Virginia Board of Housing and Community Development
CODE AND STANDARDS COMMITTEE
2021 CODE CHANGE CYCLE – BOOK 2, PART 1
October 3, 2022

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Opening Statement

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Tab 3 – USBC Proposals Recommended by Workgroups as Consensus for Disapproval

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B109.4.1-21	Changes the definition of Approved Agency to require its staff (i.e. 3rd party plan reviewers and inspectors) to hold the applicable DHCD certifications	Tab 3 – Page 1
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B1206.2-21	Increases the minimum sound transmission class and impact insulation class from 50 to 60; Increases the minimum Normalized Noise Isolation Class and Normalized Impact Sound Rating from 45 to 55	Tab 3 – Page 11
B2403.6-21	Adds requirements for bird friendly design and construction to the VCC	Tab 3 – Page 21
B3007.6-21	Brings in the code language from the IBC to correct a broken link to fire service access elevator lobby requirements	Tab 3 – Page 25
BF202-21	Aligns the definition for flammable gas with the Globally Harmonized Flammable classification system	Tab 3 – Page 27
BF608.9-21	Updates and correlates scoping of the IFC and IMC refrigeration system provisions	Tab 3 – Page 31
BF608.17-21	Removes the exception for machinery rooms for systems using Group A2L refrigerants, given updates in the 2021 IMC	Tab 3 – Page 37
BF608.17(2)-21	Removes the exception for ammonia machinery rooms that are provided with ventilation in accordance with Section 1101.1.2, Exception 1 of the IMC	Tab 3 – Page 41
BF911.1-21	Coordinates with the change in the definition of flammable gas by providing exceptions to explosion control methods for Category 1B flammable gasses having a burning velocity not exceeding 3.9 in/s	Tab 3 – Page 45
B1022.2.3-21	Requires the installation of push button type door openers at all exterior exit doors	Tab 3 – Page 51
BF5003.1.1(1)-21	Makes changes to the maximum allowable quantity table for hazardous materials in accordance with the Globally Harmonized System of Classification and Labeling of Chemicals	Tab 3 – Page 55
M-FG404.6-21	Allows the use of PEX-AL-PEX piping for fuel gas	Tab 3 – Page 65
M-FG Ch. 8-21	Adds ASTM F1281 as a referenced standard for PEX-AL-PEX piping	Tab 3 – Page 79
P401.4-21	Requires automatic or touchless control devices on plumbing fixtures and accessory controls	Tab 3 – Page 81
RB308.7-21	Adds requirements for bird friendly construction to the VRC	Tab 3 – Page 83
RB310.2.1-21	Modifies how the minimum opening area of an emergency escape and rescue opening can be measured	Tab 3 – Page 87
RB324.6.1-21	Requires a minimum 36" wide pathway on roof planes with photovoltaic arrays	Tab 3 – Page 89
RE3902.16-21	Deletes the Virginia amendment to the AFCI provisions.	Tab 3 – Page 91
EB102.2.2(2)-21	Deletes the requirements applicable to the replacement of smoke alarms powered by battery-only	Tab 3 – Page 105

Tab 1

Uniform Statewide Building Code

Base Document

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
2021 Virginia Uniform Statewide Building Code Base Document

8/22/2022

Summary – This document is compiled by staff of the State Building Codes Office of the Division of Building and Fire Regulation. Its purpose is to convert the 2018 USBC to the 2021 USBC by comparing the language in the 2018 USBC to the 2021 editions of the International Codes and standards which have amendments in the USBC. It is not intended to create substantive changes to the 2018 USBC. Those differences between the 2018 International Codes and standards and the 2021 International Codes and standards which are not affected by existing state amendments to the 2018 International Codes and standards are not addressed in this document. Those differences may be addressed in the full code change process for the 2021 USBC. The base document is simply to make those necessary changes to the 2018 USBC to bring in the 2021 International Codes and standards and keep the existing state amendments which were made to the 2018 International Codes and standards. If the 2021 International Codes and standards have language that is consistent with an existing state amendment to the 2018 International Codes and standards, then the existing state amendment is deleted. The staff document is intended to serve as the basis for the publishing of proposed regulations for the 2021 USBC. Once the base document is approved by the Board of Housing and Community Development, if any code change proposals are considered and approved by the Board of Housing and Community Development to also go into the proposed regulations for the 2021 USBC, those proposals would be correlated with this base document and brought back to the Board of Housing and Community Development as a separate "proposed regulations" document for review. Part I

Part I Construction

13VAC5-63-10. Chapter 1 Administration; Section 101 General.

A. Section 101.1 Short title. The Virginia Uniform Statewide Building Code, Part I, Construction, may be cited as the Virginia Construction Code or as the VCC. The term "USBC" shall mean the VCC unless the context in which the term is used clearly indicates it to be an abbreviation for the entire Virginia Uniform Statewide Building Code or for a different part of the Virginia Uniform Statewide Building Code.

Note: This code is also known as the ~~2018~~ 2021 edition of the USBC due to the use of the ~~2018~~ 2021 editions of the model codes.

B. Section 101.2 Incorporation by reference. Chapters 2 - 35 of the ~~2018~~ 2021 International Building Code, published by the International Code Council, Inc., are adopted and incorporated by reference to be an enforceable part of the USBC. The term "IBC" means the ~~2018~~ 2021 International Building Code, published by the International Code Council, Inc. Any codes and standards referenced in the IBC 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. In addition, any provisions of the appendices of the IBC specifically identified to be part of the USBC are also considered to be part of the incorporation by reference.

Note 1: The IBC references other International Codes and standards including the following major codes:

~~2018~~ 2021 International Plumbing Code (IPC)

~~2018~~ 2021 International Mechanical Code (IMC)

~~2017~~ 2020 NFPA 70

~~2018~~ 2021 International Fuel Gas Code (IFGC)

~~2018~~ 2021 International Energy Conservation Code (IECC)

~~2018~~ 2021 International Residential Code (IRC)

Note 2: The IRC is applicable to the construction of detached one-family and two-family dwellings and townhouses as set out in Section 310.

C. Section 101.3 Numbering system. A dual numbering system is used in the USBC to correlate the numbering system of the Virginia Administrative Code with the numbering system of the IBC. IBC numbering system designations are provided in the catchlines of the Virginia Administrative Code sections. Cross references between sections or chapters of the USBC use only the IBC numbering system designations. The term "chapter" is used in the context of the numbering system of the IBC and may mean a chapter in the USBC, a chapter in the IBC 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.

D. Section 101.4 Arrangement of code provisions. The USBC is comprised of the combination of (i) the provisions of Chapter 1, Administration, which are established herein, (ii) Chapters 2 - 35 of the IBC, which are incorporated by reference in Section 101.2, and (iii) the changes to the text of the incorporated chapters of the IBC that are specifically identified. The terminology "changes to the text of the incorporated chapters of the IBC that are specifically identified" shall also be referred to as the "state amendments to the IBC." Such state amendments to the IBC are set out using corresponding chapter and section numbers of the IBC numbering system. In addition, since Chapter 1 of the IBC is not incorporated as part of the USBC, any reference to a provision of Chapter 1 of the IBC in the provisions of Chapters 2 - 35 of the IBC 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.

E. Section 101.5 Use of terminology and notes. 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 - 35 of the IBC or in the state amendments to the IBC means the USBC, unless the context clearly indicates otherwise.

2. The term "this code," or "the code," where used in a code or standard referenced in the IBC means that code or standard, unless the context clearly indicates otherwise.

3. 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.

4. Notes in the IBC, in the codes and standards referenced in the IBC and in the state amendments to the IBC 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.

5. References to International Codes and standards, where used in this code, include state amendments made to those International Codes and standards in the VCC.

F. Section 101.6 Order of precedence. The provisions of this code shall be used as follows:

1. The provisions of Chapter 1 of this code supersede any provisions of Chapters 2 - 35 of the IBC that address the same subject matter and impose differing requirements.

2. The provisions of Chapter 1 of this code supersede any provisions of the codes and standards referenced in the IBC that address the same subject matter and impose differing requirements.

3. The state amendments to the IBC supersede any provisions of Chapters 2 - 35 of the IBC that address the same subject matter and impose differing requirements.

4. The state amendments to the IBC supersede any provisions of the codes and standards referenced in the IBC that address the same subject matter and impose differing requirements.

5. The provisions of Chapters 2 - 35 of the IBC supersede any provisions of the codes and standards referenced in the IBC that address the same subject matter and impose differing requirements.

6. The provisions of the NEC, VMC, VPC, and VFGC supersede any provisions of the VECC that address the same subject matter and impose differing requirements.

7. The provisions of Chapters 2 through 10 and 12 through 44 of the VRC supersede any provisions of Chapter 11 of the VRC that address the same subject matter and impose differing requirements.

G. Section 101.7 Administrative provisions. The provisions of Chapter 1 establish administrative requirements, which include provisions relating to the scope of the code, enforcement, fees, permits, inspections and disputes. Any provisions of Chapters 2 - 35 of the IBC or any provisions of the codes and standards referenced in the IBC that address the same subject matter and impose differing requirements are deleted and replaced by the provisions of Chapter 1. Further, any administrative requirements contained in the state amendments to the IBC shall be given the same precedence as the provisions of Chapter 1. Notwithstanding the above, where administrative requirements of Chapters 2 - 35 of the IBC or of the codes and standards referenced in the IBC are specifically identified as valid administrative requirements in Chapter 1 of this code or in the state amendments to the IBC, then such requirements are not deleted and replaced.

Note: The purpose of this provision is to eliminate overlap, conflicts and duplication by providing a single standard for administrative, procedural and enforcement requirements of this code.

H. Section 101.8 Definitions. The definitions of terms used in this code are contained in Chapter 2 along with specific provisions addressing the use of definitions. Terms may be defined in other chapters or provisions of the code and such definitions are also valid.

Note: The order of precedence outlined in Section 101.6 may be determinative in establishing how to apply the definitions in the IBC and in the referenced codes and standards.

13VAC5-63-20. Section 102 Purpose and scope.

A. Section 102.1 Purpose. In accordance with § 36-99 of the Code of Virginia, the purpose of the USBC is to protect the health, safety and welfare of the residents of the Commonwealth of Virginia, provided that buildings and structures should be permitted to be constructed at the least possible cost consistent with recognized standards of health, safety, energy conservation and water conservation, including provisions necessary to prevent overcrowding, rodent or insect infestation, and garbage accumulation; and barrier-free provisions for the physically handicapped and aged.

B. Section 102.2 Scope. This section establishes the scope of the USBC in accordance with § 36-98 of the Code of Virginia. The USBC shall supersede the building codes and regulations of the counties, municipalities and other political subdivisions and state agencies. This code also shall supersede the provisions of local ordinances applicable to single-family residential construction that (i) regulate dwelling foundations or crawl spaces, (ii) require the use of specific building materials or finishes in construction, or (iii) require minimum surface area or numbers of windows; however, this code shall not supersede proffered conditions accepted as a part of a rezoning application, conditions imposed upon the grant of special exceptions, special or conditional use permits or variances, conditions imposed upon a clustering of single-family homes and preservation of open space development through standards, conditions, and criteria established by a locality pursuant to subdivision 8 of § 15.2-2242 of the Code of Virginia or § 15.2-2286.1 of the Code of Virginia, or land use requirements in airport or highway overlay districts, or historic districts created pursuant to § 15.2-2306 of the Code of Virginia, or local flood plain regulations adopted as a condition of participation in the National Flood Insurance Program.

Note: Requirements relating to functional design are contained in Section 103.5 of this code.

C. Section 102.2.1 Invalidity of provisions. To the extent that any provisions of this code are in conflict with Chapter 6 (§ 36-97 et seq.) of Title 36 of the Code of Virginia or in conflict with the scope of the USBC, those provisions are considered to be invalid to the extent of such conflict.

D. Section 102.3 Exemptions. The following are exempt from this code:

1. Equipment and wiring used for providing utility, communications, information, cable television, broadcast or radio service in accordance with all of the following conditions:

1.1. The equipment and wiring are located on either rights-of-way or property for which the service provider has rights of occupancy and entry.

1.2. Buildings housing exempt equipment and wiring shall be subject to the USBC.

1.3. The equipment and wiring exempted by this section shall not create an unsafe condition prohibited by the USBC.

2. Support structures owned or controlled by a provider of publicly regulated utility service or its affiliates for the transmission and distribution of electric service in accordance with all of the following conditions:

2.1. The support structures are located on either rights-of-way or property for which the service provider has rights of occupancy and entry.

2.2. The support structures exempted by this section shall not create an unsafe condition prohibited by the USBC.

3. Direct burial poles used to support equipment or wiring providing communications, information or cable television services. The poles exempted by this section shall not create an unsafe condition prohibited by the USBC.

4. Electrical equipment, transmission equipment, and related wiring used for wireless transmission of radio, broadcast, telecommunications, or information service in accordance with all of the following conditions:

4.1. Buildings housing exempt equipment and wiring and structures supporting exempt equipment and wiring shall be subject to the USBC.

4.2. The equipment and wiring exempted by this section shall not create an unsafe condition prohibited by the USBC.

5. Manufacturing, processing, and product handling machines and equipment that do not produce or process hazardous materials regulated by this code, including those portions of conveyor systems used exclusively for the transport of associated materials or products, and all of the following service equipment:

5.1. Electrical equipment connected after the last disconnecting means.

5.2. Plumbing piping and equipment connected after the last shutoff valve or backflow device and before the equipment drain trap.

5.3. Gas piping and equipment connected after the outlet shutoff valve.

Manufacturing and processing machines that produce or process hazardous materials regulated by this code are only required to comply with the code provisions regulating the hazardous materials.

6. Parking lots and sidewalks that are not part of an accessible route.

7. Nonmechanized playground or recreational equipment such as swing sets, sliding boards, climbing bars, jungle gyms, skateboard ramps, and similar equipment where no admission fee is charged for its use or for admittance to areas where the equipment is located.

8. Industrialized buildings subject to the Virginia Industrialized Building Safety Regulations (13VAC5-91) and manufactured homes subject to the Virginia Manufactured Home Safety Regulations (13VAC5-95); except as provided for in Section ~~427~~ 429 and in the case of demolition of such industrialized buildings or manufactured homes.

9. Farm buildings and structures, except for a building or a portion of a building located on a farm that is operated as a restaurant as defined in § 35.1-1 of the Code of Virginia and licensed as such by the Virginia Board of Health pursuant to Chapter 2 (§ 35.1-11 et seq.) of Title 35.1 of the Code of Virginia. However, farm buildings and structures lying within a flood plain or in a

mudslide-prone area shall be subject to flood-proofing regulations or mudslide regulations, as applicable.

10. Federally owned buildings and structures unless federal law specifically requires a permit from the locality. Underground storage tank installations, modifications and removals shall comply with this code in accordance with federal law.

11. Off-site manufactured intermodal freight containers, moving containers, and storage containers placed on site temporarily or permanently for use as a storage container.

12. Automotive lifts.

13VAC5-63-30. Section 103 Application of code.

A. Section 103.1 General. In accordance with § 36-99 of the Code of Virginia, the USBC shall prescribe building regulations to be complied with in the construction and rehabilitation of buildings and structures, and the equipment therein.

B. Section 103.1.1 Virginia Existing Building Code. Part II of the Virginia Uniform Statewide Building Code, also known as the "Virginia Existing Building Code," or the "VEBC" is applicable to construction and rehabilitation activities in existing buildings and structures, as those terms are defined in the VEBC, except where specifically addressed in the VCC.

C. Section 103.2 When applicable to construction. Construction for which a permit application is submitted to the local building department on or after the effective date of the ~~2018~~ 2021 edition of the code shall comply with the provisions of this code, except for permit applications submitted during a one-year period beginning on the effective date of the ~~2018~~ 2021 edition of the code. The applicant for a permit during such one-year period shall be permitted to choose whether to comply with the provisions of this code or the provisions of the edition of the code in effect immediately prior to the ~~2018~~ 2021 edition. This provision shall also apply to subsequent amendments to this code based on the effective date of such amendments. In addition, when a permit has been properly issued under a previous edition of this code, this code shall not require changes to the approved construction documents, design or construction of such a building or structure, provided the permit has not been suspended or revoked.

D. Section 103.3 Nonrequired equipment. The following criteria for nonrequired equipment is in accordance with § 36-103 of the Code of Virginia. Building owners may elect to install partial or full fire alarms or other safety equipment that was not required by the edition of the USBC in effect at the time a building was constructed without meeting current requirements of the code, provided the installation does not create a hazardous condition. Permits for installation shall be obtained in accordance with this code. In addition, as a requirement of this code, when such nonrequired equipment is to be installed, the building official shall notify the appropriate fire official or fire chief.

E. Section 103.3.1 Reduction in function or discontinuance of nonrequired fire protection systems. When a nonrequired fire protection system is to be reduced in function or discontinued, it shall be done in such a manner so as not to create a false sense of protection. Generally, in such cases, any features visible from interior areas shall be removed, such as sprinkler heads, smoke detectors or alarm panels or

devices, but any wiring or piping hidden within the construction of the building may remain. Approval of the proposed method of reduction or discontinuance shall be obtained from the building official.

F. Section 103.4 Use of certain provisions of referenced codes. The following provisions of the IBC and of other indicated codes or standards are to be considered valid provisions of this code. Where any such provisions have been modified by the state amendments to the IBC, then the modified provisions apply.

1. Special inspection requirements in Chapters 2 - 35.

2. Testing requirements and requirements for the submittal of construction documents in any of the ICC codes referenced in Chapter 35 and in the IRC.

3. Section R301.2 of the IRC authorizing localities to determine climatic and geographic design criteria.

4. Flood load or flood-resistant construction requirements in the IBC or the IRC, including any such provisions pertaining to flood elevation certificates that are located in Chapter 1 of those codes. Any required flood elevation certificate pursuant to such provisions shall be prepared by a land surveyor licensed in Virginia or a registered design professional (RDP).

5. Section R101.2 of the IRC.

6. Section N1102.1 of the IRC and Sections C402.1.1, C402.1.1.1 and R402.1 of the IECC.

G. Section 103.5 Functional design. The following criteria for functional design is in accordance with § 36-98 of the Code of Virginia. The USBC shall not supersede the regulations of other state agencies that require and govern the functional design and operation of building related activities not covered by the USBC, including (i) public water supply systems, (ii) waste water treatment and disposal systems, and (iii) solid waste facilities. Nor shall state agencies be prohibited from requiring, pursuant to other state law, that buildings and equipment be maintained in accordance with provisions of this code. In addition, as established by this code, the building official may refuse to issue a permit until the applicant has supplied certificates of functional design approval from the appropriate state agency or agencies. For purposes of coordination, the locality may require reports to the building official by other departments or agencies indicating compliance with their regulations applicable to the functional design of a building or structure as a condition for issuance of a building permit or certificate of occupancy. Such reports shall be based upon review of the plans or inspection of the project as determined by the locality. All enforcement of these conditions shall not be the responsibility of the building official, but rather the agency imposing the condition.

Note: Identified state agencies with functional design approval are listed in the "Related Laws Package," which is available from DHCD.

H. Section 103.6 Amusement devices and inspections. In accordance with § 36-98.3 of the Code of Virginia, to the extent they are not superseded by the provisions of § 36-98.3 of the Code of Virginia and the VADR, the provisions of the USBC shall apply to amusement devices. In addition, as a requirement of this code, inspections for compliance with the VADR shall be conducted either by local building department personnel or private inspectors provided such persons are certified as amusement device inspectors under the VCS.

I. Section 103.7 State buildings and structures. This section establishes the application of the USBC to state-owned buildings and structures in accordance with § 36-98.1 of the Code of Virginia. The USBC shall be applicable to all state-owned buildings and structures, with the exception that §§ 2.2-1159 through 2.2-1161 of the Code of Virginia shall provide the standards for ready access to and use of state-owned buildings by the physically handicapped.

Any state-owned building or structure or building built on state-owned property for which preliminary plans were prepared or on which construction commenced after the initial effective date of the USBC, shall remain subject to the provisions of the USBC that were in effect at the time such plans were completed or such construction commenced. Subsequent reconstruction, renovation or demolition of such building or structure shall be subject to the pertinent provisions of this code.

Acting through the Division of Engineering and Buildings, the Virginia Department of General Services shall function as the building official for state-owned buildings. The department shall review and approve plans and specifications, grant modifications, and establish such rules and regulations as may be necessary to implement this section. It shall provide for the inspection of state-owned buildings and enforcement of the USBC and standards for access by the physically handicapped by delegating inspection and USBC enforcement duties to the State Fire Marshal's Office, to other appropriate state agencies having needed expertise, and to local building departments, all of which shall provide such assistance within a reasonable time and in the manner requested. State agencies and institutions occupying buildings shall pay to the local building department the same fees as would be paid by a private citizen for the services rendered when such services are requested by the department. The department may alter or overrule any decision of the local building department after having first considered the local building department's report or other rationale given for its decision. When altering or overruling any decision of a local building department, the department shall provide the local building department with a written summary of its reasons for doing so.

Notwithstanding any provision of this code to the contrary, roadway tunnels and bridges owned by the Virginia Department of Transportation shall be exempt from this code. The Virginia Department of General Services shall not have jurisdiction over such roadway tunnels, bridges and other limited access highways; provided, however, that the Department of General Services shall have jurisdiction over any occupied buildings within any Department of Transportation rights-of-way that are subject to this code.

Except as provided in subsection E of § 23.1-1016 of the Code of Virginia, and notwithstanding any provision of this code to the contrary, at the request of a public institution of higher education, the Virginia Department of General Services, as further set forth in this provision, shall authorize that institution of higher education to contract with a building official of the locality in which the construction is taking place to perform any inspection and certifications required for the purpose of complying with this code. The department shall publish administrative procedures that shall be followed in contracting with a building official of the locality. The authority granted to a public institution of higher education under this provision to contract with a building official of the locality shall be subject to the institution meeting the conditions prescribed in subsection A of § 23.1-1002 of the Code of Virginia.

Note: In accordance with § 36-98.1 of the Code of Virginia, roadway tunnels and bridges shall be designed, constructed and operated to comply with fire safety standards based on nationally recognized model codes and standards to be developed by the Virginia Department of Transportation in consultation with the State Fire Marshal. Emergency response planning and activities related to the

standards shall be developed by the Department of Transportation and coordinated with the appropriate local officials and emergency service providers. On an annual basis, the Department of Transportation shall provide a report on the maintenance and operability of installed fire protection and detection systems in roadway tunnels and bridges to the State Fire Marshal.

J. Section 103.7.1 Certification of state enforcement personnel. State enforcement personnel shall comply with the applicable requirements of Section 105 for certification.

13VAC5-63-40. Section 104 Enforcement, generally.

A. Section 104.1 Scope of enforcement. This section establishes the requirements for enforcement of the USBC in accordance with § 36-105 of the Code of Virginia. Enforcement of the provisions of the USBC for construction and rehabilitation shall be the responsibility of the local building department. Whenever a county or municipality does not have such a building department, the local governing body shall enter into an agreement with the local governing body of another county or municipality or with some other agency, or a state agency approved by DHCD for such enforcement. For the purposes of this section, towns with a population of less than 3,500 may elect to administer and enforce the USBC; however, where the town does not elect to administer and enforce the code, the county in which the town is situated shall administer and enforce the code for the town. In the event such town is situated in two or more counties, those counties shall administer and enforce the USBC for that portion of the town situated within their respective boundaries.

However, upon a finding by the local building department, following a complaint by a tenant of a residential dwelling unit that is the subject of such complaint, that there may be a violation of the unsafe structures provisions of Part III of the Virginia Uniform Statewide Building Code, also known as the "Virginia Maintenance Code," or the "VMC," the local building department shall enforce such provisions.

If the local building department receives a complaint that a violation of the VMC exists that is an immediate and imminent threat to the health or safety of the owner, tenant, or occupants of any building or structure, or the owner, occupant, or tenant of any nearby building or structure, and the owner, occupant, or tenant of the building or structure that is the subject of the complaint has refused to allow the local building official or his agent to have access to the subject building or structure, the local building official or his agent may make an affidavit under oath before a magistrate or a court of competent jurisdiction and request that the magistrate or court grant the local building official or his agent an inspection warrant to enable the building official or his agent to enter the subject building or structure for the purpose of determining whether violations of the VMC exist. After issuing a warrant under this section, the magistrate or judge shall file the affidavit in the manner prescribed by § 19.2-54 of the Code of Virginia. After executing the warrant, the local building official or his agents shall return the warrant to the clerk of the circuit court of the city or county wherein the inspection was made. The local building official or his agent shall make a reasonable effort to obtain consent from the owner, occupant, or tenant of the subject building or structure prior to seeking the issuance of an inspection warrant under this section.

The local governing body shall, however, inspect and enforce the provisions of the VMC for elevators, escalators, and related conveyances, except for elevators in single-family and two-family homes and

townhouses. Such inspection and enforcement shall be carried out by an agency or department designated by the local governing body.

B. Section 104.2 Interagency coordination. When any inspection functions under this code are assigned to a local agency other than the local building department, such agency shall coordinate its reports of inspection with the local building department.

13VAC5-63-50. Section 105 Local building department.

A. Section 105.1 Appointment of building official. Every local building department shall have a building official as the executive official in charge of the department. The building official shall be appointed in a manner selected by the local governing body. After permanent appointment, the building official shall not be removed from office except for cause after having been afforded a full opportunity to be heard on specific and relevant charges by and before the appointing authority. DHCD shall be notified by the appointing authority within 30 days of the appointment or release of a permanent or acting building official.

Note: Building officials are subject to sanctions in accordance with the VCS.

B. Section 105.1.1 Qualifications of building official. The building official shall have at least five years of building experience as a licensed professional engineer or architect, building, fire or trade inspector, contractor, housing inspector or superintendent of building, fire or trade construction or at least five years of building experience after obtaining a degree in architecture or engineering, with at least three years in responsible charge of work. Any combination of education and experience that would confer equivalent knowledge and ability shall be deemed to satisfy this requirement. The building official shall have general knowledge of sound engineering practice in respect to the design and construction of structures, the basic principles of fire prevention, the accepted requirements for means of egress and the installation of elevators and other service equipment necessary for the health, safety and general welfare of the occupants and the public. The local governing body may establish additional qualification requirements.

C. Section 105.1.2 Certification of building official. An acting or permanent building official shall be certified as a building official in accordance with the VCS within one year after being appointed as acting or permanent building official.

> Exception: A building official in place prior to April 1, 1983, shall not be required to meet the certification requirements in this section while continuing to serve in the same capacity in the same locality.

D. Section 105.1.3 Noncertified building official. Except for a building official exempt from certification under the exception to Section 105.1.2, any acting or permanent building official who is not certified as a building official in accordance with the VCS shall attend the core module of the Virginia Building Code Academy or an equivalent course in an individual or regional code academy accredited by DHCD within 180 days of appointment. This requirement is in addition to meeting the certification requirement in Section 105.1.2.

Note: Continuing education and periodic training requirements for DHCD certifications are set out in the VCS.

E. Section 105.2 Technical assistants. The building official, subject to any limitations imposed by the locality, shall be permitted to utilize technical assistants to assist the building official in the enforcement of the USBC. DHCD shall be notified by the building official within 60 days of the employment of, contracting with or termination of all technical assistants.

Note: Technical assistants are subject to sanctions in accordance with the VCS.

F. Section 105.2.1 Qualifications of technical assistants. A technical assistant shall have at least three years of experience and general knowledge in at least one of the following areas: building construction; building construction conceptual and administrative processes; building, fire or housing inspections; plumbing, electrical or mechanical trades; or fire protection, elevator or property maintenance work. Any combination of education and experience that would confer equivalent knowledge and ability, including high school technical training programs or college engineering, architecture, or construction degree programs, shall be deemed to satisfy this requirement. The locality may establish additional qualification requirements.

G. Section 105.2.2 Certification of technical assistants. A technical assistant shall be certified in the appropriate subject area within 18 months after becoming a technical assistant. When required by local policy to have two or more certifications, a technical assistant shall obtain the additional certifications within three years from the date of such requirement.

Exceptions:

1. A technical assistant in place prior to March 1, 1988, shall not be required to meet the certification requirements in this section while continuing to serve in the same capacity in the same locality.

2. A permit technician in place prior to the effective date of the 2015 edition of the code shall not be required to meet the certification requirements in this section while continuing to serve in the same capacity in the same locality.

Note: Continuing education and periodic training requirements for DHCD certifications are set out in the VCS.

H. Section 105.3 Conflict of interest. The standards of conduct for building officials and technical assistants shall be in accordance with the provisions of the State and Local Government Conflict of Interests Act, Chapter 31 (§ 2.2-3100 et seq.) of Title 2.2 of the Code of Virginia.

I. Section 105.4 Records. The local building department shall retain a record of applications received, permits, certificates, notices and orders issued, fees collected and reports of inspection in accordance with The Library of Virginia's General Schedule Number Six.

13VAC5-63-60. Section 106 Powers and duties of the building official.

A. Section 106.1 Powers and duties, generally. The building official shall enforce this code as set out herein and as interpreted by the State Review Board.

B. Section 106.2 Delegation of authority. The building official may delegate powers and duties except where such authority is limited by the local government. However, such limitations of authority by the local government are not applicable to the third-party inspector policy required by Section 113.7.1 nor

shall such limitations of authority by the local government have the effect of altering the provisions of this code or creating building regulations. When such delegations are made, the building official shall be responsible for assuring that they are carried out in accordance with the provisions of this code.

C. Section 106.3 Issuance of modifications. Upon written application by an owner or an owner's agent, the building official may approve a modification of any provision of the USBC provided the spirit and functional intent of the code are observed and public health, welfare and safety are assured. The decision of the building official concerning a modification shall be made in writing and the application for a modification and the decision of the building official concerning such modification shall be retained in the permanent records of the local building department.

Note: The USBC references nationally recognized model codes and standards. Future amendments to such codes and standards are not automatically included in the USBC; however the building official should give them due consideration in deciding whether to approve a modification.

D. Section 106.3.1 Substantiation of modification. The building official may require or may consider a statement from a registered design professional (RDP) or other person competent in the subject area of the application as to the equivalency of the proposed modification. In addition, the building official may require the application to include construction documents sealed by an RDP. The building official may also consider nationally recognized guidelines in deciding whether to approve a modification.

E. Section 106.3.2 Use of performance code. Compliance with the provisions of a nationally recognized performance code when approved as a modification shall be considered to constitute compliance with this code. All documents submitted as part of such consideration shall be retained in the permanent records of the local building department.

13VAC5-63-70. Section 107 Fees.

A. Section 107.1 Authority for charging fees. In accordance with § 36-105 of the Code of Virginia, fees may be levied by the local governing body in order to defray the cost of enforcement of the USBC.

Note: See subsection D of § 36-105 of the Code of Virginia for rules for permit fees involving property with easements or liens.

B. Section 107.1.1 Fee schedule. The local governing body shall establish a fee schedule incorporating unit rates, which may be based on square footage, cubic footage, estimated cost of construction or other appropriate criteria. A permit or any amendments to an existing permit shall not be issued until the designated fees have been paid, except that the building official may authorize the delayed payment of fees.

C. Section 107.1.2 Refunds. When requested in writing by a permit holder, the locality shall provide a fee refund in the case of the revocation of a permit or the abandonment or discontinuance of a building project. The refund shall not be required to exceed an amount which correlates to work not completed.

D. Section 107.1.3 Fees for generators used with amusement devices. Fees for generators and associated wiring used with amusement devices shall only be charged under the Virginia Amusement Device Regulations (13VAC5-31).

E. Section 107.2 Code academy fee levy. In accordance with subdivision 7 of § 36-137 of the Code of Virginia, the local building department shall collect a 2.0% levy of fees charged for permits issued under this code and transmit it quarterly to DHCD to support training programs of the Virginia Building Code Academy. Localities that maintain individual or regional training academies accredited by DHCD shall retain such levy.

13VAC5-63-80. Section 108 Application for permit.

A. Section 108.1 When applications are required. Application for a permit shall be made to the building official and a permit shall be obtained prior to the commencement of any of the following activities, except that applications for emergency construction, alterations or equipment replacement shall be submitted by the end of the first working day that follows the day such work commences. In addition, the building official may authorize work to commence pending the receipt of an application or the issuance of a permit.

1. Construction or demolition of a building or structure. Installations or alterations involving (i) the removal or addition of any wall, partition or portion thereof, (ii) any structural component, (iii) the repair or replacement of any required component of a fire or smoke rated assembly, (iv) the alteration of any required means of egress system, including the addition of emergency supplemental hardware, (v) water supply and distribution system, sanitary drainage system or vent system, (vi) electric wiring, (vii) fire protection system, mechanical systems, or fuel supply systems, or (viii) any equipment regulated by the USBC.

2. For change of occupancy, application for a permit shall be made when a new certificate of occupancy is required by the VEBC.

3. Movement of a lot line that increases the hazard to or decreases the level of safety of an existing building or structure in comparison to the building code under which such building or structure was constructed.

4. Removal or disturbing of any asbestos containing materials during the construction or demolition of a building or structure, including additions.

B. Section 108.2 Exemptions from application for permit. Notwithstanding the requirements of Section 108.1, application for a permit and any related inspections shall not be required for the following; however, this section shall not be construed to exempt such activities from other applicable requirements of this code. In addition, when an owner or an owner's agent requests that a permit be issued for any of the following, then a permit shall be issued and any related inspections shall be required.

1. Installation of wiring and equipment that (i) operates at less than 50 volts, (ii) is for broadband communications systems, (iii) is exempt under Section 102.3(1) or 102.3(4), or (iv) is for monitoring or automation systems in dwelling units, except when any such installations are located in a plenum, penetrate fire rated or smoke protected construction or are a component of any of the following:

1.1. Fire alarm system.

1.2. Fire detection system.

1.3. Fire suppression system.

1.4. Smoke control system.

1.5. Fire protection supervisory system.

1.6. Elevator fire safety control system.

1.7. Access or egress control system or delayed egress locking or latching system.

1.8. Fire damper.

1.9. Door control system.

2. One story detached structures used as tool and storage sheds, playhouses or similar uses, provided the building area does not exceed 256 square feet (23.78 m^2) and the structures are not classified as a Group F-1 or H occupancy.

