comments for M-101.1 cdpVA-15 : VMC Rewrite (NEW)-VMC Rewrite Committee

Phillip Storey

Public Comments for Proposal Id : 238

1 Comment(s)

By **Phillip Storey**
07-18-2016 10:55:20

VMC § 103.2

To avoid confusion and potential conflict with amended § 103.2.1, we propose removing the first three words of this amended language ("Required or provided"), so that it begins with "Building, electrical, plumbing…" We do not believe that the first three words add any substantive value to the section, and the inclusion of "provided" creates confusion when combined with § 103.2.1.

VMC § 103.2.1

We support the amended §103.2.1, making clear that the VMC requires components and systems to be maintained for safety but not necessarily for functioning unless otherwise required. This brings the maintenance requirements in line with the purpose of the code as a whole, as stated explicitly in Va. Code § 36-99 and VMC § 102.1, of protecting safety while allowing maintenance at the least possible cost consistent with recognized standards.

VMC § 603.1

We believe this section should be amended to match the proposed amended § 103.2.1, allowing components or systems that are not otherwise required under the code to be maintained for safety but not necessarily for functioning. Both the current and the proposed versions of § 603.1 are inconsistent with the explicit purpose of the code as a whole, as stated in Va. Code § 36-99 and VMC § 102.1, of protecting safety while allowing maintenance at the least possible cost consistent with recognized standards. Requiring that optional components or systems (not otherwise required by the code) to be maintained in fully functioning condition, when less expensive maintenance could render them safe, adds unnecessary costs.

We also believe that, consistent with our comments on amended § 103.2, the first three words ("Required or provided") should be removed from § 603.1 to avoid confusion and potential conflict with amended § 103.2.1.

M-202(2) cdpVA-15

Proponent : Phillip Storey, Representing Legal Aid Justice Center (phil@justice4all.org)

2012 Virginia Maintenance Code

SECTION 202 DEFINITIONS

STRUCTURE UNFIT FOR HUMAN OCCUPANCY.
An existing structure determined by the code official to be dangerous to the health, safety and welfare of the occupants of the structure or the public because (i) of the degree to which the structure is in disrepair or lacks required maintenance, ventilation, illumination, sanitary or heating facilities or other essential equipment, or (ii) the required plumbing and sanitary facilities are inoperable.

Reason:
CONTEXT AND SUMMARY

This proposal responds to a recent administrative appeal decision by the State Building Code Technical Review Board ("TRB"). (Consolidated Appeals 15-12 and 15-13.) The appeals challenged the City of Richmond's application of VMC § 105.1 to threaten with condemnation owner-occupied homes it claimed met VMC § 202's definition of Structure Unfit for Human Occupancy ("Unfit") because they lacked "primary heating systems." The homeowners argued that, because the Board of Housing and Community Development ("Board") had consistently amended the model maintenance code each cycle since 1990 to limit the requirement for heating facilities to only rented or leased dwellings (VMC § 602.2), owner-occupied homes could not be considered Unfit for lack of a primary heating system. The homeowners prevailed in their appeals, but the TRB's final order was written in a way that skirted the central issue but indirectly implied that heating systems might be required in owner-occupied homes under the Unfit definition, regardless of the Board's amendments to § 602.2.

This proposed amendment to the Unfit definition seeks to clarify that, consistent with the Board's amendments to the 1990 VMC and all subsequent editions, a structure may be declared Unfit due to "the degree to which it lacks" maintenance, facilities, equipment, or other elements *that are among the VMC's substantive requirements found in chapters 3 through 8*. This would make the language and explicit meaning of the Unfit definition's clause (i) consistent with the language and meaning of clause (ii), which likewise only applies to *required* plumbing and sanitary facilities.

This amendment would clarify that a structure could be declared Unfit due to lack of heating facilities that are required by the VMC's substantive regulations found in Chapter 6 ("Mechanical and Electrical Requirements") and § 602 in particular ("Heating and Cooling Facilities"). Conversely, the lack of heating facilities that are not required under § 602 could not be the basis for declaring a structure Unfit and subjecting it to the threat of condemnation.

CLARIFYING THE INTENT OF THE BOARD

Proposal M-202, submitted by John Walsh on behalf of VBCOA VMC Committee, argues for code changes based on an interpretation of the Board's intent in adopting the 1990 amendments to § 602.2 (and readopting them in each subsequent code cycle) that is contrary to both the Board's stated intent and the well-established principles for interpreting potentially ambiguous statutes or regulations. Mr. Walsh argues that the Board's amendments to § 602.2 were intended to eliminate the model code's specific performance measurements for owner-occupied dwellings, but not to entirely eliminate the requirement that owner-occupied structures have heating systems installed.

The clearest and most direct indication that the Board intended to entirely eliminate the heating requirement for owner-occupied dwellings is found in the Virginia Register of Regulations ("Register"), where the final amendments to the 1990 edition of the VMC were published. (7 Va. Reg. Regs. 1084 *et seq*. (December 31, 1990)) The summary the Board published in the Register along with the amendments includes a clear explanation of the Board's intent in the amended heating requirement. "[T]ext was deleted from the BOCA Property Maintenance Code, §§ PM-601.1 and PM-601.2, which required heat to be supplied in all buildings, rather than just those being rented or leased. This change was necessary to be consistent with Volume I of the Uniform Statewide Building Code." (7 Va. Reg. Regs. 1085.)

Mr. Walsh's interpretation of the Unfit definition and the substantive heating requirements in § 602 also violate well-established principles for interpreting potentially ambiguous statutes and regulations, including: (1) that substantive changes made to laws or regulations are presumed to be purposeful (*Virginia–American Water Co. v. Prince William County Service Authority*, 246 Va. 509, 517, 436 S.E.2d 618, 622-23 (1993)); and (2) that when they conflict, specific provisions control over general ones (*Virginia Nat'l Bank v. Harris*, 220 Va. 336, 340, 257 S.E.2d 867, 870 (1979)). The present amendment would clarify the Unfit definition in harmony with the principles of construction.

Cost Impact:

The proposed amendment would have no clear cost impact on the Commonwealth or municipalities that enforce the VMC. However, if the Unfit definition were interpreted as Mr. Walsh's proposal M-202 suggests and the recent TRB Appeals decision seems to leave open, the costs to low-income homeowners throughout the state could be crushing.

The Unfit definition proposed and interpreted by Mr. Walsh would impose problematically vague requirements. This was clear in his testimony at the TRB appeal hearing, where he argued that the Unfit definition required an "approved primary heat source" (undefined in the USBC) that he explained as: (1) a heat source "labeled and used for whole-home heating and not for space heating" (TRB Hearing Audio Recording at 1:25:42); (2) heating "acceptable under the building code as a sole-source heater" (*Id.* at 1:26:46); and (3) a heat source with "documentation that supports that it is an acceptable heating system for a house" (*Id.* at 1:33:49). He even indicated that an owner-occupied home could be subject to condemnation for lack of an approved heating system "in July, when it is 102 [degrees] outside." (*Id.* at 1:32:49)

According to 2014 Census Bureau data, more than 68,000 owner-occupied dwellings in Virginia use wood as their primary heating fuel and nearly 5,000 others use no fuel at all for heating, together accounting for 3.6% of the total owner-occupied homes in the state. (U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates, Table B25117) It is unclear how many of those homes would be in violation of the amendments proposed in M-202, or how many of the homes heated primarily with electricity, coal, fuel oil, or "other fuel" also lack an "approved primary heat source" under Mr. Walsh's proposal M-202. But it is safe to assume that Mr. Walsh's proposal would affect many tens of thousands of households in Virginia.

Amending the Unfit definition as here proposed would protect potentially tens of thousands of homeowners from the great expense of compliance or even from losing their homes due to the overaggressive interpretation and application of the current definition, as interpreted through one possible reading of the TRB's recent decision and as suggested in the testimony quoted above.

Workgroup Recommendation

Workgroup 1 Recommendation: None

Workgroup 1 Reason: None

Workgroup 2 Recommendation Recommendation: Non-Consensus Final

Workgroup 2 Reason: Reason: This proposal responds to a recent administrative appeal decision by the State Building code Technical Review Board (TRB), (Consolidated Appeals 15-12 and 15-13.) The appeals challenged the City of Richmond's application of VMC Section 105.1 to threaten with condemnation owner-occupied homes it claimed met VMC Section 202's definition of Structure Unfit for Human Occupancy (Unfit) because they lacked primary heating systems. Peter Askin with the Legal Aid Justice Center gave an overview of the proposal in the absence of Mr. Phil Storey.

Comments:

Cindy Davis - **Move forward with non-consensus**

Board Decision

None

M-202(2) cdpVA-15

M-603.1 cdpVA-15

Proponent : Phillip Storey, Representing Legal Aid Justice Center (phil@justice4all.org)

2012 Virginia Maintenance Code

603.1 Mechanical appliances.

~~All~~ Required mechanical appliances, fireplaces, solid fuel-burning appliances, cooking appliances and water heating appliances shall be properly installed and maintained in a safe working condition, and shall be capable of performing the intended function.

Reason: Both the existing (2012) language and the amended language proposed in the VMC Rewrite Committee's document require full maintenance of installed mechanical appliances that are not required by the code, which could be costly and unjustified by health and safety concerns. This conflicts with the VBCOA's proposed new § 103.2.1 (included in the VMC Rewrite Committee's document), which we support. More importantly, it is also contrary to the purpose of the VMC as stated explicitly in Va. Code § 36-99 and in VMC § 102.1 of protecting health and safety while allowing maintenance at the least possible cost consistent with recognized standards. The language here proposed would bring § 603.1 into harmony with the explicit purpose of the VMC.

Cost Impact: Bringing mechanical appliance maintenance requirements in line with the explicit purpose of the VMC should have no cost impact on Virginia jurisdictions. It has the potential for significant cost savings to owners of structures, who not be required to maintain full functioning of non-required mechanical appliances that are not unsafe.

Workgroup Recommendation

Workgroup 1 Recommendation: None

Workgroup 1 Reason: None

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Board Decision

None

M-604.3.1.1 cdpVA-15

Proponent : Haywood Kines (hkines@pwcgov.org)

2012 Virginia Maintenance Code

604.3.1.1 Electrical equipment.
Electrical distribution equipment, motor circuits, power equipment, transformers, wire, cable, flexible cords, wiring devices, ground fault circuit interrupters, surge protectors, molded case circuit breakers, low-voltage fuses, luminaires, ballasts, motors and electronic control, signaling and communication equipment that have been exposed to water shall be replaced in accordance with the provisions of the *International Building Code.*

- **Exception:** The following equipment shall be allowed to be repaired or reused where an inspection report from the equipment manufacturer, an approved representative of the equipment manufacturer, a third party ~~licensed or certified electrician~~field evaluation body, or an electrical engineer indicates that the exposed equipment has not sustained damage that requires replacement:
    1. Enclosed switches, rated 600 volts or less;
    2. Busway, rated 600 volts or less;
    3. Panelboards, rated 600 volts or less;
    4. Switchboards, rated 600 volts or less;
    5. Fire pump controllers, rated 600 volts or less;
    6. Manual and magnetic motor controllers;
    7. Motor control centers;
    8. Alternating current high-voltage circuit breakers;
    9. Low-voltage power circuit breakers;
    10. Protective relays, meters and current transformers;
    11. Low- and medium-voltage switchgear;
    12. Liquid-filled transformers;
    13. Cast-resin transformers;
    14. Wire or cable that is suitable for wet locations and whose ends have not been exposed to water;
    15. Wire or cable, not containing fillers, that is suitable for wet locations and whose ends have not been exposed to water;
    16. Luminaires that are listed as submersible;
    17. Motors;
    18. Electronic control, signaling and communication equipment.

Reason: The proposal adds a Third Party Field Evaluation Body to the list that may provide a report to the AHJ documenting the equipment exposed to water damage from flooding or Fire Fighting has not sustained any damage. The Third Party Evaluation Bodies are recognized by NFPA 790 Standard for Competency for third party field evaluations. Some of these Bodies are also Nationally Recognized Testing Laboratories (NRTLs) by OSHA and Approved to evaluate unlisted equipment and provide testing reports with a Label for the AHJ to except for approval. The reason for the " third party licensed or certified electrician" to be removed is based Va. DPOR Title 54.1 Chapter 11 Individual License and Certification Regulations; none of the definitions in the regulations for Electrician Work, Electrician, or Master has requirements for abilities to test damaged equipment or qualifications to certify equipment. Also there is no

definition for "Certified Electrician" for the AHJ to determine qualifications to provide testing reports or documents per the definitions in the regulations. These regulations for Licensed Electrical tradesman and contractors are intended for new construction, Alterations to existing systems and general maintenance of electrical equipment and systems to comply with the Va. Uniform Statewide Building Codes.

Cost Impact: The cost difference would be based on the hourly rate of each Company or Individual performing the evaluation and amount of equipment the needed to be evaluated for damaged.