3. Detached prefabricated buildings housing the equipment of a publicly regulated utility service, provided the floor area does not exceed 150 square feet (14 m^2).

4. Tents or air-supported structures, or both, that cover an area of 900 square feet (84 m^2) or less, including within that area all connecting areas or spaces with a common means of egress or entrance, provided such tents or structures have an occupant load of 50 or less persons.

5. Fences of any height unless required for pedestrian safety as provided for by Section 3306, or used for the barrier for a swimming pool.

6. Concrete or masonry walls, provided such walls do not exceed six feet in height above the finished grade. Ornamental column caps shall not be considered to contribute to the height of the wall and shall be permitted to extend above the six feet height measurement.

7. Retaining walls supporting less than three feet of unbalanced fill that are not constructed for the purpose of impounding Class I, II or III-A liquids or supporting a surcharge other than ordinary unbalanced fill.

8. Swimming pools that have a surface area not greater than 150 square feet (13.95 m^2), do not exceed 5,000 gallons (19,000 L) and are less than 24 inches (610 mm) deep.

9. Signs under the conditions in Section H101.2 of Appendix H.

10. Replacement of above-ground existing LP-gas containers of the same capacity in the same location and associated regulators when installed by the serving gas supplier.

11. Flagpoles 30 feet (9144 mm) or less in height.

12. Temporary ramps serving dwelling units in Groups R-3 and R-5 occupancies where the height of the entrance served by the ramp is no more than 30 inches (762 mm) above grade.

13. Construction work deemed by the building official to be minor and ordinary and which does not adversely affect public health or general safety.

14. Ordinary repairs that include the following:

14.1. Replacement of windows and doors with windows and doors of similar operation and opening dimensions that do not require changes to the existing framed opening and that are not required to be fire rated in Group R-2 where serving a single dwelling unit and in Groups R-3, R-4 and R-5.

14.2. Replacement of plumbing fixtures and well pumps in all groups without alteration of the water supply and distribution systems, sanitary drainage systems or vent systems.

14.3. Replacement of general use snap switches, dimmer and control switches, 125 volt-15 or 20 ampere receptacles, luminaires (lighting fixtures) and ceiling (paddle) fans in Group R-2 where serving a single dwelling unit and in Groups R-3, R-4 and R-5.

14.4. Replacement of mechanical appliances provided such equipment is not fueled by gas or oil in Group R-2 where serving a single-family dwelling and in Groups R-3, R-4 and R-5.

14.5. Replacement of an unlimited amount of roof covering or siding in Group R-3, R-4 or R-5 provided the building or structure is not in an area where the nominal design wind speed is greater than 100 miles per hour (44.7 meters per second) and replacement of 100 square feet (9.29 m^2) or less of roof covering in all groups and all wind zones.

14.6. Replacement of 256 square feet (23.78 m^2) or less of roof decking in Group R-3, R-4 or R-5 unless the decking to be replaced was required at the time of original construction to be fire-retardant-treated or protected in some other way to form a fire-rated wall termination.

14.7. Installation or replacement of floor finishes in all occupancies.

14.8. Replacement of Class C interior wall or ceiling finishes installed in Groups A, E and I and replacement of all classes of interior wall or ceiling finishes in other groups.

14.9. Installation or replacement of cabinetry or trim.

14.10. Application of paint or wallpaper.

14.11. Other repair work deemed by the building official to be minor and ordinary which does not adversely affect public health or general safety.

15. Crypts, mausoleums, and columbaria structures not exceeding 1,500 square feet (139.35 m^2) in area if the building or structure is not for occupancy and used solely for the interment of human or animal remains and is not subject to special inspections.

16. Billboard safety upgrades to add or replace steel catwalks, steel ladders, or steel safety cable.

Exceptions:

1. Application for a permit may be required by the building official for the installation of replacement siding, roofing and windows in buildings within a historic district designated by a locality pursuant to § 15.2-2306 of the Code of Virginia.

2. Application for a permit may be required by the building official for any items exempted in this section that are located in a special flood hazard area.

C. Section 108.3 Applicant information, processing by mail. Application for a permit shall be made by the owner or lessee of the relevant property or the agent of either or by the RDP, contractor or subcontractor associated with the work or any of their agents. The full name and address of the owner, lessee and applicant shall be provided in the application. If the owner or lessee is a corporate body, when and to the extent determined necessary by the building official, the full name and address of the responsible officers shall also be provided.

A permit application may be submitted by mail and such permit applications shall be processed by mail, unless the permit applicant voluntarily chooses otherwise. In no case shall an applicant be required to appear in person.

The building official may accept applications for a permit through electronic submissions provided the information required by this section is obtained.

D. Section 108.4 Prerequisites to obtaining permit. In accordance with § 54.1-1111 of the Code of Virginia, any person applying to the building department for the construction, removal or improvement of any structure shall furnish prior to the issuance of the permit either (i) satisfactory proof to the building official that he is duly licensed or certified under the terms or Chapter 11 (§ ~~54.1-1000~~ 54.1-1100 et seq.) of Title 54.1 of the Code of Virginia to carry out or superintend the same or (ii) file a written statement that he is not subject to licensure or certification as a contractor or subcontractor pursuant to Chapter 11 of Title 54.1 of the Code of Virginia. The applicant shall also furnish satisfactory proof that the taxes or license fees required by any county, city, or town have been paid so as to be qualified to bid upon or contract for the work for which the permit has been applied.

E. Section 108.5 Mechanics' lien agent designation. In accordance with § 36-98.01 of the Code of Virginia, a building permit issued for any one-family or two-family residential dwelling shall at the time of issuance contain, at the request of the applicant, the name, mailing address, and telephone number of the mechanics' lien agent as defined in § 43-1 of the Code of Virginia. If the designation of a mechanics' lien agent is not so requested by the applicant, the building permit shall at the time of issuance state that none has been designated with the words "None Designated."

Note: In accordance with § 43-4.01A of the Code of Virginia, a permit may be amended after it has been initially issued to name a mechanics' lien agent or a new mechanics' lien agent.

F. Section 108.6 Application form, description of work. The application for a permit shall be submitted on a form supplied by the local building department. The application shall contain a general description and location of the proposed work and such other information as determined necessary by the building official.

G. Section 108.7 Amendments to application. An application for a permit may be amended at any time prior to the completion of the work governed by the permit. Additional construction documents or other records may also be submitted in a like manner. All such submittals shall have the same effect as if filed with the original application for a permit and shall be retained in a like manner as the original filings.

H. Section 108.8 Time limitation of application. An application for a permit for any proposed work shall be deemed to have been abandoned six months after the date of filing unless such application has been pursued in good faith or a permit has been issued, except that the building official is authorized to grant one or more extensions of time if a justifiable cause is demonstrated.

13VAC5-63-90. Section 109 Construction documents.

A. Section 109.1 Submittal of documents. Construction documents shall be submitted with the application for a permit. The number of sets of such documents to be submitted shall be determined by the locality. Construction documents for one- and two-family dwellings may have floor plans reversed provided an accompanying site plan is approved.

> Exception: Construction documents do not need to be submitted when the building official determines the proposed work is of a minor nature.

Note: Information on the types of construction required to be designed by an RDP is included in the "Related Laws Package" available from DHCD.

B. Section 109.2 Site plan. When determined necessary by the building official, a site plan shall be submitted with the application for a permit. The site plan shall show to scale the size and location of all proposed construction, including any associated wells, septic tanks or drain fields. The site plan shall also show to scale the size and location of all existing structures on the site, the distances from lot lines to all proposed construction, the established street grades and the proposed finished grades. When determined necessary by the building official, the site plan shall contain the elevation of the lowest floor of any proposed buildings. The site plan shall also be drawn in accordance with an accurate boundary line survey. When the application for a permit is for demolition, the site plan shall show all construction to be demolished and the location and size of all existing structures that are to remain on the site.

Note: Site plans are generally not necessary for alterations, renovations, repairs or the installation of equipment.

C. Section 109.3 Engineering details. When determined necessary by the building official, construction documents shall include adequate detail of the structural, mechanical, plumbing or electrical components. Adequate detail may include computations, stress diagrams or other essential technical data and when proposed buildings are more than two stories in height, adequate detail may specifically be required to include where floor penetrations will be made for pipes, wires, conduits, and other components of the electrical, mechanical and plumbing systems and how such floor penetrations will be protected to maintain the required structural integrity or fire-resistance rating, or both. When dry floodproofing is provided, the engineering details shall include detail of the walls, floors, and flood shields designed to resist flood-related loads, including the sealing of floor and wall penetrations. All engineered documents, including relevant computations, shall be sealed by the RDP responsible for the design.

D. Section 109.4 Examination of documents. The building official shall examine or cause to be examined all construction documents or site plans, or both, within a reasonable time after filing. If such documents or plans do not comply with the provisions of this code, the permit applicant shall be notified in writing of the reasons, which shall include any adverse construction document review comments or determinations that additional information or engineering details need to be submitted.

The review of construction documents for new one- and two-family dwellings for determining compliance with the technical provisions of this code not relating to the site, location or soil conditions associated with the dwellings shall not be required when identical construction documents for identical dwellings have been previously approved in the same locality under the same edition of the code and such construction documents are on file with the local building department.

E. Section 109.4.1 Expedited construction document review. The building official may accept reports from an approved person or agency that the construction documents have been examined and conform to the requirements of the USBC and may establish requirements for the person or agency submitting such reports. In addition, where such reports have been submitted, the building official may expedite the issuance of the permit.

F. Section 109.5 Approval of construction documents. The approval of construction documents shall be limited to only those items within the scope of the USBC. Either the word "Approved" shall be stamped on all required sets of approved construction documents or an equivalent endorsement in writing shall be provided. One set of the approved construction documents shall be retained for the records of the local building department and one set shall be kept at the building site and shall be available to the building official at all reasonable times.

G. Section 109.6 Phased approval. The building official is authorized to issue a permit for the construction of foundations or any other part of a building or structure before the construction documents for the whole building or structure have been submitted, provided that adequate information and detailed statements have been filed complying with pertinent requirements of this code. The holder of such permit for the foundation or other parts of a building or structure shall proceed at the holder's own risk with the building operation and without assurance that a permit for the entire structure will be granted.

13VAC5-63-100. Section 110 Permits.

A. Section 110.1 Approval and issuance of permits. The building official shall examine or cause to be examined all applications for permits or amendments to such applications within a reasonable time after filing. If the applications or amendments do not comply with the provisions of this code or all pertinent laws and ordinances, the permit shall not be issued and the permit applicant shall be notified in writing of the reasons for not issuing the permit. If the application complies with the applicable requirements of this code, a permit shall be issued as soon as practicable. The issuance of permits shall not be delayed in an effort to control the pace of construction of new detached one- or two-family dwellings.

B. Section 110.1.1 Consultation and notification. Prior to approval of emergency supplemental hardware, the building code official shall consult with the local fire code official, or state fire code official if no local fire code official exists, and head of the local law-enforcement agency. The local fire code official; the state fire code official; and the local fire, EMS, and law-enforcement first responders shall be notified of such approval after approval of such emergency supplemental hardware by the building code official.

C. Section 110.2 Types of permits. Separate or combined permits may be required for different areas of construction such as building construction, plumbing, electrical, and mechanical work, or for special construction as determined appropriate by the locality. In addition, permits for two or more buildings or

structures on the same lot may be combined. Annual permits may also be issued for any construction regulated by this code. The annual permit holder shall maintain a detailed record of all alterations made under the annual permit. Such record shall be available to the building official and shall be submitted to the local building department if requested by the building official.

D. Section 110.3 Asbestos inspection in buildings to be renovated or demolished; exceptions. In accordance with § 36-99.7 of the Code of Virginia, the local building department shall not issue a building permit allowing a building for which an initial building permit was issued before January 1, 1985, to be renovated or demolished until the local building department receives certification from the owner or his agent that the affected portions of the building have been inspected for the presence of asbestos by an individual licensed to perform such inspections pursuant to § 54.1-503 of the Code of Virginia and that no asbestos-containing materials were found or that appropriate response actions will be undertaken in accordance with the requirements of the Clean Air Act National Emission Standard for the Hazardous Air Pollutant (NESHAPS) (40 CFR Part 61, Subpart M), and the asbestos worker protection requirements established by the U.S. Occupational Safety and Health Administration for construction workers (29 CFR 1926.1101). Local educational agencies that are subject to the requirements established by the Environmental Protection Agency under the Asbestos Hazard Emergency Response Act (AHERA) shall also certify compliance with 40 CFR Part 763 and subsequent amendments thereto.

To meet the inspection requirements above, except with respect to schools, asbestos inspection of renovation projects consisting only of repair or replacement of roofing, floorcovering, or siding materials may be satisfied by a statement that the materials to be repaired or replaced are assumed to contain friable asbestos and that asbestos installation, removal, or encapsulation will be accomplished by a licensed asbestos contractor.

The provisions of this section shall not apply to single-family dwellings or residential housing with four or fewer units unless the renovation or demolition of such buildings is for commercial or public development purposes. The provisions of this section shall not apply if the combined amount of regulated asbestos-containing material involved in the renovation or demolition is less than 260 linear feet on pipes or less than 160 square feet on other facility components or less than 35 cubic feet off facility components where the length or area could not be measured previously.

An abatement area shall not be reoccupied until the building official receives certification from the owner that the response actions have been completed and final clearances have been measured. The final clearance levels for reoccupancy of the abatement area shall be 0.01 or fewer asbestos fibers per cubic centimeter if determined by Phase Contrast Microscopy analysis (PCM) or 70 or fewer structures per square millimeter if determined by Transmission Electron Microscopy analysis (TEM).

E. Section 110.4 Fire apparatus access road requirements. The permit applicant shall be informed of any requirements for providing or maintaining fire apparatus access roads prior to the issuance of a building permit.

F. Section 110.5 Posting of permits; limitation of approval. A copy of the permit shall be posted on the construction site for public inspection until the work is completed. Such posting shall include the street or lot number if one has been assigned, to be readable from a public way. In addition, each building or structure to which a street number has been assigned shall, upon completion, have the number displayed so as to be readable from the public way.

A permit shall be considered authority to proceed with construction in accordance with this code, the approved construction documents, the permit application and any approved amendments or modifications. The permit shall not be construed to otherwise authorize the omission or amendment of any provision of this code.

G. Section 110.6 Abandonment of work. A building official shall be permitted to revoke a permit if work on the site authorized by the permit is not commenced within six months after issuance of the permit, or if the authorized work on the site is suspended or abandoned for a period of six months after the permit is issued; however, permits issued for plumbing, electrical and mechanical work shall not be revoked if the building permit is still in effect. It shall be the responsibility of the permit applicant to prove to the building official that authorized work includes substantive progress, characterized by approved inspections as specified in Section 113.3 of at least one inspection within a period of six months or other evidence that would indicate substantial work has been performed. Upon written request, the building official may grant one or more extensions of time, not to exceed one year per extension.

H. Section 110.7 Single-family dwelling permits. The building official shall be permitted to require a three-year time limit to complete construction of new detached single-family dwellings, additions to detached single-family dwellings and residential accessory structures. The time limit shall begin from the issuance date of the permit. The building official may grant extensions of time if the applicant can demonstrate substantive progress, characterized by approved inspections as specified in Section 113.3 of at least one inspection within a period of six months or other evidence that would indicate substantial work has been performed.

I. Section 110.8 Revocation of a permit. The building official may revoke a permit or approval issued under this code in the case of any false statement, misrepresentation of fact, abandonment of work, failure to complete construction as required by Section 110.7, noncompliance with provisions of this code and pertinent laws and ordinances, or incorrect information supplied by the applicant in the application or construction documents on which the permit or approval was based.

13VAC5-63-110. Section 111 RDP services.

A. Section 111.1 When required. In accordance with § 54.1-410 of the Code of Virginia and under the general authority of this code, the local building department shall establish a procedure to ensure that construction documents under Section 109 are prepared by an RDP in any case in which the exemptions contained in § 54.1-401, 54.1-402 or 54.1-402.1 of the Code of Virginia are not applicable or in any case where the building official determines it necessary. When required under § 54.1-402 of the Code of Virginia or when required by the building official, or both, construction documents shall bear the name and address of the author and his occupation.

Note: Information on the types of construction required to be designed by an RDP is included in the "Related Laws Package" available from DHCD.

B. Section 111.2 Special inspection requirements. Special inspections shall be conducted when required by Section 1704. Individuals or agencies, or both, conducting special inspections shall meet the qualification requirements of Sections 1703 and 1704.2.1. The permit applicant shall submit a completed statement of special inspections with the permit application. The building official shall

review, and if satisfied that the requirements have been met, approve the statement of special inspections as required in Sections 1704.2.3 and 1705 as a requisite to the issuance of a building permit. The building official may require interim inspection reports. The building official shall receive, and if satisfied that the requirements have been met, approve a final report of special inspections as specified in Section 1704.2.4. All fees and costs related to the special inspections shall be the responsibility of the building owner.

13VAC5-63-120. Section 112 Workmanship, materials and equipment.

A. Section 112.1 General. It shall be the duty of any person performing work covered by this code to comply with all applicable provisions of this code and to perform and complete such work so as to secure the results intended by the USBC. Damage to regulated building components caused by violations of this code or by the use of faulty materials or installations shall be considered as separate violations of this code and shall be subject to the applicable provisions of Section 115.

B. Section 112.2 Alternative methods or materials. In accordance with § 36-99 of the Code of Virginia, where practical, the provisions of this code are stated in terms of required level of performance so as to facilitate the prompt acceptance of new building materials and methods. When generally recognized standards of performance are not available, this section and other applicable requirements of this code provide for acceptance of materials and methods whose performance is substantially equal in safety to those specified on the basis of reliable test and evaluation data presented by the proponent. In addition, as a requirement of this code, the building official shall require that sufficient technical data be submitted to substantiate the proposed use of any material, equipment, device, assembly or method of construction. The building official may consider nationally recognized guidelines in making a determination.

C. Section 112.3 Documentation and approval. In determining whether any material, equipment, device, assembly or method of construction complies with this code, the building official shall approve items listed by nationally recognized testing laboratories, when such items are listed for the intended use and application, and in addition, may consider the recommendations of RDPs. Approval shall be issued when the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code and that the material, equipment, device, assembly or method of construction offered is, for the purpose intended, at least the equivalent of that prescribed by the code. Such approval is subject to all applicable requirements of this code and the material, equipment, device, assembly or method of construction shall be installed in accordance with the conditions of the approval and their listings. In addition, the building official may revoke such approval whenever it is discovered that such approval was issued in error or on the basis of incorrect information, or where there are repeated violations of the USBC.

D. Section 112.3.1 Conditions of listings. Where conflicts between this code and conditions of the listing or the manufacturer's installation instructions occur, the provisions of this code shall apply.

> Exception: Where a code provision is less restrictive than the conditions of the listing of the equipment or appliance or the manufacturer's installation instructions, the conditions of the listing and the manufacturer's installation instructions shall apply.

E. Section 112.4 Used material and equipment. Used materials, equipment and devices may be approved provided they have been reconditioned, tested or examined and found to be in good and proper working condition and acceptable for use by the building official.

F. Section 112.5 Defective materials. Notwithstanding any provision of this code to the contrary, where action has been taken and completed by the BHCD under subsection D of § 36-99 of the Code of Virginia establishing new performance standards for identified defective materials, this section sets forth the new performance standards addressing the prospective use of such materials and establishes remediation standards for the removal of any defective materials already installed, which when complied with enables the building official to certify that the building is deemed to comply with the edition of the USBC under which the building was originally constructed with respect to the remediation of the defective materials.

G. Section 112.5.1 Drywall, performance standard. All newly installed gypsum wallboard shall not be defective drywall as defined in Section 112.5.1.1.1.

H. Section 112.5.1.1 Remediation standards. The following provisions establish remediation standards where defective drywall was installed in buildings.

I. Section 112.5.1.1.1 Definition. For the purposes of this section the term "defective drywall" means gypsum wallboard that (i) contains elemental sulfur exceeding 10 parts per million that when exposed to heat or humidity, or both, emits volatile sulfur compounds in quantities that cause observable corrosion on electrical wiring, plumbing pipes, fuel gas lines, or HVAC equipment, or any components of the foregoing or (ii) has been designated by the U.S. Consumer Product Safety Commission as a product with a product defect that constitutes a substantial product hazard within the meaning of § 15(a)(2) of the Consumer Product Safety Act (15 USC § 2064(a)(2)).

J. Section 112.5.1.1.2 Permit. Application for a permit shall be made to the building official, and a permit shall be obtained prior to the commencement of remediation work undertaken to remove defective drywall from a building and for the removal, replacement, or repair of corroded electrical, plumbing, mechanical, or fuel gas equipment and components.

K. Section 112.5.1.1.3 Protocol. Where remediation of defective drywall is undertaken, the following standards shall be met. The building official shall be permitted to consider and approve modifications to these standards in accordance with Section 106.3.

L. Section 112.5.1.1.3.1 Drywall. Drywall in the building, whether defective or nondefective, shall be removed and discarded, including fasteners that held any defective drywall to prevent small pieces of drywall from remaining under fasteners.

Exceptions:

1. Nondefective drywall not subject to the corrosive effects of any defective drywall shall be permitted to be left in place in buildings where the defective drywall is limited to a defined room or space or isolated from the rest of the building and the defective drywall can be positively identified. If the room or space containing the defective drywall also contains any nondefective drywall, the nondefective drywall in that room or space shall also be removed.

2. In multifamily buildings where defective drywall was not used in the firewalls between units and there are no affected building systems behind the firewalls, the firewalls shall be permitted to be left in place.

M. Section 112.5.1.1.3.2 Insulation and other building components. Insulation in walls and ceilings shall be removed and discarded. Carpet and vinyl flooring shall be removed and discarded. Woodwork, trim, cabinets, and tile or wood floors may be left in place or may be reused.

Exceptions:

1. Closed-cell foam insulation is permitted to be left in place if testing for off-gassing from defective drywall is negative, unless its removal is required to gain access.

2. Insulation, carpet, or vinyl flooring in areas not exposed to defective drywall or to the effects of defective drywall, may be left in place or reused.

N. Section 112.5.1.1.3.3 Electrical wiring, equipment, devices, and components. All electrical wiring regulated by this code shall be permitted to be left in place, but removal or cleaning of exposed ends of the wiring to reveal clean or uncorroded surfaces is required. All electrical equipment, devices, and components of the electrical system of the building regulated by this code shall be removed and discarded. This shall include all smoke detectors.

Exceptions:

1. Electrical equipment, devices, or components in areas not exposed to the corrosive effects of defective drywall shall be permitted to be left in place or reused. Electrical equipment, devices, or components in areas exposed to the corrosive effects of defective drywall shall be cleaned, repaired, or replaced.

2. Cord and plug connected appliances are not subject to this code and, therefore, cannot be required to be removed or replaced.

Note: All low-voltage wiring associated with security systems, door bells, elevator controls, and other such components shall be removed and replaced or repaired.

O. Section 112.5.1.1.3.4 Plumbing and fuel gas piping, fittings, fixtures, and equipment. All copper fuel gas piping and all equipment utilizing fuel gas with copper, silver, or aluminum components shall be removed and discarded. All copper plumbing pipes and fittings shall be removed and discarded. Plumbing fixtures with copper, silver, or aluminum components shall be removed and discarded.

Exception: Plumbing or fuel gas piping, fittings, fixtures, equipment, or components in areas not exposed to the corrosive effects of defective drywall shall be permitted to be left in place or reused.

P. Section 112.5.1.1.3.5 Mechanical systems. All heating, air-conditioning, and ventilation system components, including ductwork, air-handling units, furnaces, heat pumps, refrigerant lines, and thermostats and associated wiring, shall be removed and discarded.

Exception: Mechanical system components in areas not exposed to the corrosive effects of defective drywall shall be permitted to be left in place or reused.

Q. Section 112.5.1.1.3.6 Cleaning. Following the removal of all materials and components in accordance with Sections 112.5.1.1.3.1 through 112.5.1.1.3.5, the building shall be thoroughly cleaned to remove any particulate matter and dust.

R. Section 112.5.1.1.3.7 Airing out. Following cleaning in accordance with Section 112.5.1.1.3.6, the building shall be thoroughly aired out with the use of open windows and doors and fans.

S. Section 112.5.1.1.3.8 Pre-rebuilding clearance testing. Following the steps outlined above for removal of all materials and components, cleaning and airing out, a pre-rebuilding clearance test shall be conducted with the use of copper or silver coupons and the methodology outlined in the April 2, 2010, joint report by the Consumer Products Safety Commission and the Department of Housing and Urban Development "Interim Remediation Guidance for Homes with Corrosion from Problem Drywall" or with the use of a copper probe and dosimeter. The clearance testing shall confirm that all airborne compounds associated with the defective drywall are at usual environmental background levels. The clearance testing report, certifying compliance, shall be submitted to the building official.

Notes:

1. Where the building is served by a well and prior to conducting clearance tests, all outlets in piping served by the well should be capped or otherwise plugged to prevent contamination of the air sample.

2. To prevent siphoning and evaporation of the trap seals, fixtures should be capped or otherwise plugged to prevent sewer gases from contaminating the air sample.

T. Section 112.5.1.1.3.9 Testing agencies and personnel. Agencies and personnel performing pre-rebuilding or post-rebuilding clearance testing shall be independent of those responsible for all other remediation work and the agencies and personnel shall be appropriately certified or accredited by the Council of Engineering and Scientific Specialty Boards, the American Indoor Air Quality Council, or the World Safety Organization.

> Exception: Testing agencies and personnel shall be accepted if certified by an RDP or if the agency employs an RDP to be in responsible charge of the work.

U. Section 112.5.1.1.3.10 Rebuilding standards. The rebuilding of the building shall comply with the edition of the USBC that was in effect when the building was originally built.

V. Section 112.5.1.1.3.11 Post-rebuilding clearance testing. A post-rebuilding clearance test prior to reoccupancy of the building or structure shall be conducted with the use of copper or silver coupons and the methodology outlined in the April 2, 2010, joint report by the U.S. Consumer Products Safety Commission and by the Department of Housing and Urban Development "Interim Remediation Guidance for Homes with Corrosion from Problem Drywall" or with the use of a copper probe and dosimeter. The clearance testing shall confirm that all airborne compounds associated with the defective drywall are at usual environmental background levels. The clearance testing report certifying compliance shall be submitted to the building official.

Notes:

1. Where the building is served by a well and prior to conducting clearance tests, all outlets in piping served by the well should be capped or otherwise plugged to prevent contamination of the air sample.

2. To prevent siphoning and evaporation of the trap seals, fixtures should be capped or otherwise plugged to prevent sewer gases from contaminating the air sample.

W. Section 112.5.1.1.4 Final approval by the building official. Once remediation has been completed in accordance with this section, a certificate or letter of approval shall be issued by the building official. The certificate or letter shall state that the remediation and rebuilding is deemed to comply with this code.

X. Section 112.5.1.1.4.1 Approval of remediation occurring prior to these standards. The building official shall issue a certificate or letter of approval for remediation of defective drywall that occurred prior to the effective date of these standards provided post-rebuilding clearance testing has been performed in accordance with Section 112.5.1.1.3.11, by agencies and personnel complying with Section 112.5.1.1.3.9, and the clearance testing confirms that all airborne compounds associated with the defective drywall are at usual environmental background levels. The clearance testing report certifying compliance shall be submitted to the building official.

13VAC5-63-130. Section 113 Inspections.

A. Section 113.1 General. In accordance with § 36-105 of the Code of Virginia, any building or structure may be inspected at any time before completion, and shall not be deemed in compliance until approved by the inspecting authority. Where the construction cost is less than $2,500, however, the inspection may, in the discretion of the inspecting authority, be waived. The building official shall coordinate all reports of inspections for compliance with the USBC, with inspections of fire and health officials delegated such authority, prior to the issuance of an occupancy permit.

B. Section 113.1.1 Equipment required. Any ladder, scaffolding or test equipment necessary to conduct or witness a requested inspection shall be provided by the permit holder.

C. Section 113.1.2 Duty to notify. When construction reaches a stage of completion that requires an inspection, the permit holder shall notify the building official.

D. Section 113.1.3 Duty to inspect. Except as provided for in Section 113.7, the building official shall perform the requested inspection in accordance with Section 113.6 when notified in accordance with Section 113.1.2.

E. Section 113.2 Prerequisites. The building official may conduct a site inspection prior to issuing a permit. When conducting inspections pursuant to this code, all personnel shall carry proper credentials.

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

1. Inspection of footing excavations and reinforcement material for concrete footings prior to the placement of concrete.

2. Inspection of foundation systems during phases of construction necessary to assure compliance with this code.

3. Inspection of preparatory work prior to the placement of concrete.

4. Inspection of structural members and fasteners prior to concealment.

5. Inspection of electrical, mechanical and plumbing materials, equipment and systems prior to concealment.

6. Inspection of energy conservation material prior to concealment.

7. Final inspection.

G. 113.3.1 Equipment changes. Upon the replacement or new installation of any fuel-burning appliances or equipment in existing Group R-5 occupancies, an inspection or inspections shall be conducted to ensure that the connected vent or chimney systems comply with the following:

1. Vent or chimney systems are sized in accordance with the IRC.

2. Vent or chimney systems are clean, free of any obstruction or blockages, defects, or deterioration, and are in operable condition. Where not inspected by the local building department, persons performing such changes or installations shall certify to the building official that the requirements of Items 1 and 2 of this section are met.

H. 113.3.2 Lowest floor elevation. In flood hazard areas, upon placement of the lowest floor, including the basement, and prior to further vertical construction, the elevation certification required in Section ~~1612.5~~ 1612.4 shall be submitted to the building official.

I. 113.3.3 Flood hazard documentation. If located in a flood hazard area, documentation of the elevation of the lowest floor as required in Section ~~1612.5~~ 1612.4 shall be submitted to the building official prior to the final inspection.

J. Section 113.4 Additional inspections. The building official may designate additional inspections and tests to be conducted during the construction of a building or structure and shall so notify the permit holder.

K. Section 113.5 In-plant and factory inspections. When required by the provisions of this code, materials, equipment or assemblies shall be inspected at the point of manufacture or fabrication. The building official shall require the submittal of an evaluation report of such materials, equipment or assemblies. The evaluation report shall indicate the complete details of the assembly including a description of the assembly and its components, and describe the basis upon which the assembly is being evaluated. In addition, test results and other data as necessary for the building official to determine conformance with the USBC shall be submitted. For factory inspections, an identifying label or stamp permanently affixed to materials, equipment or assemblies indicating that a factory inspection has been made shall be acceptable instead of a written inspection report, provided the intent or meaning of such identifying label or stamp is properly substantiated.

L. Section 113.6 Approval or notice of defective work. The building official shall either approve the work in writing or give written notice of defective work to the permit holder. Upon request of the permit holder, the notice shall reference the USBC section that serves as the basis for the defects and such defects shall be corrected and reinspected before any work proceeds that would conceal such defects. A record of all reports of inspections, tests, examinations, discrepancies and approvals issued shall be

maintained by the building official and shall be communicated promptly in writing to the permit holder. Approval issued under this section may be revoked whenever it is discovered that such approval was issued in error or on the basis of incorrect information, or where there are repeated violations of the USBC. Notices issued pursuant to this section shall be permitted to be communicated electronically, provided the notice is reasonably calculated to get to the permit holder.

M. Section 113.7 Approved inspection agencies. The building official may accept reports of inspections and tests from individuals or inspection agencies approved in accordance with the building official's written policy required by Section 113.7.1. The individual or inspection agency shall meet the qualifications and reliability requirements established by the written policy. Under circumstances where the building official is unable to make the inspection or test required by Section 113.3 or 113.4 within two working days of a request or an agreed upon date or if authorized for other circumstances in the building official's written policy, the building official shall accept reports for review. The building official shall approve the report from such approved individuals or agencies unless there is cause to reject it. Failure to approve a report shall be in writing within two working days of receiving it stating the reason for the rejection. Reports of inspections conducted by approved third-party inspectors or agencies shall be in writing, shall indicate if compliance with the applicable provisions of the USBC have been met and shall be certified by the individual inspector or by the responsible officer when the report is from an agency. Reports of inspections conducted for the purpose of verifying compliance with the requirements of the USBC for elevators, escalators, and related conveyances shall include the name and certification number of the elevator mechanic performing the tests witnessed by the third-party inspector or agency.

> Exception: The licensed mechanical contractor installing the mechanical system shall be permitted to perform duct tests required by Section ~~R403.3.3~~ R403.3.5 of the IECC or Section ~~N1103.3.3~~ N1103.3.5 of the IRC. The contractor shall have been trained on the equipment used to perform the test.

Note: Photographs, videotapes or other sources of pertinent data or information may be considered as constituting such reports and tests.

N. Section 113.7.1 Third-party inspectors. Each building official charged with the enforcement of the USBC shall have a written policy establishing the minimum acceptable qualifications for third-party inspectors. The policy shall include the format and time frame required for submission of reports, any prequalification or preapproval requirements before conducting a third-party inspection and any other requirements and procedures established by the building official.

O. Section 113.7.2 Qualifications. In determining third-party inspector qualifications, the building official may consider such items as DHCD inspector certification, other state or national certifications, state professional registrations, related experience, education and any other factors that would demonstrate competency and reliability to conduct inspections.

P. Section 113.8 Final inspection. Upon completion of construction for which a permit was issued, a final inspection shall be conducted to ensure that any defective work has been corrected and that all work complies with the USBC and has been approved, including any work associated with modifications under Section 106.3. The building official shall be permitted to require the electrical service to a building or structure to be energized prior to conducting the final inspection. Approval of the final inspection indicates that all work associated with the permit complies with this code and the permit is complete.

Prior to occupancy or change of occupancy of a building or structure, a certificate of occupancy shall be issued in accordance with Section 116.

13VAC5-63-140. Section 114 Stop work orders.