Workgroup Recommendation

Workgroup 1 Recommendation Recommendation: Pending

Workgroup 1 Reason: None

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Board Decision

None

M-604.3.1.1 cdpVA-15

R-101.1 cdpVA-15

Proponent : Kenney Payne, Representing AIA-VA (kpayne@moseleyarchitects.com)

2012 Virginia Construction Code

103.3 Change of occupancy.
No change of occupancy shall be made in any structure when the current USBC requires a greater degree of accessibility, structural strength, fire protection, means of egress, ventilation or sanitation. When such a greater degree is required, the owner or the owner's agent shall comply with the following:

1. When involving Group I-2 or I-3, written application shall be made to the local building department for a new certificate of occupancy and the new certificate of occupancy shall be obtained prior to the new use of the structure. When impractical to achieve compliance with this code for the new occupancy classification, the building official shall consider modifications upon application and as provided for in Section 106.3. In addition, the applicable accessibility provisions of Section 1012.8 of Part II of the *Virginia Uniform Statewide Building Code*, also known as the "*Virginia ~~Rehabilitation~~Existing Building Code*," or the "~~VRC~~VEBC" shall be met.
    - **Exception:** This section shall not be construed to permit noncompliance with any applicable flood load or flood-resistant construction requirements of this code.
2. In other than Group I-2 or I-3, the provisions of the ~~VRC~~VEBC for change of occupancy shall be met.

103.4 Additions.
Additions to buildings and structures shall comply with the requirements of this code for new construction or shall comply with the ~~VRC~~VEBC. An existing building or structure plus additions shall comply with the height and area provisions of Chapter 5 and the applicable provisions of Chapter 9. Further, this code shall not require changes to the design or construction of any portions of the building or structure not altered or affected by an addition, unless the addition has the effect of lowering the current level of safety.

- **Exceptions:**
    1. This section shall not be construed to permit noncompliance with any applicable flood load or flood-resistant construction requirements of this code.
    2. When this code is used for compliance, existing structural elements carrying gravity loads shall be permitted to comply with Section 1103of the~~*International Existing Building Code*~~*VEBC*.

103.5 Reconstruction, alteration or repair in Group R-5 occupancies.
The following criteria is applicable to reconstruction, alteration or repair of Group R-5 buildings or structures:

1. Any reconstruction, alteration or repair shall not adversely affect the performance of the building or structure, or cause the building or structure to become unsafe or lower existing levels of health and safety.
2. Parts of the building or structure not being reconstructed, altered or repaired shall not be required to comply with the requirements of this code applicable to newly constructed buildings or structures.
3. The installation of material or equipment, or both, that is neither required nor prohibited shall only be required to comply with the provisions of this code relating to the safe installation of such material or equipment.
4. Material or equipment, or both, may be replaced in the same location with material or equipment of a similar kind or capacity.
    - **Exceptions:**
        - 4.1. This section shall not be construed to permit noncompliance with any applicable flood load or flood-resistant construction requirements of this code.
        - 4.2. Reconstructed decks, balconies, porches and similar structures located 30 inches (762 mm) or more above grade shall meet the current code provisions for structural loading capacity, connections and structural attachment. This requirement excludes the configuration and height of handrails and guardrails.
        - 4.3. Compliance with the ~~VRC~~VEBC shall be an acceptable alternative to compliance with this section at the discretion of the owner or owner's agent.

103.6 Reconstruction, alteration, and repair in other occupancies.
Reconstruction, alteration, and repair in occupancies other than Group R-5 shall comply with the ~~VRC~~VEBC.

103.7 Retrofit requirements.
The local building department shall enforce the provisions of Section 1701 of the ~~VRC~~VEBC, which require certain existing buildings to be retrofitted with fire protection systems and other safety equipment. Retroactive fire protection system requirements contained in the *International Fire Code* (IFC) shall not be applicable unless required for compliance with the provisions of Section 1701of the ~~VRC~~VEBC.

117.2 Moved buildings and structures.
Any building or structure moved into a locality or moved to a new location within a locality shall not be occupied or used until a certification of occupancy is issued for the new location. Such moved buildings or structures shall be required to comply with the requirements of this code for a newly constructed building or structure unless meeting all of the following requirements relative to the new location:

1. There is no change in the occupancy classification from its previous location.
2. The building or structure was in compliance with all state and local requirements applicable to it in its previous location and is in compliance with all state and local requirements applicable if originally constructed in the new location.

3. The building or structure did not become unsafe during the moving process due to structural damage or for other reasons.
4. Any alterations, reconstruction, renovations or repairs made pursuant to the move are in compliance with applicable requirements of the ~~VRC~~VEBC.

2012 Virginia Rehabilitation Code

101.1 Short title.
The *Virginia Uniform Statewide Building Code*, Part II, Rehabilitation, may be cited as the "*Virginia ~~Rehabilitation~~Existing Building Code*," or as the "~~VRC~~VEBC."

101.2 Incorporation by reference.
Chapters 2 –16 of the 2012 *International Existing Building Code*, published by the International Code Council, Inc., are adopted and incorporated by reference to be an enforceable part of the ~~VRC~~VEBC. The term "IEBC" means the 2012 *International Existing Building Code*, published by the International Code Council, Inc. Any codes and standards referenced in the IEBC are also considered to be part of the incorporation by reference, except that such codes and standards are used only to the prescribed extent of each such reference.

101.3 Numbering system.
A dual numbering system is used in the ~~VRC~~VEBC to correlate the numbering system of the *Virginia Administrative Code* with the numbering system of the IEBC. IEBC numbering system designations are provided in the catch-lines of the *Virginia Administrative Code* sections and cross references between sections or chapters of the ~~VRC~~VEBC use only the IEBC numbering system designations. The term "chapter" is used in the context of the numbering system of the IEBC and may mean a chapter in the ~~VRC~~VEBC, a chapter in the IEBC or a chapter in a referenced code or standard, depending on the context of the use of the term. The term "chapter" is not used to designate a chapter of the *Virginia Administrative Code*, unless clearly indicated.

101.4 Arrangement of code provisions.
The ~~VRC~~VEBC is comprised of the combination of (i) the provisions of Chapter 1, Administration, which are established herein, (ii) Chapters 2 –16 of the IEBC, which are incorporated by reference in Section 101.2, and (iii) the changes to the text of the incorporated chapters of the IEBC that are specifically identified, including any new chapters added. The terminology "changes to the text of the incorporated chapters of the IEBC that are specifically identified, including any new chapters added" shall also be referred to as the "state amendments to the IEBC." Such state amendments to the IEBC are set out using corresponding chapter and section numbers of the IEBC numbering system. In addition, since Chapter 1 of the IEBC is not incorporated as part of the ~~VRC~~VEBC, any reference to a provision of Chapter 1of the IEBC in the provisions of Chapters 2 –16 of the IEBC is generally invalid. However, where the purpose of such a reference would clearly correspond to a provision of Chapter 1 established herein, then the reference may be construed to be a valid reference to such corresponding Chapter 1 provision.

101.5 Use of terminology and notes.
The term "this code," or "the code," where used in the provisions of Chapter 1, in Chapters 2 –16 of the IEBC, or in the state amendments to the IEBC, means the ~~VRC~~VEBC, unless the context clearly indicates otherwise. The term "this code," or "the code," where used in a code or standard referenced in the ~~IEBC~~VEBC, means that code or standard, unless the context clearly indicates otherwise. The term "USBC" where used in this code, means the *Virginia Construction Code*, or VCC, unless the context clearly indicates otherwise. In addition, where the phrase "of the *International Building Code* under which the building was constructed" is used in the ~~IEBC~~VEBC, it shall be construed to mean the USBC or other code that was in effect when the building was built. Further, the use of notes in Chapter 1 is to provide information only and shall not be construed as changing the meaning of any code provision. Notes in the ~~IEBC~~VEBC, in the codes and standards referenced in the ~~IEBC and in the state amendments to the IEBC~~VEBC, may modify the content of a related provision and shall be considered to be a valid part of the provision, unless the context clearly indicates otherwise.

Reason: The proposed new title "*Virginia Existing Building Code*" (VEBC) follows the model code "*International Existing Building Code*" (IEBC) for which it is named. Although not "officially" recognized as such, the "*International Residential Code*" (with state amendments) is most often referred to and known as the "*Virginia Residential Code*" or VRC.
The proposed code change would eliminate the possible confusion.

Cost Impact: None.

Workgroup Recommendation

Workgroup 1 Recommendation: None

Workgroup 1 Reason: None

Board Decision

None

R-101.1 cdpVA-15

R-101.5 cdpVA-15

Proponent : Kenney Payne, Representing AIA-VA (kpayne@moseleyarchitects.com)

2012 Virginia Rehabilitation Code

101.5 Use of terminology and notes. ~~The term "this code," or "the code," where used in the provisions of Chapter 1, in Chapters 2 – 16 of the IEBC, or in the state amendments to the IEBC, means the VRC, unless the con-text clearly indicates otherwise. The term "this code," or "the code," where used in a code or standard referenced in the IEBC, means that code or standard, unless the context clearly indicates otherwise. The term "USBC" where used in this code, means the VCC, unless the context clearly indicates otherwise. In addition, where the phrase "of the International Building Code under which the building was constructed" is used in the IEBC, it shall be construed to mean the USBC or other code that was in effect when the building was built. Further, the use of notes in Chapter 1 is to provide information only and shall not be construed as changing the meaning of any code provision. Notes in the IEBC, in the codes and standards referenced in the IEBC and in the state amendments to the IEBC, may modify the content of a related provision and shall be considered to be a valid part of the provision, unless the context clearly indicates otherwise.~~ The provisions of this code shall be used as follows:

1. The term "this code," or "the code," where used in the provisions of Chapter 1, in Chapters 2 –16 of the IEBC, or in the state amendments to the IEBC, means the VEBC, unless the context clearly indicates otherwise.

2. The term "this code," or "the code," where used in a code or standard referenced in the VEBC, means that code or standard, unless the context clearly indicates otherwise.

3. The term "USBC" where used in this code, means the *Virginia Construction Code*, or VCC, unless the context clearly indicates otherwise.

4. Where the phrase "of the *International Building Code* under which the building was constructed" is used in the VEBC, it shall be construed to mean the USBC or other code that was in effect when the building was built.

5. The use of notes in Chapter 1 is to provide information only and shall not be construed as changing the meaning of any code provision.

6. Notes in the VEBC, in the codes and standards referenced in the VEBC, may modify the content of a related provision and shall be considered to be a valid part of the provision, unless the context clearly indicates otherwise.

7. References to *International Codes* and standards, where used in this code, include state amendments made to those *International Codes* and standards in the VCC.

Note: The VCC references other ~~code that was in effect when the building was~~

~~built. Further, the use of notes in Chapter 1 is to provide information only and shall not be construed as changing the meaning of any code provision. Notes in the IEBC, in the codes~~*International Codes* and standards ~~referenced in~~including the ~~IEBC and in the state amendments to the IEBC, may modify the content of a related provision and shall be considered to be a valid part of the provision, unless the context clearly indicates otherwise.~~following major codes:

2015 *International Plumbing Code* (IPC)
2015 *International Mechanical Code* (IMC)
2014 NFPA 70
2015 *International Fuel Gas Code* (IFGC)
2015 *International Energy Conservation Code* (IECC)
2015 *International Residential Code* (IRC)

Reason: The entire paragraph has been converted to a list format, which is much easier to read and understand. Other than the new #7 and "Note" the text remains unchanged (except for "VEBC" in lieu of "VRC").

The added language under #7 clarifies that any VRC reference to the IBC means the VCC, which includes the Virginia amendments to the model IBC, as well as, any VRC references to of the other iCodes or standards means those including Virginia amendments. Otherwise, such references would be to the IBC (or other iCodes or standards) without the Virginia amendments.

The "Note" follows the same concept as that found in VCC 101.2, Note 1 to remind everyone of the "International Codes" referenced in the VEBC that might otherwise be amended in the USBC.

Cost Impact: None.

Workgroup Recommendation

Workgroup 1 Recommendation Recommendation: Consensus for Approval

Workgroup 1 Reason: Consenus for approval pending Kennys changes when referencing the International Building Code and IBC/IEBC reference.

Workgroup 2 Recommendation Recommendation: Consensus for Approval

Workgroup 2 Reason: Reason: The entire paragraph has been converted to a list format, which is much easier to read and understand. Other than the new #7 and "Note" the text remains unchanged (except for "VEBC" in lieu of "VRC".
Kenney Payne gave an overview of the proposal. He is presenting under adhoc group and as a speaker for VRC.

Comments:

Johnna Grizzard stated that we will not be presenting these code changes to the national level at this time.

Ron Clements said he will do some of these code changes at the national level.

Sean Farrell stated he wanted to clarify, we are just proposing to change the VA Rehabilitation Code to the Virginia Existing Building Code.