A. Section 114.1 Issuance of order. When the building official finds that work on any building or structure is being executed contrary to the provisions of this code or any pertinent laws or ordinances, or in a manner endangering the general public, a written stop work order may be issued. The order shall identify the nature of the work to be stopped and be given either to the owner of the property involved, to the owner's agent or to the person performing the work. Following the issuance of such an order, the affected work shall cease immediately. The order shall state the conditions under which such work may be resumed.

B. Section 114.2 Limitation of order. A stop work order shall apply only to the work identified in the order, provided that other work on the building or structure may be continued if not concealing the work covered by the order.

13VAC5-63-150. Section 115 Violations.

A. Section 115.1 Violation a misdemeanor; civil penalty. In accordance with § 36-106 of the Code of Virginia, it shall be unlawful for any owner or any other person, firm or corporation, on or after the effective date of any code provisions, to violate any such provisions. Any locality may adopt an ordinance that establishes a uniform schedule of civil penalties for violations of specified provisions of the code that are not abated or remedied promptly after receipt of a notice of violation from the local enforcement officer.

Note: See the full text of § 36-106 of the Code of Virginia for additional requirements and criteria pertaining to legal action relative to violations of the code.

B. Section 115.2 Notice of violation. The building official shall issue a written notice of violation to the permit holder if any violations of this code or any directives or orders of the building official have not been corrected or complied with within a reasonable time. The building official may also issue a notice of violation to other persons found to be responsible in addition to the permit holder. If the violations, directives, or orders involve work without a permit, the notice of violation shall be issued to the responsible party. The notice shall reference the code section upon which the notice is based and direct the correction of the violation or the compliance with such directive or order and specify a reasonable time period within which the corrections or compliance must occur. The notice shall be issued by either delivering a copy by mail to the last known address of the permit holder or responsible party, by delivering the notice in person, by leaving it in the possession of any person in charge of the premises, or by posting the notice in a conspicuous place if the person in charge of the premises cannot be found. The notice of violation shall indicate the right of appeal by referencing the appeals section. When the owner of the building or structure or the tenants of such building or structure are not the party to whom the notice of violation is issued, then a copy of the notice shall also be delivered to the owner or tenants.

Note: A notice of unsafe building or structure for structures that become unsafe during the construction process are issued in accordance with Section 118.

C. Section 115.2.1 Notice not to be issued under certain circumstances. When violations are discovered more than two years after the certificate of occupancy is issued or the date of initial occupancy, whichever occurred later, or more than two years after the approved final inspection for an alteration or renovation, a notice of violation shall only be issued upon advice from the legal counsel of the locality that action may be taken to compel correction of the violation. When compliance can no longer be compelled by prosecution under § 36-106 of the Code of Virginia, the building official, when requested by the building owner, shall document in writing the existence of the violation noting the edition of the USBC the violation is under.

D. Section 115.3 Further action when violation not corrected. Upon failure to comply with the notice of violation, the building official may initiate legal proceedings by requesting the legal counsel of the locality to institute the appropriate legal proceedings to restrain, correct or abate the violation or to require the removal or termination of the use of the building or structure involved. In cases where the locality so authorizes, the building official may issue or obtain a summons or warrant. Compliance with a notice of violation notwithstanding, the building official may request legal proceedings be instituted for prosecution when a person, firm or corporation is served with three or more notices of violation within one calendar year for failure to obtain a required construction permit prior to commencement of work subject to this code.

Note: See § 19.2-8 of the Code of Virginia concerning the statute of limitations for building code prosecutions.

E. Section 115.4 Penalties and abatement. Penalties for violations of the USBC shall be as set out in § 36-106 of the Code of Virginia. The successful prosecution of a violation of the USBC shall not preclude the institution of appropriate legal action to require correction or abatement of a violation.

F. Section 115.5 Transfer of ownership. In accordance with § 36-105 of the Code of Virginia, if the local building department has initiated an enforcement action against the owner of a building or structure and such owner subsequently transfers the ownership of the building or structure to an entity in which the owner holds an ownership interest greater than 50%, the pending enforcement action shall continue to be enforced against the owner.

13VAC5-63-160. Section 116 Certificates of occupancy.

A. Section 116.1 General; when to be issued. Prior to occupancy or change of occupancy of a building or structure, a certificate of occupancy shall be obtained in accordance with this section. The building official shall issue the certificate of occupancy within five working days after approval of the final inspection and when the building or structure or portion thereof is determined to be in compliance with this code and any pertinent laws or ordinances, or when otherwise entitled.

Exceptions:

1. A certificate of occupancy is not required for an accessory structure as defined in the IRC.

2. A new certificate of occupancy is not required for an addition to an existing Group R-5 building that already has a certificate of occupancy.

B. Section 116.1.1 Temporary certificate of occupancy. Upon the request of a permit holder, a temporary certificate of occupancy may be issued before the completion of the work covered by a permit, provided that such portion or portions of a building of structure may be occupied safely prior to full completion of the building or structure without endangering life or public safety.

C. Section 116.2 Contents of certificate. A certificate of occupancy shall specify the following:

1. The edition of the USBC under which the permit is issued.

2. The group classification and occupancy in accordance with the provisions of Chapter 3.

3. The type of construction as defined in Chapter 6.

4. If an automatic sprinkler system is provided and whether or not such system was required.

5. Any special stipulations and conditions of the building permit and if any modifications were issued under the permit, there shall be a notation on the certificate that modifications were issued.

6. Group R-5 occupancies complying with Section ~~R320.2~~ R320.1.1 of the ~~IRC~~ VRC shall have a notation of compliance with that section on the certificate.

D. Section 116.3 Suspension or revocation of certificate. A certificate of occupancy may be revoked or suspended whenever the building official discovers that such certificate was issued in error or on the basis of incorrect information, or where there are repeated violations of the USBC after the certificate has been issued or when requested by the code official under Section 106.6 of the VMC. The revocation or suspension shall be in writing and shall state the necessary corrections or conditions for the certificate to be reissued or reinstated in accordance with Section 116.3.1.

E. Section 116.3.1 Reissuance or reinstatement of certificate of occupancy. When a certificate of occupancy has been revoked or suspended, it shall be reissued or reinstated upon correction of the specific condition or conditions cited as the cause of the revocation or suspension and the revocation or suspension of a certificate of occupancy shall not be used as justification for requiring a building or structure to be subject to a later edition of the code than that under which such building or structure was initially constructed.

F. Section 116.4 When no certificate exists. When the local building department does not have a certificate of occupancy for a building or structure, the owner or owner's agent may submit a written request for a certificate to be created. The building official, after receipt of the request, shall issue a certificate provided a determination is made that there are no current violations of the VMC or the Virginia Statewide Fire Prevention Code (13VAC5-51) and the occupancy classification of the building or structure has not changed. Such buildings and structures shall not be prevented from continued use.

When the local building department has records indicating that a certificate did exist but does not have a copy of the certificate itself, then the building official may either verify in writing that a certificate did exist or issue a certificate based upon the records.

13VAC5-63-170. Section 117 Temporary and moved buildings and structures; demolition.

A. Section 117.1 Temporary buildings and structures. The building official is authorized to issue a permit for temporary buildings or structures. Such permits shall be limited as to time of service, but shall not be permitted for more than one year, except that upon the permit holder's written request, the building official may grant one or more extensions of time, not to exceed one year per extension. The building official is authorized to terminate the approval and order the demolition or removal of temporary buildings or structures during the period authorized by the permit when determined necessary.

B. Section 117.1.1 Temporary uses within existing buildings and structures. The building official shall review and may approve conditions or modifications for temporary uses, including hypothermia and hyperthermia shelters, that may be necessary as long as the use meets the spirit and functional intent intended by this code. The building official is authorized to terminate the approval and order the discontinuance of the temporary use during the period authorized by the permit when determined necessary. The building official shall notify the appropriate fire official or fire chief of the approved temporary use.

C. Section 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 the flood hazard documentation, if required by Section ~~1612.5~~ 1612.4 has been approved by the building official and a certificate of occupancy is issued for the new location. Such moved buildings or structures shall be required to comply with the requirements of the VEBC.

D. Section 117.3 Demolition of buildings and structures. Prior to the issuance of a permit for the demolition of any building or structure, the owner or the owner's agent shall provide certification to the building official that all service connections of utilities have been removed, sealed or plugged satisfactorily and a release has been obtained from the associated utility company. The certification shall further provide that written notice has been given to the owners of adjoining lots and any other lots that may be affected by the temporary removal of utility wires or the temporary disconnection or termination of other services or facilities relative to the demolition. In addition, the requirements of Chapter 33 of the IBC for any necessary retaining walls or fences during demolition shall be applicable and when a building or structure is demolished or removed, the established grades shall be restored.

13VAC5-63-180. Section 118 Unsafe buildings or structures.

A. Section 118.1 Applicability. This section applies to unsafe buildings or structures.

Note: Existing buildings and structures other than those under construction or subject to this section are subject to the VMC, which also has requirements for unsafe conditions.

B. Section 118.2 Repair or removal of unsafe buildings or structures. Any unsafe building or structure shall be made safe through compliance with this code or shall be taken down and removed if determined necessary by the building official.

C. Section 118.3 Inspection report. The building official shall inspect any reported unsafe building or structure and shall prepare a report to be filed in the records of the local building department. In addition to a description of any unsafe conditions found, the report shall include the occupancy

classification of the building or structure and the nature and extent of any damages caused by collapse or failure of any building components.

D. Section 118.4 Notice of unsafe building or structure. When a building or structure is determined by the building official to be an unsafe building or structure, a written notice of unsafe building or structure shall be issued by personal service to the owner, the owner's agent, or the person in control of such building or structure. The notice shall specify the corrections necessary to comply with this code and specify the time period within which the repairs must occur, or if the notice specifies that the unsafe building or structure is required to be demolished, the notice shall specify the time period within which demolition must occur.

Note: Whenever possible, the notice should also be given to any tenants or occupants of the unsafe building or structure.

E. Section 118.4.1 Vacating unsafe building or structure. If the building official determines there is actual and immediate danger to the occupants or public, or when life is endangered by the occupancy of an unsafe building or structure, the building official shall be authorized to order the occupants to immediately vacate the unsafe building or structure. When an unsafe building or structure is ordered to be vacated, the building official shall post a notice at each entrance that reads as follows:

"This Building (or Structure) is Unsafe and its Occupancy (or Use) is Prohibited by the Building Official."

After posting, occupancy or use of the unsafe building or structure shall be prohibited except when authorized to enter to conduct inspections, make required repairs, or as necessary to demolish the building or structure.

F. Section 118.5 Posting of notice. If the notice is unable to be issued by personal service as required by Section 118.4, then the notice shall be sent by registered or certified mail to the last known address of the responsible party and a copy of the notice shall be posted in a conspicuous place on the premises.

G. Section 118.6 Posting of placard. In the case of an unsafe building or structure, if the notice is not complied with, a placard with the following wording shall be posted at the entrance to the building or structure:

"This Building (or Structure) is Unfit for Habitation and its Use or Occupancy has been Prohibited by the Building Official."

After an unsafe building or structure is placarded, entering the unsafe building or structure shall be prohibited except as authorized by the building official to make inspections, to perform required repairs, or to demolish the unsafe building or structure. In addition, the placard shall not be removed until the unsafe building or structure is determined by the building official to be safe to occupy. The placard shall not be defaced.

H. Section 118.7 Emergency repairs and demolition. To the extent permitted by the locality, the building official may authorize emergency repairs to unsafe buildings or structures when it is determined that there is an immediate danger of any portion of the unsafe building or structure collapsing or falling and when life is endangered. Emergency repairs may also be authorized when there is a code violation resulting in a serious and imminent threat to the life and safety of the occupants or public. The building

official shall be permitted to authorize the necessary work to make the unsafe building or structure temporarily safe whether or not legal action to compel compliance has been instituted.

In addition, whenever an owner of an unsafe building or structure fails to comply with a notice to demolish issued under Section 118.4 in the time period stipulated, the building official shall be permitted to cause the unsafe building or structure to be demolished. In accordance with §§ 15.2-906 and 15.2-1115 of the Code of Virginia, the legal counsel of the locality may be requested to institute appropriate action against the property owner to recover the costs associated with any such emergency repairs or demolition and every such charge that remains unpaid shall constitute a lien against the property on which the emergency repairs or demolition were made and shall be enforceable in the same manner as provided in Articles 3 (§ 58.1-3940 et seq.) and 4 (§ 58.1-3965 et seq.) of Chapter 39 of Title 58.1 of the Code of Virginia.

Note: Building officials and local governing bodies should be aware that other statutes and court decisions may impact on matters relating to demolition, in particular whether newspaper publication is required if the owner cannot be located and whether the demolition order must be delayed until the owner has been given the opportunity for a hearing.

I. Section 118.8 Closing of streets. When necessary for public safety, the building official shall be permitted to order the temporary closing of sidewalks, streets, public ways, or premises adjacent to unsafe buildings or structures and prohibit the use of such spaces.

13VAC5-63-190. Section 119 Appeals.

A. Section 119.1 Establishment of appeals board. In accordance with § 36-105 of the Code of Virginia, there shall be established within each local building department a LBBCA. Whenever a county or a municipality does not have such a LBBCA, the local governing body shall enter into an agreement with the local governing body of another county or municipality or with some other agency, or a state agency approved by DHCD for such appeals resulting therefrom. Fees may be levied by the local governing body in order to defray the cost of such appeals. In addition, as an authorization in this code, separate LBBCAs may be established to hear appeals of different enforcement areas such as electrical, plumbing or mechanical requirements. Each such LBBCA shall comply with the requirements of this section. The locality is responsible for maintaining a duly constituted LBBCA prepared to hear appeals within the time limits established in this section. The LBBCA shall meet 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.

B. Section 119.2 Membership of board. The LBBCA shall consist of at least five members appointed by the locality for a specific term 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 locality. 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.

C. Section 119.3 Officers and qualifications of members. The LBBCA shall annually select one of its regular members to serve as chairman. When the chairman is not present at an appeal hearing, the

members present shall select an acting chairman. The locality or the chief executive officer of the locality shall appoint a secretary to the LBBCA to maintain a detailed record of all proceedings. Members of the LBBCA shall be selected by the locality on the basis of their ability to render fair and competent decisions regarding application of the USBC and shall to the extent possible, represent different occupational or professional fields relating to the construction industry. At least one member should be an experienced builder; at least one member should be an RDP, and at least one member should be an experienced property manager. Employees or officials of the locality shall not serve as members of the LBBCA.

D. Section 119.4 Conduct of members. No member shall hear an appeal in which that member has a conflict of interest in accordance with the State and Local Government Conflict of Interests Act (§ 2.2-3100 et seq. of the Code of Virginia). Members shall not discuss the substance of an appeal with any other party or their representatives prior to any hearings.

E. Section 119.5 Right of appeal; filing of appeal application. Any person aggrieved by the local building department's application of the USBC or the refusal to grant a modification to the provisions of the USBC may appeal to the LBBCA. The applicant shall submit a written request for appeal to the LBBCA within 30 calendar days of the receipt of the decision being appealed. The application shall contain the name and address of the owner of the building or structure and in addition, the name and address of the person appealing, when the applicant is not the owner. A copy of the building official's decision shall be submitted along with the application for appeal and maintained as part of the record. The application shall be marked by the LBBCA to indicate the date received. Failure to submit an application for appeal within the time limit established by this section shall constitute acceptance of a building official's decision.

Note: To the extent that a decision of a building official pertains to amusement devices there may be a right of appeal under the VADR.

F. Section 119.6 Meetings and postponements. The LBBCA shall meet within 30 calendar days after the date of receipt of the application for appeal, except that a period of up to 45 calendar days shall be permitted where the LBBCA has regularly scheduled monthly meetings. A longer time period shall be permitted if agreed to by all the parties involved in the appeal. Notice indicating the time and place of the hearing shall be sent to the parties in writing to the addresses listed on the application if requested or by electronic means at least 14 calendar days prior to the date of the hearing unless a lesser time period is agreed to by all the parties involved in the appeal. When a quorum of the LBBCA is not present at a hearing to hear an appeal, any party involved in the appeal shall have the right to request a postponement of the hearing. The LBBCA shall reschedule the appeal within 30 calendar days of the postponement, except that a longer time period shall be permitted if agreed to by all the parties involved in the appeal.

G. Section 119.7 Hearings and decision. All hearings before the LBBCA shall be open meetings and the appellant, the appellant's representative, the locality's representative and any person whose interests are affected by the building official's decision in question shall be given an opportunity to be heard. The chairman shall have the power and duty to direct the hearing, rule upon the acceptance of evidence and oversee the record of all proceedings. The LBBCA shall have the power to uphold, reverse or modify the decision of the official by a concurring vote of a majority of those present. Decisions of the LBBCA shall be final if no further appeal is made. The decision of the LBBCA shall be explained in writing, signed by

the chairman and retained as part of the record of the appeal. Copies of the written decision shall be sent to all parties by certified mail. In addition, the written decision shall contain the following wording:

"Any person who was a party to the appeal may appeal to the State Review Board by submitting an application to such Board within 21 calendar days upon receipt by certified mail of this decision. Application forms are available from the Office of the State Review Board, 600 East Main Street, Richmond, Virginia 23219, (804) 371-7150."

H. Section 119.8 Appeals to the State Review Board. After final determination by the LBBCA in an appeal, any person who was a party to the appeal may further appeal to the State Review Board. In accordance with Section 36-114 of the Code of Virginia, the State Review Board shall have the power and duty to hear all appeals from decisions arising under the application of the USBC and to render its decision on any such appeal, which decision shall be final if no appeal is made therefrom. In accordance with § 36-98.2 of the Code of Virginia for state-owned buildings and structures, appeals by an involved state agency from the decision of the building official for state-owned buildings or structures shall be made directly to the State Review Board. The application for appeal shall be made to the State Review Board within 21 calendar days of the receipt of the decision to be appealed. Failure to submit an application within that time limit shall constitute an acceptance of the building official's decision. For appeals from a LBBCA, a copy of the building official's decision and the written decision of the LBBCA shall be submitted with the application for appeal to the State Review Board. Upon request by the office of the State Review Board, the LBBCA shall submit a copy of all pertinent information from the record of the appeal. In the case of appeals involving state-owned buildings or structures, the involved state agency shall submit a copy of the building official's decision and other relevant information with the application for appeal to the State Review Board. Procedures of the State Review Board are in accordance with Article 2 (§ 36-108 et seq.) of Chapter 6 of Title 36 of the Code of Virginia.

I. Section 119.9 Hearings and decision. All hearings before the State Review Board shall be open meetings and the chair shall have the power and duty to direct the hearing, rule upon the acceptance of evidence and oversee the record of all proceedings. The State Review Board shall have the power to uphold, reverse, or modify the decision of the LBBCA by a concurring vote of a majority of those present. Proceedings of the Review Board shall be governed by the provisions of the Administrative Process Act (§ 2.2-4000 et seq. of the Code of Virginia), except that an informal conference pursuant to § 2.2-4019 of the Code of Virginia shall not be required. Decisions of the State Review Board shall be final if no further appeal is made. The decision of the State Review Board shall be explained in writing, signed by the chair and retained as part of the record of the appeal. Copies of the written decision shall be sent to all parties by certified mail. In addition, the written decision shall contain the following wording: "As provided by Rule 2A:2 of the Supreme Court of Virginia, you have thirty (30) days from the date of service (the date you actually received this decision or the date it was mailed to you, whichever occurred first) within which to appeal this decision by filing a Notice of Appeal with the Secretary of the Review Board. In the event that this decision is served on you by mail, three (3) days are added to that period."

13VAC5-63-200. Chapter 2 Definitions.

A. Add the following definitions to Section 202 of the IBC to read:

Aboveground liquid fertilizer storage tank (ALFST). A device that contains an accumulation of liquid fertilizer (i) constructed of nonearthen materials, such as concrete, steel or plastic, that provide structural support; (ii) having a capacity of 100,000 gallons (378,500 L) or greater; and (iii) the volume of which is more than 90% above the surface of the ground. The term does not include any wastewater treatment or wastewater storage tank, utility or industry pollution control equipment.

Building regulations. Any law, rule, resolution, regulation, ordinance or code, general or special, or compilation thereof, heretofore or hereafter enacted or adopted by the Commonwealth or any county or municipality, including departments, boards, bureaus, commissions, or other agencies thereof, relating to construction, reconstruction, alteration, conversion, repair, maintenance, or use of structures and buildings and installation of equipment therein. The term does not include zoning ordinances or other land use controls that do not affect the manner of construction or materials to be used in the erection, alteration or repair of a building or structure.

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

Construction. The construction, reconstruction, alteration, repair, or conversion of buildings and structures.

Day-night average sound level (Ldn). A 24-hour energy average sound level expressed in dBA, with a 10 decibel penalty applied to noise occurring between 10 p.m. and 7 a.m.

DHCD. The Virginia Department of Housing and Community Development.

Emergency communication equipment. Emergency communication equipment, includes two-way radio communications, signal booster, bi-directional amplifiers, radiating cable systems, or internal multiple antenna, or a combination of the foregoing.

Emergency public safety personnel. Emergency public safety personnel includes firefighters, emergency medical personnel, law-enforcement officers, and other emergency public safety personnel routinely called upon to provide emergency assistance to members of the public in a wide variety of emergency situations, including fires, medical emergencies, violent crimes, and terrorist attacks.

Emergency supplemental hardware. Any approved hardware used only for emergency events or drills to keep intruders from entering the room during an active shooter or hostile threat event or drill.

Equipment. Plumbing, heating, electrical, ventilating, air-conditioning and refrigeration equipment, elevators, dumbwaiters, escalators, and other mechanical additions or installations.

Farm building or structure. A building or structure not used for residential purposes, located on property where farming operations take place, and used primarily for any of the following uses or combination thereof:

1. Storage, handling, production, display, sampling or sale of agricultural, horticultural, floricultural or silvicultural products produced in the farm.

2. Sheltering, raising, handling, processing or sale of agricultural animals or agricultural animal products.

3. Business or office uses relating to the farm operations.

4. Use of farm machinery or equipment or maintenance or storage of vehicles, machinery or equipment on the farm.

5. Storage or use of supplies and materials used on the farm.

6. Implementation of best management practices associated with farm operations.

Hospice facility. An institution, place, or building owned or operated by a hospice provider and licensed by the Virginia Department of Health as a hospice facility to provide room, board, and palliative and supportive medical and other health services to terminally ill patients and their families, including respite and symptom management, on a 24-hour basis to individuals requiring such care pursuant to the orders of a physician.

Industrialized building. A combination of one or more sections or modules, subject to state regulations and including the necessary electrical, plumbing, heating, ventilating and other service systems, manufactured off-site and transported to the point of use for installation or erection, with or without other specified components, to comprise a finished building. Manufactured homes shall not be considered industrialized buildings for the purpose of this code.

~~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 430.3.~~

LBBCA. Local board of building code appeals.

Liquid fertilizer. A fluid in which a fertilizer is in true solution. This term does not include anhydrous ammonia or a solution used in pollution control.

Local building department. The agency or agencies of any local governing body charged with the administration, supervision, or enforcement of this code, approval of construction documents, inspection of buildings or structures, or issuance of permits, licenses, certificates or similar documents.

Local governing body. The governing body of any city, county or town in this Commonwealth.

Locality. A city, county or town in this Commonwealth.

Manufactured home. A structure subject to federal regulation, which is transportable in one or more sections; is eight body feet or more in width and 40 body feet or more in length in the traveling mode, or is 320 or more square feet when erected on site; is built on a permanent chassis; is designed to be used as a single-family dwelling, with or without a permanent foundation, when connected to the required utilities; and includes the plumbing, heating, air-conditioning, and electrical systems contained in the structure.

Marina. Any installation, operating under public or private ownership, that has a structure providing dockage or moorage for boats, other than paddleboats or rowboats, and provides, through sale, rental, fee, or on a free basis, any equipment, supply, or service, including fuel, electricity, or water, for the convenience of the public or its lessees, renters, or users of its facilities. A dock or pier with or without

slips that exclusively serves a single-family residential lot for the use of the owner of the lot is not a marina.

Night club. Any building in which the main use is a place of public assembly that provides exhibition, performance or other forms of entertainment; serves alcoholic beverages; and provides music and space for dancing.

Permissible fireworks. Any sparklers, fountains, Pharaoh's serpents, caps for pistols, or pinwheels commonly known as whirligigs or spinning jennies.

Short-term holding area. An area containing a holding cell, or a holding room, including associated rooms or spaces where the occupants are restrained or detained by the use of security measures not under the occupant's control for less than 24 hours.

Permit Holder. The person to whom the permit is issued.

Skirting. A weather-resistant material used to enclose the space from the bottom of the manufactured home to grade.

Slip. A berth or space where a boat may be secured to a fixed or floating structure, including a dock, finger pier, boat lift, or mooring buoy.

Sound transmission class (STC) rating. A single number characterizing the sound reduction performance of a material tested in accordance with ASTM E90-90, "Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions."

State regulated care facility (SRCF). A building occupied by persons in the care of others where program oversight is provided by the Virginia Department of Social Services, the Virginia Department of Behavioral Health and Developmental Services, the Virginia Department of Education, the Virginia Department of Health, or the Virginia Department of Juvenile Justice.

State Review Board. The Virginia State Building Code Technical Review Board as established under § 36-108 of the Code of Virginia.

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.

Technical assistant. Any person employed by or under an extended contract to a local building department or local enforcing agency for enforcing the USBC, including inspectors, plans reviewers, and permit technicians. For the purpose of this definition, an extended contract shall be a contract with an aggregate term of 18 months or longer.

Tenable environmental. An environment in which the products of combustion, including smoke, toxic gases, particulates, and heat, are limited or otherwise restricted in order to maintain the impact on occupants, including those in the area of fire origin, to a level that is not life threatening and permits the rescue of occupants for a limited time.

Unsafe building or structure. Any building or structure that is under construction and has not received a permanent certificate of occupancy, final inspection, or for which a permit was never issued or has

expired and has been determined by the building official to be of faulty construction that is so damaged, decayed, dilapidated, structurally unsafe, or of such faulty construction or unstable foundation that partial or complete collapse is likely, or any unfinished construction that does not have a valid permit, or the permit has been revoked, and the condition of the unfinished construction presents an immediate serious and imminent threat to the life and safety of the occupants or the public.

VADR. The Virginia Amusement Device Regulations (13VAC5-31).

VCS. The Virginia Certification Standards (13VAC5-21).

Working day. A day other than Saturday, Sunday or a legal local, state or national holiday.

B. Change the following definitions in Section 202 of the IBC to read:

~~Addition. An extension or increase in floor area, number of stories, or height of a building or structure.~~

Ambulatory care facility. Buildings or portions thereof used to provide medical care on less than a 24-hour basis that are licensed by the Virginia Department of Health as outpatient surgical hospitals.

Automatic fire-extinguishing system. An approved system of devices and equipment that automatically detects a fire and discharges an approved fire-extinguishing agent onto or in the area of a fire and includes among other systems an automatic sprinkler system, unless otherwise expressly stated.

Building. A combination of materials, whether portable or fixed, having a roof to form a structure for the use or occupancy by persons, or property. The word "building" shall be construed as though followed by the words "or part or parts thereof" unless the context clearly requires a different meaning. "Building" shall not include roadway tunnels and bridges owned by the Virginia Department of Transportation, which shall be governed by construction and design standards approved by the Virginia Commonwealth Transportation Board.

Change of occupancy. See Section 202 of the VEBC.

Clinic, outpatient. Buildings or portions thereof used to provide medical care on less than a 24-hour basis that are not licensed by the Virginia Department of Health as outpatient surgical hospitals.

Custodial care. Assistance with day-to-day living tasks, such as assistance with cooking, taking medication, bathing, using toilet facilities, and other tasks of daily living. In other than in hospice facilities, custodial care includes occupants that have the ability to respond to emergency situations and evacuate at a slower rate or who have mental and psychiatric complications, or both.

Existing structure. A structure (i) for which a legal building permit has been issued under any edition of the USBC, (ii) that has been previously approved, or (iii) that was built prior to the initial edition of the USBC. For application of provisions in flood hazard areas, an existing structure is any building or structure for which the start of construction commenced before the effective date of the community's first flood plain management code, ordinance, or standard.

<u>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 ~~430.3~~ 428.3.</u>

Owner. The owner or owners of the freehold of the premises or lesser estate therein, a mortgagee or vendee in possession, assignee of rents, receiver, executor, trustee or lessee in control of a building or structure.

Registered design professional (RDP). An architect or professional engineer, licensed to practice architecture or engineering, as defined under § 54.1-400 of the Code of Virginia.

Structure. An assembly of materials forming a construction for occupancy or use including stadiums, gospel and circus tents, reviewing stands, platforms, stagings, observation towers, radio towers, water tanks, storage tanks (underground and aboveground), trestles, piers, wharves, swimming pools, amusement devices, storage bins, and other structures of this general nature but excluding water wells. The word "structure" shall be construed as though followed by the words "or part or parts thereof" unless the context clearly requires a different meaning. "Structure" shall not include roadway tunnels and bridges owned by the Virginia Department of Transportation, which shall be governed by construction and design standards approved by the Virginia Commonwealth Transportation Board.

Swimming pool. A pool or spa as defined in the International Swimming Pool and Spa Code (ISPSC).

Wall. A vertical element with a horizontal length-to-thickness ratio greater than three used to enclose space.

C. Delete the following definitions from Section 202 of the IBC:

Agricultural building

Historic buildings

13VAC5-63-210. Chapter 3 Use and occupancy classification.

A. Change items 6 and 8 of Section~~s~~ 302.1 ~~to read~~ of the IBC to read:

~~302.1 General. Structures or portions of structures shall be classified with respect to occupancy in one or more of the groups listed in this section. A room or space that is intended to be occupied at different times for different purposes shall comply with all of the requirements that are applicable to each of the purposes for which the room or space will be occupied. Structures with multiple occupancies or uses shall be classified in the group that the occupancy most nearly resembles, according to the fire safety and relative hazard involved.~~

~~1. Assembly (see Section 303): Groups A-1, A-2, A-3, A-4, and A-5.~~

~~2. Business (see Section 304): Group B.~~

~~3. Educational (see Section 305): Group E.~~

~~4. Factory and Industrial (see Section 306): Groups F-1 and F-2.~~

~~5. High Hazard (see Section 307): Groups H-1, H-2, H-3, H-4, and H-5.~~

6. Institutional (see Section 308 and Section 313 for SRCFs).

~~7. Mercantile (see Section 309): Group M.~~

8. Residential (see Section 310 and Section 313 for SRCFs): Groups R-1, R-2, R-3, R-4, and R-5.

~~9. Storage (see Section 311): Groups S-1 and S-2.~~

~~10. Utility and Miscellaneous (see Section 312): Group U.~~

B. Change Sections 303.1.1 and 303.1.2 of the IBC to read:

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 be permitted to be classified as Group B occupancies or as part of the assembly occupancy:

1. A room or space used for assembly purposes with an occupant load of less than 50 persons and ancillary to another occupancy.

2. A room or space used for assembly purposes that is less than 750 square feet (70 m^2) in area and ancillary to another occupancy.

C. Change Section 303.6 of the IBC to read:

303.6 Assembly Group A-5. Assembly uses intended for participation in or viewing outdoor activities including:

Amusement park structures

Bleachers

Grandstands

Stadiums

Swimming pools

D. Add Section 304.1.1 to the IBC to read:

304.1.1 Day support and day treatment facilities. Day support and day treatment facilities licensed by the Virginia Department of Behavioral Health and Developmental Services shall be permitted to be classified as Group B occupancies provided all of the following conditions are met:

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

2. 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.

3. Where the facilities are located more than two stories above grade, an automatic sprinkler system shall be provided throughout the building in accordance with Section 903.3.1.1.

E. ~~Change Exception 14 of Section 307.1.1 of the IBC and add Exception 18 to~~ Delete Exception 19 of Section 307.1.1 of the IBC and change Exceptions 14 and 18 to Section 307.1.1 of the IBC to read:

14. The storage of black powder, smokeless propellant and small arms primers in Groups M, R-3 and R-5 and special industrial explosive devices in Groups B, F, M and S, provided such storage conforms to the quantity limits and requirements prescribed in the IFC, as amended in Section 307.9.

18. The storage of distilled spirits and wines in wooden barrels and casks. Distillation, blending, bottling, and other hazardous materials storage or processing shall be in separate control areas complying with Section 414.2.

F. Change the "Flammable liquid, combination (IA, IB, IC)" row in Table 307.1(1), add a new "Permissible fireworks" row to Table 307.1(1) of the IBC, and add footnote "r" to Table 307.1(1) of the IBC to read:

Flammable liquid, combination (IA, IB, IC)	NA	H-2 or H-3	NA	120[d,e,h]	NA	NA	120[d,h]	NA	NA	30[d,h,r]
Permissible fireworks	1.4G	H-3	125[d,e,l]	NA	NA	NA	NA	NA	NA	NA
r. The tabular value for distilled spirit distillation and blending rooms is 120 gallons.										

G. Add Section 307.9 to the IBC to read:

307.9 Amendments. The following changes shall be made to the IFC for the use of Exception 14 in Section 307.1.1:

1. Change the following definition in Section 202 of the IFC to read:

Smokeless propellants. Solid propellants, commonly referred to as smokeless powders, or any propellants classified by DOTn as smokeless propellants in accordance with NA3178 (Smokeless Powder for Small Arms), used in small arms ammunition, firearms, cannons, rockets, propellant-actuated devices, and similar articles.

2. Change Section 314.1 of the IFC to read as follows:

314.1 General. Indoor displays constructed within any building or structure shall comply with Sections 314.2 through 314.5.

3. Add new Section 314.5 to the IFC to read as follows:

314.5 Smokeless powder and small arms primers. Vendors shall not store, display or sell smokeless powder or small arms primers during trade shows inside exhibition halls except as follows:

1. The amount of smokeless powder each vendor may store is limited to the storage arrangements and storage amounts established in Section 5606.5.2.1.