Cindy Davis stated we will **Move forward as consensus.**

Board Decision

None

R-101.5 cdpVA-15

R-202(2) cdpVA-15

Proponent : Kenney Payne, Representing AIA-VA (kpayne@moseleyarchitects.com)

2012 Virginia Rehabilitation Code

SECTION 202 DEFINITIONS

EXISTING BUILDING.
A building for which a legal certificate of occupancy has been issued under any edition of the USBC or approved by the building official, and that has been occupied for its intended use; or, a building built prior to the initial edition of the USBC.

2015 International Existing Building Code

SECTION 202 DEFINITIONS

~~**EXISTING BUILDING.**~~
~~A building erected prior to the date of adoption of the appropriate code, or one for which a legal building permit has been issued.~~

Reason: There should be a way to address buildings that have been occupied, but have never been issued an "actual" certificate of occupancy. In some instances, there may not be any documentation, and in others, there may be a "document" but it is not an "official" certificate of occupancy. Per a strict reading of the current definition would such buildings be considered "existing buildings?" We all know the buildings are there, and they have been or are occupied.

This code change attempts to address that question by saying at some point, a building official "approved" such occupancy (whihc is a defined term), and therefore such buildings would be considered an existing building.

Cost Impact: None.

Workgroup Recommendation

Workgroup 2 Recommendation Recommendation: Consensus for Approval

Workgroup 2 Reason: Reason: There should be a way to address buildings that have been occupied, but have never been issued an "actual" certificate of occupancy. In some instances,

there may not be any documentation, and in others, there may be a "document" but it is not an "official" certificate of occupancy. This code change attempts to address that question by saying at some point, a code official "approved" such occupancy, and therefore such buildings would be considered an existing building.
Kenney Payne gave an overview of his proposal.

Comments:

Bob Adkins said his building official is opposed to this proposal. He read an email from him. The language is permissive and will not be applied uniformly throughout the state. To assume a building constructed under the VUSBC that does not have a certificate of occupancy was "approved" by some other means is simply unsound decision making. This is not about "just missing a piece of paper." If approved this will open the door to "approvals" given by others not reporting to the Building Official (e.g., Zoning Approval, a limited Fire Prevention Inspection conducted by a Fire House; a Tax Assessment) usurping the enforcement of the Building Code for building constructed without a Building Permit and issuance of a Certificate of Occupancy.

Johnna Grizzard stated that the current definition is more lenient than the proposed definition. A zoning official doesn't have jurisdiction when it comes to a building code.

Andrew Milliken believes this is a real issue, the word approved creates confusion. He thinks we should change the language.

Chris Phillips stated approved means approved by the building official.

Bob Adkins stated the language, as approved by code official or as defined in the building code, he thinks it may satisfy his building official.

Kenney Payne asked about the term "as approved"?

Cindy Davis said we will **Move forward as consensus adding "as approved by the building official".**

Vernon Hodge - The building code as always required a certificate of occupancy since 1973. If the building doesn't have a certificate of occupancy, the building official is obligated to issue one immediately if he finds out that the building doesn't have one and was built after 1973. There should not be any post building out there without a certificate of occupancy. So if you are trying to change this to address an illegally constructed building. You can take care of that.

Sean Farrell stated this is the world that he lives in with code compliance and he can assure you that about 1% of the buildings out there don't have a certificate of occupancy. It goes into the category that Vernon Hodge explained where we have all the inspections, we have everything in place except the owner didn't come to the counter to pick-up a piece of paper. Most issues resolve around a permit that was issued but inspections were never obtained. The documented compliance was never achieved. He agrees with Vernon that we need to institute some kind of notice of violation or enforcement action in order to get there. He does have some of the same concerns that Eric has with this particular language. If we are assured that approved means the building official or authority having jurisdiction, and he always assumed that authority having jurisdiction was the jurisdiction. But if that is indeed the building official then he thinks an interpretation of that magnitude would satisfy Eric's concerns.

Board Decision

None

R-202(2) cdpVA-15

R-202(5) cdpVA-15

Proponent : Bob Orr, Representing VBCOA VRC Committee (borr@culpepercounty.gov)

2015 International Existing Building Code

SECTION 202 DEFINITIONS

~~**UNSAFE.**~~
~~Buildings, structures or equipment that are unsanitary, or that are deficient due to inadequate means of egress facilities, inadequate light and ventilation, or that constitute a fire hazard, or in which the structure or individual structural members meet the definition of "*Dangerous*," or that are otherwise *dangerous* to human life or the public welfare, or that involve illegal or improper occupancy or inadequate maintenance shall be deemed unsafe. A vacant structure that is not secured against entry shall be deemed unsafe.~~

~~**[BS] DANGEROUS.**~~
~~Any building, structure or portion thereof that meets any of the conditions described below shall be deemed dangerous:~~

1. ~~The building or structure has collapsed, has partially collapsed, has moved off its foundation, or lacks the necessary support of the ground.~~
2. ~~There exists a significant risk of collapse, detachment or dislodgement of any portion, member, appurtenance or ornamentation of the building or structure under service loads.~~

Reason: These definitions are not inline with those in the Virginia Construction Code addressing buildings or structures under active permit.
2012 Virginia Rehabilitation Code section 201.3 directs you to the Virginia construction Code:

201.3 Terms defined in other codes."Where terms are not defined in this code and are defined in other International Codes, such terms shall have the meanings ascribed to them in those codes, except for terms that are not defined in this code and that are defined in the VCC shall take precedence over other definitions".

Cost Impact: No cost impact as this is a function of interpretation clarity.

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Board Decision

None

R-202(5) cdpVA-15

R-301.1 cdpVA-15

Proponent : Kenney Payne, Representing AIA-VA (kpayne@moseleyarchitects.com)

2015 International Existing Building Code

OPTION A

301.1 General. The *repair*, *alteration*, *change of occupancy*, *addition* or ~~relocation~~moving of all *existing buildings* shall comply with one of the methods listed in Sections 301.1.1 through ~~301.1.3~~301.1.4 as selected by the applicant. Sections 301.1.1 through ~~301.1.3~~301.1.4 shall not be applied in combination with each other. ~~Where this code requires consideration of the seismic forceresisting system of an *existing building* subject to *repair*, *alteration*, *change of occupancy*, *addition* or relocation of *existing buildings*, the seismic evaluation and design shall be based on Section 301.1.4 regardless of which compliance method is used.~~

> ~~**Exception:** Subject to the approval of the *code official*, *alterations* complying with the laws in existence at the time the building or the affected portion of the building was built shall be considered in compliance with the provisions of this code unless the building is undergoing more than a limited structural *alteration* as defined in Section 907.4.4. New structural members added as part of the *alteration* shall comply with the *International BuildingCode*. *Alterations* of *existing buildings* in *flood hazardareas* shall comply with Section 701.3.~~

301.1.1 Prescriptive compliance method. *Repairs*, *alterations*, *additions*,~~and~~*changes of occupancy*, and moved buildings complying with Chapter 4 of this code ~~in buildings complying with the *International Fire Code*~~ shall be considered in compliance with the provisions of this code.

301.1.2 Work area compliance method. *Repairs*, *alterations, additions, changes* ~~*in*~~*of occupancy* and ~~relocated~~moved buildings complying with the applicable requirements of Chapters 5 through 13 of this code shall be considered in compliance with the provisions of this code.

301.1.3 Performance compliance method. *Repairs*, *alterations*, *additions*, *changes* ~~*in*~~*of occupancy* and ~~relocated~~moved buildings complying with Chapter 14 of this code shall be considered in compliance with the provisions of this code.

301.1.4 Previous code compliance method. *Alterations* and *repairs* complying with the requirements of the building code under which the building or structure or the affected portions thereof was built, or as previously approved by the building official, shall be considered in compliance with the provisions of this code, unless the building or structure or the affected portions thereof is undergoing a substantial structural alteration as described in Section 907.4.2. New structural members added as part of the *alteration* or *repairs* shall comply with the *IBC*. *Alterations* and *repairs* of *existing buildings* in flood hazard areas shall comply with Section 601.3, for *repairs*, or Section

701.3 for *alterations*.

[BS] ~~301.1.4~~301.2 Seismic evaluation and design procedures. Where this code requires consideration of the seismic force-resisting system of an *existing building* subject to *repair*, *alteration*, *change of occupancy*, *addition* or relocation of *existing buildings*, the seismic evaluation and design shall be based on this section regardless of which compliance method is used. The seismic evaluation and design shall be based on the procedures specified in the *International Building Code* or ASCE 41. The procedures contained in Appendix A of this code shall be permitted to be used as specified in Section ~~301.1.4.2~~301.2.2.

[renumber remaining sections and tables and correlate cross references from other sections of the code]

OPTION B

301.1 General. The *repair*, *alteration*, *change of occupancy*, *addition* or ~~relocation~~moving of all *existing buildings* shall comply with one of the mthods listed in Sections 301.1.1 through 301.1.3 as selected by the applicant. Sections 301.1.1 through 301.1.3 shall not be applied in combination with each other. ~~Where this code requires consideration of the seismic forceresisting system of an *existing building* subject to *repair*, *alteration*, *change of occupancy*, *addition* or relocation of *existing buildings*, the seismic evaluation and design shall be based on Section 301.1.4 regardless of which compliance method is used.~~

Exception: ~~Subject to the approval of the *code official*, a~~*Alterations* and *repairs* complying with the ~~laws in existence at the time~~requirements of the building code under which the building or structure or the affected portion of the building or structure was built, or complying with requirements as previously approved by the building official, shall be considered in compliance with the provisions of this code unless the building or structure or portions thereof is undergoing ~~more than~~ a ~~limited~~substantial structural *alteration* as ~~defined~~described in Section 907.4.~~4~~2. New structural members added as part of the *alteration*or *repair* shall comply with the *International Building Code*. *Alteration*s and *repairs* of *existing buildings* in *flood hazard areas* shall comply with Section 701.3 for *alterations* and Section 601.3 for *repairs*.

301.1.1 Prescriptive compliance method. *Repairs*, *alterations*, *additions*,~~and~~*changes of occupancy* and moved buildings complying with Chapter 4 of this code ~~in buildings complying with the *International Fire Code*~~ shall be considered in compliance with the provisions of this code.

301.1.2 Work area compliance method. *Repairs*, *alterations*, *additions*, *changes*~~in~~*of occupancy* and ~~relocated~~moved buildings complying with the applicable requirements of Chapters 5 through 13 of this code shall be considered in compliance with the provisions of this code.

301.1.3 Performance compliance method. *Repairs*, *alterations*, *additions*, *changes*~~in~~*of occupancy* and ~~relocated~~moved buildings complying with Chapter 14 of this code shall be considered in compliance with the provisions of this code.

Reason:
OPTION A:

Regarding 301.1, the proposal takes an "exception" (which is essentially a 4th compliance method) and giving it its own "section" like the other compliance methods and adds "repairs" to the scope (what is good enough for alterations should be good enough for repairs). It also moves structural-related provisions from 301.1 to the structural part of the Section - which would now become 301.2. That way, all structural-related provisions are kept together and not spread around. Deleted "relocation" and substituted "moved' since "relocated" buildings are covered under the Industrial Buildings Code and are therefore not under the purview of the VRC.

Regarding the other sections: The changes made regarding "change in occupancy" to "change of occupancy" is so we use a defined term (which is change of occupancy), to achieve consistency, and because change of occupancy is the term used in the technical provisions (Section 407, Chapter 10, and 1401.2). Deleted "relocated" and substituted "moved' since "relocated" buildings are covered under the Industrial Buildings Code and are therefore not under the purview of the VRC.

The rest of the changes are related to renumbering only.

OPTION B:

Regarding 301.1, the proposal leaves the "exception" (which is essentially a 4th compliance method) and adds "repairs" to the scope (what is good enough for alterations should be good enough for repairs). It also moves structural-related provisions from 301.1 to the structural part of the Section 301.1.4. That way, all structural-related provisions are kept together and not spread around.

Regarding the other sections: The changes made regarding "change in occupancy" to "change of occupancy" is so we use a defined term (which is change of occupancy), to achieve consistency, and because change of occupancy is the term used in the technical provisions (Section 407, Chapter 10, and 1401.2).

No renumbering is necessary with this Option.

Cost Impact: None.

Workgroup Recommendation

Workgroup 2 Recommendation Recommendation: Non-Consensus Final

Workgroup 2 Reason:
Reason: Tried to simplify the language when determining compliance methods, including taking an "exception" (which is actually a 4th compliance method) and giving it its own "section" like the other compliance methods. It also moves structural-related provisions from 301.1 to the structural part of the Section – which would now become 301.2. That way, all structural-related provisions are kept together and not spread around.

Kenney Payne gave an overview of his proposal.

Comments:

William King stated whatever the old provisions of the code, such as if it was built in 1975, forget all the provisions that have come passed this date. Prior to USBC you do whatever you feel like.

Johnna Grizzard stated this proposal was improving the existing language.

Ron Clements said he believed deleting the exception is a separate code change.

William King stated he thought this was an open modification. If we put this in as an exception to the language, as an option, then I believe that it becomes a Virginia Amendment with an allowance in there that actually becomes enforceable.

Kenney Payne asked if we left this as an exception with different language would this be acceptable?