2. Smokeless powder shall remain in the manufacturer's original sealed container and the container shall remain sealed while inside the building. The repackaging of smokeless powder shall not be performed inside the building. Damaged containers shall not be repackaged inside the building and shall be immediately removed from the building in such manner to avoid spilling any powder.

3. There shall be at least 50 feet separation between vendors and 20 feet from any exit.

4. Small arms primers shall be displayed and stored in the manufacturer's original packaging and in accordance with the requirements of Section 5606.5.2.3.

4. Change Exception 4 and add Exceptions 10 and 11 to Section 5601.1 of the IFC as follows:

4. The possession, storage and use of not more than 15 pounds (6.75 kg) of commercially manufactured sporting black powder, 20 pounds (9 kg) of smokeless powder and any amount of small arms primers for hand loading of small arms ammunition for personal consumption.

10. The display of small arms primers in Group M when in the original manufacturer's packaging.

11. The possession, storage and use of not more than 50 pounds (23 kg) of commercially manufactured sporting black powder, 100 pounds (45 kg) of smokeless powder, and small arms primers for hand loading of small arms ammunition for personal consumption in Group R-3 or R-5, or 200 pounds (91 kg) of smokeless powder when stored in the manufacturer's original containers in detached Group U structures at least 10 feet (3048 mm) from inhabited buildings and are accessory to Group R-3 or R-5.

5. Change Section 5606.4 of the IFC to read as follows:

5606.4 Storage in residences. Propellants for personal use in quantities not exceeding 50 pounds (23 kg) of black powder or 100 pounds (45 kg) of smokeless powder shall be stored in original containers in occupancies limited to Groups R-3 and R-5 or 200 pounds (91 kg) of smokeless powder when stored in the manufacturer's original containers in detached Group U structures at least 10 feet (3048 mm) from inhabited buildings and are accessory to Group R-3 or R-5. In other than Group R-3 or R-5, smokeless powder in quantities exceeding 20 pounds (9 kg) but not exceeding 50 pounds (23 kg) shall be kept in a wooden box or cabinet having walls of at least one inch (25 mm) nominal thickness or equivalent.

6. Delete Sections 5606.4.1 and 5606.4.2 of the IFC.

7. Change Section 5606.5.1.1 of the IFC to read as follows:

5606.5.1.1 Smokeless propellant. No more than 100 pounds (45 kg) of smokeless propellants in containers of eight pounds (3.6 kg) or less capacity shall be displayed in Group M occupancies.

8. Delete Section 5606.5.1.3 of the IFC.

9. Change Section 5606.5.2.1 of the IFC as follows:

5606.5.2.1 Smokeless propellant. Commercial stocks of smokeless propellants shall be stored as follows:

1. Quantities exceeding 20 pounds (9 kg), but not exceeding 100 pounds (45 kg) shall be stored in portable wooden boxes having walls of at least one inch (25 mm) nominal thickness or equivalent.

2. Quantities exceeding 100 pounds (45 kg), but not exceeding 800 pounds (363 kg), shall be stored in storage cabinets having walls at least one inch (25 mm) nominal thickness or equivalent. Not more than 400 pounds (182 kg) shall be stored in any one cabinet, and cabinets

shall be separated by a distance of at least 25 feet (7620 mm) or by a fire partition having a fire-resistance rating of at least one hour.

3. Storage of quantities exceeding 800 pounds (363 kg), but not exceeding 5,000 pounds (2270 kg) in a building shall comply with all of the following:

3.1. The warehouse or storage room is not open to unauthorized personnel.

3.2. Smokeless propellant shall be stored in nonportable storage cabinets having wood walls at least one inch (25 mm) nominal thickness or equivalent and having shelves with no more than 3 feet (914 mm) of vertical separation between shelves.

3.3. No more than 400 pounds (182 kg) is stored in any one cabinet.

3.4. Cabinets shall be located against walls with at least 40 feet (12,192 mm) between cabinets. The minimum required separation between cabinets may be reduced to 20 feet (6096 mm) provided that barricades twice the height of the cabinets are attached to the wall, midway between each cabinet. The barricades must extend a minimum of 10 feet (3048 mm) outward, be firmly attached to the wall, and be constructed of steel not less than 0.25 inch thick (6.4 mm), 2-inch (51 mm) nominal thickness wood, brick, or concrete block.

3.5. Smokeless propellant shall be separated from materials classified as combustible liquids, flammable liquids, flammable solids, or oxidizing materials by a distance of 25 feet (7620 mm) or by a fire partition having a fire-resistance rating of 1 hour.

3.6. The building shall be equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.

4. Smokeless propellants not stored according to Item 1, 2, or 3 above shall be stored in a Type 2 or 4 magazine in accordance with Section 5604 and NFPA 495.

H. Change Section 308.2 of the IBC to read:

308.2 Institutional Group I-1. This occupancy shall include buildings, structures or portions thereof for more than 16 persons, excluding staff, who reside on a 24-hour basis in a supervised environment and receive custodial care. Buildings of Group I-1, shall be classified as the occupancy condition indicated in Section 308.2.1 or 308.2.2. Assisted living facilities licensed by the Virginia Department of Social Services shall be classified as one of the occupancy conditions indicated in Section 308.2.1 or 308.2.2. T

I. Change Sections 308.2.1 and 308.2.2 of the IBC to read:

308.2.1 Condition 1. This occupancy condition shall include buildings in which all persons receiving custodial care who, without any assistance, are capable of responding to an emergency situation to complete building evacuation. Not more than five of the residents may require physical assistance from staff to respond to an emergency situation when all residents who may require the physical assistance reside on a level of exit discharge and the path of egress to the exit does not include steps.

308.2.2 Condition 2. This occupancy condition shall include buildings in which there are persons receiving custodial care who require assistance by not more than one staff member while responding to

an emergency situation to complete building evacuation. Five of the residents may require physical assistance from more than one staff member to respond to an emergency.

J. Change Section 308.3 of the IBC to read:

308.3 Institutional Group I-2. This occupancy shall include buildings and structures used for medical care on a 24-hour basis for more than five persons who are incapable of self-preservation.

K. Add an exception to Section 308.5 of the IBC to read:

Exception: Family day homes under Section 313.3.

L. Change Section 310.2 of the IBC to read:

310.2 Residential Group R-1. Residential occupancies containing sleeping units or more than two dwelling units, and:

1. The occupants are primarily transient, and

2. There are more than 10 occupants.

M. Change Section 310.3 of the IBC to read:

Residential Group R-2. Residential occupancies containing sleeping units or more than two dwelling units where the occupants are not primarily transient.

N. Change Sections 310.4, 310.4.1, 310.4.2, 310.5, and 310.5.1 and add Section 310.5.3 of the IBC to read:

310.4 Residential Group R-3. Residential occupancies containing no more than two dwelling units and where the occupancy is not classified as Group R-1, R-2, R-4, R-5, or I, and:

1. The occupants are not primarily transient, or

2. There are no more than 10 transient occupants per dwelling unit.

310.4.1 Radon-resistant construction. Group R-3 buildings and structures shall be subject to the radon-resistant construction requirements in Appendix F of the IRC in localities enforcing such requirements pursuant to Section ~~R327~~ R328 of the IRC.

310.4.2 Lodging houses. Owner-occupied or proprietor-occupied lodging houses and other transient boarding facilities not more than three stories above grade plane in height, with five or fewer guest rooms and 10 or fewer total occupants shall be permitted to be classified as either Group R-3 or R-5, provided that smoke alarms are installed in compliance with Section 907.2.11.2 for Group R-3 or Section R314 of the IRC for Group R-5.

310.5 Residential Group R-4. Residential occupancies with more than five but not more than 16 persons, excluding staff, who reside on a 24-hour basis in a supervised environment and receive custodial care. Buildings of Group R-4, other than assisted living facilities licensed by the Virginia Department of Social Services, shall be classified as the occupancy condition indicated in Section 310.5. Assisted living facilities licensed by the Virginia Department of Social Services shall be classified as one of the occupancy conditions indicated in Section 310.5.1 or 310.5.2.

310.5.1 Condition 1. This occupancy condition shall include buildings in which all persons receiving custodial care who, without any assistance, are capable of responding to an emergency situation to complete building evacuation or, in which not more than five of the residents may require physical assistance from staff to respond to an emergency situation when all residents who may require the physical assistance from staff reside on a level of exit discharge and the path of egress to the exit does not include steps.

310.5.3 Radon-resistant construction. Group R-4 buildings and structures shall be subject to the radon-resistant construction requirements in Appendix F of the VRC in localities enforcing such requirements pursuant to Section ~~R327~~ R328 of the VRC.

O. Add Section 310.6 to the IBC to read:

310.6 Residential Group R-5. Residential occupancies within the scope of the VRC, other occupancies specifically permitted in this code to be classified as Group R-5, and manufactured homes in accordance with the Virginia Manufactured Home Safety Regulations (23VAC5-91).

The provisions of the International Residential Code for One- and Two-family Dwellings shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal and demolition of the following when classified as Group R-5:

1. Detached single-family and two-family dwellings.

2. Townhouses.

3. Care facilities for five or fewer people.

4. Owner-occupied or proprietor-occupied lodging houses with no more than five guest rooms and 10 or fewer total occupants.

5. Accessory structures of Group R-5 occupancies.

The amendments to the IRC set out in Section ~~310.9~~ 310.8 shall be made to the IRC for its use as part of this code. In addition, all references to the IRC and the IBC shall be considered to be references to this section.

P. Add Section 310.6.1 to the IBC to read:

310.6.1 Additional requirements. Methods of construction, materials, systems, equipment or components for Group R-5 structures not addressed by prescriptive or performance provisions of the IRC shall comply with applicable IBC requirements.

Q. Add Section 310.7 to the IBC to read:

310.7 Radon-resistant construction in Groups R-3 and R-4 structures. Groups R-3 and R-4 structures shall be subject to the radon-resistant construction requirements in Appendix F of the IRC in localities enforcing such requirements pursuant to Section ~~R324~~ R328 of the IRC.

R. Add Section 310.8 to the IBC to read:

310.8 Amendments to the IRC. The following changes shall be made to the IRC for its use as part of this code:

1. Add the following definitions to read:

Accessory dwelling unit. A dwelling unit in a two-family dwelling that is accessory to the primary dwelling unit. An accessory dwelling unit provides for separate living, sleeping, eating, cooking, and sanitation facilities for one or more occupants but may share living space, means of egress, utilities, or other components. An accessory dwelling unit fully complies with the requirements of this code for a dwelling unit except where specified otherwise.

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.

Nonpotable fixtures and outlets. Fixtures and outlets that are not dependent on potable water for the safe operation to perform their intended use. Such fixtures and outlets may include water closets, urinals, irrigation, mechanical equipment, and hose connections to perform operations, such as vehicle washing and lawn maintenance.

Nonpotable water systems. Water systems for the collection, treatment, storage, distribution, and use or reuse of nonpotable water. Nonpotable systems include reclaimed water, rainwater, and gray water systems.

Rainwater. Natural precipitation, including snow melt, from roof surfaces only.

Stormwater. Precipitation that is discharged across the land surface or through conveyances to one or more waterways and that may include stormwater runoff, snow melt runoff, and surface runoff and drainage.

Substantial damage. Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50% of the market value of the structure before the damage occurred. Substantial Improvement. Any repair, reconstruction, rehabilitation, alteration, addition or other improvement of a building or structure, the cost of which equals or exceeds 50% of the market value of the structure before the improvement or repair is started. If the structure has sustained substantial damage, any repairs are considered substantial improvement regardless of the actual repair work performed. The term does not, however, include either:

1. Any project for improvement of a building required to correct existing health, sanitary, or safety code violations identified by the building official and that are the minimum necessary to assure safe living conditions.

2. Any alteration of a historic structure, provided that the alteration will not preclude the building or structure's continued designation as a historic structure.

Two-family dwelling. A dwelling that includes two dwelling units or one dwelling unit and one accessory dwelling unit.

2. Change the following definitions to read:

Attic, habitable. A finished or unfinished area, not considered a story, complying with all of the following requirements:

1. The occupiable floor area is at least 70 square feet (17 m^2), in accordance with Section R304,

2. The occupiable floor area has a ceiling height in accordance with Section R305, and

3. The occupiable space is enclosed by the roof assembly above, knee walls (if applicable) on the sides and the floor-ceiling assembly below.

Habitable attics greater than two-thirds of the area of the story below or over 400 square feet (37.16 m^2) shall not be permitted in dwellings or ~~townhouses~~ townhouse units that are three stories above grade plane in height.

Gray water. Water discharged from lavatories, bathtubs, showers, clothes washers, and laundry trays.

Dwelling. Any building that contains one or two dwelling units, or one dwelling ~~unity~~ unit and one accessory dwelling unit, used, intended, or designed to be built, used, rented, leased, let or hired out to be occupied, or that are occupied for living purposes.

Manufactured home. A structure subject to federal regulation , which is transportable in one or more sections; is eight body feet or more in width and 40 body feet or more in length in the traveling mode, or is 320 or more square feet when erected on site; is built on a permanent chassis; is designed to be used as a single- family dwelling, with or without a permanent foundation , when connected to the required utilities; and includes the plumbing , heating , air conditioning , and electrical systems contained in the structure.

3. ~~Change table R301.2(2) to read:~~

~~Table R301.2(2)~~

~~COMPONENT AND CLADDING LOADS FOR A BUILDING WITH A MEAN ROOF HEIGHT OF 30 FEET LOCATED IN EXPOSURE B (ASD) (psf)[a,b,c,d,e,f,g]~~

	Zone	Effective Wind Areas (feet^2)	Ultimate Design Wind Speed, V_{ult}																							
			90		95		100		105		110		115		120		130		140		150		160		170		180	
			Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg	Pos	Neg
Flat and Gable Roof 0 to 7 degrees	1	10	3.6	-13.9	4.0	-15.5	4.4	-17.2	4.8	-19.0	5.3	-20.8	5.8	-22.7	6.3	-24.8	7.4	-29.1	8.6	-33.7	9.9	-38.7	11.2	-44.0	12.7	-49.7	14.2	-55.7
	1	20	3.3	-13.0	3.7	-14.5	4.1	-16.0	4.5	-17.7	5.0	-19.4	5.4	-21.2	5.9	-23.1	7.0	-27.1	8.1	-31.4	9.3	-36.1	10.5	-41.1	11.9	-46.4	13.3	-52.0
	1	50	3.0	-11.8	3.4	-13.1	3.8	-14.5	4.1	-16.0	4.5	-17.6	5.0	-19.2	5.4	-20.9	6.3	-24.5	7.4	-28.4	8.4	-32.6	9.6	-37.1	10.8	-41.9	12.2	-47.0
	1	100	2.8	-10.8	3.1	-12.1	3.5	-13.4	3.8	-14.7	4.2	-16.2	4.6	-17.7	5.0	-19.2	5.9	-22.6	6.8	-26.2	7.8	-30.0	8.9	-34.2	10.1	-38.6	11.3	-43.3
	2	10	3.6	-18.4	4.0	-20.5	4.4	-22.7	4.8	-25.0	5.3	-27.4	5.8	-30.0	6.3	-32.7	7.4	-38.3	8.6	-44.5	9.9	-51.0	11.2	-28.1	12.7	-65.6	14.2	-73.5
	2	20	3.3	-17.2	3.7	-19.2	4.1	-21.2	4.5	-23.4	5.0	-25.7	5.4	-28.1	5.9	-30.6	7.0	-35.9	8.1	-41.6	9.3	-47.8	10.5	-54.3	11.9	-61.4	13.3	-68.8
	2	50	3.0	-15.6	3.4	-17.4	3.8	-19.3	4.1	-21.3	4.5	-23.3	5.0	-25.5	5.4	-27.8	6.3	-32.6	7.4	-37.8	8.4	-43.4	9.6	-49.4	10.8	-55.8	12.2	-62.5

	2	100	2.8	-14.4	3.1	-16.1	3.5	-17.8	3.8	-19.7	4.2	-21.6	4.6	-23.6	5.0	-25.7	5.9	-30.1	6.8	-35.0	7.8	-40.1	8.9	-45.7	10.0	-51.5	11.3	-57.8
	3	10	3.6	-25.0	4.0	-27.9	4.4	-30.9	4.8	-34.1	5.3	-37.4	5.8	-40.9	6.3	-44.5	7.4	-52.2	8.6	-60.6	9.9	-69.6	11.2	-79.1	12.7	-89.4	14.2	-100.2
	3	20	3.3	-22.6	3.7	-25.2	4.1	-28.0	4.5	-30.8	5.0	-33.8	5.4	-37.0	5.9	-40.3	7.0	-47.2	8.1	-54.8	9.3	-62.9	10.5	-71.6	11.9	-80.8	13.3	-90.6
	3	50	3.0	-19.4	3.4	-21.7	3.8	-24.0	4.1	-26.5	4.5	-29.0	5.0	-31.7	5.4	-34.6	6.3	-40.6	7.4	-47.0	8.4	-54.0	9.6	-61.4	10.8	-69.4	12.2	-77.8
	3	100	2.8	-17.4	3.1	-19.0	3.5	-21.0	3.8	-23.2	4.2	-25.5	4.6	-27.8	5.0	-30.3	5.9	-35.6	6.8	-41.2	7.8	-47.3	8.9	-53.9	10.0	-60.8	11.3	-68.2
Gable Roof >7 to 20 degrees	1, 2e	10	5.4	-16.2	6.0	-18.0	6.7	-19.9	7.4	-22.0	8.1	-24.1	8.8	-26.4	9.6	-28.7	11.3	-33.7	13.1	-39.1	15.0	-44.9	17.1	-51.0	19.3	-57.6	21.6	-64.6
	1, 2e	20	4.9	-16.2	5.4	-18.0	6.0	-19.9	6.6	-22.0	7.2	-24.1	7.9	-26.4	8.6	-28.7	10.1	-33.7	11.7	-39.1	13.5	-44.9	15.3	-51.0	17.3	-57.6	19.4	-64.6
	1, 2e	50	4.1	-9.99	4.6	-11.0	5.1	-12.2	5.6	-13.4	6.1	-14.7	6.7	-16.1	7.3	-17.5	8.6	-20.6	10.0	-23.8	11.4	-27.4	13.0	-31.1	14.7	-35.2	16.4	-39.4
	1, 2e	100	3.6	-5.00	4.0	-5.56	4.4	-6.62	4.8	-6.69	5.3	-7.75	5.8	-8.82	6.3	-9.90	7.4	-10.5	8.6	-12.2	9.9	-14.0	11.2	-15.9	12.7	-18.0	14.2	-20.2
	2n, 2r, 3e	10	5.4	-23.6	6.0	-26.3	6.7	-29.1	7.4	-32.1	8.1	-35.2	8.8	-38.5	9.6	-41.9	11.3	-49.2	13.1	-57.0	15.0	-65.0	17.1	-74.5	19.3	-84.1	21.6	-94.2
	2n, 2r, 3e	20	4.9	-20.3	5.4	-22.7	6.0	-25.1	6.6	-27.7	7.2	-30.4	7.9	-33.2	8.6	-36.2	10.1	-42.4	11.7	-49.2	13.5	-56.5	15.3	-64.3	17.3	-72.6	19.4	-81.4
	2n, 2r, 3e	50	4.1	-16.0	4.6	-17.9	5.4	-19.8	5.6	-21.8	6.1	-24.0	6.7	-26.2	7.3	-28.5	8.6	-33.5	10.0	-38.8	11.4	-44.6	13.0	-50.7	14.7	-57.2	16.4	-64.2
	2n, 2r, 3e	100	3.6	-12.8	4.0	-14.3	4.4	-15.8	4.8	-17.4	5.3	-19.1	5.8	-20.9	6.3	-22.8	7.4	-26.7	8.6	-31.0	9.9	-35.6	11.2	-40.5	12.7	-45.7	14.2	-51.3
	3r	10	5.4	-28.0	6.0	-30.2	6.7	-34.6	7.4	-38.1	8.1	-41.8	8.8	-45.7	9.6	-49.8	11.3	-58.4	13.1	-67.8	15.0	-77.8	17.1	-88.5	19.3	-99.9	21.6	-112.0
	3r	20	4.9	-24.0	5.4	-26.7	6.0	-29.6	6.6	-32.7	7.2	-35.9	7.9	-39.2	8.6	-42.7	10.1	-50.1	11.7	-58.1	13.5	-66.7	15.3	-75.9	17.3	-85.6	19.4	-96.1

	3r	50	4.1	-18.7	4.6	-20.8	5.1	-23.1	5.6	-25.4	6.1	-27.9	6.7	-30.5	7.3	-33.2	8.6	-39.0	10.0	-45.2	11.4	-51.9	13.0	-59.0	14.7	-66.6	16.4	-74.7
	3r	100	3.6	-14.7	4.0	-16.3	4.4	-18.1	4.8	-20.0	5.3	-21.9	5.8	-24.0	6.3	-26.1	7.4	-30.6	8.6	-35.5	9.9	-40.8	11.2	-46.4	12.7	-52.3	14.2	-58.7
Gable Roof >20 to 27 degrees	1, 2e	10	6.5	-12.4	7.3	-13.9	8.0	-15.4	8.9	-16.9	9.7	-18.6	10.6	-20.3	11.6	-22.1	13.6	-26.0	15.8	-30.1	18.1	-34.6	20.6	-39.3	23.3	-44.4	26.1	-49.9
	1, 2e	20	5.6	-12.4	6.3	-13.9	7.0	-15.4	7.7	-16.9	8.4	-18.6	9.2	-20.3	10.0	-22.1	11.7	-26.0	13.6	-30.1	15.6	-34.6	17.8	-39.3	20.1	-44.4	22.5	-49.8
	1, 2e	50	4.4	-10.6	5.0	-11.8	5.5	-13.1	6.1	-14.4	6.6	-15.8	7.3	-17.3	7.9	-18.8	9.3	-22.1	10.8	-25.6	12.3	-29.4	14.0	-33.5	15.9	-37.8	17.8	-42.4
	1, 2e	100	3.6	-9.1	4.0	-10.2	4.4	-11.3	4.8	-12.4	5.3	-13.6	5.8	-14.9	6.3	-16.2	7.4	-19.0	8.6	-22.1	9.9	-25.3	11.2	-28.8	12.7	-32.5	14.2	-36.5
	2n, 2r, 3e	10	6.5	-19.9	7.3	-22.1	8.0	-24.5	8.9	-27.0	9.7	-29.7	10.6	-32.4	11.6	-35.3	13.6	-41.4	15.8	-48.0	18.1	-55.2	20.6	-62.8	23.3	-70.8	26.1	-79.4
	2n, 2r, 3e	20	5.6	-17.4	6.3	-19.4	7.0	-21.5	7.7	-23.7	8.4	-26.0	9.2	-28.4	10.0	-31.0	11.7	-36.3	13.6	-42.1	15.6	-48.4	17.8	-55.0	20.1	-62.1	22.5	-69.6
	2n, 2r, 3e	50	4.4	-14.2	5.0	-15.8	5.5	-17.5	6.1	-19.3	6.6	-21.1	7.3	-23.1	7.9	-25.2	9.3	-29.5	10.8	-34.2	12.3	-39.3	14.0	-44.7	15.9	-50.5	17.8	-56.6
	2n, 2r, 3e	100	3.6	-11.7	4.0	-13.0	4.4	-14.5	4.8	-15.9	5.3	-17.5	5.8	-19.1	6.3	-20.8	7.4	-24.4	8.6	-28.3	9.9	-32.5	11.2	-37.0	12.7	-41.8	14.2	-46.8
	3r	10	6.5	-23.6	7.3	-26.3	8.0	-29.1	8.9	-32.1	9.7	-35.2	10.6	-38.5	11.6	-41.9	13.6	-49.2	15.8	-57.0	18.1	-65.4	20.6	-74.5	23.3	-84.1	26.1	-94.2
	3r	20	5.6	-19.9	6.3	-22.1	7.0	-24.5	7.7	-27.0	8.4	-29.7	9.2	-32.4	10.0	-35.3	11.7	-41.4	13.6	-48.0	15.6	-55.2	17.8	-62.8	20.1	-70.8	22.5	-79.4
	3r	50	4.4	-14.7	5.0	-16.3	5.5	-18.1	6.1	-20.0	6.6	-21.9	7.3	-24.0	7.9	-26.1	9.3	-30.6	10.8	-35.5	12.3	-40.8	14.0	-46.4	15.9	-52.3	17.8	-58.7
	3r	100	3.6	-14.7	4.0	-16.3	4.4	-18.1	4.8	-20.0	5.3	-21.9	5.8	-24.0	6.3	-26.1	7.4	-30.6	8.6	-35.5	9.9	-40.8	11.2	-46.4	12.7	-52.3	14.2	-58.7
Gable	1, 2e, 2r	10	8.0	-14.7	8.9	-16.3	9.9	-18.1	10.9	-20.0	12.0	-21.9	13.1	-24.0	14.2	-26.1	16.7	-30.6	19.4	-35.5	22.2	-40.8	25.3	-46.4	28.5	-52.3	32.0	-58.7

Roof	1, 2c, 2r	20	7.1	-12.7	7.9	-13.9	8.8	-15.4	9.7	-16.9	10.6	-18.6	11.6	-20.3	12.6	-22.1	14.8	-26.0	17.2	-30.1	19.8	-34.6	22.5	-39.3	25.4	-44.4	28.5	-49.8
>27 to 45 degrees	1, 2c, r	50	5.9	-9.5	6.6	-10.6	7.3	-11.7	8.1	-12.9	8.9	-14.2	9.7	-15.5	10.5	-16.9	12.4	-19.8	14.3	-22.9	16.5	-26.3	18.7	-30.0	21.1	-33.8	23.7	-37.9
	1, 2c, 2r	100	5.0	-7.3	5.6	-8.1	6.2	-9.0	6.9	-9.9	7.5	-10.8	8.2	-11.9	9.0	-12.9	10.5	-15.1	12.2	-17.6	14.0	-20.2	15.9	-22.9	18.0	-25.9	20.2	-29.0
	2n, 3r	10	8.0	-16.2	8.9	-18.0	9.9	-19.9	10.9	-22.0	12.0	-24.1	13.1	-26.4	14.2	-28.7	16.7	-33.7	19.4	-39.1	22.2	-44.9	25.3	-51.0	28.5	-57.6	32.0	-64.6
	2n, 3r	20	7.1	-14.4	7.9	-16.1	8.8	-17.8	9.7	-19.7	10.6	-21.6	11.6	-23.6	12.6	-25.7	14.8	-30.1	17.2	-34.9	19.8	-40.1	22.5	-45.6	25.4	-51.5	28.5	-57.8
	2n, 3r	50	5.9	-12.2	6.6	-13.5	7.3	-15.0	8.1	-16.5	8.9	-18.2	9.7	-19.9	10.5	-21.6	12.4	-25.4	14.3	-29.4	16.5	-33.8	18.7	-38.4	21.1	-43.4	23.7	-48.6
	2n, 3r	100	5.0	-10.4	5.6	-11.6	6.2	-12.9	6.9	-14.2	7.5	-15.6	8.2	-17.1	9.0	-18.6	10.5	-21.8	12.2	-25.3	14.0	-29.0	15.9	-33.0	18.0	-37.3	20.0	-41.8
	3e	10	8.0	-19.9	8.9	-22.1	9.9	-24.5	10.9	-27.0	12.0	-29.7	13.1	-32.4	14.2	-35.3	16.7	-41.4	19.4	-48.0	22.2	-55.2	25.3	-62.8	28.5	-70.8	32.0	-79.4
	3e	20	7.1	-17.6	7.9	-19.6	8.8	-21.8	9.7	-24.0	10.6	-26.3	11.6	-28.8	12.6	-31.3	14.8	-36.8	17.2	-42.7	19.8	-49.0	22.5	-55.7	25.4	-62.9	28.5	-70.5
	3e	50	5.9	-14.7	6.6	-16.3	7.3	-18.1	8.1	-20.0	8.9	-21.9	9.7	-24.0	10.5	-26.1	12.4	-30.6	14.3	-35.5	16.5	-40.8	18.7	-46.4	21.1	-52.3	23.7	-58.7
	3e	100	5.0	-12.4	5.5	-13.9	6.2	-15.4	6.9	-16.9	7.5	-18.6	8.2	-20.3	9.0	-22.1	10.5	-26.0	12.2	-30.1	14.0	-34.6	15.9	-39.3	18.0	-44.4	20.2	-49.8
Hipped Roof >7 to 20 degree	1	10	6.5	-14.7	7.3	-16.3	8.0	-18.1	8.9	-20.0	9.7	-21.9	10.6	-24.0	11.6	-26.1	13.6	-30.6	15.8	-35.5	18.1	-40.8	20.6	-46.4	23.3	-52.3	26.1	-58.7
	1	20	5.6	-14.7	6.3	-16.3	7.0	-18.1	7.7	-20.0	8.4	-21.9	9.2	-24.0	10.0	-26.1	11.7	-30.6	13.6	-35.5	15.6	-40.8	17.8	-46.4	20.1	-52.3	22.5	-58.7
	1	50	4.4	-11.3	5.0	-12.6	5.5	-14.0	6.1	-15.4	6.6	-16.9	7.3	-18.5	7.9	-20.2	9.3	-23.7	10.8	-27.4	12.3	-31.5	14.0	-35.8	15.9	-40.4	17.8	-45.3
	1	100	3.6	-8.7	4.0	-9.7	4.4	-10.8	4.8	-11.9	5.3	-13.1	5.8	-14.3	6.3	-15.5	7.4	-18.2	8.6	-21.2	9.9	-24.3	11.2	-27.6	12.7	-31.2	14.2	-35.0

	2r	10	6.5	-19.1	7.3	-21.3	8.0	-23.6	8.9	-26.0	9.7	-28.6	10.6	-31.2	11.6	-34.0	13.6	-39.9	15.8	-46.3	18.1	-53.1	20.6	-60.4	23.3	-68.2	26.1	-76.5
	2r	20	5.6	-17.2	6.3	-19.2	7.0	-21.3	7.7	-23.4	8.4	-25.7	9.2	-28.1	10.0	-30.6	11.7	-35.9	13.6	-41.7	15.6	-47.9	17.8	-54.4	20.1	-61.5	22.1	-68.9
	2r	50	4.4	-14.7	5.0	-16.4	5.5	-18.2	6.1	-20.0	6.6	-22.0	7.3	-24.0	7.9	-26.1	9.3	-30.7	10.8	-35.6	12.3	-40.9	14.0	-46.5	15.9	-52.5	17.8	-58.8
	2r	100	3.6	-12.8	4.0	-14.3	4.4	-15.8	4.8	-17.4	5.3	-19.1	5.8	-20.9	6.3	-22.8	7.4	-26.7	8.6	-31.0	9.9	-35.6	11.2	-40.5	12.7	-45.7	14.2	-51.3
	2e, 3	10	6.5	-20.6	7.3	-22.9	8.0	-25.4	8.9	-28.0	9.7	-30.8	10.6	-33.6	11.6	-36.6	13.6	-43.0	15.8	-49.8	18.1	-57.2	20.6	-65.1	23.3	-73.5	26.1	-82.4
	2e, 3	20	5.6	-18.5	6.3	-20.6	7.0	-22.9	7.7	-25.2	8.4	-27.7	9.2	-30.3	10.0	-32.9	11.7	-38.7	13.6	-44.8	15.6	-51.5	17.8	-58.6	20.1	-66.1	22.5	-74.1
	2e, 3	50	4.4	-15.8	5.0	-17.6	5.5	-19.5	6.1	-21.5	6.6	-23.6	7.3	-25.8	7.9	-28.0	9.3	-32.7	10.8	-38.2	12.3	-43.8	14.0	-49.9	15.9	-56.3	17.8	-63.1
	2e, 3	100	3.6	-13.7	4.0	-15.3	4.4	-16.9	4.8	-18.7	5.3	-20.5	5.8	-22.4	6.3	-24.4	7.4	-28.6	8.6	-33.2	9.9	-38.1	11.2	-43.3	12.7	-48.9	14.2	-54.8
Hipped Roof >20 to 27 degrees	1	10	6.5	-11.7	7.3	-13.0	8.0	-14.5	8.9	-15.9	9.7	-17.5	10.6	-19.1	11.6	-20.8	13.6	-24.4	15.8	-28.3	18.1	-32.5	20.6	-37.0	23.3	-41.8	26.1	-46.8
	1	20	5.6	-10.4	6.3	-11.6	7.0	-12.8	7.7	-14.1	8.4	-15.5	9.2	-16.9	10.0	-18.4	11.7	-21.6	13.6	-25.1	15.6	-28.8	17.8	-32.8	20.1	-37.0	22.5	-41.5
	1	50	4.4	-8.6	5.0	-9.6	5.5	-10.6	6.1	-11.7	6.6	-12.8	7.3	-14.0	7.9	-15.3	9.3	-17.9	10.8	-20.8	12.3	-23.9	14.0	-27.2	15.9	-30.7	17.8	-34.4
	1	100	3.6	-7.3	4.0	-8.1	4.4	-9.0	4.8	-9.9	5.3	-10.8	5.8	-11.9	6.3	-12.9	7.4	-15.1	8.6	-17.6	9.9	-20.2	11.2	-22.9	12.7	-25.9	14.2	-29.0
	2e, 2r, 3	10	6.5	-16.2	7.3	-18.0	8.0	-19.9	8.9	-22.0	9.7	-24.1	10.2	-26.4	11.6	-28.7	13.6	-33.7	15.8	-39.1	18.1	-44.9	20.6	-51.0	23.3	-57.6	26.1	-64.6
	2e, 2r, 3	20	5.6	-14.4	6.3	-16.1	7.0	-17.8	7.7	-19.7	8.4	-21.6	8.9	-23.6	10.0	-25.7	11.7	-30.1	13.6	-34.9	15.6	-40.1	17.8	-45.6	20.1	-51.5	22.5	-57.8
	2e, 2r, 3	50	4.4	-12.2	5.0	-13.5	5.5	-15.0	6.1	-16.5	6.6	-18.2	7.3	-19.9	7.9	-21.6	9.3	-25.4	10.8	-29.4	12.3	-33.8	14.0	-38.4	15.9	-43.4	17.8	-48.6

	2e, 2r, 3	100	3.6	-10.4	4.0	-11.6	4.4	-12.9	4.8	-14.2	5.3	-15.6	5.8	-17.1	6.3	-18.6	7.4	-21.8	8.6	-25.3	9.9	-29.0	11.2	-33.0	12.7	-37.3	14.2	-41.8
Hipped Roof >27 to 45 degrees	1	10	6.2	-12.4	6.9	-13.9	7.7	-15.4	8.5	-16.9	9.3	-18.6	10.2	-20.3	11.1	-22.1	13.0	-26.0	15.1	-30.1	17.3	-34.6	19.7	-39.3	22.2	-44.4	24.9	-49.8
	1	20	5.4	-11.0	6.0	-12.3	6.7	-13.6	7.4	-15.0	8.1	-16.5	8.9	-18.0	9.6	-19.6	11.3	-23.0	13.1	-26.7	15.1	-30.7	17.1	-34.9	19.4	-39.4	21.7	-44.2
	1	50	4.4	-9.2	4.9	-10.2	5.4	-11.3	5.9	-12.5	6.5	-13.7	7.1	-15.0	7.7	-16.3	9.1	-19.2	10.5	-22.2	12.1	-25.5	13.8	-29.0	15.5	-32.8	17.4	-36.7
	1	100	3.6	-7.8	4.0	-8.7	4.4	-9.6	4.8	-10.6	5.3	-11.6	5.8	-12.7	6.3	-13.8	7.4	-16.2	8.6	-18.8	9.9	-21.6	11.2	-24.6	12.7	-27.8	14.2	-31.1
	2e	10	6.2	-14.8	6.9	-16.5	7.7	-18.3	8.5	-20.2	9.3	-22.1	10.2	-24.2	11.1	-26.3	13.0	-30.9	15.1	-35.9	17.3	-41.2	19.7	-46.8	22.2	-52.9	24.9	-59.3
	2e	20	5.4	-11.7	6.0	-13.0	6.7	-14.5	7.4	-15.9	8.1	-17.5	8.9	-19.1	9.6	-20.8	11.3	-24.4	13.1	-28.3	15.1	-32.5	17.1	-37.0	19.4	-41.8	21.7	-46.8
	2e	50	4.4	-7.3	4.9	-8.1	5.4	-9.0	5.9	-9.9	6.5	-10.8	7.1	-11.9	7.7	-12.9	9.1	-15.1	10.5	-17.6	12.1	-20.2	13.8	-22.9	15.5	-25.9	17.4	-29.0
	2e	100	3.6	-7.3	4.0	-8.1	4.4	-9.0	4.8	-9.9	5.3	-10.8	5.8	-11.9	6.3	-12.9	7.4	-15.1	8.6	-17.6	9.9	-20.2	11.2	-22.9	12.7	-25.9	14.2	-29.0
	2r	10	6.2	-18.7	6.9	-20.9	7.7	-23.1	8.5	-25.5	9.3	-28.0	10.2	-30.6	11.1	-33.3	13.0	-39.1	15.1	-45.4	17.3	-52.1	19.7	-59.2	22.2	-66.9	24.9	-75.0
	2r	20	5.4	-15.7	6.0	-17.5	6.7	-19.4	7.4	-21.4	8.1	-23.5	8.9	-25.7	9.6	-28.0	11.3	-32.8	13.1	-38.1	15.1	-43.7	17.1	-49.8	19.4	-56.2	21.7	-63.0
	2r	50	4.4	-11.7	4.9	-13.1	5.4	-14.5	5.9	-16.0	6.5	-17.5	7.1	-19.2	7.7	-20.9	9.1	-24.5	10.5	-28.4	12.1	-32.6	13.8	-37.1	15.5	-41.9	17.4	-47.0
	2r	100	3.6	-8.7	4.0	-9.7	4.4	-10.8	4.8	-11.9	5.3	-13.1	5.8	-14.3	6.3	-15.5	7.4	-18.2	8.6	-21.2	9.9	-24.3	11.2	-27.6	12.7	-31.2	14.2	-35.0
	3	10	6.2	-20.0	6.9	-22.3	7.7	-24.7	8.5	-27.2	9.3	-29.9	10.2	-32.7	11.1	-35.6	13.0	-41.7	15.1	-48.4	17.3	-55.6	19.7	-63.2	22.2	-71.4	24.9	-80.0
	3	20	5.4	-15.0	6.0	-16.8	6.7	-18.6	7.4	-20.5	8.1	-22.5	8.9	-24.6	9.6	-26.7	11.3	-31.4	13.1	-36.4	15.1	-41.8	17.1	-47.5	19.4	-53.8	21.7	-60.2

	3	50	4.4	-8.7	4.9	-9.7	5.4	-10.8	5.9	-11.9	6.5	-13.1	7.1	-14.3	7.7	-15.5	9.1	-18.2	10.5	-21.2	12.1	-24.3	13.8	-27.6	15.5	-31.2	17.4	-35.0
	3	100	3.6	-8.7	4.0	-9.7	4.4	-10.8	4.8	-11.9	5.3	-13.1	5.8	-14.3	6.3	-15.5	7.4	-18.2	8.6	-21.2	9.9	-24.3	11.2	-27.6	12.7	-31.2	14.2	-35.0
Wall	4	10	8.7	-9.7	9.7	-10.6	10.8	-11.7	11.9	-12.9	13.1	-14.2	14.3	-15.5	15.5	-16.9	18.2	-19.8	21.2	-22.9	24.3	-26.3	27.6	-30.0	31.2	-33.8	35.0	-37.9
	4	20	8.3	-9.1	9.3	-10.1	10.3	-11.2	11.4	-12.4	12.5	-13.6	13.6	-14.8	14.8	-16.2	17.4	-19.0	20.2	-22.0	23.2	-25.3	26.4	-28.7	29.8	-32.4	33.4	-36.4
	4	50	7.8	-8.6	8.7	-9.5	9.7	-10.6	10.7	-11.7	11.7	-12.8	12.8	-14.0	13.9	-15.2	16.3	-17.9	18.9	-20.7	21.7	-23.8	24.7	-27.1	27.9	-30.6	31.3	-34.3
	4	100	7.4	-8.2	8.3	-9.1	9.2	-10.1	10.1	-11.1	11.1	-12.2	12.1	-13.3	13.2	-14.5	15.5	-17.1	18.0	-19.8	20.6	-22.7	23.5	-25.8	26.5	-29.2	29.7	-32.7
	4	500	6.5	-7.3	7.3	-8.1	8.0	-9.0	8.9	-9.9	9.7	-10.8	10.6	-11.9	11.6	-12.9	13.5	-15.1	15.8	-17.6	18.1	-20.2	20.6	-22.9	23.3	-25.9	26.1	-29.0
	5	10	8.7	-11.8	9.7	-13.0	10.8	-14.5	11.9	-15.9	13.1	-17.5	14.3	-19.1	15.5	-20.8	18.2	-24.4	21.2	-28.3	24.3	-32.5	27.6	-37.0	31.2	-41.8	35.0	-46.8
	5	20	8.3	-10.9	9.3	-12.2	10.3	-13.5	11.4	-14.9	12.5	-16.3	13.6	-17.8	14.8	-19.4	17.4	-22.8	20.2	-26.4	23.2	-30.3	26.4	-34.5	29.8	-39.0	33.4	-43.7
	5	50	7.8	-9.9	8.7	-11.0	9.7	-12.2	10.7	-13.4	11.7	-14.7	12.8	-16.1	13.9	-17.5	16.3	-20.6	18.9	-23.9	21.7	-27.4	24.7	-31.2	27.9	-35.2	31.3	-39.5
	5	100	7.4	-9.1	8.3	-10.1	9.2	-11.2	10.1	-12.4	11.1	-13.6	12.1	-14.8	13.2	-16.1	15.5	-19.0	18.0	-22.0	20.6	-25.2	23.5	-28.7	26.5	-32.4	29.7	-36.3
	5	500	6.5	-7.3	7.3	-8.1	8.0	-9.0	8.9	-9.9	9.7	-10.8	10.6	-11.9	11.6	-12.9	13.6	-15.1	15.8	-17.6	18.1	-20.2	20.6	-22.9	23.3	-25.9	26.1	-29.0

For SI: 1 foot = 304.8mm, 1 square foot = 0.0929m^2, 1 mile per hour = 0.447 m/s, 1 pound per square foot = 0.0479 kPa

a. The effective wind area shall be equal to the span length multiplied by an effective width. This shall be permitted to be not less than one-third the span length. For cladding fasteners, the effective wind area shall not be greater than the area that is tributary to an individual fastener.

b. For effective areas between those given, the load shall be interpolated or the load associated with the lower effective area shall be used.

c. Table values shall be adjusted for height and exposure by multiplying the adjustment coefficient in Table R301.2(3).

d. See Figure R301.2(7) for location of zones.

e. Plus and minus signs signify pressures acting toward and away from the building surfaces.

f. Positive and negative design wind pressures shall be not less than 10 psf.

g. Where the ratio of the building mean roof height to the building length or width is less than 0.8, uplift loads shall be permitted to be calculated in accordance with ASCE 7.

4. Change table R301.2(3) to read:

Table R301.2(3)

HEIGHT AND EXPOSURE ADJUSTMENT COEFFICIENTS FOR TABLE R301.2(2)

	EXPOSURE		
MEAN ROOF HEIGHT	**B**	**C**	**D**
15	0.82	1.21	1.47
20	0.89	1.29	1.55
25	0.94	1.35	1.61
30	1.00	1.40	1.66
35	1.05	1.45	1.70
40	1.09	1.49	1.74
45	1.12	1.53	1.78
50	1.16	1.56	1.81
55	1.19	1.59	1.84
60	1.22	1.62	1.87

5. Change Add the following paragraph to the end of Section R301.2.1 to read:

R301.2.1 Wind design criteria. Buildings and portions thereof shall be constructed in accordance with the wind provisions of this code using the ultimate design wind speed in Table R301.2(1) as determined from Figure R301.2(5)A. The structural provisions of this code for wind loads are not permitted where wind design is required as specified in Section R301.2.1.1. Where different construction methods and structural materials are used for various portions of a building, the applicable requirements of this section for each portion shall apply. Where not otherwise specified, the wind loads listed in Table R301.2(2) adjusted for height and exposure using Table R301.2(3) shall be used to determine design load performance requirements for wall coverings, curtain walls, roof coverings, exterior windows, skylights, garage doors, and exterior doors. Asphalt shingles shall be designed for wind speeds in accordance with Section R905.2.4. A continuous load path shall be provided to transmit the applicable uplift forces in Section from the roof assembly to the foundation. Where ultimate design wind speeds in Figure R301.2(4)A are less than the lowest wind speed indicated in the prescriptive provisions of this code, the lowest wind speed indicated in the prescriptive provisions of this code shall be used. Wind speeds for localities in special wind regions, near mountainous terrain, and near gorges shall be based on elevation. Areas at 4,000 feet in elevation or higher shall use the nominal design wind speed of 140 mph (62.6 m/s and areas under 4,000 feet in elevation shall use nominal design wind speed of 110 mph (49.2

~~m/s). Gorge areas shall be based on the highest recorded speed per locality or in accordance with local jurisdiction requirements determined in accordance with Section 26.5.2 of ASCE 7.~~

Wind speeds for localities in special wind regions, near mountainous terrain, and near gorges shall be based on elevation. Areas at 4,000 feet in elevation or higher shall use the ultimate design wind speed of 140 mph (62.6 m/s and areas under 4,000 feet in elevation shall use the ultimate design wind speed of 110 mph (49.2 m/s). Gorge areas shall be based on the highest recorded speed per locality or in accordance with local jurisdiction requirements determined in accordance with Section 26.5.2 of ASCE 7.

6. ~~Change section R 301.2.1.1 to read:~~

~~R301.2.1.1 Wind limitations and wind design required. The wind provisions of this code shall not apply to the design of buildings where wind design is required in accordance with Figure R301.2(5)B or where the ultimate design wind speed, V_{alt} in Figure R301.2(5)A equals or exceeds 140 mph in a special wind region.~~

~~Exceptions:~~

~~1. For concrete construction, the wind provisions of this code shall apply in accordance with the limitations of Sections R404 and R608.~~

~~2. For structural insulated panels, the wind provisions of this code shall apply in accordance with the limitations of Section R610.~~

~~3. For cold-formed steel light-frame construction, the wind provisions of this code shall apply in accordance with the limitations of Sections R505, R603, and R804.~~

~~In regions where wind design is required in accordance with Figure R301.2(5)B or where the ultimate design wind speed V_{alt} in Figure R301.2(5)A equals or exceeds 140 mph in a special wind region, the design of buildings for wind loads shall be in accordance with one or more of the following methods:~~

~~1. AWC Wood Frame Construction Manual (WFCM).~~

~~2. ICC Standard for Residential Construction in High-Wind Regions (ICC 600).~~

~~3. ASCE Minimum Design Loads for Buildings and Other Structures (ASCE 7).~~

~~4. AISI Standard for Cold-Formed Steel Framing - Prescriptive Method for One- and Two-Family Dwellings (AISI S230).~~

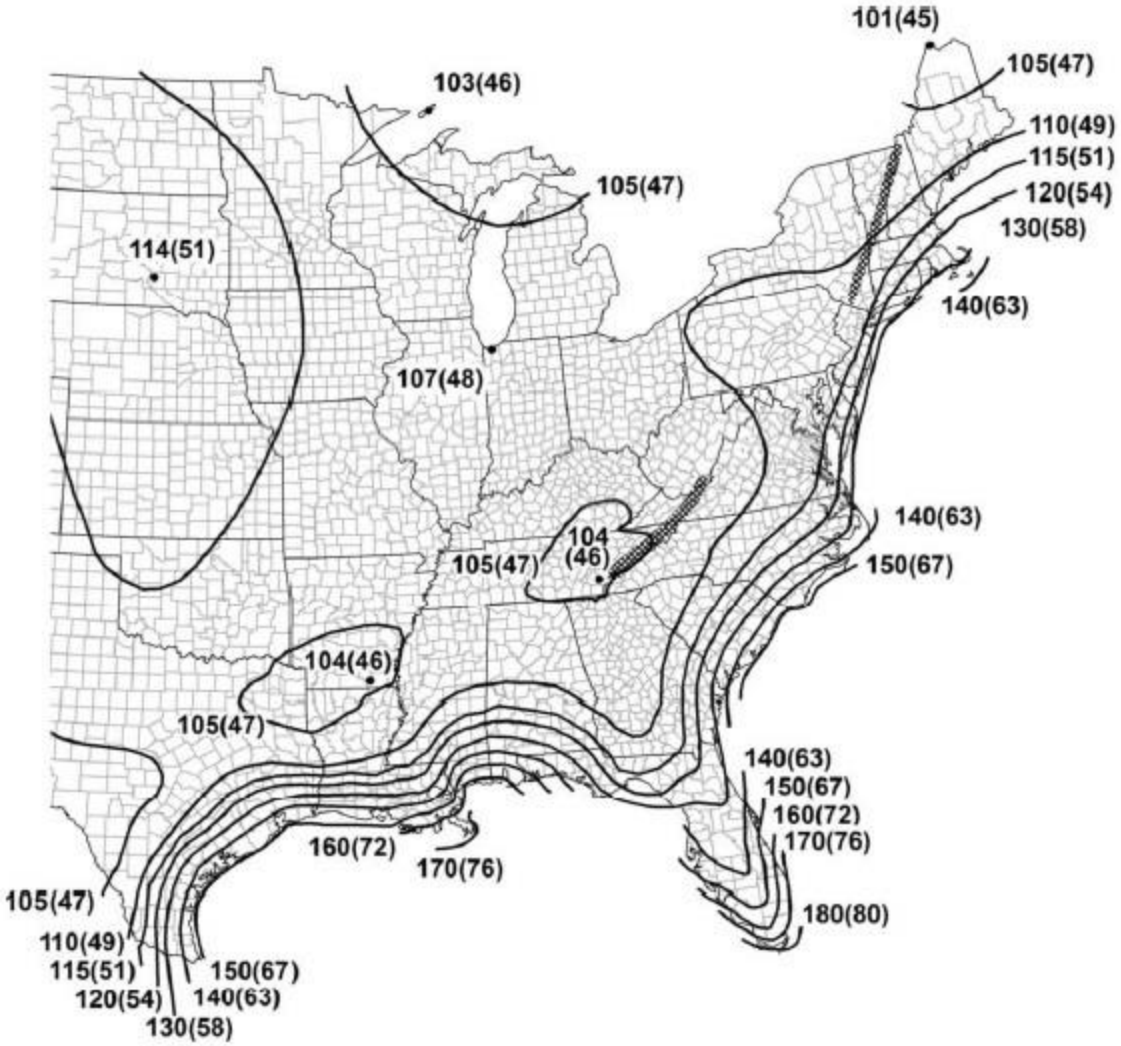
~~5. International Building Code.~~

~~The elements of design not addressed by the methods in Items 1 through 5 shall be in accordance with the provisions of this code.~~

~~Where ASCE 7 or the International Building Code is used for the design of the building, the wind speed map and exposure category requirements as specified in ASCE 7 and the International Building Code shall be used.~~

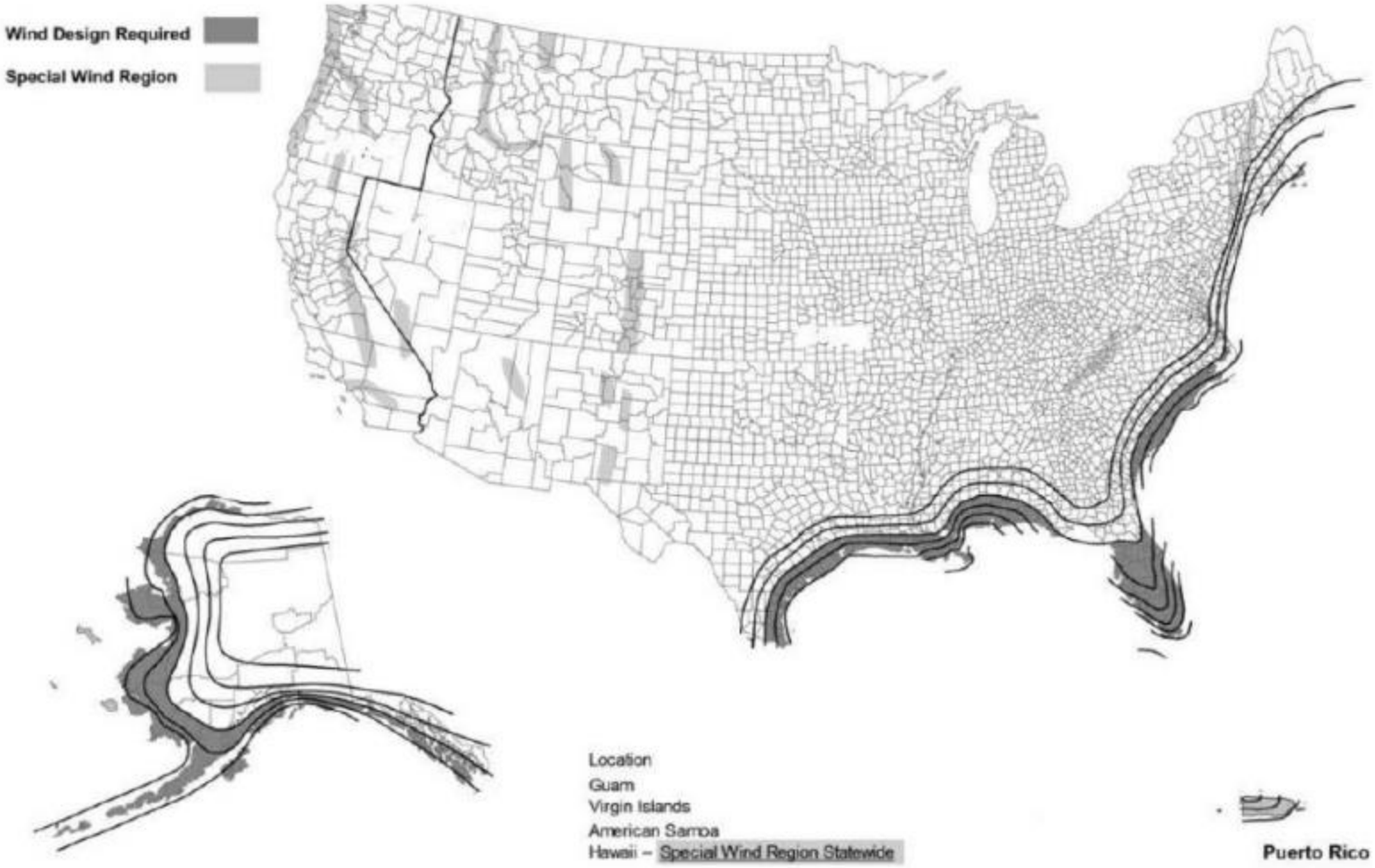
7. ~~Change Figure R301.2(5)A to read:~~

~~Note: Crosshatching on map indicates Special Wind Region~~



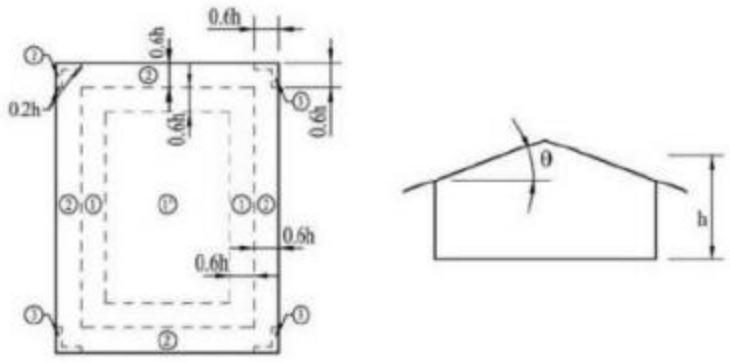
~~Figure R301.2(5)A ULTIMATE DESIGN WIND SPEEDS~~

8. ~~Change Figure R301.2(5)B to read:~~

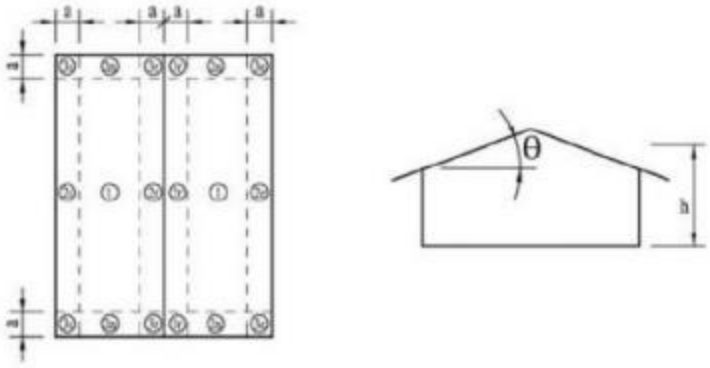


~~Figure R301.2(5)B REGIONS WHERE WIND DESIGN IS REQUIRED~~

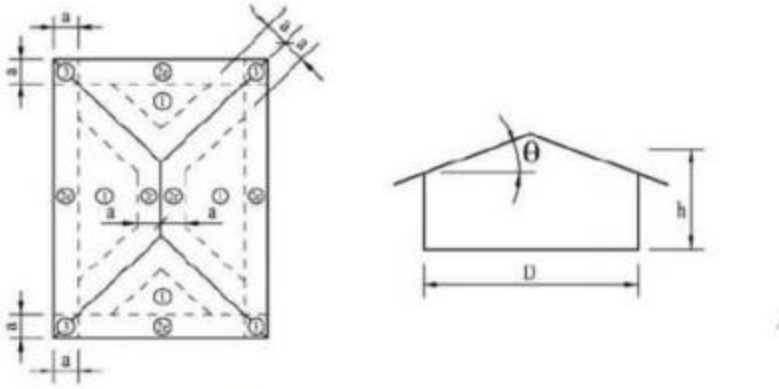
9. ~~Change Figure R301.2(8) to read:~~



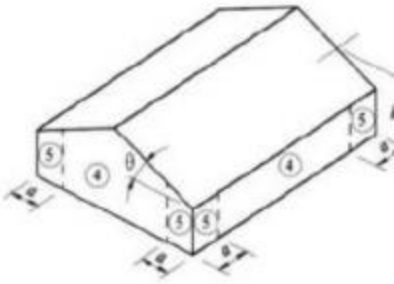
Gable and Flat Roofs θ ≤ 7°



Gable Roofs 7 < θ ≤ 45°



Hip Roofs 7 < θ ≤ 45°



Walls

~~Figure R301.2(8) COMPONENT AND CLADDING PRESSURE ZONES~~

10. Add Exceptions 6 and 7 to Section R302.1 to read:

    6. Decks and open porches.

    7. Walls of dwellings and accessory structures located on lots in subdivisions or zoning districts where building setbacks established by local ordinance prohibit the walls of

the structures on adjacent lots from being closer than 10 feet (3048 mm) to each other at any point along the exterior walls.

11. Change the Projections row of table R302.1(1) to remove the top row and change the Minimum Fire Separation Distance for Fire-resistance rated Exterior Wall Elements to less than five feet.

12. ~~Change Section R302.2 to read:~~

~~R302.2 Townhouses. Wall separating townhouse units shall be constructed in accordance with Section R302.2.1 or R302.2.2 and shall comply with Sections 302.2.3 through 302.2.5.~~

~~13. Change Section R302.2.2 to read:~~

~~R302.2.2 Common walls. Common walls separating townhouses shall be assigned a fire-resistance rating in accordance with Item 1 or 2. The common wall shared by two townhouses shall be constructed without plumbing or mechanical equipment, ducts or vents, other than water-filled fire sprinkler piping, in the cavity of the common wall. The wall shall be rated for fire exposure from both sides and shall extend to and be tight against exterior walls and the underside of the roof sheathing. Electrical installations shall be in accordance with Chapters 34 through 43. Penetrations of the membrane of common walls for electrical outlet boxes shall be in accordance with Section R302.4.~~

~~1. Where a fire sprinkler system in accordance with Section P2904 is provided, the common wall shall be not less than a one-hour fire-resistance-rated wall assembly tested in accordance with ASTM E119, UL 263, or Section 703.3 of the International Building Code.~~

~~2. Where a fire sprinkler system in accordance with Section P2904 is not provided, the common wall shall be not less than a two-hour fire-resistance-rated wall assembly in accordance with ASTM E119, UL 263, or Section 703.3 of the International Building Code.~~

14. ~~Add~~ Change exception 6 to Section R302.2.6 to read:

6. ~~Townhouses~~ Townhouse units protected by a fire sprinkler system complying with Section P2904, NFPA 13, NFPA 13R, or NFPA 13D.

15. ~~Add the following sentence to the end of~~ Change Section R302.3, including exception 1 and add exception 3 to read (exception 2 remains):

~~Dwelling unit separation wall assemblies that are constructed on a lot line shall be constructed as required in Section R302.2 for townhouses.~~

Dwelling units in two-family dwellings shall be separated from each other by wall and floor assemblies having not less than a 1-hour fire-resistance rating where tested in accordance with ASTM E119, UL 263 or Section 703.2.2 of the International Building Code. Fire-resistance-rated floor/ceiling and wall assemblies shall extend to and be tight against the exterior wall, and wall assemblies shall extend from the foundation to the underside of the roof sheathing. Dwelling unit separation wall assemblies that are constructed on a lot line shall be constructed as required in Section R302.2 for townhouses.

~~16. Change the first exception in R302.3 to read:~~

1. A fire-resistance rating of 1/2 hour shall be permitted in buildings equipped throughout with an automatic sprinkler system installed in accordance with NFPA 13, NFPA 13R, or Section P2904.

~~17. Add a third exception in R302.3 to read:~~

3. Fire-resistant-rated assemblies are not required to separate a dwelling unit and accessory dwelling unit where both units are located on the same lot and comply with Sections R314.7 and R315.5.

~~18. Change the exceptions to R302.4.1 to read:~~

~~Exceptions:~~

~~1. Where the penetrating items are steel, ferrous, or copper pipes, tubes, or conduits, the annular space shall be protected as follows:~~

~~1.1 In Concrete or masonry wall or floor assemblies, concrete, grout, or mortar shall be permitted where installed to the full thickness of the wall or floor assembly or the thickness required to maintain the fire-resistance rating, provided~~ that ~~both of the following are complied with:~~

~~1.1.1 The nominal diameter of the penetrating item is not more than 6 inches (152 mm.~~

~~1.1.2 The area of the opening through the wall does not exceed 144 square inches (92,900 mm^2).~~

~~1.2 The material used to fill the annular space shall prevent the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTEM E119 or UL 263 time temperature fire conditions under a positive pressure differential of not less than 0.01 inch of water (3 Pa) at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated.~~

~~2. The annular space created by the penetration of water-filled fire sprinkler piping, provided the annular space is filled using a material complying with Exception 1.2 above.~~

19. ~~Change exception 3 of Section R302.4.2 to read:~~

~~3. The annular space created by the penetration of a fire sprinkler or water-filled fire sprinkler piping, provided that the annular space is covered by a metal escutcheon plate.~~

20. Change Section R302.5.1 to read:

R302.5.1 Opening protection. Openings from a private garage directly into a room used for sleeping purposes shall not be permitted. Other openings between the garage and residence shall be equipped with solid wood doors not less than 1-3/8 inches (35 mm) ~~thickness~~ thick, solid or honeycomb-core steel doors not less than 1-3/8 inches (35 mm) thick, or 20-minute fire-rated doors.

21. Delete Section R302.13 in its entirety.

~~22. Change Section R303.4 to read:~~

~~R303.4 Mechanical ventilation. Dwelling units shall be provided with mechanical ventilation in accordance with Section M1505.~~

23. Add an exception to Section R303.10 to read:

Exception: Seasonal structures not used as a primary residence for more than 90 days per year, unless rented, leased or let on terms expressed or implied to furnish heat, shall not be required to comply with this section.

24. Add Section R303.10.1 to read:

R303.10.1 Nonowner occupied required heating. Every dwelling unit or portion thereof which is to be rented, leased or let on terms either expressed or implied to furnish heat to the occupants thereof shall be provided with facilities in accordance with Section R303.10 during the period from October 15 to May 1.

25. Add Section R303.11 to read:

R303.11 Insect screens. Every door, window and other outside opening required for ventilation purposes shall be supplied with approved tightly fitted screens of not less than 16 mesh per inch (16 mesh per 25 mm) and every screen door used for insect control shall have a self-closing device.

26. Add Section R306.5 to read:

    R306.5 Water supply sources and sewage disposal systems. The water and drainage system of any building or premises where plumbing fixtures are installed shall be connected to a public or private water supply and a public or private sewer system. As provided for in Section 103.5 of Part I of the Virginia Uniform Statewide Building Code (13VAC5-63), for functional design, water supply sources and sewage disposal systems are regulated and approved by the Virginia Department of Health and the Virginia Department of Environmental Quality.

    Note: See also the Memorandums of Agreement in the "Related Laws Package," which is available from the Virginia Department of Housing and Community Development.

27. Change Section R308.4.5 to read:

    R308.4.5 Glazing and wet surfaces. Glazing in walls, enclosures, or fences containing or facing hot tubs, spas, whirlpools, saunas, steam rooms, bathtubs, showers, and indoor or outdoor swimming pools shall be considered a hazardous location if located less than 60 inches (1524 mm) measured horizontally, in a straight line, from the water's edge and the bottom exposed edge of the glazing is less than 60 inches (1524 mm) measured vertically above any standing or walking surface. This shall apply to single glazing and each pane in multiple glazing.

28. ~~Change section R309.3 to read:~~

    ~~R309.3 Flood hazard areas. Garages and carports located in flood hazard areas as established by Table R301.2(1) shall be constructed in accordance with Section R322~~.

29. Change Section R310.1, including exception 2 to read (exceptions 1 and 3 remain):

    R310.1 Emergency escape and rescue opening required. Basements, habitable attics, and every sleeping room designated on the construction documents shall have not less than one operable emergency escape and rescue opening. Where basements contain one or more sleeping rooms, an emergency egress and rescue opening shall be required in each sleeping room. Emergency escape and rescue openings shall open directly into a public way, or to a yard or court having a minimum width of 36 inches (914 mm) that opens to a public way.

    ~~Exceptions:~~

    ~~1.~~ 2. Dwelling units equipped throughout with an approved automatic sprinkler system installed in accordance with NFPA 13, 13R, or 13D or Section P2904.

    ~~2. Storm shelters and basements used only to house mechanical equipment and not exceeding total floor area of 200 square feet (18.58 m^2).~~

30. Change Section R310.2.1 and delete Section R310.2.2:

    R310.2.1 Minimum opening area. Emergency and escape rescue openings shall have a net clear opening of not less than 5.7 square feet (0.530 m^2). The net clear opening dimensions required by this section shall be obtained by the normal operation of the emergency escape and rescue opening from the inside, including the tilting or removal of the sash as the normal operation. The net clear height opening shall be not less than 24 inches (610 mm), and the net clear width shall be not less than 20 inches (508 mm).

Exception: Grade floor or below grade openings shall have a net clear opening of not less than 5 square feet (0.465 m^2).

31. Change Section R311.1 to read:

    R311.1 Means of egress. Dwellings, and each dwelling unit in a two-family dwelling, shall be provided with a means of egress in accordance with this section. The means of egress shall provide a continuous and unobstructed path of vertical and horizontal egress travel from all portions of the dwelling to the required egress door without requiring travel through a garage. The required egress door shall open directly into a public way or to a yard or court that opens to a public way.

32. Change the exception to Section R311.3.1 to read:

    Exception: The landing or floor on the exterior side shall ~~not be~~ be not more than 8-1/4 inches (210 mm) below the top of the threshold, provided the door does not swing over the landing or floor.

33. Change Section R311.3.2 to read:

    R311.3.2 Floor elevations for other exterior doors. Doors other than the required egress door shall be provided with landings or floors not more than 8-1/4 inches (210 mm) below the top of the threshold.