Andrew Milliken asked if his proposal removed the subject to approval from the building official?

Vernon Hodge stated this was not enforceable language now because it is in the model code and it is administrative language.

Cindy Davis stated we would **Move forward as non-consensus with tweaking**.

DHCD Staff Note: Proposal has been modified since July 20, 2016 Workgroup Two meeting.

Board Decision

None

R-301.1 cdpVA-15

R-301.1.1 cdpVA-15

Proponent : Kenney Payne, Representing AIA-VA
(kpayne@moseleyarchitects.com)

2015 International Existing Building Code

301.1.1 Prescriptive compliance method. *Repairs*, *alterations*, *additions* and *changes of occupancy* complying with Chapter 4 of this code ~~in buildings complying with the *International Fire Code*~~ shall be considered in compliance with the provisions of this code.

~~**302.2 Additional codes.** *Alterations, repairs, additions* and *changes of occupancy* to, or relocation of, *existing buildings* and structures shall comply with the provisions for *alterations, repairs, additions* and *changes of occupancy* or relocation, respectively, in this code and the *International Energy Conservation Code*, *International Fire Code*, *International Fuel Gas Code*, *International Mechanical Code*, *International Plumbing Code*, *International Property Maintenance Code*, *International Private Sewage Disposal Code*, *International Residential Code* and NFPA 70. Where provisions of the other codes conflict with provisions of this code, the provisions of this code shall take precedence.~~

302.5 Fire alarm systems. An approved fire alarm system shall be installed in *existing buildings* and structures in accordance with Sections 302.5.1 through 302.5.7 and provide occupant notification in accordance with Section 907.5 of the *International Building Code* unless other requirements are provided by other sections of this code.

Exception: Occupancies with an existing, previously approved fire alarm system.

302.5.1 Group E. A fire alarm system shall be installed in accordance with Section 907.2.3 of the *International Building Code* in existing occupancies classified as Group E.

Exceptions:

1. A manual fire alarm system is not required in a building with a maximum area of 1,000 square feet (93 m2) that contains a single classroom and is located not closer than 50 feet (15 240 mm) from another building.

2. A manual fire alarm system is not required in Group E occupancies with an occupant load less than 50.

302.5.2 Group I-1. An automatic fire alarm system shall be installed in accordance with Section 907.2.6.1 of the *International Building Code* in existing facilities classified as Group I-1.

Exception: Where each sleeping room has a means of egress door opening directly to an exterior egress balcony that leads directly to the exits in accordance with Section 1021 of the *International Building Code*, and the building is not more than three stories in height.

302.5.3 Group I-2. In occupancies classified as Group I-2, an automatic fire alarm system shall be installed in accordance with Section 302.5.3.1.

Exception: Manual fire alarm boxes in patient sleeping areas shall not be required at exits if located at all nurses' control stations or other constantly attended staff locations, provided such stations are visible and continuously accessible and that travel distances required in Section 907.5.2.1 of the *International Building Code* are not exceeded.

302.5.3.1 Corridors in Group I-2. An automatic smoke detection system shall be installed in corridors in Group I-2 Condition 1 facilities and spaces permitted to be open to the corridors by Section 407.2 of the *International Building Code*. The system shall be activated in accordance with Section 907.4 of the *International Building Code*. Group I-2 Condition 2 occupancies shall be equipped with an automatic smoke detection system as required in Section 407 of the *International Building Code*.

Exceptions:

1. Corridor smoke detection is not required in smoke compartments that contain sleeping units where such units are provided with smoke detectors that comply with UL 268. Such detectors shall provide a visual display on the corridor side of each sleeping unit and shall provide an audible and visual alarm at the care providers' station attending each unit.

2. Corridor smoke detection is not required in smoke compartments that contain sleeping units where sleeping unit doors are equipped with automatic door-closing devices with integral smoke detectors on the unit sides installed in accordance with their listing, provided that the integral detectors perform the required alerting function.

302.5.4 Group I-3. An automatic and manual fire alarm system shall be installed in accordance with Section 907.2.6.3 of the *International Building Code* in existing occupancies classified as Group I-3.

302.5.5 Group R-1. A fire alarm system and smoke alarms shall be installed in accordance with Sections 302.5.5.1 through 302.5.5.2.1 in existing occupancies classified as Group R-1.

302.5.5.1 Group R-1 hotel and motel manual fire alarm system. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 of the *International Building Code* shall be installed in existing Group R-1 hotels and motels more than three stories or with more than 20 sleeping units.

Exceptions:

1. Buildings less than two stories in height where all sleeping units, attics and crawl spaces are separated by 1-hour fire-resistance-rated construction and each sleeping

unit has direct access to a public way, egress court or yard.

2. Manual fire alarm boxes are not required throughout the building where the following conditions are met:

2.1. The building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 of the *International Building Code*.

2.2. The notification appliances will activate upon sprinkler water flow.

2.3. Not less than one manual fire alarm box is installed at an approved location.

302.5.5.1.1 Group R-1 hotel and motel automatic smoke detection system. An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.5 of the *International Building Code* shall be installed in existing Group R-1 hotels and motels throughout all interior corridors serving sleeping rooms not equipped with an approved, supervised sprinkler system installed in accordance with Section 903 of the *International Building Code*.

Exception: An automatic smoke detection system is not required in buildings that do not have interior corridors serving sleeping units and where each sleeping unit has a means of egress door opening directly to an exit or to an exterior exit access that leads directly to an exit.

302.5.5.2 Group R-1 boarding and rooming houses manual fire alarm system. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 of the *International Building Code* shall be installed in existing Group R-1 boarding and rooming houses.

Exception: Buildings less than two stories in height where all sleeping units, attics and crawl spaces are separated by 1-hour fire-resistance-rated construction and each sleeping unit has direct access to a public way, egress court or yard.

302.5.5.2.1 Group R-1 boarding and rooming houses automatic smoke detection system. An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.5 of the *International Building Code* shall be installed in existing Group R-1 boarding and rooming houses throughout all interior corridors serving sleeping units not equipped with an approved, supervised sprinkler system installed in accordance with Section 903 of the *International Building Code*.

Exception: Buildings equipped with single-station smoke alarms meeting or exceeding the requirements of Section 907.2.11.1 of the *International Building Code* and where the fire alarm system includes not less than one manual fire alarm box per floor arranged to initiate the alarm.

302.5.6 Group R-2. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 of the *International Building Code*

shall be installed in existing occupancies classified as Group R-2 more than three stories in height or with more than 16 dwelling or sleeping units.

Exceptions:

1. Where each living unit is separated from other contiguous living units by fire barriers having a fire-resistance rating of not less than 3/4 hour, and where each living unit has either its own independent exit or its own independent stairway or ramp discharging at grade.

2. A separate fire alarm system is not required in buildings that are equipped throughout with an approved supervised automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 of the *International Building Code* and having a local alarm to notify all occupants.

3. A fire alarm system is not required in buildings that do not have interior corridors serving dwelling units and are protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 of the *International Building Code*, provided that dwelling units either have a means of egress door opening directly to an exterior exit access that leads directly to the exits or are served by openended corridors designed in accordance with Section 1027.6, Exception 3 of the *International Building Code*.

4. A fire alarm system is not required in buildings that do not have interior corridors serving dwelling units, do not exceed three stories in height and comply with both of the following:

4.1. Each dwelling unit is separated from other contiguous dwelling units by fire barriers having a fire-resistance rating of not less than 3/4 hour.

4.2. Each dwelling unit is provided with hardwired, interconnected smoke alarms as required by Section 907.2.11 of the *International Building Code*.

302.5.7 Group R-4. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 of the *International Building Code* shall be installed in existing Group R-4 residential care/assisted living facilities in accordance with Section 907.2.10.1 of the *International Building Code*.

Exceptions:

1. Where there are interconnected smoke alarms meeting the requirements of Section 907.2.11 of the *International Building Code* and there is not less than one manual fire alarm box per floor arranged to continuously sound the smoke alarms.

2. Other manually activated, continuously sounding alarms approved by the building official.

302.6 Single- and multiple-station smoke alarms. Single and multiple-station smoke alarms shall be installed in existing Group I-1 and R occupancies in accordance

with Sections 302.6.1 through 302.6.3.

302.6.1 Where required. Existing Group I-1 and R occupancies shall be provided with single-station smoke alarms in accordance with Section 907.2.11 of the *International Building Code*. Interconnection and power sources shall be in accordance with Sections 302.6.2 and 302.6.3, respectively.

Exceptions:

1. Where the code that was in effect at the time of construction required smoke alarms and smoke alarms complying with those requirements are already provided.

2. Where smoke alarms have been installed in occupancies and dwellings that were not required to have them at the time of construction, additional smoke alarms shall not be required provided that the existing smoke alarms comply with requirements that were in effect at the time of installation.

3. Where smoke detectors connected to a fire alarm system have been installed as a substitute for smoke alarms.

302.6.2 Interconnection. Where more than one smoke alarm is required to be installed within an individual dwelling or sleeping unit, the smoke alarms shall be interconnected in such a manner that the activation of one alarm will activate all of the alarms in the individual unit. Physical interconnection of smoke alarms shall not be required where listed wireless alarms are installed and all alarms sound upon activation of one alarm. The alarm shall be clearly audible in all bedrooms over background noise levels with all intervening doors closed.

Exceptions:

1. Interconnection is not required in buildings that are not undergoing *alterations*, *repairs* or construction of any kind.

2. Smoke alarms in existing areas are not required to be interconnected where *alterations* or *repairs* do not result in the removal of interior wall or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available that could provide access for interconnection without the removal of interior finishes.

302.6.3 Power source. Single-station smoke alarms shall receive their primary power from the building wiring provided that such wiring is served from a commercial source and shall be equipped with a battery backup. Smoke alarms with integral strobes that are not equipped with battery backup shall be connected to an emergency electrical system. Smoke alarms shall emit a signal when the batteries are low. Wiring shall be permanent and without a disconnecting switch other than as required for overcurrent protection.

Exceptions:

1. Smoke alarms are permitted to be solely battery operated in existing buildings

where construction is not taking place.

2. Smoke alarms are permitted to be solely battery operated in buildings that are not served from a commercial power source.

3. Smoke alarms are permitted to be solely battery operated in existing areas of buildings undergoing *alterations* or *repairs* that do not result in the removal of interior walls or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available that could provide access for building wiring without the removal of interior finishes.

402.5 Smoke alarms in existing portions of a building. Where an *addition* is made to a building or structure of a Group R or I-1 occupancy, the *existing building* shall be provided with smoke alarms in accordance with Section ~~1103.8~~ 302.5 of ~~the *International Fire Code*.~~this code.

403.10 Smoke alarms. Individual sleeping units and individual dwelling units in Group R and I-1 occupancies shall be provided with smoke alarms in accordance with Section ~~1103.8~~ 302.5 of ~~the *International Fire Code*.~~this code.

803.2.1 Existing vertical openings. All existing interior vertical openings connecting two or more floors shall be enclosed with approved assemblies having a fire-resistance rating of not less than 1 hour with approved opening protectives.

- **Exceptions:**
    1. Where vertical opening enclosure is not required by the *International Building Code*~~or the *International Fire Code*~~.
    2. Interior vertical openings other than stairways may be blocked at the floor and ceiling of the *work area* by installation of not less than 2 inches (51 mm) of solid wood or equivalent construction.
    3. The enclosure shall not be required where:
        - 3.1. Connecting the main floor and mezzanines; or
        - 3.2. All of the following conditions are met:
            - 3.2.1. The communicating area has a low hazard occupancy or has a moderate hazard occupancy that is protected throughout by an automatic sprinkler system.
            - 3.2.2. The lowest or next to the lowest level is a street floor.
            - 3.2.3. The entire area is open and unobstructed in a manner such that it may be assumed that a fire in any part of the interconnected spaces will be readily obvious to all of the occupants.
            - 3.2.4. Exit capacity is sufficient to provide egress simultaneously for all occupants of all levels by considering all areas to be a single floor area for the determination of required exit capacity.
            - 3.2.5. Each floor level, considered separately, has at least onehalf of its individual required exit

capacity provided by an exit or exits leading directly out of that level without having to traverse another communicating floor level or be exposed to the smoke or fire spreading from another communicating floor level.