    Exception: A top landing is not required where a stairway of not more than two risers is located on the exterior side of the door, provided that the door does not swing over the stairway.

34. Change Section R311.7.5.1 to read:

    R311.7.5.1 Risers. The riser height shall be not more than 8-1/4 inches (210 mm). The riser shall be measured vertically between the leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm). Risers shall be vertical or sloped from the underside of the nosing of the tread above at an angle not more than 30 degrees (0.51 rad) from the vertical. Open risers are permitted, provided that the openings located more than 30 inches (~~763~~ 762 mm), as measured vertically, to the floor or grade below do not permit the passage of a 4-inch-diameter (102 mm) sphere.

    Exceptions:

    1. The opening between adjacent treads is not limited on spiral stairways.

    2. The riser height of spiral stairways shall be in accordance with Section R311.7.10.1.

35. Change Section R311.7.5.2 to read:

    R311.7.5.2 Treads. The tread depth shall be not less than 9 inches (229 mm). The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge. The greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm).

36. ~~Change Section R311.7.7 to read:~~

    ~~R311.7.7 Stairway walking surface. The walking surface of treads and landings of stairways shall be level or sloped no steeper than one unit vertical in 48 units horizontal (2.0% slope).~~

37. Change Section R312.2.1 to read (exceptions remain):

    R312.2.1 Window sills. In dwelling units, where the top of the sill of an operable window opening is located less than 18 inches (457 mm) above the finished floor and greater

than 72 inches (1829 mm) above the finished grade or other surface below on the exterior of the building, the operable window shall comply with one of the following:

~~1. Operable windows with openings that will not allow a 4-inch-diameter (102 mm) sphere to pass through the opening where the opening is in its largest opened position.~~

~~2. Operable windows that are provided with window fall prevention devices that comply with ASTM F 2090.~~

~~3. Operable windows that are provided with window opening control devices that comply with Section R312.2.2.~~

38. Replace Section R313 with the following:

    Section R313.

    Automatic Fire Sprinkler Systems.

    R313.1 Townhouse automatic fire sprinkler systems. Notwithstanding the requirements of Section 103.3, where installed, an automatic residential fire sprinkler system for townhouses shall be designed and installed in accordance with NFPA 13D or Section P2904.

    Exception: An automatic residential fire sprinkler system shall not be required when additions or alterations are made to existing townhouses that do not have an automatic residential fire sprinkler system installed.

~~39. Change Section R13.1.1 to read:~~

    R313.1.1 Design and installation. Automatic residential fire sprinkler systems for townhouses shall be designed and installed in accordance with Section P2904 or NFPA 13D, 13, or 13R.

    R313.2 One-family and two-family dwellings automatic fire sprinkler systems. Notwithstanding the requirements of Section 103.3, where installed, an automatic residential fire sprinkler system shall be designed and installed in accordance with ~~NFPA 13D, 13, 13R, or Section P2904~~ Section P2904, or NFPA 13D, 13, or 13R.

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

~~40. Change section R313.2.1 to read:~~

    R313.2.1 Design and installation. Automatic residential fire sprinkler systems shall be designed and installed in accordance with Section P2904 or NFPA 13D, 13, or 13R.

41. Delete Section R314.2.2.

42. ~~Change~~ Delete exception 2 and change exception 1 to Section R314.6 to read:

    ~~R314.6 Power source. Smoke alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source and, where primary power is interrupted, shall receive power from a battery. Wiring shall be permanent and without a disconnecting switch other than those required for overcurrent protection.~~

    Exception:

    Smoke alarms shall be permitted to be battery operated with a minimum 10-year battery where installed in buildings without commercial power.

43. Change Section R314.7 to read:

    R314.7 Fire alarm systems. A fire alarm system complying with Sections R314.7.1 through R314.7.4 shall be installed within a two-family dwelling that is constructed without fire separations in accordance with Exception 3 of Section R302.3 and shall

be installed in such a manner that the actuation of an alarm will activate all notification appliances within both dwelling units. Fire alarm systems shall be permitted to be used in other dwelling units in lieu of smoke alarms and shall comply with Sections R314.7.1 through R314.7.4.

44. Change Section R314.7.3 to read:~~1~~

    R314.7.3 Permanent fixture. Where a household fire alarm system is installed, it shall become a permanent fixture of the dwelling unit.

45. Change Section R315.1.1 to read:

    R315.1.1 Listings. Carbon monoxide alarms shall be hard wired, plug-in or battery type; listed as complying with UL 2034; and installed in accordance with this code and the manufacturer's installation instructions. Combination carbon monoxide and smoke alarms shall be listed in accordance with UL 2034 and UL 217.

46. Change Section R315.2 to read:

    R315.2 Where required. Carbon monoxide alarms shall be provided in accordance with this section.

47. Delete Section R315.2.2.

48. Change Section R315.5 to read <u>(exception remains)</u>:

    R315.5 Interconnectivity. Where more than one carbon monoxide alarm is required to be installed within an individual dwelling unit in accordance with Section R315.3, the alarm devices shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms in the dwelling. Alarm devices within a two-family dwelling constructed without fire separations in accordance with Exception 3 of Section R302.3 shall be interconnected in such a manner that the actuation of one alarm within either unit will activate all alarms within both dwelling units. Physical interconnection of carbon monoxide alarms shall not be required where listed wireless alarms are installed and all alarms sound upon activation of one alarm.

    ~~Exception: Interconnection of carbon monoxide alarms in existing areas shall not be required where alterations or repairs do not result in 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.~~

49. Delete Section R315.6.

50. Change Section R315.7.3 to read:

    R315.7.3 Permanent fixture. Where a household carbon monoxide detection system is installed, it shall become a permanent fixture of the occupancy.

51. Add Section ~~R320.2~~ <u>R320.3</u> to read:

    ~~R320.2~~ <u>R320.3</u> Universal design features for accessibility in dwellings. Dwellings constructed under the IRC not subject to Section R320.1 may comply with Section ~~1109.16~~ <u>1110.17</u> of the USBC and be approved by the local building department as dwellings containing universal design features for accessibility.

52. ~~Change section R322.2.1 to read:~~

    ~~R.322.2.1 Elevation requirements.~~

    ~~1. Buildings and structures in floor hazard areas, including flood hazard areas not designated as Coastal A Zones, shall have the lowest floors elevated to or above the base flood elevation plus 1 foot (305 mm), or the design flood elevation, whichever is higher.~~

2. In areas of shallow flooding (AO Zones), buildings and structures shall have the lowest floor (including basement) elevated to a height above the highest adjacent grade of not less than the depth number specified in feet (mm) on the FIRM plus 1 foot (305 mm), or not less than 3 feet (915 mm) if a depth number is not specified.

3. Basement floors that are below grade on all sides shall be elevated to or above base flood elevation plus 1 foot (305 mm), or the design flood elevation, whichever is higher.

4. Garage and carport floors shall comply with one of the following:

4.1 They shall be elevated to or above the elevations required in Item 1 or Item 2, as applicable

4.2 They shall be at or above grade on not less than one side. Where a garage or carport is enclosed by walls, the garage or carport shall be used solely for parking, building access or storage.

Exception: Enclosed areas below the elevation required by this section, including basements with floors that are not below grade on all sides, shall meet the requirements of Section R322.2.2

53. Change section R322.3.2 to read:

R322.3.2 Elevation Requirements.

1. Buildings and structures erected within coastal high-hazard areas and Coastal A Zones, shall be elevated so that the bottom of the lowest horizontal structural members supporting the lowest floor, with the exception of piling, pile caps, columns, grade beams and bracing, is elevated to or above the base flood elevation plus 1 foot (305 mm) or the design flood elevation, whichever is higher.

2. Basement floors that are below grade on all sides are prohibited.

3. Garages used solely for parking, building access or storage and carports, shall comply with Item 1 or shall be at or above grade on not less than one side, and where enclosed with walls. Such walls shall comply with Item 6.

4. The use of fill or structural support is prohibited.

5. Minor grading, and the placement of minor quantities of fill, shall be permitted for landscaping and for drainage purposes under and around buildings and for support of parking slabs, pool decks, patios, and walkways.

6. Walls and partitions enclosing areas below the elevation required in this section shall meet the requirements of Sections R322.3.5 and R322.3.6

54. Change R322.3.3 to read:

R322.3.3 Foundations. Buildings and structures erected in coastal high-hazard areas and Coastal A Zones shall be supported on pilings or columns and shall be adequately anchored to such pilings or columns.

1. The space below the elevated building shall be either free of obstruction or, if enclosed with walls, the walls shall meet the requirements of Section R322.3.5.

2. Pilings shall have adequate soil penetrations to resist the combined wave and wind loads (lateral and uplift). Pile embedment shall include consideration of decreased resistance capacity caused by scour of soil strata surrounding the piling.

3. Columns and their supporting foundations shall be designed to resist combined wave and wind loads, lateral and uplift, and shall include consideration of decreased resistance capacity caused by scour of soil strata surrounding the columns. Spread footing, mat, raft, or other foundations that support columns shall not be permitted

~~where soil investigations that are required in accordance with Section R401.4 indicate that soil material under the spread footing, mat, raft, or other foundation is subject to scour or erosion from wave velocity flow conditions. If permitted, spread footing, mat, raft, or other foundations that support columns shall be designed in accordance with ASCE 24.~~

~~4. Flood and wave loads shall be associated with the design flood. Wind loads shall be those required by this code.~~

~~5. Foundation designs and construction documents shall be prepared and sealed in accordance with Section R322.3.9.~~

~~Exception: In Coastal A zones, stem wall foundations supporting a floor system above and backfilled with soil or gravel to the underside of the floor system shall be permitted provided that the foundations are designed to account for wave action, debris impact, erosion and local scour. Where soils are susceptible to erosion and local scour, stem wall foundations shall have deep footings to account for the loss of soil.~~

55. Change R324.6.2.1 to read <u>(items 1 and 2 remain)</u>:

    R324.6.2.1 Alternative setback at ridge. Where an automatic sprinkler system is installed within the dwelling in accordance with NFPA 13D, 13,13R, or Section P2904, setbacks at ridges shall comply with one of the following:

    ~~1. For photovoltaic arrays occupying not more than 66% of the plan view total roof area, not less than an 18-inch (457 mm) clear setback is required on both sides of a horizontal ridge.~~

    ~~2. For photovoltaic arrays occupying more than 66% of the plan view total roof area, not less than a 36-inch (914 mm) clear setback is required on both sides of a horizontal ridge.~~

56. ~~Add Section R326.1.1 to read:~~

    ~~R326.1.1 Changes to the ISPSC. The following change shall be made to the ISPSC:~~

    ~~1. Change Section 305.2.9 to read:~~

    ~~305.2.9 Equipment clear zone. Equipment, including pool equipment such as pumps, filters, and heaters shall not be installed within 36 inches (914 mm) of the exterior of the barrier when located on the same property.~~

57. Add Section ~~R328~~ <u>R331</u> Radon-Resistant Construction.

58. Add Section ~~R328.1~~ <u>R331.1</u> to read:

    ~~R328.1~~ <u>R331.1</u> Local enforcement of radon requirements. Following official action under Article 7 (§ 15.2-2280 et seq.) of Chapter 22 of Title 15.2 of the Code of Virginia by a locality in areas of high radon potential, as indicated by Zone 1 on the U.S. EPA Map of Radon Zones (IRC Figure AF101), such locality shall enforce the provisions contained in Appendix ~~F~~ <u>AF</u>.

    Exception: Buildings or portions thereof with crawl space foundations which are ventilated to the exterior shall not be required to provide radon-resistant construction.

59. Add Section ~~R329~~ <u>R332</u> Patio Covers.

60. Add Section ~~R329.1~~ <u>R332.1</u> to read:

    ~~R329.1~~ <u>R332.1</u> Use of Appendix ~~H~~ <u>AH</u> for patio covers. Patio covers shall comply with the provisions in Appendix ~~H~~ <u>AH</u>.

61. Add Section ~~R330~~ <u>R333</u> Sound Transmission.

62. Add Section ~~R330.1~~ <u>R333.1</u> to read:

~~R330.1~~ R333.1 Sound transmission between dwelling units. Construction assemblies separating dwelling units shall provide airborne sound insulation as required in Appendix ~~K~~ AK.

63. Add Section ~~R330.2~~ R333.2 to read:

    ~~R330.2~~ R333.2 Airport noise attenuation. This section applies to the construction of the exterior envelope of detached one-~~family~~ and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories high with separate means of egress within airport noise zones when enforced by a locality pursuant to § 15.2-2295 of the Code of Virginia. The exterior envelope of such structures shall comply with Section 1206.4 of the state amendments to the IBC.

64. Add Section ~~R331~~ R334 Fire Extinguishers.

65. Add Section ~~R331.1~~ R334.1 to read:

    ~~R331.1~~ R334.1 Kitchen areas. Other than where the dwelling is equipped with an approved sprinkler system in accordance with Section R313, a fire extinguisher having a rating of 2-A:10-B:C or an approved equivalent type of fire extinguisher shall be installed in the kitchen area.

66. Add Section ~~R332~~ R335 Interior Passage.

67. Add Sections ~~R332.1~~ R335.1 through ~~R332.6~~ R335.6 to read:

    ~~R332.1~~ R335.1 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.

    ~~R332.2~~ R335.2 Kitchen. One interior passage route from the egress door to the kitchen shall comply with R332.6.

    ~~R332.3~~ R335.3 Living area. One interior passage route from the egress door to at least one living area shall comply with ~~R332.6~~ R335.6.

    ~~R332.4~~ R335.4 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 ~~R332.6~~ R335.6.

    ~~R332.5~~ R335.5 Bathroom. Where a dwelling unit has a bathroom on the 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 ~~R332.6~~ R335.6. Bathroom fixture clearances shall comply with R307 and access to fixtures is not required to comply with ~~R332.6~~ R335.6.

    ~~R332.6~~ R335.6 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 (864 mm) clear width.

    2. Doors shall be a nominal 34 inch (864 mm) minimum width. Double doors are permitted to be used to meet this requirement.

68. Add Section ~~R333~~ R336 Tiny Houses.

69. Add Section ~~R333.1~~ R336.1 to read:

    ~~R333.1~~ R336.1 General. Appendix ~~Q~~ AQ may be used as an alternative to the requirements of this code where a dwelling is 400 square feet (37 m^2) or less in floor area.

70. Change Section R401.3 to read:

    R401.3 Drainage. Surface drainage shall be diverted to a storm sewer conveyance or other approved point of collection that does not create a hazard to the dwelling unit.

Lots shall be graded to drain surface water away from foundation walls. The grade shall fall a minimum of six inches (152 mm) within the first 10 feet (3048 mm).

Exception: Where lot lines, walls, slopes or other physical barriers prohibit six inches (152 mm) of fall within 10 feet (3048 mm), drains or swales shall be constructed to ensure drainage away from the structure. Impervious surfaces within 10 feet (3048 mm) of the building foundation shall be sloped a minimum of 1.0% away from the building.

71. Add the following exceptions to Section R403.1 to read:

Exceptions:

1. One-story detached accessory structures used as tool and storage sheds, playhouses and similar uses, not exceeding 256 square feet (~~23.7824~~ 24m^2) of building area, provided that all of the following conditions are met:

1.1. The building eave height is 10 feet or less.

1.2. The maximum height from the finished floor level to grade does not exceed 18 inches (457mm).

1.3. The supporting structural elements in direct contact with the ground shall be placed level on firm soil and when such elements are wood they shall be approved pressure preservative treated suitable for ground contact use.

1.4. The structure is anchored to withstand wind loads as required by this code.

1.5. The structure shall be of light-frame construction whose vertical and horizontal structural elements are primarily formed by a system of repetitive wood or light gauge steel framing members, with walls and roof of light weight material, not slate, tile, brick or masonry.

2. Footings are not required for ramps serving dwelling units in Groups R-3 and R-5 occupancies where the height of the entrance is no more than 30 inches (762 mm) above grade.

72. Change Section R403.1.6 to read (exceptions remain):

R403.1.6 Foundation anchorage. Wood sill plates and wood walls supported directly on continuous foundations shall be anchored to the foundation in accordance with this section.

Cold-formed steel framing shall be anchored directly to the foundation or fastened to wood sill plates in accordance with Section R505.3.1 or R603.3.1, as applicable. Wood sill plates supporting cold-formed steel framing shall be anchored to the foundation in accordance with this section.

Wood foundation plates or sills shall be bolted or anchored to the foundation with not less than 1/2-inch-diameter (12.7 mm) steel bolts or approved anchors spaced to provide equivalent anchorage as the steel bolts. Bolts shall be embedded not less than 7 inches (178 mm) into concrete or grouted cells of concrete masonry units. The centerline of the bolts shall be located a minimum of 1.75 inches (44.5mm) from the edge of the sill plate. Bolts shall be spaced not more than 6 feet (1829 mm) on center and there shall be not less than two bolts or anchor straps per piece with one bolt or anchor strap located not more than 12 inches (305 mm) or less than 4 inches (102 mm) from each end of each piece. A properly sized nut and washer shall be tightened on each bolt to the plate. Interior bearing wall sole plates on monolithic slab foundation that are not part of a braced wall panel shall be positively anchored with approved fasteners. Sill plates and sole plates shall be protected against decay and termites where required by Sections R317 and R318. Anchor bolts shall be permitted to be

located while concrete is still plastic and before it has set. Where anchor bolts resist placement or the consolidation of concrete around anchor bolts is impeded, the concrete shall be vibrated to ensure full contact between the anchor bolts and concrete.

~~Exceptions:~~

~~1. Walls 24 inches (610 mm) total length or shorter connecting offset braced wall panels shall be anchored to the foundation with not fewer than one anchor bolt located in the center third of the plate section and shall be attached to adjacent braced wall panels at corners as shown in Item 9 of Table R602.3(1).~~

~~2. Connection of walls 12 inches (305 mm) total length or shorter connecting offset braced wall panels to the foundation without anchor bolts shall be permitted. The wall shall be attached to adjacent braced wall panels at corners as shown in Item 9 of Table R602.3(1).~~

73. Delete Section R404.1.9.2.

74. Change ~~Sections R408.1, R408.2, and~~ Item 2.4 in Section R408.3 to read:

~~R408.1 Moisture control. The under-floor space between the bottom of the floor joists and the earth under any building (except space occupied by a basement) shall comply with Section R408.2 or R408.3.~~

~~R408.2 Openings for under-floor ventilation. Ventilation openings through foundation or exterior walls surrounding the under-floor space shall be provided in accordance with this section. The minimum net area of ventilation openings shall be not 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 external corner of the under-floor space. 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 inch (6.4 mm), and operational louvers are permitted:~~

~~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.~~

~~Exceptions:~~

~~1. The total area of ventilation openings shall be permitted to be reduced to 1/1,500 of the under-floor area where the ground surface is covered with an approved Class I vapor retarder material.~~

~~2. Where the ground surface is covered with an approved Class I vapor retarder material, ventilation openings are not required to be within 3 feet (915 mm) of each external corner of the under-floor space provided the openings are placed to provide cross ventilation of the space.~~

~~R408.3 Unvented crawl space. For unvented under-floor spaces the following items shall be provided:~~

~~1. Exposed earth shall be covered with a continuous Class I vapor retarder. Joints of the vapor retarder shall overlap by 6 inches (152 mm) and shall be sealed or taped.~~

~~The edges of the vapor retarder shall extend not less than 6 inches (152 mm) up the stem wall and shall be attached and sealed to the stem wall or insulation.~~

~~2. One of the following shall be provided for the under-floor space:~~

~~2.1. Continuously operated mechanical exhaust ventilation at a rate equal to 1 cubic foot per minute (0.47 L/s) for each 50 square feet (4.7 m^2) of crawl space floor area, including an air pathway to the common area (such as a duct or transfer grille), and perimeter walls insulated in accordance with Section N1102.2.11 of this code.~~

~~2.2. Conditioned air supply sized to deliver at a rate equal to 1 cubic foot per minute (0.47 L/s) for each 50 square feet (4.7 m^2) of under-floor area, including a return air pathway to the common area (such as a duct or transfer grille), and perimeter walls insulated in accordance with Section N1102.2.11 of this code.~~

~~2.3. Plenum in existing structures complying with Section M1601.5, if under-floor space is used as a plenum.~~

2.4. Dehumidification sized to provide 70 pints (33 liters) of moisture removal per day for every 1,000 square feet (93 m^2) of crawl space floor area.

75. ~~Change the exception to Section R408.2 to read:~~

~~Exception: The total area of ventilation openings shall be permitted to be reduced to 1/1,500 of the under-floor area where the ground surface is covered with an approved Class I vapor retarder material and the required openings are placed to provide cross ventilation of the space. The installation of operable louvers shall not be prohibited nor shall the required openings need to be within three feet (915 mm) of each corner provided there is cross ventilation of the space.~~

76. Add Section R408.3.1 to read:

R408.3.1 Termite inspection. Where an unvented crawl space is installed and meets the criteria in Section R408, the vertical face of the sill plate shall be clear and unobstructed and an inspection gap shall be provided below the sill plate along the top of any interior foundation wall covering. The gap shall be a minimum of one inch (25.4 mm) and a maximum of two inches (50.8 mm) in width and shall extend throughout all parts of any foundation that is enclosed. Joints between the sill plate and the top of any interior wall covering may be sealed.

Exceptions:

1. In areas not subject to damage by termites as indicated by Table ~~R301.2(1)~~ R301.2.

2. Where other approved means are provided to inspect for potential damage.

Where pier and curtain foundations are installed as depicted in Figure ~~R404.1.5(1)~~ R404.1.5.3, the inside face of the rim joist and sill plate shall be clear and unobstructed except for construction joints which may be sealed.

Exception: Fiberglass or similar insulation may be installed if easily removable.

77. Change Section R506.2.1 to read:

R506.2.1 Fill. Fill material shall be free of vegetation and foreign material and shall be natural nonorganic material that is not susceptible to swelling when exposed to moisture. The fill shall be compacted to assure uniform support of the slab, and except where approved, the fill depth shall not exceed 24 inches (610 mm) for clean sand or gravel and 8 inches (203 mm) for earth.

Exception: Material other than natural material may be used as fill material when accompanied by a certification from an RDP and approved by the building official.

78. Change Section R506.2.2 to read:

R506.2.2 Base. A 4-inch-thick (102 mm) base course consisting of clean graded sand, gravel or crushed stone passing a 2-inch (51 mm) sieve shall be placed on the prepared subgrade when the slab is below grade.

Exception: A base course is not required when the concrete slab is installed on well drained or sand-gravel mixture soils classified as Group I according to the United Soil Classification System in accordance with Table R405.1. Material other than natural material may be used as base course material when accompanied by a certification from an RDP and approved by the building official.

79. Change Section R602.10 to read:

R602.10 Wall bracing. Buildings shall be braced in accordance with this section or Section R602.12. Where a building, or portion thereof, does not comply with one or more of the bracing requirements in this section, those portions shall be designed and constructed in accordance with Section R301.1.

The building official shall be permitted to require the permit applicant to identify braced wall lines and braced wall panels on the construction documents as described in this section and provide associated analysis. The building official shall be permitted to waive the analysis of the upper floors where the cumulative length of wall openings of each upper floor wall is less than or equal to the length of the openings of the wall directly below.

80. ~~Change~~ Add an Exception to Section R602.10.9 to read:

~~R602.10.9 Braced wall panel support. Braced wall panel support shall be provided as follows:~~

~~1. Cantilevered floor joists complying with Section R502.3.3 shall be permitted to support braced wall panels.~~

~~2. Raised floor system post or pier foundations supporting braced wall panels shall be designed in accordance with accepted engineering practice.~~

~~3. Masonry stem walls with a length of 48 inches (1219 mm) or less supporting braced wall panels shall be reinforced in accordance with Figure R602.10.9. Masonry stem walls with a length greater than 48 inches (1219 mm) supporting braced wall panels shall be constructed in accordance with Section R403.1 Methods ABW and PFH shall not be permitted to attach to masonry stem walls.~~

~~4. Concrete stem walls with a length of 48 inches (1219 mm) or less, greater than 12 inches (305 mm) tall and less than 6 inches (152 mm) thick shall have reinforcement sized and located in accordance with Figure R602.10.9.~~

Exception: For masonry stem walls, an approved post-installed adhesive anchoring system shall be permitted as an alternative to the Optional Stem Wall Reinforcement detail in Figure R602.10.9. A minimum of two anchors shall be installed as indicated in Figure R602.10.9. Anchors shall be located not more than 4 inches (102 mm) from each end of the stem wall. Anchors shall be installed into the concrete footing as follows:

1. Five-eighth inch (16 mm) treaded rod using a 3/4 inch (19 mm) diameter drilled hole with a minimum embedment of 6 inches (152 mm).

2. Number 4 size reinforcing bar using a 5/8-inch (16 mm) diameter drilled hole with a minimum embedment of 4-1/2 inches (114 mm).

A minimum footing thickness of 8 inches (203 mm) is required and the minimum distance from each anchor to the edge of the footing shall be 3-3/4 inches (95 mm). The anchoring adhesive and anchors shall be installed in accordance with the

manufacturer's instructions and have a minimum tensile capacity of 5,000 lbs. (22 kN). The bond beam reinforcement and attachment of braced wall panels to the stem wall shall be as shown in Figure R602.10.9.

81. Replace Section R602.12, including all subsections, with the following:

R602.12 Practical wall bracing. All buildings in Seismic Design Categories A and B and detached buildings in Seismic Design Category C shall be permitted to be braced in accordance with this section as an alternative to the requirements of Section R602.10. Where a building, or portion thereof, does not comply with one or more of the bracing requirements in this section, those portions shall be designed and constructed in accordance with Section R301.1. The use of other bracing provisions of Section R602.10, except as specified herein, shall not be permitted.

The building official shall be permitted to require the permit applicant to identify bracing on the construction documents and provide associated analysis. The building official shall be permitted to waive the analysis of the upper floors where the cumulative length of wall openings of each upper floor wall is less than or equal to the length of the openings of the wall directly below.

R602.12.1 Sheathing materials. The following materials shall be permitted for use as sheathing for wall bracing. Exterior walls shall be sheathed on all sheathable surfaces, including infill areas between bracing locations, above and below wall openings, and on gable end walls.

1. Wood structural panels with a minimum thickness of 7/16 inch (9.5 mm) fastened in accordance with Table R602.3(3).

2. Structural fiberboard sheathing with a minimum thickness of 1/2 inch (12.7 mm) fastened in accordance with Table R602.3(1).

3. Gypsum board with a minimum thickness of 1/2 inch (12.7 mm) fastened in accordance with Table R702.3.5 on interior walls only.

R602.12.2 Braced wall panels. Braced wall panels shall be full-height wall sections sheathed with the materials listed in Section R602.12.1 and complying with the following:

1. Exterior braced wall panels shall have a minimum length based on the height of the adjacent opening as specified in Table R602.12.2. Panels with openings on both sides of differing heights shall be governed by the taller opening when determining panel length.

2. Interior braced wall panels shall have a minimum length of 48 inches (1220 mm) when sheathing material is applied to one side. Doubled-sided applications shall be permitted to be considered two braced wall panels.

3. Braced wall panels shall be permitted to be constructed of Methods ABW, PFH, PFG, and CS-PF in accordance with Section R602.10.4.

4. Exterior braced wall panels, other than the methods listed in Item 3 above shall have a finish material installed on the interior. The finish material shall consist of 1/2 inch (12.7 mm) gypsum board or equivalent and shall be permitted to be omitted where the required length of bracing, as determined in Section R602.12.4, is multiplied by 1.40, unless otherwise required by Section R302.6.

5. Vertical sheathing joints shall occur over and be fastened to common studs.

6. Horizontal sheathing joints shall be edge nailed to 1-1/2 inch (38 mm) minimum thick common blocking.

Table R602.12.2 Braced Wall Panel Lengths						
Location	Wall Height (feet)					
	8	9	10	11	12	
	Minimum Panel Length (inches)					
Adjacent garage door of one-story garage[a]	24	27	30	33	36	
Adjacent all other openings[b]						
Clear opening height (inches) ≤ 64	24	27	30	33	36	
Clear opening height (inches) ≤ 72	27	27	30	33	36	
Clear opening height (inches) ≤ 80	30	30	30	33	36	
Clear opening height (inches) > 80	36	36	36	40	40	
For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm. a. Braced wall panels supporting a gable end wall or roof load only. b. Interpolation shall be permitted.						

R602.12.3 Circumscribed rectangle. Required length of bracing shall be determined by circumscribing one or more rectangles around the entire building or portions thereof as shown in Figure R602.12.3. Rectangles shall surround all enclosed offsets and projections such as sunrooms and attached garages. Chimneys, partial height projections, and open structures, such as carports and decks, shall be excluded from the rectangle. Each rectangle shall have no side greater than 80 feet (24,384 mm) with a maximum 3:1 ratio between the long and short side. Rectangles shall be permitted to be skewed to accommodate angled projections as shown in Figure R602.12.4.3.

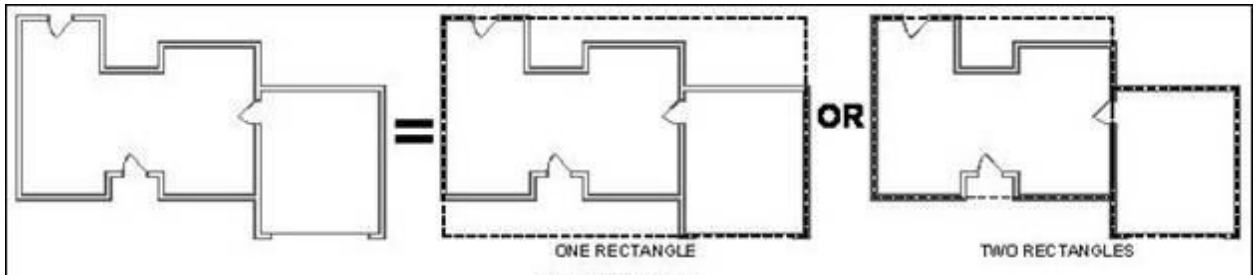


FIGURE R602.12.3
CIRCUMSCRIBED RECTANGLES

R602.12.4 Required length of bracing. The required length of bracing for each side of a circumscribed rectangle shall be determined using Table R602.12.4. Where multiple

rectangles share a common side or sides, the required length of bracing shall equal the sum of the required lengths from all shared rectangle sides.

Table R602.12.4
Required Length of Bracing Along Each Side of a Circumscribed Rectangle[a,b,c]

Wind Speed	Eave-to-Ridge Height (feet)	Number of Floor Levels Above[e,f]	Required Length of Bracing on Front/Rear Side (feet)								Required Length of Bracing on Left/Right Side (feet)							
			Length of Left/Right Side (feet)								Length of Front/Rear Side (feet)							
			10	20	30	40	50	60	70	80	10	20	30	40	50	60	70	80
115	10	0	2.0	3.5	5.0	6.0	7.5	9.0	10.5	12.0	2.0	3.5	5.0	6.0	7.5	9.0	10.5	12.0
		1[d]	3.5	6.5	9.0	12.0	14.5	17.0	19.8	22.6	3.5	6.5	9.0	12.0	14.5	17.0	19.8	22.6
		2[d]	5.0	9.5	13.5	17.5	21.5	25.0	29.2	33.4	5.0	9.5	13.5	17.5	21.5	25.0	29.2	33.4
	15	0	2.6	4.6	6.5	7.8	9.8	11.7	13.7	15.7	2.6	4.6	6.5	7.8	9.8	11.7	13.7	15.7
		1[d]	4.0	7.5	10.4	13.8	16.7	19.6	22.9	26.2	4.0	7.5	10.4	13.8	16.7	19.6	22.9	26.2
		2[d]	5.5	10.5	14.9	19.3	23.7	27.5	32.1	36.7	5.5	10.5	14.9	19.3	23.7	27.5	32.1	36.7
	20	0	2.9	5.2	7.3	8.8	11.1	13.2	15.4	17.6	2.9	5.2	7.3	8.8	11.1	13.2	15.4	17.6
		1[d]	4.5	8.5	11.8	15.6	18.9	22.1	25.8	29.5	4.5	8.5	11.8	15.6	18.9	22.1	25.8	29.5
		2[d]	6.2	11.9	16.8	21.8	27.3	31.1	36.3	41.5	6.2	11.9	16.8	21.8	27.3	31.1	36.3	41.5
130	10	0	2.5	4.0	6.0	7.5	9.5	11.0	12.8	14.6	2.5	4.0	6.0	7.5	9.5	11.0	12.8	14.6
		1[d]	4.5	8.0	11.0	14.5	18.0	21.0	24.5	28.0	4.5	8.0	11.0	14.5	18.0	21.0	24.5	28.0
		2[d]	6.0	11.5	16.5	21.5	26.5	31.0	36.2	41.4	6.0	11.5	16.5	21.5	26.5	31.0	36.2	41.4
	15	0	3.4	5.2	7.8	9.8	12.4	14.3	16.7	19.1	3.4	5.2	7.8	9.8	12.4	14.3	16.7	19.1
		1[d]	5.2	9.2	12.7	16.7	20.7	24.2	28.2	32.2	5.2	9.2	12.7	16.7	20.7	24.2	28.2	32.2

		2[d]	6.6	12.7	18.2	23.7	29.2	34.1	39.8	45.5	6.6	12.7	18.2	23.7	29.2	34.1	39.8	45.5
	20	0	3.8	5.9	8.8	11.1	14.0	16.2	18.9	21.6	3.8	5.9	8.8	11.1	14.0	16.2	18.9	21.6
		1[d]	5.9	10.4	14.4	18.9	23.4	27.3	31.8	36.3	5.9	10.4	14.4	18.9	23.4	27.3	31.8	36.3
		2[d]	7.5	14.4	20.6	26.8	33.0	38.5	44.9	51.3	7.5	14.4	20.6	26.8	33.0	38.5	44.9	51.3

For SI: 1 ft = 304.8 mm.

a. Interpolation shall be permitted; extrapolation shall be prohibited.

b. For Exposure Category C, multiply the required length of bracing by a factor of 1.20 for a one-story building, 1.30 for a two-story building, and 1.40 for a three-story building.

c. For wall height adjustments multiply the required length of bracing by the following factors: 0.90 for 8 feet (2438 mm), 0.95 for 9 feet (2743 mm), 1.0 for 10 feet (3048 mm), 1.05 for 11 feet (3353 mm), and 1.10 for 12 feet (3658 mm).

d. Where braced wall panels supporting stories above have been sheathed in wood structural panels with edge fasteners spaced at 4 inches (102 mm) on center, multiply the required length of bracing by 0.83.

e. A floor level, habitable or otherwise, contained wholly within the roof rafters or trusses shall not be considered a floor level for purposes of determining the required length of bracing.

f. A rectangle side with differing number of floor levels above shall use the greatest number when determining the required length of bracing.

R602.12.4.1 Braced wall panel assignment to rectangle sides. Braced wall panels shall be assigned to the applicable rectangle side and contribute to its required length of bracing. Panels shall be assigned as specified below and as shown in Figure R602.12.4.1.

1. Exterior braced wall panels shall be assigned to the parallel rectangle side on which they are located or in which they face.

2. Interior braced wall panels shall be assigned to the parallel rectangle side on which they are located or in which they face up to 4 feet (1220 mm) away. Interior braced wall panels more than 4 feet (1220 mm) away from a parallel rectangle side shall not contribute.

3. The projections of angled braced wall panels shall be assigned to the adjacent rectangle sides.

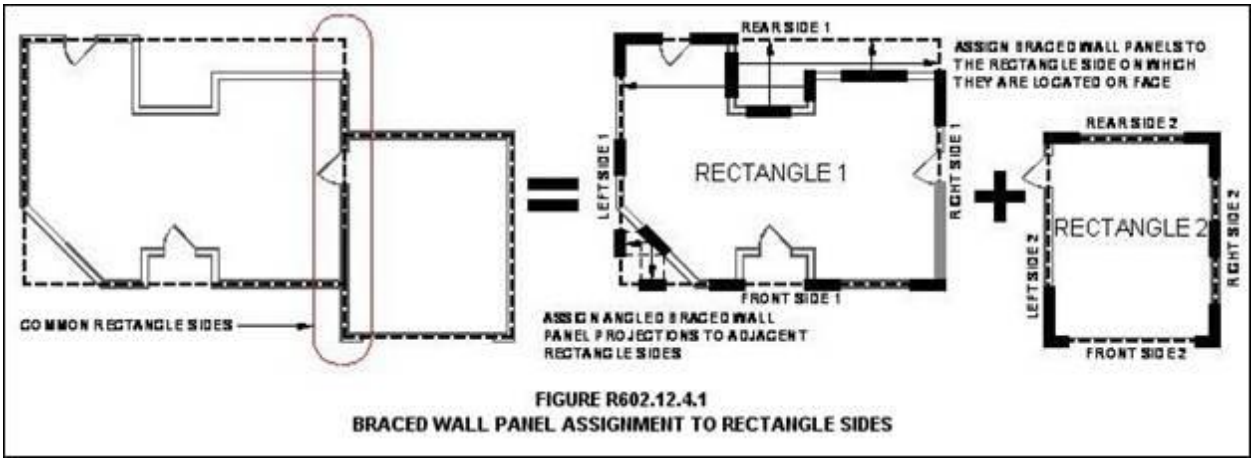


FIGURE R602.12.4.1
BRACED WALL PANEL ASSIGNMENT TO RECTAINGLE SIDES

R602.12.4.2 Contributing length. The cumulative contributing length of braced wall panels assigned to a rectangle side shall be greater than or equal to the required length of bracing as determined in Section R602.12.4. The contributing length of a braced wall panel shall be as specified below. When applying contributing length to angled braced wall panels, apply the requirements below to each projection:

1. Exterior braced wall panels shall contribute their actual length.

2. Interior braced wall panels shall contribute one-half of their actual length.

3. The contributing length of Methods ABW, PFH, PFG, and CS-PF shall be in accordance with Table R602.10.5.

R602.12.4.3 Common sides with skewed rectangles. Braced wall panels located on a common wall where skewed rectangles intersect, as shown in Figure R602.12.4.3, shall be permitted to be assigned to the parallel rectangle side, and their projections shall be permitted to be assigned to the adjacent skewed rectangle sides.

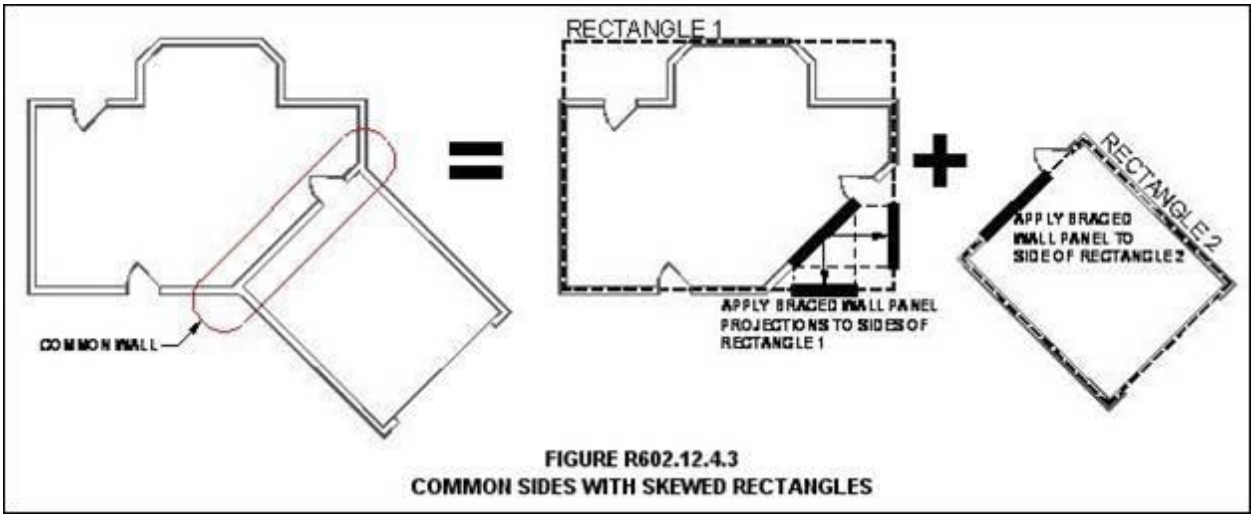


FIGURE R602.12.4.3
COMMON SIDES WITH SKEWED RECTANGLES

R602.12.5 Cripple walls and framed walls of walk-out basements. For rectangle sides with cripple walls having a maximum height of 48 inches (1220 mm), the required length of bracing shall be as determined in Section R602.12.4. For rectangle sides with cripple walls having a height greater than 48 inches (1220 mm) at any location or framed walls of a walk-out basement, the required length of bracing shall be determined using Table R602.12.4. Braced wall panels within cripple walls and walls of walk-out basements shall comply with Item 4 of Section R602.12.2.

R602.12.6 Distribution of braced wall panels. Braced wall panels shall be distributed in accordance with the following requirements as shown in Figure R602.12.6.

1. The edge of a braced wall panel shall be no more than 12 feet (3658 mm) from any building corner or rectangle corner.

2. The distance between adjacent edges of braced wall panels shall be no more than 20 feet (6096 mm).

3. Segments of exterior walls greater than 8 feet (2438 mm) in length shall have a minimum of one braced wall panel.

4. Segments of exterior wall 8 feet (2438 mm) or less in length shall be permitted to have no braced wall panels.

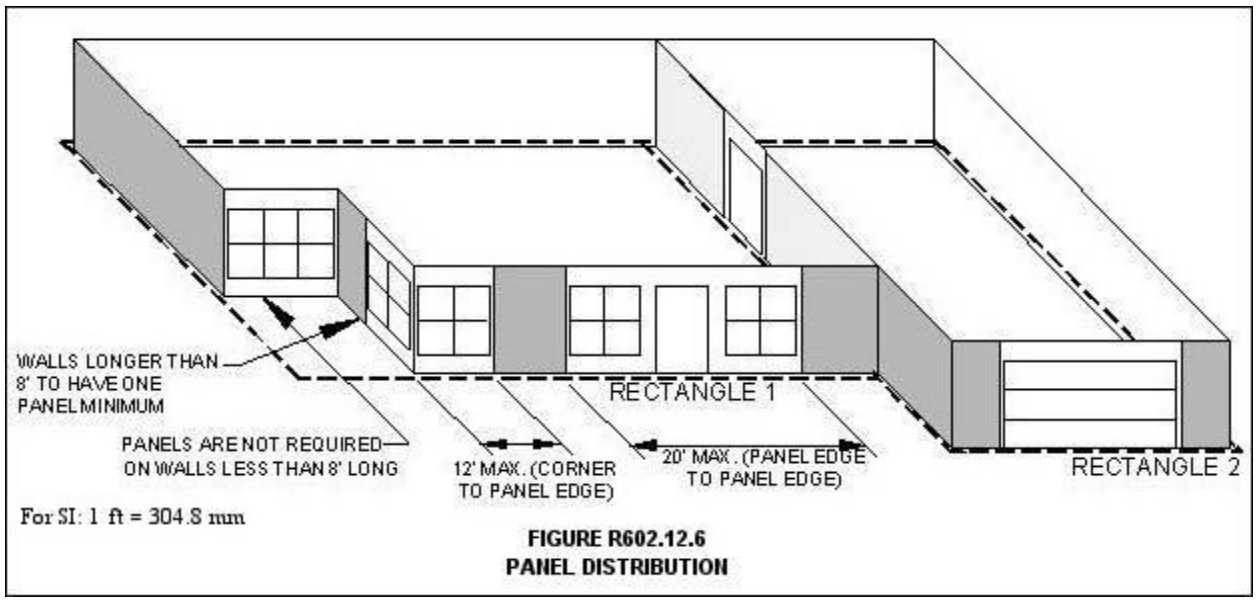


FIGURE R602.12.6
PANEL DISTRIBUTION

R602.12.6.1 Panels adjacent to balloon framed walls. Braced wall panels shall be placed on each side of each story adjacent to balloon framed walls designed in accordance with Section R602.3 with a maximum height of two stories.

R602.12.7 Braced wall panel connection. Braced wall panels shall be connected to other structural elements in accordance with Section R602.10.8.

R602.12.8 Braced wall panel support. Braced wall panels shall be supported in accordance with Section R602.10.9.

82. ~~Change Section R609.4 to read:~~

~~R609.4 Garage doors. Garage doors shall be tested in accordance with either ASTM E330 or ANSI/DASMA 108, and shall meet the pass/fail criteria of ANSI/DASMA 108.~~

83. ~~Add Section R609.4.1 to read:~~

~~R609.4.1 Garage door labeling. Garage doors shall be labeled with a permanent label affixed to the garage door by the manufacturer. The label shall identify the garage door manufacturer, the garage door model/series number, the positive and negative design wind pressure rating, the installation instruction drawing reference number, and the applicable test standard.~~

84. Delete Section R905.2.8.5.

85. Change Section R1001.8 to read:

R1001.8 Smoke chamber. Smoke chamber walls shall be constructed of solid masonry units, hollow masonry units grouted solid, stone, or concrete. The total

minimum thickness of front, back, and side walls shall be 8 inches (203 mm) of solid masonry. When the inside surface of the smoke chamber is formed by corbelled masonry, the inside surface shall be parged smooth. When a lining of firebrick at least 2 inches (51 mm) thick, or a lining of vitrified clay at least 5/8 inch (16 mm) thick, is provided, the total minimum thickness of front, back, and side walls shall be 6 inches (152 mm) of solid masonry, including the lining. Firebrick shall conform to ASTM C 1261 and shall be laid with medium duty refractory mortar conforming to ASTM C 199. Vitrified clay linings shall conform to ASTM C 315.

~~86. Change Section N1101.13 (R401.2) to read:~~

~~N1101.13 (R401.2) Compliance. Projects shall comply with all provisions of Chapter 11 labeled "Mandatory" and one of the following:~~

~~1. Sections N1101.14 through N1104.~~

~~2. Section N1105.~~

~~3. Section N1106.~~

~~4. The most recent version of REScheck, keyed to the 2018 IECC.~~

~~87. Change Section N1101.14 (R401.3). to read:~~

~~N1101.14 (R401.3) Certificate mandatory. A permanent certificate shall be completed by the builder or other approved party and posted on a wall in the space where the furnace is located, a utility room or an approved location inside the building. Where located on an electrical panel, the certificate shall not cover or obstruct the visibility of the circuit directory label, service disconnect label, or other required labels. The certificate shall indicate the predominant R-values of insulation installed in or on ceilings, roofs, walls, or foundation components, such as slabs, basement walls, crawl space walls, and floors and ducts outside conditioned spaces; U-factors of fenestration and the solar heat gain coefficient (SHGC) of fenestration; and the results from any required duct system and building envelope air leakage testing performed on the building. Where there is more than one value for each component, the certificate shall indicate the value covering the largest area. The certificate shall indicate the types and efficiencies of heating, cooling, and service water heating equipment. Where a gas-fired unvented room heater, electric furnace, or baseboard electric heater is installed in the residence, the certificate shall indicate "gas-fired unvented room heater," "electric furnace," or "baseboard electric heater," as appropriate. An efficiency shall not be indicated for gas-fired unvented room heaters, electric furnaces, and electric baseboard heaters.~~

88. Change the wood frame wall R-value categories for climate ~~zone 4 (Except Marine)~~ zones 3A, 4A and 5A in Table ~~N1102.1.2 (R402.1.2)~~ N1102.1.3 (R402.1.3) to read:

		Wood Frame Wall R-Value
		15 or 13+1[h]

89. Change the frame wall U-factor categories for climate ~~zone 4 (Except Marine)~~ zones 3A, 4A and 5A in Table ~~N1102.1.4 (R402.1.4)~~ N1102.1.2 (R402.1.2) to read:

		Frame Wall U-Factor
		0.079

90. Change Section N1102.2.4 (R402.2.4) to read:

N1102.2.4 (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% 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.

91. ~~Change Sections N1102.4 (R402.4) and N1102.4.1.1 (R402.4.1.1) to read:~~

~~N1102.4 (R402.4) Air leakage. The building thermal envelope shall be constructed to limit air leakage in accordance with the requirements of Sections N1102.4.1 through N1102.4.5.~~

~~N1102.4.1.1 (R402.4.1.1) Installation (Mandatory). The components of the building thermal envelope as listed in Table N1102.4.1.1 shall be installed in accordance with the manufacturer's instructions and the criteria listed in Table N1102.4.1.1, as applicable to the method of construction. Where required by the code official, an approved third party shall inspect all components and verify compliance.~~

92. Change the title of the "Insulation Installation Criteria" category of Table N1102.4.1.1 (R402.4.1.1); change the "Shower/tub on exterior wall" category of Table N1102.4.1.1 (R402.4.1.1), and add footnotes ~~"b" and~~ "c" and “d” to Table N1102.4.1.1 (R402.4.1.1) to read:

Component	Air Barrier Criteria	Insulation Installation Criteria[~~b~~,d]
Shower/tub on exterior wall[c]	The air barrier installed at exterior walls adjacent to showers and tubs shall be installed on the interior side and separate the exterior walls from the showers and tubs.	Exterior walls adjacent to showers and tubs shall be insulated.
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. ~~b.~~ d. Structural integrity of headers shall be in accordance with the applicable building code.		

93. Change Section N1102.4.1.2 (R402.4.1.2) to read (exception remains):

N1102.4.1.2 (R402.4.1.2)

Testing. The building or dwelling unit shall be tested and verified as having an air leakage rate not exceeding five air changes per hour in Climate Zone 4. Testing shall be conducted in accordance with RESNET/ICC 380, ASTM E 779, or ASTM E 1827 and reported at a pressure of 0.2 inches w.g. (50 Pa). 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 conducted by a Virginia licensed general contractor, a Virginia licensed HVAC contractor, a Virginia licensed home inspector, a Virginia registered design professional, a certified BPI Envelope Professional, a certified HERS rater, or a certified duct and envelope tightness rater. The party conducting the test shall have been trained on the equipment used to perform the test. Testing shall be performed at any time after creation of all penetrations of the building thermal envelope.

Note: Should additional sealing be required as a result of the test, consideration may be given to the issuance of temporary certificate of occupancy in accordance with Section 116.1.1.

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.

93A. Change Section N1102.4.1.3 (R402.4.1.3) to read:

R402.4.1.3 Leakage rate: When complying with Section R401.2.1, the building or dwelling unit shall have an air leakage rate not exceeding 5.0 air changes per hour in Climate Zones 3 through 5, when tested in accordance with Section R402.4.1.2.

94. Change Section ~~N1103.3.3 (R403.3.3)~~ N1103.3.5 (R403.3.5) to read:

~~N1103.3.3 (R403.3.3)~~ N1103.3.5 (R403.3.5) Duct testing (Mandatory). Ducts shall be pressure tested in accordance with ANSI/RESNET/ICC 380 or ASTM E1554 to determine air leakage by one 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.

A written report of the results of the test shall be signed by the party conducting the test and provided to the code official. The licensed mechanical contractor installing the mechanical system shall be permitted to perform the duct testing. The contractor shall have been trained on the equipment used to perform the test.

94A Delete item 3 of Section N1103.3.6 (R403.3.6).

95. Delete Section ~~N1103.3.5 (R403.3.5)~~ N1103.3.7 (R403.3.7).

96. Change Section N1103.7 (R403.7) to read:

N1103.7 (R403.7) 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.

97. Change ~~footnote "a" in Table R406.4~~ Section N1106.3.2 (R406.3.2) to read:

When onsite renewable energy is included for compliance using the ERI analysis per Section R406.4, the building shall meet the mandatory requirements of Section R406.2 and the building thermal envelope shall be greater than or equal to levels of energy efficiency and solar heat gain coefficient in Table R402.1.2, with a ceiling R-value of 49 and a wood frame wall R-value of 20 or 13+5, or Table R402.1.4, with a ceiling U-factor of 0.026 and a frame wall U-factor of 0.060.

~~a. When onsite renewable energy is included for compliance using the ERI analysis per Section N1106.4 (R406.4), the building shall meet the mandatory requirements of Section N1106.2 (R406.2) and the building thermal envelope shall be greater than or equal to levels of energy efficiency and solar heat gain coefficient in Table N1102.1.2 (R402.1.2), with a ceiling R-value of 49 and a wood frame wall R-value of 20 or 13 + 5, or Table N1102.1.4 (R402.1.4), with a ceiling U-factor of 0.026 and a frame wall U-factor of 0.060.~~

98. Change Section ~~N1107.1~~ N1109.1 (R501.1) and delete Sections ~~N1107.1.1~~ N1109.1.1 (R501.1.1) through ~~N1107.6~~ N1109.6 (R501.6).

~~N1107.1~~ N1109.1 (R501.1) Scope. The provisions of the Virginia Existing Building Code shall control the alteration, repair, addition, and change of occupancy of existing buildings and structures.

99. Change Section ~~N1108.1~~ N1110.1 (R502.1) and delete Sections ~~N1108.1.1(R502.1.1)~~ 1110.2 (R502.2) through ~~N1108.1.2 (R502.1.2)~~ N1110.3.4 (R502.3.4).

~~N1108.1 (R502.1.1)~~ N1110.1 (R502.1) General. Additions to an existing building, building system or portion thereof shall conform to the provisions of Section ~~811~~ 805 of the VEBC.

100. Change Section ~~N1109.1~~ N1111.1 (R503.1) and delete Sections ~~N1109.1.1~~ N1111.1.1 (R503.1.1) through ~~N1109.2 (R503.2)~~ N1111.1.4 (R503.1.4).

~~N1109.1~~ N1111.1 (R503.1) General. Alterations to any building or structure shall comply with the requirements of Chapter 6 of the VEBC.

101. Change Section ~~N1110.1~~ N1112.1 (R504.1) and delete Section ~~N1110.2~~ N1112.2 (R504.2).

~~N1110.1~~ N1112.1 (R504.1) General. Buildings and structures, and parts thereof, shall be repaired in compliance with Section ~~510~~ 507 of the VEBC.

102. ~~Delete Section N1109.1.1.1 (R503.1.1.1).~~

103. Change Section M1401.3 to read:

M1401.3 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.

104. Add Section M1501.2 to read:

M1501.2 Transfer air. Air transferred from occupiable spaces other than kitchens, baths, and toilet rooms shall not be prohibited from serving as makeup air for exhaust systems. Transfer openings between spaces shall be of the same cross-sectional area as the free area of the makeup air openings. Where louvers and grilles are installed, the required size of openings shall be based on the net free area of each opening. Where the design and free area of louvers and grilles are not known, it shall be assumed that wood louvers will have 25% free area and metal louvers and grilles will have 75% free area.

105. Change Section M1502.4.2 to read:

M1502.4.2 Duct installation. Exhaust ducts shall be supported at 4-foot (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. Ducts shall not be joined with screws or similar fasteners that protrude into the inside of the duct. Where dryer exhaust ducts are enclosed in wall or ceiling cavities, such cavities shall allow the installation of the duct without deformation.

106. Change Section M1503.6 to read:

M1503.6 Makeup air required. Exhaust hood systems capable of exhausting more than 400 cubic feet per minute (0.19 m^3/s) shall be provided with makeup air at a rate approximately equal to the exhaust air rate in excess of 400 cubic feet per minute (0.19

m^3/s). Such makeup air systems shall be equipped with a means of closure and shall be automatically controlled to start and operate simultaneously with the exhaust system.

Exception: Intentional openings for makeup air are not required for kitchen exhaust systems capable of exhausting not greater than 600 cubic feet per minute (0.28 m^3/s) provided that one of the following conditions is met:

1. Where the floor area within the air barrier of a dwelling unit is at least 1,500 square feet (139.35 m^2), and where natural draft or mechanical draft space-heating or water-heating appliances are not located within the air barrier.

2. Where the floor area within the air barrier of a dwelling unit is at least 3,000 square feet (278.71 m^2), and where natural draft space-heating or water-heating appliances are not located within the air barrier.

107. Add an exception to item 7 in Section M1602.2 to read:

Exception: The return air within a two-family dwelling constructed without fire separations in accordance with Exception 3 of Section R302.3 shall be permitted to discharge into either dwelling unit.

108. Add Section M1801.1.1 to read:

M1801.1.1 Equipment changes. Upon the replacement or new installation of any fuel-burning appliances or equipment in existing buildings, an inspection or inspections shall be conducted to ensure that the connected vent or chimney systems comply with the following:

1. Vent or chimney systems are sized in accordance with this code.

2. Vent or chimney systems are clean, free of any obstruction or blockages, defects or deterioration and are in operable condition.

Where not inspected by the local building department, persons performing such changes or installations shall certify to the building official that the requirements of Items 1 and 2 of this section are met.

109~~. Change Sections G2411.1 and G2411.2 to read:~~

~~G2411.1 Pipe and tubing. Each above-group portion of a gas piping system that is likely to become energized shall be electrically continuous and bonded to an effective ground-fault current path. Gas piping 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/CSA 6.26 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/CSA 6.26, Section G2411.2 shall apply.~~

~~G2411.2 CSST without arc resistant jacket or coating system. 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/CSA 6.26 shall be bonded to the electrical service grounding electrode system or, where provided, the lightning protection electrode system and shall comply with Sections G2411.2.1 through G2411.2.5.~~

110. Add Section G2425.1.1 to read:

G2425.1.1 Equipment changes. Upon the replacement or new installation of any fuel-burning appliances or equipment in existing buildings, an inspection or inspections

shall be conducted to ensure that the connected vent or chimney systems comply with the following:

1. Vent or chimney systems are sized in accordance with this code.

2. Vent or chimney systems are clean, free of any obstruction or blockages, defects, or deterioration and are in operable condition.

Where not inspected by the local building department, persons performing such changes or installations shall certify to the building official that the requirements of Items 1 and 2 of this section are met.

111. Change Section G2439.7.2 to read:

G2439.7.2 Duct installation. Exhaust ducts shall be supported at 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 into the inside of the duct. Where dryer exhaust ducts are enclosed in wall or ceiling cavities, such cavities shall allow the installation of the duct without deformation.

112. Change Section P2601.2 to read:

P2601.2 Connections. Plumbing fixtures, drains and appliances used to receive or discharge liquid wastes or sewage shall be directly connected to the sanitary drainage system of the building or premises, in accordance with the requirements of this code. This section shall not be construed to prevent indirect waste systems.

Exception: Bathtubs, showers, lavatories, clothes washers and laundry trays shall not be required to discharge to the sanitary drainage system where such fixtures discharge to an approved nonpotable gray water system in accordance with the applicable provisions of Sections P2910, P2911, and P2912.

113. Change Section P2602.1 to read:

P2602.1 General. The water and drainage system of any building or premises where plumbing fixtures are installed shall be connected to a public or private water supply and a public or private sewer system. As provided for in Section 103.5 of Part I of the Virginia Uniform Statewide Building Code (13VAC5-63) for functional design, water supply sources and sewage disposal systems are regulated and approved by the Virginia Department of Health and the Virginia Department of Environmental Quality.

Note: See also the Memorandums of Agreement in the "Related Laws Package," which is available from the Virginia Department of Housing and Community Development.

114. Add Section P2602.3 to read:

P2602.3 Tracer wire. Nonmetallic water service 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 service 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 service pipe 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.

115. Change Section P2801.6 to read:

P2801.6 Required pan. Where a storage tank-type water heater or a hot water storage tank is installed in a location where water leakage from the tank will cause damage, the tank shall be installed in a pan constructed of one of the following:

1. Galvanized steel or aluminum of not less than 0.0236 inch (0.6010 mm) in thickness.
2. Plastic not less than 0.036 inch (0.9 mm) in thickness.
3. Other ~~approves~~ approved materials.

A plastic pan shall not be installed beneath a gas-fired water heater.

116. Add Section P2901.1.1 to read:

P2901.1.1 Nonpotable fixtures and outlets. Nonpotable water shall be permitted to serve nonpotable type fixtures and outlets in accordance with the applicable provisions of Sections P2910, P2911, and P2912.

116A Change Section P2902.6 of the IRC to read:

P2902.6 Location of backflow preventers. Access for inspection, testing, service, repair, and replacement shall be provided to backflow prevention assemblies. Backflow prevention assemblies shall be installed between 12 inches (305 mm) and 60 inches (1525 mm) from grade, floor level or service platform and as specified by the manufacturer's instructions. Where the manufacturer's listed installation height conflicts with this requirement, the manufacturer's listed heights shall apply. Access shall be provided to backflow prevention devices and as specified by the manufacturer's instructions.

117. Change Section P2903.5 to read:

P2903.5 Water hammer. The flow velocity of the water distribution system shall be controlled to reduce the possibility of water hammer. A water-hammer arrestor shall be installed where quick-closing valves are utilized, unless otherwise approved. Water hammer arrestors shall be installed in accordance with manufacturer's specifications. Water hammer arrestors shall conform to ASSE 1010.

118. Change Section P2904.1 to read:

P2904.1 General. The design and installation of residential fire sprinkler systems shall be in accordance with NFPA 13D, 13, 13R, or Section P2904, which shall be considered to be equivalent to NFPA 13D. Partial residential sprinkler systems shall be permitted to be installed only in buildings not required to be equipped with a residential sprinkler system. Section P2904 shall apply to stand-alone and multipurpose wet-pipe sprinkler systems that do not include the use of antifreeze. A multipurpose fire sprinkler system shall provide domestic water to both fire sprinklers and plumbing fixtures. A stand-alone sprinkler system shall be separate and independent from the water distribution system. A backflow preventer shall not be required to separate a sprinkler system from the water distribution system, provided that the sprinkler system complies with all of the following:

1. The system complies with NFPA 13D, 13, 13R, or Section P2904.
2. The piping material complies with Section P2906.
3. The system does not contain antifreeze.
4. The system does not have a fire department connection.

119. Change Section P2906.2.1 to read:

P2906.2.1 Lead content of drinking water pipe and fittings. Pipe, pipe fittings, joints, valves, faucets, and fixture fittings utilized to supply water for drinking or cooking purposes shall comply with NSF 372.

120. Change Sections P2910.1 through P2910.14, including subsections, to read:

P2910.1 Scope. The provisions of this section shall govern the materials, design, construction, and installation of nonpotable water systems subject to this code.

P2910.1.1 Design of nonpotable water systems. All portions of nonpotable water systems subject to this code shall be constructed using the same standards and requirements for the potable water systems or drainage systems as provided for in this code unless otherwise specified in this section or Section P2911 or P2912, as applicable.

P2910.2 Makeup water. Makeup water shall be provided for all nonpotable water supply systems. The makeup water system shall be designed and installed to provide supply of water in the amounts and at the pressures specified in this code. The makeup water supply shall be potable and be protected against backflow in accordance with the applicable requirements of Section P2902.

P2910.2.1 Makeup water sources. Nonpotable water shall be permitted to serve as makeup water for gray water and rainwater systems.

P2910.2.2 Makeup water supply valve. A full-open valve shall be provided on the makeup water supply line.

P2910.2.3 Control valve alarm. Makeup water systems shall be fitted with a warning mechanism that alerts the user to a failure of the inlet control valve to close correctly. The alarm shall activate before the water within the storage tank begins to discharge into the overflow system.

P2910.3 Sizing. Nonpotable water distribution systems shall be designed and sized for peak demand in accordance with approved engineering practice methods that comply with the applicable provisions of this chapter.

P2910.4 Signage required. All nonpotable water outlets, other than water closets and urinals, such as hose connections, open ended pipes, and faucets shall be identified at the point of use for each outlet with signage that reads as follows: "Nonpotable water is utilized for (insert application name). Caution: nonpotable water. DO NOT DRINK." The words shall be legibly and indelibly printed on a tag or sign constructed of corrosion-resistant waterproof material or shall be indelibly printed on the fixture. The letters of the words shall be not less than 0.5 inches (12.7 mm) in height and in colors in contrast to the background on which they are applied. The pictograph shown in Figure P2910.4 shall appear on the signage required by this section.

Figure P2910.4
Pictograph DO NOT DRINK

P2910.5 Potable water supply system connections. Where a potable water supply system is connected to a nonpotable water system, the potable water supply shall be

protected against backflow in accordance with the applicable provisions of Section P2902.

P2910.6 Nonpotable water system connections. Where a nonpotable water system is connected and supplies water to another nonpotable water system, the nonpotable water system that supplies water shall be protected against backflow in accordance with the applicable provisions of Section P2902.

P2910.7 Approved components and materials. Piping, plumbing components, and materials used in the nonpotable water drainage and distribution systems shall be approved for the intended application and compatible with the water and any disinfection or treatment systems used.

P2910.8 Insect and vermin control. Nonpotable water systems shall be protected to prevent the entrance of insects and vermin into storage and piping systems. Screen materials shall be compatible with system material and shall not promote corrosion of system components.

P2910.9 Freeze protection. Nonpotable water systems shall be protected from freezing in accordance with the applicable provisions of Chapter 26.

P2910.10 Nonpotable water storage tanks. Nonpotable water storage tanks shall be approved for the intended application and comply with Sections P2910.10.1 through P2910.10.12.

P2910.10.1 Sizing. The holding capacity of storage tanks shall be sized for the intended use.

P2910.10.2 Inlets. Storage tank inlets shall be designed to introduce water into the tank and avoid agitating the contents of the storage tank. The water supply to storage tanks shall be controlled by fill valves or other automatic supply valves designed to stop the flow of incoming water before the tank contents reach the overflow pipes.

P2910.10.3 Outlets. Outlets shall be located at least 4 inches (102 mm) above the bottom of the storage tank and shall not skim water from the surface.

P2910.10.4 Materials and location. Storage tanks shall be constructed of material compatible with treatment systems used to treat water. Above grade storage vessels shall be constructed using opaque, UV-resistant materials such as tinted plastic, lined metal, concrete, or wood or painted to prevent algae growth. Above grade storage tanks shall be protected from direct sunlight unless their design specifically incorporates the use of the sunlight heat transfer. Wooden storage tanks shall be provided with a flexible liner. Storage tanks and their manholes shall not be located directly under soil or waste piping or sources of contamination.

P2910.10.5 Foundation and supports. Storage tanks shall be supported on a firm base capable of withstanding the storage tank's weight when filled to capacity. Storage tanks shall be supported in accordance with the applicable provisions of the IBC.

P2910.10.5.1 Ballast. Where the soil can become saturated, an underground storage tank shall be ballasted, or otherwise secured, to prevent the effects of buoyancy. The combined weight of the tank and hold down ballast shall meet or exceed the buoyancy force of the tank. Where the installation requires a foundation, the foundation shall be flat and shall be designed to support the storage tank weight when full, consistent with the bearing capability of adjacent soil.

P2910.10.5.2 Structural support. Where installed below grade, storage tank installations shall be designed to withstand earth and surface structural loads without damage.

P2910.10.6 Overflow. The storage tank shall be equipped with an overflow pipe having a diameter not less than that shown in Table P2910.10.6. The overflow outlet shall discharge at a point not less than 6 inches (152 mm) above the roof or roof drain, floor or floor drain, or over an open water-supplied fixture. The overflow outlet shall terminate through a check valve. Overflow pipes shall not be directed on walkways. The overflow drain shall not be equipped with a shutoff valve. A minimum of one cleanout shall be provided on each overflow pipe in accordance with the applicable provisions of Section P3005.2.

Table P2910.10.6
Sizes for Overflow Pipes for Water Supply Tanks

Maximum Capacity of Water Supply Line to Tank (gpm)	Diameter of Overflow Pipe (inches)
0 - 50	2
50 - 150	2-1/2
150 - 200	3
200 - 400	4
400 - 700	5
700 - 1,000	6
Over 1,000	8

For SI: 1 inch = 25.4 mm, 1 gallon per minute = 3.785 L/m.

P2910.10.7 Access. A minimum of one access opening shall be provided to allow inspection and cleaning of the tank interior. Access openings shall have an approved locking device or other approved method of securing access. Below grade storage tanks, located outside of the building, shall be provided with either a manhole not less than 24 inches (610 mm) square or a manhole with an inside diameter not less than 24 inches (610 mm). The design and installation of access openings shall prohibit surface water from entering the tank. Each manhole cover shall have an approved locking device or other approved method of securing access.