4. In Group A occupancies, a minimum 30-minute enclosure shall be provided to protect all vertical openings not exceeding three stories.
5. In Group B occupancies, a minimum 30-minute enclosure shall be provided to protect all vertical openings not exceeding three stories. This enclosure, or the enclosure specified in Section 803.2.1, shall not be required in the following locations:
    - 5.1. Buildings not exceeding 3,000 square feet (279 m^2) per floor.
    - 5.2. Buildings protected throughout by an approved automatic fire sprinkler system.
6. In Group E occupancies, the enclosure shall not be required for vertical openings not exceeding three stories when the building is protected throughout by an approved automatic fire sprinkler system.
7. In Group F occupancies, the enclosure shall not be required in the following locations:
    - 7.1. Vertical openings not exceeding three stories.
    - 7.2. Special purpose occupancies where necessary for manufacturing operations and direct access is provided to at least one protected stairway.
    - 7.3. Buildings protected throughout by an approved automatic sprinkler system.
8. In Group H occupancies, the enclosure shall not be required for vertical openings not exceeding three stories where necessary for manufacturing operations and every floor level has direct access to at least two remote enclosed stairways or other approved exits.
9. In Group M occupancies, a minimum 30-minute enclosure shall be provided to protect all vertical openings not exceeding three stories. This enclosure, or the enclosure specified in Section 803.2.1, shall not be required in the following locations:
    - 9.1. Openings connecting only two floor levels.
    - 9.2. Occupancies protected throughout by an approved automatic sprinkler system.
10. In Group R-1 occupancies, the enclosure shall not be required for vertical openings not exceeding three stories in the following locations:
    - 10.1. Buildings protected throughout by an approved automatic sprinkler system.
    - 10.2. Buildings with less than 25 dwelling units or sleeping units where every sleeping room above the second floor is provided with direct access to a fire escape or other approved second exit by means of an approved exterior door or window having a sill height of not greater than 44 inches (1118 mm) and where:
        - 10.2.1. Any exit access corridor exceeding 8 feet (2438 mm) in length that serves two means of egress, one of which is an unprotected vertical

opening, shall have at least one of the means of egress separated from the vertical opening by a 1-hour fire barrier; and

10.2.2. The building is protected throughout by an automatic fire alarm system, installed and supervised in accordance with the *International Building Code*.

11. In Group R-2 occupancies, a minimum 30-minute enclosure shall be provided to protect all vertical openings not exceeding three stories. This enclosure, or the enclosure specified in Section 803.2.1, shall not be required in the following locations:
    - 11.1. Vertical openings not exceeding two stories with not more than four dwelling units per floor.
    - 11.2. Buildings protected throughout by an approved automatic sprinkler system.
    - 11.3. Buildings with not more than four dwelling units per floor where every sleeping room above the second floor is provided with direct access to a fire escape or other approved second exit by means of an approved exterior door or window having a sill height of not greater than 44 inches (1118 mm) and the building is protected throughout by an automatic fire alarm system complying with Section 804.4.
12. One- and two-family dwellings.
13. Group S occupancies where connecting not more than two floor levels or where connecting not more than three floor levels and the structure is equipped throughout with an approved automatic sprinkler system.
14. Group S occupancies where vertical opening protection is not required for open parking garages and ramps.

803.2.3 Supplemental stairway enclosure requirements. Where the *work area* on any floor exceeds 50 percent of that floor area, stairways that are part of the means of egress serving the *work area* shall~~, at a minimum,~~ be enclosed with smoke-tight construction on the highest *work area* floor and all floors below.

- **Exception:** Where stairway enclosure is not required by the *International Building Code*~~or the *International Fire Code*~~.

804.4.1 Occupancy requirements. A fire alarm system shall be installed in accordance with Sections 804.4.1.1 through 804.4.1.7 and Section 302.6 of this code. Existing alarm-notification appliances shall be automatically activated throughout the building. Where the building is not equipped with a fire alarm system, alarm-notification appliances within the *work area* shall be provided and automatically activated.

- **Exceptions:**
    1. Occupancies with an existing, previously approved fire alarm system.
    2. Where selective notification is permitted, alarmnotification appliances shall be automatically activated in the areas selected.

804.4.1.1 Group E. ~~A fire alarm system shall be installed in~~
In *work areas* ~~of Group E occupancies~~classified as ~~required by the *International Fire Code* for existing~~ Group E occupancies.

804.4.1.2 Group I-1. ~~A fire alarm system shall be installed in~~
In *work areas*~~of~~ classified as Group I-1 residential care/ assisted living facilities ~~as required by the *International Fire Code* for existing Group I-1~~ occupancies.

804.4.1.3 Group I-2. ~~A fire alarm system shall be installed throughout~~
Throughout occupancies classified as Group I-2~~ occupancies as required by the *International Fire Code*~~.

804.4.1.4 Group I-3. ~~A fire alarm system shall be installed in~~
In *work areas*~~of~~ classified as Group I-3 occupancies~~ as required by the *International Fire Code*~~.

804.4.1.5 Group R-1. ~~A fire alarm system shall be installed in~~
Throughout occupancies classified as Group R-1~~ occupancies as required by the *International Fire Code* for existing Group R-1 occupancies~~.

804.4.1.6 Group R-2. ~~A fire alarm system shall be installed in~~
In *work areas*~~of~~ classified as Group R-2 apartment buildings~~ as required by the *International Fire Code* for existing Group R-2 occupancies~~.

804.4.1.7 Group R-4. ~~A fire alarm system shall be installed in~~
In *work areas*~~of~~ classified as Group R-4 residential care/ assisted living facilities~~ as required by the *International Fire Code* for existing Group R-4 occupancies~~.

804.4.3 Smoke alarms. Individual sleeping units and individual dwelling units in any *work area* in Group R and I-1 occupancies shall be provided with smoke alarms in accordance with ~~the *International Fire Code*.~~

> ~~**Exception:** Interconnection of smoke alarms outside of the *work area* shall not be required.~~

Section 302.5 of this code.

> **Exception:** Interconnection of smoke alarms outside of the *work area* shall not be required.

1012.5.1.1 Fire wall alternative. In other than Groups H, F-1 and S-1, fire barriers

and horizontal assemblies constructed in accordance with Sections 707 and 711, respectively, of the *International Building Code* shall be permitted to be used in lieu of fire walls to subdivide the building into separate buildings for the purpose of complying with the area limitations required for the new occupancy where all of the following conditions are met:

1. The buildings are protected throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 of the *International ~~Fire~~ Building Code*.
2. The maximum allowable area between fire barriers, horizontal assemblies, or any combination thereof shall not exceed the maximum allowable area determined in accordance with Chapter 5 of the *International Building Code* without an increase allowed for an automatic sprinkler system in accordance with Section 506 of the *International Building Code*.
3. The fire-resistance rating of the fire barriers and horizontal assemblies shall be not less than that specified for fire walls in Table 706.4 of the *International Building Code*.

- **Exception:** Where horizontal assemblies are used to limit the maximum allowable area, the required fireresistance rating of the horizontal assemblies shall be permitted to be reduced by 1 hour provided the height and number of stories increases allowed for an automatic sprinkler system by Section 504 of the *International Building Code* are not used for the buildings.

1104.1 Smoke alarms in existing portions of a building. Where an *addition* is made to a building or structure of a Group R or I-1 occupancy, the *existing building* shall be provided with smoke alarms as required by Section ~~1103.8~~ 302.5 of ~~the *International Fire Code*~~ *this code or Section R314 of the International Residential Code as applicable.*

1301.2 Conformance. The building shall be safe for human occupancy as determined by the ~~*International Fire Code* and~~building code under which the ~~*International Property Maintenance Code*~~building or structure or the affected portion of the building or structure was constructed or previously approved. Any *repair*, *alteration*, or *change of occupancy* undertaken within the moved structure shall comply with the requirements of this code applicable to the work being performed. Any field-fabricated elements shall comply with the requirements of the *International Building Code* or the *International Residential Code* as applicable.

~~**1401.3.2 Compliance with other codes.** Buildings that are evaluated in accordance with this section shall comply with the *International Fire Code* and *International Property Maintenance Code*.~~

1401.6.8.1 Categories. The categories for automatic fire detection are:

1. Category a—None.
~~2. Category b—Existing smoke detectors in HVAC systems and maintained in accordance with the *International Fire Code*.~~
2. Category b—Existing smoke detectors in HVAC systems and maintained in

accordance with the building code under which the building or structure or the affected portion of the building or structure was constructed or previously approved.

3. Category c—Smoke detectors in HVAC systems. The detectors are installed in accordance with the requirements for new buildings in the *International Mechanical Code*.
4. Category d—Smoke detectors throughout all floor areas other than individual sleeping units, tenant spaces and dwelling units.
5. Category e—Smoke detectors installed throughout the floor area.
6. Category f—Smoke detectors in corridors only.

1401.6.14 Elevator control. Evaluate the passenger elevator equipment and controls that are available to the fire department to reach all occupied floors. Emergency recall and in-car operation of elevators shall be provided in accordance with the ~~*International Fire Code*~~building code under which the building or structure or the affected portion of the building or structure was constructed or previously approved. Under the categories and occupancies in Table 1401.6.14, determine the appropriate value and enter that value into Table 1401.7 under Safety Parameter 1401.6.14, Elevator Control, for fire safety, means of egress and general safety. The values shall be zero for a single-story building.

1401.6.14.1 Categories. The categories for elevator controls are:

1. Category a—No elevator.
2. Category b—Any elevator without Phase I emergency recall operation and Phase II emergency in-car operation.
3. Category c—All elevators with Phase I emergency recall operation and Phase II emergency in-car operation as required by the ~~*International Fire Code*.~~building code under which the building or structure or the affected portion of the building or structure was constructed or previously approved.
4. Category d—All meet Category c; or Category b where permitted to be without Phase I emergency recall operation and Phase II emergency in-car operation; and at least one elevator that complies with new construction requirements serves all occupied floors.

[BG] 1501.5 Fire safety during construction. Fire safety during construction shall comply with ~~the applicable requirements of the *International Building Code* and~~ the applicable provisions of Chapter 33 of the *International* ~~*Fire*~~ *Building Code.*

[F] 1504.1 Where required. All structures under construction, *alteration*, or demolition shall be provided with not less than one approved portable fire extinguisher in accordance with Section 906 of the *International* ~~*Fire*~~ *Building Code* and sized for not less than ordinary hazard as follows:

1. At each stairway on all floor levels where combustible materials have accumulated.

2. In every storage and construction shed.
3. Additional portable fire extinguishers shall be provided where special hazards exist including, but not limited to, the storage and use of flammable and combustible liquids.

[F] 1504.2 Fire hazards. The provisions of this code and of the ~~*International*~~*Statewide Fire Prevention Code* shall be strictly observed to safeguard against all fire hazards attendant upon construction operations.

Reason: Attempt was made to remove all references to the *International Fire Code* and either delete it without substitution or replace with the appropriate code reference (i.e., VRC, IBC or SFPC) since construction requirements in the IFC are generally not enforceable, and most retrofit requirements are limited in Virginia to those identified in Chapter 17 of the VRC.
When such IFC construction-related provisions were needed to make the provision work, those original referenced sections and exceptions were added as new VRC Sections 302.5 and 302.6. The numbering assumes the deletion of IEBC Section 302.2 is approved under this code change proposal. If that is not approved, then the numbers would be 302.6 and 302.7, respectively.

The "additional codes" references were deleted since VRC/VCC Chapter 1 governs what other codes are applicable, especially as it relates to the IFC and IPMC.

The revisions proposed for Section 804.4.1 is strictly formatting to streamline the provisions and should not include technical changes.

The language used regarding "building under which . . . was constructed" is identical to the language used in other proposed VRC changes. This phrase can be revised as deem appropriate to obtain support or approval as necessary.

cdpVA does not allow revisions to VRC Chapter 16 (Reference Standards), but it would be nice if the approved deleted IFC references were correlated with Chapter 16.

Cost Impact: None.

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Board Decision

None

R-301.1.1 cdpVA-15

R-301.1.2 cdpVA-15

Proponent : Kenney Payne, Representing AIA-Virginia (kpayne@moseleyarchitects.com)

2015 International Existing Building Code

301.1.2 ~~Work area~~Proportional compliance method. *No change to text.*

Reason: The term "Work area" when used to describe an entire "compliance method" leads to confusion among owners, designers, reviewers, code and fire officials. "Work area" is a defined term and involves reconfigured spaces. However, not all "work" covered under the "work area" compliance method is actually "work areas!" A "work area" is but a small part of this entire compliance method, yet the entire method is named after this one concept. This is like calling the original 13 colonies the "Virginia Colonies." Virginia was but just one of the original colonies. Chapters 5 through 13 technically fall under the "Work area" compliance method; however, "work areas" only apply in Chapters 8 and 9 (in other words, 2 out of 9 chapters).

> Repair: Has nothing to do with a "work area," yet it falls under the "Work area" compliance method. So, would a code/fire official be correct in interpreting a repair is a work area?
>
> Level 1 alteration: Has nothing to do with a "work area," yet it falls under the "Work area" compliance method. So, would a code/fire official be correct in interpreting a repair is a work area?.
>
> Addition, moved/relocated building, or a historic building: They all must be "work areas," because they fall under the "work area" compliance method.

Since it is apparent NONE of the above examples are actual "work areas" (per the definition in Chapter 2), then why confuse things by assigning them to the "Work area" compliance method? If we revise the name/title of this particular compliance method, then at least trying to connect all "work" performed under Chapters 5-13 to a "work area" should no longer be an interpretation issue.

Other than the Index (where I cannot make a code change under this cdpVA system), this is the only place the term "Work area" compliance method is used.

Cost Impact: Could potentially reduce costs if we can avoid interpretations that require repairs, Level 1 alterations, some Level 2 alterations, additions, etc. to be classified as "work areas."

Workgroup Recommendation

Workgroup 2 Recommendation Recommendation: Pending

Workgroup 2 Reason: Editorial changes-Beahm asked why cost reduction if only editorial, Witt suggests hold till July.-Robbie suggested TRB decide

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Board Decision

None

R-303.1 cdpVA-15

Proponent : Kenney Payne, Representing AIA-VA (kpayne@moseleyarchitects.com)

2015 International Building Code

SECTION 1511 REROOFING AND ROOF REPAIR

1511.1 General. Materials and methods of application used for ~~recovering or replacing an existing~~reroofing and roof ~~covering~~repair, as defined by Section 202 of the IEBC, shall comply with the applicable requirements of Chapter 15 and the requirements of Section 303 of the VEBC.

~~**Exceptions:**~~

1. ~~*Roof replacement* or *roof recover* of existing low-slope roof coverings shall not be required to meet the minimum design slope requirement of one-quarter unit vertical in 12 units horizontal (2-percent slope) in Section 1507 for roofs that provide positive roof drainage.~~
2. ~~Recovering or replacing an existing roof covering shall not be required to meet the requirement for secondary (emergency overflow) drains or scuppers in Section 1503.4 for roofs that provide for positive roof drainage. For the purposes of this exception, existing secondary drainage or scupper systems required in accordance with this code shall not be removed unless they are replaced by secondary drains or scuppers designed and installed in accordance with Section 1503.4.~~

~~**1511.2 Structural and construction loads.** Structural roof components shall be capable of supporting the roof covering system and the material and equipment loads that will be encountered during installation of the system.~~

~~**1511.3 Roof replacement.** *Roof replacement* shall include the removal of all existing layers of roof coverings down to the roof deck.~~

~~**Exception:** Where the existing roof assembly includes an ice barrier membrane that is adhered to the roof deck, the existing ice barrier membrane shall be permitted to remain in place and covered with an additional layer of ice barrier membrane in accordance with Section 1507.~~

~~**1511.3.1 Roof recover.** The installation of a new roof covering over an existing roof covering shall be permitted where any of the following conditions occur:~~

1. ~~Where the new roof covering is installed in accordance with the roof covering manufacturer's approved instructions.~~
2. ~~Complete and separate roofing systems, such as standing-seam metal roof panel systems, that are designed to transmit the roof loads directly to the~~

~~building's structural system and that do not rely on existing roofs and roof coverings for support, shall not require the removal of existing roof coverings.~~

3. ~~Metal panel, metal shingle and concrete and clay tile roof coverings shall be permitted to be installed over existing wood shake roofs when applied in accordance with Section 1511.4.~~
4. ~~The application of a new protective coating over an existing spray polyurethane foam roofing system shall be permitted without tear off of existing roof coverings.~~

~~**1511.3.1.1 Exceptions.** A *roof recover* shall not be permitted where any of the following conditions occur:~~

1. ~~Where the existing roof or roof covering is water soaked or has deteriorated to the point that the existing roof or roof covering is not adequate as a base for additional roofing.~~
2. ~~Where the existing roof covering is slate, clay, cement or asbestos-cement tile.~~
3. ~~Where the existing roof has two or more applications of any type of roof covering.~~

~~**1511.4 Roof recovering.** Where the application of a new roof covering over wood shingle or shake roofs creates a combustible concealed space, the entire existing surface shall be covered with gypsum board, mineral fiber, glass fiber or other *approved* materials securely fastened in place.~~

~~**1511.5 Reinstallation of materials.** Existing slate, clay or cement tile shall be permitted for reinstallation, except that damaged, cracked or broken slate or tile shall not be reinstalled. Existing vent flashing, metal edgings, drain outlets, collars and metal counterflashings shall not be reinstalled where rusted, damaged or deteriorated. Aggregate surfacing materials shall not be reinstalled.~~

~~**1511.6 Flashings.** Flashings shall be reconstructed in accordance with *approved* manufacturer's installation instructions. Metal flashing to which bituminous materials are to be adhered shall be primed prior to installation.~~

2015 International Existing Building Code

SECTION303 REROOFING AND ROOF REPAIR

303.1 Reroofing. Materials and methods of application used for recovering or replacing an existing roof covering shall comply with this section and the applicable requirements of Chapter 15 of the *International Building Code*.

Exceptions:

1. *Roof replacement* or *roof recover* of existing low-slope roof coverings shall not be required to meet the minimum design slope requirement of one-quarter unit vertical in 12 units horizontal (2-percent slope) in Section 1507 of the *International Building Code* for roofs that provide positive roof drainage.

2. Recovering or replacing an existing roof covering shall not be required to meet the requirement for secondary (emergency overflow) drains or scuppers in Section 1503.4 of the *International Building Code* for roofs that provide for positive roof drainage. For the purposes of this exception, existing secondary drainage or scupper systems required in accordance with the *International Building Code* shall not be removed unless they are replaced by secondary drains or scuppers designed and installed in accordance with Section 1503.4 of the *International Building Code*.

303.2 Structural and construction loads. Structural roof components shall be capable of supporting the roof-covering system and the material and equipment loads that will be encountered during installation of the system.

303.3 Roof replacement. *Roof replacement* shall include the removal of all existing layers of roof coverings down to the roof deck.

Exception: Where the existing roof assembly includes an ice barrier membrane that is adhered to the roof deck, the existing ice barrier membrane shall be permitted to remain in place and covered with an additional layer of ice barrier membrane in accordance with Section 1507 of the International Building Code.

303.3.1 Roof recover. The installation of a new roof covering over an existing roof covering shall be permitted where any of the following conditions occur:

1. Complete and separate roofing systems, such as standing-seam metal roof systems, that are designed to transmit the roof loads directly to the building's structural system and that do not rely on existing roofs and roof coverings for support, shall not require the removal of existing roof coverings.

2. Metal panel, metal shingle and concrete and clay tile roof coverings shall be permitted to be installed over existing wood shake roofs when applied in accordance with Section 706.4.

3. The application of a new protective coating over an existing spray polyurethane foam roofing system shall be permitted without tear-off of existing roof coverings.

4. Where the new roof covering is installed in accordance with the roof covering manufacturer's approved instructions.

Exceptions. A *roof recover* shall not be permitted where any of the following conditions occur:

1. Where the existing roof or roof covering is water soaked or has deteriorated to the point that the existing roof or roof covering is not adequate as a base for additional

roofing.

2. Where the existing roof covering is slate, clay, cement or asbestos-cement tile.

3. Where the existing roof has two or more applications of any type of roof covering.

303.4 Roof recovering. Where the application of a new roof covering over wood shingle or shake roofs creates a combustible concealed space, the entire existing surface shall be covered with gypsum board, mineral fiber, glass fiber or other approved materials securely fastened in place.

303.5 Reinstallation of materials. Existing slate, clay or cement tile shall be permitted for reinstallation, except that damaged, cracked or broken slate or tile shall not be reinstalled. Existing vent flashing, metal edgings, drain outlets, collars and metal counterflashings shall not be reinstalled where rusted, damaged or deteriorated. Aggregate surfacing materials shall not be reinstalled.

303.6 Flashings. Flashings shall be reconstructed in accordance with approved manufacturer's installation instructions. Metal flashing to which bituminous materials are to be adhered shall be primed prior to installation.

303.7 Roof repair. *Roof repairs* shall comply with this section. Work on nondamaged components that is necessary for the required *repair* of damaged components shall be considered part of the *roof repair* and shall not be subject to the requirements of other parts of this code.

Exception: Routine maintenance required by this section, ordinary *repairs* exempt from permit in accordance with Section 108.2 of the VCC, and abatement of wear due to normal service conditions shall not be subject to the requirements for *roof repairs* in this section.

303.7.1 Building materials and systems. Building materials and systems shall comply with the requirements of Sections 303.7.1.1 and 303.7.1.2.

303.7.1.1 Existing materials. Materials already in use in a building in compliance with requirements or approvals in effect at the time of their erection or installation shall be permitted to remain in use unless determined by the building official to be unsafe.

303.7.1.2 New and replacement materials. Except as otherwise required or permitted by this code, materials permitted by the applicable code for new construction shall be used. Like materials shall be permitted for *repairs*, provided no hazard to life, health or property is created. Hazardous materials shall not be used where the code for new construction would not permit their use in buildings of similar occupancy, purpose and location.

~~SECTION706 REROOFING~~

~~707~~706~~707~~706 STRUCTURAL

[BS] ~~707.1~~706.1 General. *No change to text.*

~~**[BS] 706.1 General.** Materials and methods of application used for recovering or replacing an existing roof covering shall comply with the requirements of Chapter 15 of the *International Building Code*.~~

> ~~**Exception:** Reroofing shall not be required to meet the minimum design slope requirement of one-quarter unit vertical in 12 units horizontal (2-percent slope) in Section 1507 of the *International Building Code* for roofs that provide positive roof drainage.~~

[BS] ~~707.2~~706.2 Addition or replacement of roofing or replacement of equipment. *No change to text.*

~~**[BS] 706.2 Structural and construction loads.** Structural roof components shall be capable of supporting the roof-covering system and the material and equipment loads that will be encountered during installation of the system.~~

~~**[BS] 706.3 Recovering versus replacement.** New roof coverings shall not be installed without first removing all existing layers of roof coverings down to the roof deck where any of the following conditions occur:~~

1. ~~Where the existing roof or roof covering is water soaked or has deteriorated to the point that the existing roof or roof covering is not adequate as a base for additional roofing.~~
2. ~~Where the existing roof covering is wood shake, slate, clay, cement or asbestos-cement tile.~~
3. ~~Where the existing roof has two or more applications of any type of roof covering.~~

~~**Exceptions:**~~

1. ~~Complete and separate roofing systems, such as standing-seam metal roof systems, that are designed to transmit the roof loads directly to the building's structural system and that do not rely on existing roofs and roof coverings for support, shall not require the removal of existing roof coverings.~~
2. ~~Metal panel, metal shingle and concrete and clay tile roof coverings shall be permitted to be installed over existing wood shake roofs when applied in accordance with Section 706.4.~~
3. ~~The application of a new protective coating over an existing spray polyurethane foam roofing system shall be permitted~~

~~without tear-off of existing roof coverings.~~

4. ~~Where the existing roof assembly includes an ice barrier membrane that is adhered to the roof deck, the existing ice barrier membrane shall be permitted to remain in place and covered with an additional layer of ice barrier membrane in accordance with Section 1507 of the *International Building Code*.~~

~~**[BS] 706.4 Roof recovering.** Where the application of a new roof covering over wood shingle or shake roofs creates a combustible concealed space, the entire existing surface shall be covered with gypsum board, mineral fiber, glass fiber or other approved materials securely fastened in place.~~

~~**[BS] 706.5 Reinstallation of materials.** Existing slate, clay or cement tile shall be permitted for reinstallation, except that damaged, cracked or broken slate or tile shall not be reinstalled. Existing vent flashing, metal edgings, drain outlets, collars and metal counterflashings shall not be reinstalled where rusted, damaged or deteriorated. Aggregate surfacing materials shall not be reinstalled.~~

~~**[BS] 706.6 Flashings.** Flashings shall be reconstructed in accordance with approved manufacturer's installation instructions. Metal flashing to which bituminous materials are to be adhered shall be primed prior to installation.~~

~~**[BS] 707.3 Additional requirements for reroof permits.** The requirements of this section shall apply to *alteration* work requiring reroof permits.~~

~~**[BS] 707.3.1 Bracing for unreinforced masonry bearing wall parapets.** Where a permit is issued for reroofing for more than 25 percent of the roof area of a building assigned to Seismic Design Category D, E or F that has parapets constructed of unreinforced masonry, the work shall include installation of parapet bracing to resist the reduced *International Building Code* level seismic forces as specified in Section 301.1.4.2 of this code, unless an evaluation demonstrates compliance of such items.~~

~~**[BS] 707.3.2 Roof diaphragms resisting wind loads in high-wind regions.** Where roofing materials are removed from more than 50 percent of the roof diaphragm or section of a building located where the ultimate design wind speed, V_{ult}, determined in accordance with Figure 1609.3(1) of the *International Building Code*, is greater than 115 mph (51 m/s) or in a special wind region, as defined in Section 1609 of the *International Building Code*, roof diaphragms, connections of the roof diaphragm to roof framing members, and roof-to-wall connections shall be evaluated for the wind loads specified in the *International Building Code*, including wind uplift. If the diaphragms and connections in their current condition are not capable of resisting at least 75 percent of those wind loads, they shall be replaced or strengthened in accordance with the loads specified in the *International Building Code*.~~

Reason: Reroofing and roof repair are clearly an "existing building" scope of work and should be in the VEBC. Therefore, reroofing and roof repair requirements (IBC Section 1511) have been relocated from the IBC to the new VEBC Section 303 and a "pointer" has been left in IBC 1511. Since "reroofing" is a defined term meaning, "the process of recovering and replacing an existing roof covering" it is redundant to repeat that same language again in the IBC 1511.1 charging paragraph and only the defined term is necessary.

Is reroofing a repair or an alteration? If an alteration, would it equate to a Level 1 or Level 2? When does a roof "repair" become an alteration? Rather than deal with such ambiguity and potential inconsistent interpretations, why not just call it – *reroofing* (as defined) and *roof repair* (as defined) and not get into how it fits within the classification of work under the VEBC. Simply put these provisions into VEBC Chapter 3, which applies to all compliance methods, and you would not need to "classify" the work as anything – repair or alteration. It is simply a reroofing or a roof repair project.

Upon a word search of the term "roof repair" (which is a defined term in the 2015 IEBC), it appears that term does not exist in the IEBC. Therefore, this code change has added requirements for a "roof repair" which essentially duplicates language already found in other IEBC sections (e.g., 401.2, 404.1, 602.1, and 602.2). Section 303 of the VEBC essentially is the same text as the 2015 IBC Section 1511 and 2015 IEBC Section 706. So, even though it is being proposed to be deleted in the IBC and Section 706 of the IEBC, it is being reinserted in the new 2015 VEBC Section 303.

2015 IEBC Section 706 was deleted and incorporated into the new VEBC Section 303.

2015 IEBC Section 707.3 was deleted in its entirety because it is completely contrary to the purpose of the VEBC as described in VRC Section 102.1. The VEBC should "incentivize, not penalize." Numerous owners want – or need – to repair a large portion or replace a large portion or all of their existing roofs, yet in doing so, they may be required to brace existing parapets and/or evaluate and provide for additional connections regarding the roof diaphragm. These requirements seem onerous and could be enough to prevent owners from repairing or replacing their roofs (I have heard of one owner already say so) – or – to have to do such repairs as "mini" projects (under the percentage limits) to avoid triggering the need to comply with these provisions. To do as "mini" projects would be extremely costly and inefficient (due to restaging, time lost, and possibly relocating occupants numerous times). Also, the VEBC should not require more than or be more stringent than the IBC; however, in the case of IEBC Section 707.3, if one were to follow the reroofing requirements found in the IBC, they would be less stringent and more flexible than those found in the VEBC. Although one could choose the Prescriptive Compliance Method (Section 403) which sends you to the IBC, the Work Area Compliance Method should not be that much more onerous when it comes to reroofing.

Cost Impact: By deleting the requirement for bracing of wall parapets and evaluating and providing for roof diaphragms when reroofing, or if such provisions remained, an owner might decide to create numerous "mini" proejcts (in lieu of just one project) to get the work done - there should be the potential for tremendous COST SAVINGS.

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Board Decision

None

R-303.1 cdpVA-15

R-505.1.1 cdpVA-15

Proponent : Ronald Clements, Jr, Representing VBCOA VRC Committee (clementsro@chesterfield.gov)

2015 International Existing Building Code

505.1.1 Special Provisions A building separated horizontally in compliance with VCC section 510.2 shall be considered as separate and distinct buildings for the purpose of determining *building area* used for application of this section.

Reason: The current VRC is silent on how to calculate work areas in pedestal buildings designed per IBC 510. This change clarifies that the areas on either side of the horizontal assemblies should be used as the "building area" for application of the 50% calculation in 505.1.

Cost Impact: This will increase the cost of construction if the interpretation is that the "buildings" above and below the horizontal assemblies should not be reviewed as separate buildings when applying the 50% calculation. This will not icrease the cost of construction if the interpretation is that the "buildings" above and below the horizontal assemblies should be reviewed as separate buildings when applying the 50% calculation.

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Board Decision

None

R-505.1.1 cdpVA-15

R-805.3.1.1 cdpVA-15

Proponent : Kenney Payne, Representing AIA-VA (kpayne@moseleyarchitects.com)

2015 International Existing Building Code

805.3.1.1 Single-exit buildings. Only one exit is required from buildings and spaces of the following occupancies:

1. In Group A, B, E, F, M, U and S occupancies, a single exit is permitted in the story at the level of exit discharge when the occupant load of the story does not exceed 50 and the ~~exit access~~*common path of egress travel* distance does not exceed 75 feet (22 860 mm).
2. Group B, F-2, and S-2 occupancies not more than two stories in height that are not greater than 3,500 square feet per floor (326 m^2), when the ~~exit access~~*common path of egress* travel distance does not exceed 75 feet (22 860 mm). The minimum fire-resistance rating of the exit enclosure and of the opening protection shall be 1 hour.
3. Open parking structures where vehicles are mechanically parked.
4. In Group R-4 occupancies, the maximum occupant load excluding staff is 16.
5. Groups R-1 and R-2 not more than two stories in height, when there are not more than four dwelling units per floor and the ~~exit access~~*common path of egress* travel distance does not exceed 50 feet (15 240 mm). The minimum fire-resistance rating of the exit enclosure and of the opening protection shall be 1 hour.
6. In multilevel dwelling units in buildings of occupancy Group R-1 or R-2, an exit shall not be required from every level of the dwelling unit provided that one of the following conditions is met:
    - 6.1. The *common path of egress travel* distance within the dwelling unit does not exceed 75 feet (22 860 mm); or
    - 6.2. The building is not more than three stories in height and all third-floor space is part of one or more dwelling units located in part on the second floor; and no habitable room within any such dwelling unit shall have a travel distance that exceeds 50 feet (15 240 mm) from the outside of the habitable room entrance door to the inside of the entrance door to the dwelling unit.
7. In Group R-2, H-4, H-5 and I occupancies and in rooming houses and child care centers, a single exit is permitted in a one-story building with a maximum occupant load of 10 and the ~~exit access~~*common path of egress travel* distance does not exceed 75 feet (22 860 mm).
8. In buildings of Group R-2 occupancy that are equipped throughout with an automatic fire sprinkler system, a single exit shall be permitted from a basement or story below grade if every dwelling unit on that floor is equipped with an approved window providing a clear opening of at least 5 square feet (0.47 m^2) in area, a minimum net clear opening of 24 inches (610 mm) in height and 20 inches (508 mm) in width, and a sill height of not more than 44 inches (1118 mm) above the finished floor.
9. In buildings of Group R-2 occupancy of any height with not more than four dwelling units per floor; with a smokeproof enclosure or outside stairway as

an exit; and with such exit located within 20 feet (6096 mm) of travel to the entrance doors to all dwelling units served thereby.

10. In buildings of Group R-3 occupancy equipped throughout with an automatic fire sprinkler system, only one exit shall be required from basements or stories below grade.

805.3.2 Mezzanines. Mezzanines in the *work area* and with an occupant load of more than 50 or in which the *common path of egress travel* distance to an exit or exit access doorway exceeds 75 feet (22 860 mm) shall have access to at least two independent means of egress.

- **Exception:** Two independent means of egress are not required where the travel distance to an exit does not exceed 100 feet (30 480 mm) and the building is protected throughout with an automatic sprinkler system.

~~**805.3.3 Main entrance—Group A.** All buildings of Group A with an occupant load of 300 or more shall be provided with a main entrance capable of serving as the main exit with an egress capacity of at least one-half of the total occupant load. The remaining exits shall be capable of providing one-half of the total required exit capacity.~~

~~**Exception:** Where there is no well-defined main exit or where multiple main exits are provided, exits shall be permitted to be distributed around the perimeter of the building provided that the total width of egress is not less than 100 percent of the required width.~~

805.4.1.1 Occupant load and travel distance. In any *work area*, all rooms and spaces having an occupant load greater than 50 or in which the *common path of egress travel* distance to an *exit* or *exit access doorway* exceeds 75 feet (22 860 mm) shall have a minimum of two egress doorways.

- **Exceptions:**
    1. Storage rooms having a maximum occupant load of 10.
    2. Where the *work area* is served by a single exit in accordance with Section 805.3.1.1.

Reason: In the case of Section 805.3.1.1, the more appropriate term should be *common path of egress travel* distance not *exit access* travel distance. If you look at 2015 IBC Tables 1006.3.2(1) and 1006.3.2(2) the term used is *common path of egress travel* distance not *exit access* travel distance. Also, the travel distances (75 feet) are more consistent with the limits found in 805.3.1.1 (also mostly 75 feet). The term *exit access* travel distance is more often associated with 2015 Table 1017.2 where the travel distances are typically 200-400 feet given the occupancies noted in 805.3.1.1.

In the case of 805.3.2 and 805.4.1.1, the more appropriate term should be *common path of egress travel* distance not just travel distance. If you look at 2015 IBC Table 1006.2.1 the term used is *common path of egress travel* distance not travel distance. Also, the travel distances (75

or 100 feet) are more consistent with the limits found in 805.3.2 and its exception (also mostly 75 or 100 feet). The term travel distance is more often associated with 2015 Table 1017.2 where the travel distances are typically 200-400 feet. Table 1006.2.1 also allows the travel distance to be to an *exit access doorway* - not just an *exit*.

805.3.3 is being deleted because it is a retrofit requirement. Note it is not limited to just work areas (like all of the other sections are), but applies to all buildings of Group A. It is also more stringent than 2015 IBC 1029.2, where a main exit is only addressed when one is provided. If not, then 1029.2 would not apply. If left in the VRC, this provision would require you to widen "main" entrance doors or add additional entrance doors and/or add additional doors around the perimeter of the building simply because you may have a work area within a Group A building. It also appears it may conflict with 2012 VRC 805.2, Exception 2 - which states that "means egress conforming to the requirements of the building code under which the building was constructed shall be considered compliant means of egress."

Cost Impact: This should / could result in COST SAVINGS. if the exit access travel distances were limited to 75 feet and not the more appropriate common path of egress travel distances, then you would eb required to have more exits and/or exit access doorways. Also, if you were required to provide additional or wider doors around the perimeter of your Group A building, that could be challenging and would be an additional costs that does not appear to be necessary and may conflict with state law regarding retrofit requirements.

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Board Decision

None

R-805.3.1.1 cdpVA-15

R-808.3 cdpVA-15

Proponent : Johnna Grizzard (grizzardj@chesterfield.gov)

2015 International Existing Building Code

808.3 Residential occupancies. In Group R-2, R-3, R-4 and ~~R-4~~ R-5 occupancies and buildings regulated by the *International Residential Code*, the requirements of Sections 808.3.1 through 808.3.7 shall be applicable only to work areas located within a dwelling unit.

Reason: The 2012 VCC currently permits application of the VRC for reconstruction, alteration or repair in group R-5 occupancies as an exception to VCC 103.5. There is also a forthcoming proposal for the 2015 Virginia code change cycle to more clearly specify the VRC is applicable to R-5 occupancies. The 2015 IEBC specifies that Section 808.3 is applicable to residential occupancies, and lists the occupancies: R-1, R-2, R-3, and R-4 and buildings regulated by the *International Residential Code.*" Because R-5 is not a Use Group designation in the I-codes, but buildings regulated by the IRC is specified for this section, it appears the intent is for this section to apply to all residential occupancies.

Cost Impact: None

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Board Decision

None

R-808.3 cdpVA-15

R-903.1 cdpVA-15

Proponent : Kenney Payne, Representing AIA-VA (kpayne@moseleyarchitects.com)

2015 International Existing Building Code

903.1 Existing ~~shafts and vertical openings~~stairways. Existing stairways that are part of the means of egress shall be enclosed in accordance with Section 803.2.1 and its Exceptions if applicable, from the highest *work area* floor to, and including, the level of exit discharge and all floors below.

Reason: The revision to the header is to avoid potential confusion as the charging paragraph is only about stairways, and not shafts and vertical openings.

The purpose of adding "and Exceptions if applicable" is to again avoid potential confusion where it may be interpreted that all such stairways must be enclosed, regardless of whether the exceptions would otherwise apply. In other words, could a code official interpret that the stairway must be enclosed - period - per 803.2.1, which only addresses the hourly rating - without allowing the application of the exceptions? If yes, then this code change is needed and should avoid such confusion or potentially incorrect interpretations.

Cost Impact: If it could be interpreted that the stairway(s) must be enclosed with rated construction without allowing the use of the exceptions, then this code change could result in COST SAVINGS.

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Board Decision

None

R-903.1 cdpVA-15

R-904.2 cdpVA-15

Proponent : Kenney Payne, Representing AIA-VA (kpayne@moseleyarchitects.com)

2015 International Existing Building Code

904.2 Fire alarm and detection systems. Fire alarm and detection shall be provided throughout the *work area* in accordance with Section 907 of the *International Building Code* as required for new construction.

904.2.1 Manual fire alarm systems. Where required by the *International Building Code,* a manual fire alarm system shall be provided throughout the *work area*. Alarm notification appliances shall be provided on such floors and shall be automatically activated as required by the *International Building Code*.

- **Exceptions:**
    1. Alarm-initiating and notification appliances shall not be required to be installed in tenant spaces outside of the *work area*.
    2. Visual alarm notification appliances are not required, except where an existing alarm system is upgraded or replaced or where a new fire alarm system is installed.

904.2.2 Automatic fire detection. Where required by the *International Building Code* for new buildings, automatic fire detection systems shall be provided throughout the *work area.*

Reason: It could be interpreted that VRC Section 904.2 (the "charging" paragraph) requires installation throughout the building, as it would be required "for new construction." However, VRC Sections 904.2.1 and 904.2.2 clearly only require such installation in work areas only.

There appears to be a lack of clarity and/or the potential for a conflict that could lead to confusion, misinterpretations, and/or inconsistent interpretations. By adding "throughout the *work area*" in the charging paragraph, it clarifies the extent (work area (as defined) only) and uses the exact same terminology as the subsections.

Cost Impact: Potential **COST SAVINGS** if such systems are only required in work areas (which it clearly says in Sections 904.2.1 and 904.2.2), and not throughout the building (which might be interpreted under Section 904.2 because of the term "new construction").

Workgroup Recommendation

Workgroup 2 Recommendation: None

Workgroup 2 Reason: None

Board Decision

None

R-904.2 cdpVA-15

CHAPTER 524

An Act to amend and reenact §§ 22.1-137 and 22.1-137.2 of the Code of Virginia, relating to public schools; fire drills; lock-down drills.

[H 1279]

Approved March 29, 2016

Be it enacted by the General Assembly of Virginia:

1. That §§ 22.1-137 and 22.1-137.2 of the Code of Virginia are amended and reenacted as follows:

§ 22.1-137. Fire drills.

In every public school there shall be a fire drill at least ~~once every week~~ *twice* during the first ~~twenty~~ *20* school days of each school session~~, and more often if necessary~~, in order that pupils may be thoroughly practiced in such drills. ~~During~~ *Every public school shall hold at least two additional fire drills during* the remainder of the school session ~~fire drills shall be held at least monthly~~.

§ 22.1-137.2. Lock-down drills.

In every public school there shall be ~~at least two~~ *a* lock-down ~~drills every school year~~ *drill at least twice during the first 20 school days of each school session*, in order that students may be thoroughly practiced in such drills. ~~One lock-down drill shall be completed in September of each school year and one lock-down drill shall be completed in January of each school year~~ *Every public school shall hold at least two additional lock-down drills during the remainder of the school session*. Lock-down plans and drills shall be in compliance with the Statewide Fire Prevention Code (§ 27-94 et seq.).

occupancy and an atrium. Group E occupancies shall also comply with Section 403.4.1.

403.4.1 Group E occupancies. Group E occupancies shall comply with 403.4.1.1 through 403.4.1.3.

403.4.1.1 First emergency evacuation drill. The first emergency evacuation drill of each school year shall be conducted within 10 days of the beginning of classes.

403.4.1.2 Time of day. Emergency evacuation drills shall be conducted at different hours of the day or evening, during the changing of classes, when the school is at assembly, during the recess or gymnastic periods, or during other times to avoid distinction between drills and actual fires.

403.4.1.3 Assembly points. Outdoor assembly areas shall be designated and shall be located a safe distance from the building being evacuated so as to avoid interference with fire department operations. The assembly areas shall be arranged to keep each class separate to provide accountability of all individuals.

403.5 Group F occupancies. An approved fire safety and evacuation plan in accordance with Section 404 shall be prepared and maintained for buildings containing a Group F occupancy where the Group F occupancy has an occupant load of 500 or more persons or more than 100 persons above or below the lowest level of exit discharge.

403.6 Group H occupancies. An approved fire safety and evacuation plan in accordance with Section 404 shall be prepared and maintained for Group H occupancies. Group H-5 occupancies shall also comply with Section 403.6.1.

403.6.1 Group H-5 occupancies. Group H-5 occupancies shall comply with Sections 403.6.1.1 through 403.6.1.4.

403.6.1.1 Plans and diagrams. In addition to the requirements of Section 404 and Section 407.6, plans and diagrams shall be maintained in approved locations indicating the approximate plan for each area; the amount and type of HPM stored, handled and used; locations of shutoff valves for HPM supply piping; emergency telephone locations; and locations of exits.

403.6.1.2 Plan updating. The plans and diagrams required by Section 404, 403.6.1.1 and 407.6 shall be maintained up to date and the fire code official and fire department shall be informed of major changes.

403.6.1.3 Emergency response team. Responsible persons shall be designated as an on-site emergency response team and trained to be liaison personnel for the fire department. These persons shall aid the fire department in preplanning emergency responses; identifying locations where HPM is stored, handled and used; and be familiar with the chemical nature of such material. An adequate number of personnel for each work shift shall be designated.

403.6.1.4 Emergency drills. Emergency drills of the on-site emergency response team shall be conducted on a regular basis but not less than once every three months. Records of drills conducted shall be maintained.

403.7 Group I occupancies. An approved fire safety and evacuation plan in accordance with Section 404 shall be prepared and maintained for Group I occupancies. Group I occupancies shall also comply with Sections 403.7.1 through 403.7.3.

403.7.1 Group I-1 occupancies. Group I-1 occupancies shall comply with Sections 403.7.1.1 through 403.7.1.6.

403.7.1.1 Fire safety and evacuation plan. The fire safety and evacuation plan required by Section 404 shall include special employee actions, including fire protection procedures necessary for residents, and shall be amended or revised upon admission of any resident with unusual needs.

403.7.1.2 Employee training. Employees shall be periodically instructed and kept informed of their duties and responsibilities under the plan. Such instruction shall be reviewed by employees at intervals not exceeding two months. A copy of the plan shall be readily available at all times within the facility.

403.7.1.3 Resident training. Residents capable of assisting in their own evacuation shall be trained in the proper actions to take in the event of a fire. The training shall include actions to take if the primary escape route is blocked. Where the resident is given rehabilitation or habilitation training, training

gate, because of the number of persons, or the nature of the performance, exhibition, display, contest or activity, the *owner*, agent or lessee shall provide one or more fire watch personnel, as required and *approved*. Fire watch personnel shall comply with Sections 403.12.1.1 and 403.12.1.2.

403.12.1.1 Duty times. Fire watch personnel shall remain on duty while places requiring a fire watch are open to the public, or when an activity requiring a fire watch is being conducted.

403.12.1.2 Duties. On-duty fire watch personnel shall have the following responsibilities:

1. Keep diligent watch for fires, obstructions to *means of egress* and other hazards.
2. Take prompt measures for remediation of hazards and extinguishment of fires that occur.
3. Take prompt measures to assist in the evacuation of the public from the structures.

403.12.2 Public safety plan for gatherings. Where the *fire code official* determines that an indoor or outdoor gathering of persons has an adverse impact on public safety through diminished access to buildings, structures, fire hydrants and fire apparatus access roads or where such gatherings adversely affect public safety services of any kind, the *fire code official* shall have the authority to order the development of or prescribe a public safety plan that provides an *approved* level of public safety and addresses the following items:

1. Emergency vehicle ingress and egress.
2. Fire protection.
3. Emergency egress or escape routes.
4. Emergency medical services.
5. Public assembly areas.
6. The directing of both attendees and vehicles, including the parking of vehicles.
7. Vendor and food concession distribution.
8. The need for the presence of law enforcement.
9. The need for fire and emergency medical services personnel.

403.12.3 Crowd managers for gatherings exceeding 1,000 people. Where facilities or events involve a gathering of more than 1,000 people, crowd managers shall be provided in accordance with Sections 403.12.3.1 through 403.12.3.3.

403.12.3.1 Number of crowd managers. The minimum number of crowd managers shall be established at a ratio of one crowd manager for every 250 persons.

Exception: Where approved by the *fire code official*, the number of crowd managers shall be permitted to be reduced where the facility is equipped throughout with an *approved automatic sprinkler system* or based upon the nature of the event.

403.12.3.2 Training. Training for crowd managers shall be *approved*.

403.12.3.3 Duties. The duties of crowd managers shall include, but not be limited to:

1. Conduct an inspection of the area of responsibility and identify and address any egress barriers.
2. Conduct an inspection of the area of responsibility to identify and mitigate any fire hazards.
3. Verify compliance with all permit conditions, including those governing pyrotechnics and other special effects.
4. Direct and assist the event attendees in evacuation during an emergency.
5. Assist emergency response personnel where requested.
6. Other duties required by the *fire code official*.
7. Other duties as specified in the fire safety plan.

SECTION 404
FIRE SAFETY, EVACUATION AND LOCKDOWN PLANS

404.1 General. Where required by Section 403, fire safety, evacuation and lockdown plans shall comply with Sections 404.2 through 404.4.1.

404.2 Contents. Fire safety and evacuation plan contents shall be in accordance with Sections 404.2.1 and 404.2.2.

404.2.1 Fire evacuation plans. Fire evacuation plans shall include the following:

1. Emergency egress or escape routes and whether evacuation of the building is to be complete by selected floors or areas only or with a defend-in-place response.
2. Procedures for employees who must remain to operate critical equipment before evacuating.
3. Procedures for the use of elevators to evacuate the building where occupant evacuation elevators complying with Section 3008 of the *International Building Code* are provided.
4. Procedures for assisted rescue for persons unable to use the general *means of egress* unassisted.
5. Procedures for accounting for employees and occupants after evacuation has been completed.
6. Identification and assignment of personnel responsible for rescue or emergency medical aid.
7. The preferred and any alternative means of notifying occupants of a fire or emergency.
8. The preferred and any alternative means of reporting fires and other emergencies to the fire department or designated emergency response organization.
9. Identification and assignment of personnel who can be contacted for further information or explanation of duties under the plan.

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10. A description of the emergency voice/alarm communication system alert tone and preprogrammed voice messages, where provided.

404.2.2 Fire safety plans. Fire safety plans shall include the following:

1. The procedure for reporting a fire or other emergency.
2. The life safety strategy including the following:
   - 2.1. Procedures for notifying occupants, including areas with a private mode alarm system.
   - 2.2. Procedures for occupants under a defend-in-place response.
   - 2.3. Procedures for evacuating occupants, including those who need evacuation assistance.
3. Site plans indicating the following:
   - 3.1. The occupancy assembly point.
   - 3.2. The locations of fire hydrants.
   - 3.3. The normal routes of fire department vehicle access.
4. Floor plans identifying the locations of the following:
   - 4.1. Exits.
   - 4.2. Primary evacuation routes.
   - 4.3. Secondary evacuation routes.
   - 4.4. Accessible egress routes.
     - 4.4.1. Areas of refuge.
     - 4.4.2. Exterior areas for assisted rescue.
   - 4.5. Refuge areas associated with *smoke barriers* and *horizontal exits*.
   - 4.6. Manual fire alarm boxes.
   - 4.7. Portable fire extinguishers.
   - 4.8. Occupant-use hose stations.
   - 4.9. Fire alarm annunciators and controls.
5. A list of major fire hazards associated with the normal use and occupancy of the premises, including maintenance and housekeeping procedures.
6. Identification and assignment of personnel responsible for maintenance of systems and equipment installed to prevent or control fires.
7. Identification and assignment of personnel responsible for maintenance, housekeeping and controlling fuel hazard sources.

404.2.3 Lockdown plans. Where facilities develop a lockdown plan, it shall be in accordance with Sections 404.2.3.1 through 404.2.3.3.

404.2.3.1 Lockdown plan contents. Lockdown plans shall be *approved* by the *fire code official* and shall include the following:

1. Initiation. The plan shall include instructions for reporting an emergency that requires a lockdown.
2. Accountability. The plan shall include accountability procedures for staff to report the presence or absence of occupants.
3. Recall. The plan shall include a prearranged signal for returning to normal activity.
4. Communication and coordination. The plan shall include an *approved* means of two-way communication between a central location and each secured area.

404.2.3.2 Training frequency. The training frequency shall be included in the lockdown plan. The lockdown drills shall not substitute for any of the fire and evacuation drills required in Section 405.2.

404.2.3.3 Lockdown notification. The method of notifying building occupants of a lockdown shall be included in the plan. The method of notification shall be separate and distinct from the fire alarm signal.

404.3 Maintenance. Fire safety and evacuation plans shall be reviewed or updated annually or as necessitated by changes in staff assignments, occupancy or the physical arrangement of the building.

404.4 Availability. Fire safety and evacuation plans shall be available in the workplace for reference and review by employees, and copies shall be furnished to the *fire code official* for review upon request.

404.4.1 Distribution. The fire safety and evacuation plans shall be distributed to the tenants and building service employees by the *owner* or *owner's* agent. Tenants shall distribute to their employees applicable parts of the fire safety plan affecting the employees' actions in the event of a fire or other emergency.

SECTION 405
EMERGENCY EVACUATION DRILLS

405.1 General. Emergency evacuation drills complying with Sections 405.2 through 405.9 shall be conducted not less than annually where fire safety and evacuation plans are required by Section 403 or where required by the *fire code official*. Drills shall be designed in cooperation with the local authorities.

405.2 Frequency. Required emergency evacuation drills shall be held at the intervals specified in Table 405.2 or more frequently where necessary to familiarize all occupants with the drill procedure.

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