Exception: Storage tanks under 800 gallons (3028 L) in volume installed below grade shall not be required to be equipped with a manhole, but shall have an access opening not less than 8 inches (203 mm) in diameter to allow inspection and cleaning of the tank interior.

P2910.10.8 Venting. Storage tanks shall be vented. Vents shall not be connected to the sanitary drainage system. Vents shall be at least equal in size to the internal diameter of the drainage inlet pipe or pipes connected to the tank. Where installed at grade, vents shall be protected from contamination by means of a U-bend installed with the opening directed downward. Vent outlets shall extend a minimum of 12 inches (304.8 mm) above grade, or as necessary to prevent surface water from entering the storage tank. Vent openings shall be protected against the entrance of vermin and insects. Vents serving gray water tanks shall terminate in accordance with the applicable provisions of Sections P3103 and P2910.8.

P2910.10.9 Drain. Where drains are provided, they shall be located at the lowest point of the storage tank. The tank drain pipe shall discharge as required for overflow pipes

and shall not be smaller in size than specified in Table P2910.10.6. A minimum of one cleanout shall be provided on each drain pipe in accordance with Section P3005.2.

P2910.10.10 Labeling and signage. Each nonpotable water storage tank shall be labeled with its rated capacity and the location of the upstream bypass valve. Underground and otherwise concealed storage tanks shall be labeled at all access points. The label shall read: "CAUTION: NONPOTABLE WATER - DO NOT DRINK." Where an opening is provided that could allow the entry of personnel, the opening shall be marked with the words: "DANGER - CONFINED SPACE." Markings shall be indelibly printed on a tag or sign constructed of corrosion-resistant waterproof material mounted on the tank or shall be indelibly printed on the tank. The letters of the words shall be not less than 0.5 inches (12.7 mm) in height and shall be of a color in contrast with the background on which they are applied.

P2910.10.11 Storage tank tests. Storage tanks shall be tested in accordance with the following:

1. Storage tanks shall be filled with water to the overflow line prior to and during inspection. All seams and joints shall be left exposed and the tank shall remain water tight without leakage for a period of 24 hours.

2. After 24 hours, supplemental water shall be introduced for a period of 15 minutes to verify proper drainage of the overflow system and verify that there are no leaks.

3. Following a successful test of the overflow system, the water level in the tank shall be reduced to a level that is at 2 inches (50.8 mm) below the makeup water offset point. The tank drain shall be observed for proper operation. The makeup water system shall be observed for proper operation, and successful automatic shutoff of the system at the refill threshold shall be verified. Water shall not be drained from the overflow at any time during the refill test.

4. Air tests shall be permitted in lieu of water testing as recommended by the tank manufacturer or the tank standard.

P2910.10.12 Structural strength. Storage tanks shall meet the applicable structural strength requirements of the IBC.

P2910.11 Trenching requirements for nonpotable water system piping. Underground nonpotable water system piping shall be horizontally separated from the building sewer and potable water piping by 5 feet (1524 mm) of undisturbed or compacted earth. Nonpotable water system piping shall not be located in, under, or above sewage systems cesspools, septic tanks, septic tank drainage fields, or seepage pits. Buried nonpotable water system piping shall comply with the requirements of this code for the piping material installed.

Exceptions:

1. The required separation distance shall not apply where the bottom of the nonpotable water pipe within 5 feet (1524 mm) of the sewer is equal to or greater than 12 inches (305 mm) above the top of the highest point of the sewer and the pipe materials ~~conforms~~ conform to Table P3002.2.

2. The required separation distance shall not apply where the bottom of the potable water service pipe within 5 feet (1524 mm) of the nonpotable water pipe is a minimum of 12 inches (305 mm) above the top of the highest point of the nonpotable water pipe and the pipe materials comply with the requirements of Table P2906.5.

3. Nonpotable water pipe is permitted to be located in the same trench with building sewer piping, provided that such sewer piping is constructed of materials that comply with the requirements of Table P3002.1(2).

4. The required separation distance shall not apply where a nonpotable water pipe crosses a sewer pipe, provided that the pipe is sleeved to at least 5 feet (1524 mm) horizontally from the sewer pipe centerline on both sides of such crossing with pipe materials that comply with Table P3002.1(2).

5. The required separation distance shall not apply where a potable water service pipe crosses a nonpotable water pipe provided that the potable water service pipe is sleeved for a distance of at least 5 feet (1524 mm) horizontally from the centerline of the nonpotable pipe on both sides of such crossing with pipe materials that comply with Table P3002.1(2).

P2910.12 Outdoor outlet access. Sillcocks, hose bibs, wall hydrants, yard hydrants, and other outdoor outlets that are supplied by nonpotable water shall be located in a locked vault or shall be operable only by means of a removable key.

P2910.13 Drainage and vent piping and fittings. Nonpotable drainage and vent pipe and fittings shall comply with the applicable material standards and installation requirements in accordance with provisions of Chapter 30.

P2910.13.1 Labeling and marking. Identification of nonpotable drainage and vent piping shall not be required.

P2910.14 Pumping and control system. Mechanical equipment, including pumps, valves, and filters, shall be accessible and removable in order to perform repair, maintenance, and cleaning. The minimum flow rate and flow pressure delivered by the pumping system shall be designed for the intended application in accordance with the applicable provisions of Section P2903.

121. Add Sections P2910.15 through P2910.18, including subsections, to read:

P2910.15 Water-pressure reducing valve or regulator. Where the water pressure supplied by the pumping system exceeds 80 psi (552 kPa) static, a pressure-reducing valve shall be installed to reduce the pressure in the nonpotable water distribution system piping to 80 psi (552 kPa) static or less. Pressure-reducing valves shall be specified and installed in accordance with the applicable provisions of Section P2903.3.1.

P2910.16 Distribution pipe. Distribution piping utilized in nonpotable water ~~stems~~ systems shall comply with Sections P2910.16.1 through P2910.16.4.

P2910.16.1 Materials, joints, and connections. Distribution piping and fittings shall comply with the applicable material standards and installation requirements in accordance with the applicable provisions of Chapter 29.

P2910.16.2 Design. Distribution piping shall be designed and sized in accordance with the applicable provisions of Chapter 29.

P2910.16.3 Labeling and marking. Distribution piping labeling and marking shall comply with Section P2901.2.

P2910.16.4 Backflow prevention. Backflow preventers shall be installed in accordance with the applicable provisions of Section P2902.

P2910.17 Tests and inspections. Tests and inspections shall be performed in accordance with Sections P2910.17.1 through P2910.17.5.

P2910.17.1 Drainage and vent pipe test. Drain, waste, and vent piping used for gray water and rainwater nonpotable water systems shall be tested in accordance with the applicable provisions of Section P2503.

P2910.17.2 Storage tank test. Storage tanks shall be tested in accordance with the Section P2910.10.11.

P2910.17.3 Water supply system test. Nonpotable distribution piping shall be tested in accordance with Section P2503.7.

P2910.17.4 Inspection and testing of backflow prevention assemblies. The testing of backflow preventers and backwater valves shall be conducted in accordance with Section P2503.8.

P2910.17.5 Inspection of vermin and insect protection. Inlets and vent terminations shall be visually inspected to verify that each termination is installed in accordance with Section P2910.10.8.

P2910.18 Operation and maintenance manuals. Operations and maintenance materials for nonpotable water systems shall be provided as prescribed by the system component manufacturers and supplied to the owner to be kept in a readily accessible location.

122. Change the title of Section P2911 to "Gray Water Nonpotable Water Systems."

123. Change Sections P2911.1 through P2911.6, including subsections, to read:

P2911.1 Gray water nonpotable water systems. This code is applicable to the plumbing fixtures, piping or piping systems, storage tanks, drains, appurtenances, and appliances that are part of the distribution system for gray water within buildings and to storage tanks and associated piping that are part of the distribution system for gray water outside of buildings. This code does not regulate equipment used for, or the methods of, processing, filtering, or treating gray water, which may be regulated by the Virginia Department of Health or the Virginia Department of Environmental Quality.

P2911.1.1 Separate systems. Gray water nonpotable water systems, unless approved otherwise under the permit from the Virginia Department of Health, shall be separate from the potable water system of a building with no cross connections between the two systems except as permitted by the Virginia Department of Health.

P2911.2 Water quality. Each application of gray water reuse shall meet the minimum water quality requirements set forth in Sections P2911.2.1 through P2911.2.4 unless otherwise superseded by other state agencies.

P2911.2.1 Disinfection. Where the intended use or reuse application for nonpotable water requires disinfection or other treatment or both, it shall be disinfected as needed to ensure that the required water quality is delivered at the point of use or reuse.

P2911.2.2 Residual disinfectants. Where chlorine is used for disinfection, the nonpotable water shall contain not more than 4 parts per million (4 mg/L) of free chlorine, combined chlorine, or total chlorine. Where ozone is used for disinfection, the nonpotable water shall not exceed 0.1 parts per million (by volume) of ozone at the point of use.

P2911.2.3 Filtration. Water collected for reuse shall be filtered as required for the intended end use. Filters shall be accessible for inspection and maintenance. Filters shall utilize a pressure gauge or other approved method to indicate when a filter requires servicing or replacement. Shutoff valves installed immediately upstream and downstream of the filter shall be included to allow for isolation during maintenance.

P2911.2.4 Filtration required. Gray water utilized for water closet and urinal flushing applications shall be filtered by a 100 micron or finer filter.

P2911.3 Storage tanks. Storage tanks utilized in gray water nonpotable water systems shall comply with Section P2910.10.

P2911.4 Retention time limits. Untreated gray water shall be retained in storage tanks for a maximum of 24 hours.

P2911.5 Tank location. Storage tanks shall be located with a minimum horizontal distance between various elements as indicated in Table P2911.5.1.

	Table P2911.5.1 Location of Nonpotable Gray Water Reuse Storage Tanks	
	Element	Minimum Horizontal Distance from Storage Tank (feet)
	Lot line adjoining private lots	5
	Sewage systems	5
	Septic tanks	5
	Water wells	50
	Streams and lakes	50
	Water service	5
	Public water main	10

P2911.6 Valves. Valves shall be supplied on gray water nonpotable water drainage systems in accordance with Sections P2911.6.1 and P2911.6.2.

P2911.6.1 Bypass valve. One three-way diverter valve certified to NSF 50 or other approved device shall be installed on collection piping upstream of each storage tank, or drainfield, as applicable, to divert untreated gray water to the sanitary sewer to allow servicing and inspection of the system. Bypass valves shall be installed downstream of fixture traps and vent connections. Bypass valves shall be labeled to indicate the direction of flow, connection, and storage tank or drainfield connection. Bypass valves shall be provided with access for operation and maintenance. Two shutoff valves shall not be installed to serve as a bypass valve.

P2911.6.2 Backwater valve. Backwater valves shall be installed on each overflow and tank drain pipe to prevent unwanted water from draining back into the storage tank. If the overflow and drain piping arrangement is installed to physically not allow water to drain back into the tank, such as in the form of an air gap, backwater valves shall not be required. Backwater valves shall be constructed and installed in accordance with Section P3008.

124. Delete Sections P2911.7 through P2911.13, including subsections.

125. Change the title of Section P2912 to "Rainwater Nonpotable Water Systems."

126. Change Sections P2912.1 through P2912.10, including subsections, to read:

P2912.1 General. The provisions of this section shall govern the design, construction, installation, alteration, and repair of rainwater nonpotable water systems for the collection, storage, treatment, and distribution of rainwater for nonpotable applications. The provisions of CSA B805/ICC 805 shall be permitted as an alternative to the provisions contained in this section for the design, construction, installation, alteration, and repair of rainwater nonpotable water systems for the collection, storage, treatment, and distribution of rainwater for nonpotable applications. Roof runoff or stormwater runoff collection surfaces shall be limited to roofing materials, public pedestrian accessible roofs, and subsurface collection identified in CSA B805/ICC 805 Table 7.1. Stormwater runoff shall not be collected from any other surfaces.

P2912.2 Water quality. Each application of rainwater reuse shall meet the minimum water quality requirements set forth in Sections P2912.2.1 through P2912.2.4 unless otherwise superseded by other state agencies.

P2912.2.1 Disinfection. Where the intended use or reuse application for nonpotable water requires disinfection or other treatment or both, it shall be disinfected as needed to ensure that the required water quality is delivered at the point of use or reuse.

P2912.2.2 Residual disinfectants. Where chlorine is used for disinfection, the nonpotable water shall contain not more than 4 parts per million (4 mg/L) of free chlorine, combined chlorine, or total chlorine. Where ozone is used for disinfection, the nonpotable water shall not exceed 0.1 parts per million (by volume) of ozone at the point of use.

P2912.2.3 Filtration. Water collected for reuse shall be filtered as required for the intended end use. Filters shall be accessible for inspection and maintenance. Filters shall utilize a pressure gauge or other approved method to indicate when a filter requires servicing or replacement. Shutoff valves installed immediately upstream and downstream of the filter shall be included to allow for isolation during maintenance.

P2912.2.4 Filtration required. Rainwater utilized for water closet and urinal flushing applications shall be filtered by a 100 micron or finer filter.

P2912.3 Collection surface. Rainwater shall be collected only from aboveground impervious roofing surfaces constructed from approved materials. Overflow or discharge piping from appliances or equipment or both, including evaporative coolers, water heaters, and solar water heaters shall not discharge onto rainwater collection surfaces.

P2912.4 Collection surface diversion. At a minimum, the first 0.04 inches (1.016 mm) of each rain event of 25 gallons (94.6 L) per 1,000 square feet (92.9 m^2) shall be diverted from the storage tank by automatic means and not require the operation of manually operated valves or devices. Diverted water shall not drain onto other collection surfaces that are discharging to the rainwater system or to the sanitary sewer. Such water shall be diverted from the storage tank and discharged in an approved location.

P2912.5 Pre-tank filtration. Downspouts, conductors, and leaders shall be connected to a pre-tank filtration device. The filtration device shall not permit materials larger than 0.015 inches (0.4 mm).

P2912.6 Roof gutters and downspouts. Gutters and downspouts shall be constructed of materials that are compatible with the collection surface and the rainwater quality for the desired end use. Joints shall be made watertight.

P2912.6.1 Slope. Roof gutters, leaders, and rainwater collection piping shall slope continuously toward collection inlets. Gutters and downspouts shall have a slope of not less than 1 unit in 96 units along their entire length, and shall not permit the collection or pooling of water at any point.

P2912.6.2 Size. Gutters and downspouts shall be installed and sized in accordance with local rainfall rates.

P2912.6.3 Cleanouts. Cleanouts or other approved openings shall be provided to permit access to all filters, flushes, pipes, and downspouts.

P2912.7 Storage tanks. Storage tanks utilized in rainwater nonpotable water systems shall comply with Section P2910.10.

P2912.8 Location. Storage tanks shall be located with a minimum horizontal distance between various elements as indicated in Table P2912.8.1.

	Table P2912.8.1 Location of Rainwater Storage Tanks	
	Element	Minimum Horizontal Distance from Storage Tank (feet)
	Lot line adjoining private lots	5
	Sewage systems	5
	Septic tanks	5

P2912.9 Valves. Valves shall be installed in collection and conveyance drainage piping of rainwater nonpotable water systems in accordance with Sections P2912.9.1 and P2912.9.2.

P2912.9.1 Influent diversion. A means shall be provided to divert storage tank influent to allow maintenance and repair of the storage tank system.

P2912.9.2 Backwater valve. Backwater valves shall be installed on each overflow and tank drain pipe to prevent unwanted water from draining back into the storage tank. If the overflow and drain piping arrangement is installed to physically not allow water to drain back into the tank, such as in the form of an air gap, backwater valves shall not be required. Backwater valves shall be constructed and installed in accordance with Section P3008.

P2912.10 Tests and inspections. Tests and inspections shall be performed in accordance with Sections P2912.10.1 and P2912.10.2.

P2912.10.1 Roof gutter inspection and test. Roof gutters shall be inspected to verify that the installation and slope is in accordance with Section P2912.6.1. Gutters shall be tested by pouring a minimum of one gallon of water into the end of the gutter opposite the collection point. The gutter being tested shall not leak and shall not retain standing water.

P2912.10.2 Collection surface diversion test. A collection surface diversion test shall be performed by introducing water into the gutters or onto the collection surface area. Diversion of the first quantity of water in accordance with the requirements of Section P2912.4 shall be verified.

127. Delete Sections P2912.11 through P2912.16, including subsections.

128. Delete Section P2913 in its entirety.

129. Add Section P3002.2.2 to read:

P3002.2.2 Tracer wire. Nonmetallic sanitary sewer piping that discharges 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 sewer within 12 inches (305 mm) of the pipe and shall be installed from within five feet of the building wall to the point where the building sewer intersects with the public system. At a minimum, one end of the wire shall terminate above grade in an accessible location that is resistant to physical damage, such as with a cleanout or at the building wall.

130. ~~Add Section P3012 Relining Building Sewers and Building Drains.~~

~~131. Add Sections P3012.1 through P3012.10 to read:~~

~~P3012.1 General. This section shall govern the relining of existing building sewers and building draining piping.~~

~~P3012.2 Applicability. The relining of existing building sewer and building drainage piping shall be limited to gravity drainage piping that is 4 inches (102 mm) in diameter and larger. The relined piping shall be of the same nominal size as the existing piping.~~

~~P3012.3 Pre-installation requirements. Prior to commencement of the relining installation, the existing piping sections to be relined shall be descaled and cleaned. After the cleaning process has occurred and water has been flushed through the system, the piping shall be inspected internally by a recorded video camera survey.~~

~~P3012.3.1 Pre-installation recorded video camera survey. The video survey shall include verification of the project address location. The video shall include notations of the cleanout and fitting locations, and the approximate depth of the existing piping. The video shall also include notations of the length of piping at intervals no greater than 25 feet.~~

~~P3012.4 Permitting. Prior to permit issuance, the code official shall review and evaluate the pre-installment recorded video camera survey to determine if the piping system is capable to be relined in accordance with the proposed lining system manufacturer's installation requirements and applicable referenced standards.~~

~~P3012.5 Prohibited applications. Where review of the pre-installation recorded video camera survey reviews that piping systems are not installed correctly or defects exist, relining shall not be permitted. The defective portions of piping shall be exposed and repaired with pipe and fittings in accordance with this code. Defects shall include backgrade or insufficient slope, complete pipe wall deterioration, or complete separations such as from tree root invasion or improper support.~~

~~P3012.6 Relining materials. The relining materials shall be manufactured in compliance with applicable standards and certified as required in Section 303. Fold-and-form pipe reline materials shall be manufactured in compliance with ASTM F1504 or ASTM F1871.~~

~~P3012.7 Installation. The installation of relining materials shall be performed in accordance with the manufacturer's installation instructions, applicable referenced standards, and this code.~~

~~P3012.7.1 Material data report. The installer shall record the data as required by the relining material manufacture and applicable standards. The recorded data shall include the location of the project, relining material type, amount of product installed, and conditions of the installation. A copy of the data report shall be provided to the code official prior to final approval.~~

~~P3012.8 Post-installation recorded video camera survey. The completed relined piping system shall be inspected internally by a recorded video camera survey after the system has been flushed and flow tested with water. The video survey shall be submitted to the code official prior to finalization of the permit. The video survey shall be reviewed and evaluated to provide verification that no defects exist. Any defects identified shall be repaired and replaced in accordance with this code.~~

~~P3012.9 Certification. A certification shall be provided in writing to the code official, from the permit holder, that the relining materials have been installed in accordance with the manufacturer's installation instructions, the applicable standards and this code.~~

~~P3012.10 Approval. Upon verification of compliance with the requirements of Sections P3011.1 through P3011.9, the code official shall approve the installation.~~

132. Add an exception to Section P3301.1 to read:

Exception: Rainwater nonpotable water systems shall be permitted in accordance with the applicable provisions of Sections P2910 and P2912.

133. Delete the exception for Section P3003.9.2.

134. Add Section ~~E3601.8~~ E3601.9 to read:

~~E3601.8~~ E3601.9 Energizing service equipment. The building official shall give permission to energize the electrical service equipment of a one-family or two-family dwelling unit when all of the following requirements have been approved:

1. The service wiring and equipment, including the meter socket enclosure, shall be installed and the service wiring terminated.

2. The grounding electrode system shall be installed and terminated.

3. At least one receptacle outlet on a ground fault protected circuit shall be installed and the circuit wiring terminated.

4. Service equipment covers shall be installed.

5. The building roof covering shall be installed.

6. Temporary electrical service equipment shall be suitable for wet locations unless the interior is dry and protected from the weather.

135. Change Section E3802.4 to read:

E3802.4 In unfinished basements. Where Type SE or NM cable is run at angles with joists in unfinished basements, cable assemblies containing two or more conductors of sizes 6 AWG and larger and assemblies containing three or more conductors of sizes 8 AWG and larger shall not require additional protection where attached directly to the bottom of the joists. Smaller cables shall be run either through bored holes in joists or on running boards. Type NM or SE cable installed on the wall of an unfinished basement shall be permitted to be installed in a listed conduit or tubing or shall be protected in accordance with Table E3802.1. Conduit or tubing shall be provided with a suitable insulating bushing or adapter at the point ~~the~~ where cable enters the raceway. The sheath of the Type NM or SE cable shall extend through the conduit or tubing and into the outlet or device box not less than 1/4 inch (6.4 mm). The cable shall be secured within 12 inches (305 mm) of the point where the cable enters the conduit or tubing. Metal conduit, tubing, and metal outlet boxes shall be connected to an equipment grounding conductor complying with Section E3908.13.

136. ~~Change~~ Add exception 2 to Section ~~E3902.16~~ E3902.17 to read:

~~E3902.16 Arc-fault circuit interrupter protection. Branch circuits that supply 120-volt, single-phase, 15-ampere and 20-ampere outlets installed in kitchens, family rooms, dining rooms, living rooms, parlors, libraries dens, bedrooms, sunrooms, recreation rooms, closets, hallways, laundry areas, and similar rooms or areas 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.~~

~~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.~~

~~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 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 two 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 where GFCI protection is required in accordance with E3902 and NEC 210.8(A).

137. Change the referenced standards in Chapter 44 as follows (standards not shown remain the same):

	Standard Reference Number	Title	Referenced in Code Section Number
	~~ANSI LC1/CSA 6.26-18~~	~~Fuel Gas Piping Systems Using Corrugated~~	~~G2411.1, G2411.1.1, G2414.5.3~~

		~~Stainless Steel Tubing (CSST)~~	
	~~ASTM F1504-14~~	~~Standard Specification for Folded/Formed Poly (Vinyl Chloride) (PVC) for Existing Sewer and Conduit Rehabilitation~~	~~P3012.4, P3012.6~~
	~~ASTM F1871-11~~	~~Standard Specification for Folded/Formed Poly (Vinyl Chloride) Pipe Type A for Existing Sewer and Conduit Rehabilitation~~	~~P3012.4, P3012.6~~
	~~CSA B805-18/ICC 805-18~~	~~Rainwater Harvesting Systems~~	~~P2912.1~~
	~~NFPA 13 – 16~~ NFPA 13-19	Standard for Installation of Sprinkler Systems	R302.2.6
	~~NFPA 13D – 16~~ NFPA 13D-19	Standard for the Installation of Sprinkler Systems in one- and Two-family Dwellings and Manufactured Homes	R302.2.6, R302.13, R325.5, P2904.1, P2904.6.1
	~~NFPA 13R – 16~~ NFPA 13R-19	Standard for the Installation of Sprinkler Systems in Low Rise Residential Occupancies	R302.2.6, R302.3, R325.5

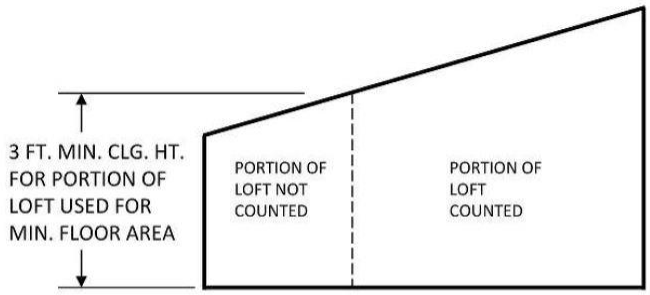
138. ~~Change Section AQ104.1.2 to read:~~

~~AQ104.1.2 Minimum horizontal dimensions. Lofts shall be not less than 5 feet (1524 mm) in any horizontal dimension.~~

139. ~~Change the exception to Section AQ104.1.3 to read:~~

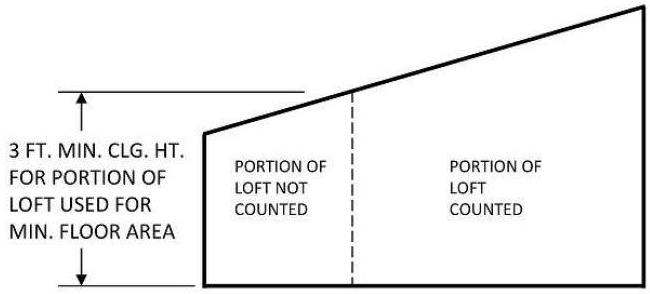
~~Exception: Under gable roofs with a minimum slope of 6 units vertical in 12 units horizontal (50% slope), portions of a loft with a sloped ceiling measuring less than 16 inches (406 mm) from the finished floor to the finished ceiling shall not be considered as contributing to the minimum required area for the loft. See Figure AQ104.1.3.~~

140. ~~Add Figure AQ104.1.3 Loft Ceiling Height.~~



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

Figure AQ104.1.3
Loft Ceiling Height



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

Figure AQ104.1.3
Loft Ceiling Height

~~141. Change Sections AQ104.2, AQ104.2.1, and AQ 104.2.1.2 to read:~~

~~AQ104.2 Loft access and egress. The access to and primary egress from lofts shall be of any type described in Sections AQ104.2.1 through AQ104.2.4. The loft access and egress element along its required minimum width shall meet the loft where its ceiling height is not less than 3 feet (914 mm).~~

~~AQ104.2.1 Stairways. Stairways accessing lofts shall comply with this code or with Sections AQ104.2.1.1 through AQ104.2.1.7.~~

~~AQ104.2.1.2 Headroom. The headroom above stairways accessing a loft shall be not less than 6 feet 2 inches (1880 mm), as measured vertically, from a sloped line connecting the tread, landing, or landing platform nosings in the center of their width, and vertically from the landing platform along the center of its width.~~

~~142. Change Sections AQ104.2.1.4 through AQ104.2.1.6 to read:~~

~~AQ104.2.1.4 Landings. Intermediate landings and landings at the bottom of stairways shall comply with Section R311.7.6, except that the depth in direction of travel shall be not less than 24 inches (610 mm).~~

~~AQ104.2.1.5 Landing platforms. The top tread and riser of stairways accessing lofts shall be constructed as a landing platform where the loft ceiling height is less than 6 feet 2 inches (1880 mm) where the stairway meets the loft. The landing platform shall~~

~~be not less than 20 inches (508 mm) in width and in depth measured horizontally from and perpendicular to the nosing of the landing platform. The landing platform riser height to the loft floor shall be not less than 16 inches (406 mm) and not greater than 18 inches (457 mm).~~

~~AQ104.2.1.6 Handrails. Handrails shall comply with Section R311.7.8.~~

~~143. Add Section AQ104.2.1.7 to read:~~

~~AQ104.2.1.7 Stairway guards. Guards at open sides of stairways, landings, and landing platforms shall comply with Section R312.1.~~

~~144. Change Sections AQ 104.2.2.1 and AQ104.2.5 to read:~~

~~AQ104.2.2.1 Size and capacity. Ladders accessing lofts shall have a rung width of not less than 12 inches (305 mm), with 10-inch (254 mm) to 14-inch (356 mm) spacing between rungs. Ladders shall be capable of supporting a 300-pound (136 kg) load on any rung. Rung spacing shall be uniform within 3/8 inch (9.5 mm).~~

~~AQ104.2.5 Loft Guards. Loft guards shall be located along the open side of lofts. Loft guards shall be not less than 36 inches (914 mm) in height or one-half of the clear height to the ceiling, whichever is less. Loft guards shall comply with Section R312.1.3 and Table R301.5 for their components.~~

S. Add "Marinas" to the list of occupancies in Section 312.1 of the IBC.

T. Add Section 313 State regulated care facilities (SRCF) to the IBC to read:

313.1 General. Notwithstanding any other requirements of this code, this section applies to the use and occupancy classification of state regulated care facilities addressed in this section.

313.2 Assisted living facilities. Assisted living facilities licensed by the Virginia Department of Social Services shall be classified as one of the occupancies specified in Sections 313.2.1 through 313.2.6.

313.2.1 Group I-1 Condition 1. Facilities with more than 16 persons receiving care, in which all persons receiving care, without any assistance, are capable of responding to an emergency situation to complete building evacuation, shall be classified as Group I-1 Condition 1. Not more than five of the persons may require physical assistance from staff to respond to an emergency, provided all persons requiring assistance reside on a level of exit discharge and the path of egress to the exit does not include steps.

313.2.2 Group I-1 Condition 2. Facilities with more than 16 persons receiving care, in which there are persons who require assistance by not more than one staff member while responding to an emergency situation to complete building evacuation, shall be classified as Group I-1 Condition 2. Not more than five of the persons may require physical assistance from more than one staff member to respond to an emergency situation.

313.2.3 Group I-2 Condition 1. Facilities with more than five persons receiving care who require assistance by more than one staff member when responding to an emergency situation to complete building evacuation, shall be classified as Group I-2 Condition 1.

313.2.4 Group R-4 Condition 1. Facilities with nine to 16 persons receiving care, where all persons receiving care, without any assistance, are capable of responding to an emergency situation to complete building evacuation shall be classified as R-4 Condition 1. Not more than five of the persons may require physical assistance from staff to respond to an emergency, provided all persons requiring assistance reside on a level of exit discharge and the path of egress to the exit does not include steps.

313.2.5 Group R-4 Condition 2. Buildings with nine to 16 persons receiving care, who may require assistance by not more than one staff member when responding to an emergency situation to complete building evacuation, shall be classified as Group R-4 Condition 2. Not more than five of the persons may require physical assistance from staff to respond to an emergency situation.

313.2.6 Group R-2, R-3, or R-5. Facilities with no more than eight persons receiving care, with one or more resident counselors, and all persons are capable of ~~respond~~ responding to an emergency situation without physical assistance from staff, may be classified as Group R-2, R-3, or R-5. Up to five of the persons may require physical assistance from staff to respond to an emergency situation when in compliance with the following:

1. All residents that require physical assistance from staff reside on a level of exit discharge and the path of egress to the exit does not include steps.

2. The building is protected by an automatic sprinkler system installed in accordance with Section 903.3 or Section P2904 of the IRC.

313.3 Family day homes. Family day homes registered or licensed by the Virginia Department of Social Services shall be classified as Group R-2, R-3, or R-5.

313.4 Group homes. Group Homes licensed by the Virginia Department of Behavioral Health and Developmental Services shall be classified as one of the occupancies specified in Sections 313.4.1 through 313.4.3.

313.4.1 Groups R-2, R-3, R-4 Condition 1 or 2, or R-5. Facilities with no more than eight persons receiving care, with one or more resident counselors, shall be classified as Group R-2, R-3, R-4 (Condition 1 or 2), or R-5. Not more than five of the persons may require physical assistance from staff to respond to an emergency situation.

313.4.2 Group R-4 Condition 1. Facilities with eight to 16 persons receiving care, where all persons, without any assistance, are capable of responding to an emergency situation to complete building evacuation shall be classified as Group R-4 Condition 1. Not more than five of the persons may require physical assistance from staff to respond to an emergency, provided all persons requiring assistance reside on a level of exit discharge and the path of egress to the exit does not include steps.

313.4.3 Group R-4 Condition 2. Facilities with eight to 16 persons receiving care or facilities with more than five persons requiring physical assistance from staff to respond to an emergency situation shall be classified as Group R-4 Condition 2.

313.5 Hospice facilities. Hospice facilities licensed by the Virginia Department of Health shall be classified as one of the occupancies specified in Sections 313.5.1 through 313.5.3.

313.5.1 Group I-2. Facilities with 16 or more persons receiving care shall be classified as Group I-2.

313.5.2 Group R-4 Condition 1. Facilities with less than 16 persons receiving care shall be classified as Group R-4 Condition 1.

313.5.3 Group R-5. Facilities with five or fewer persons receiving care are permitted to be classified as Group R-5.

13VAC5-63-220. Chapter 4 Special detailed requirements based on use and occupancy.

A. Delete Section 403.4.5 of the IBC.

B. Change Section 407.4.1.1 of the IBC to read:

407.4.1.1 Special locking arrangement. Means of egress doors shall be permitted to contain locking devices restricting the means of egress in areas in which the clinical needs of the patients require restraint of movement, where all of the following conditions are met:

1. The locks release upon activation of the fire alarm system or the loss of power.

2. The building is equipped with an approved automatic sprinkler system in accordance with Section 903.3.1.1.

3. A manual release device is provided at a nursing station responsible for the area.

4. A key-operated switch or other manual device is provided adjacent to each door equipped with the locking device. Such switch or other device, when operated, shall result in direct interruption of power to the lock -- independent of the control system electronics.

5. All staff shall have keys or other means to unlock the switch or other device or each door provided with the locking device.

C. Add Section 407.12 to the IBC to read:

407.12 Emergency power systems. Emergency power shall be provided for medical life support equipment, operating, recovery, intensive care, emergency rooms, fire detection and alarm systems in any Group I-2 occupancy licensed by the Virginia Department of Health as a hospital, nursing home or hospice facility.

D. Add Section 408.2.1 to the IBC to read:

408.2.1 Short-term holding areas. Short-term holding areas shall be permitted to comply with Section 431.

E. Change Section 408.6 of the IBC to read:

408.6 Smoke barrier. Occupancies classified as Group I-3 shall have smoke barriers complying with Sections 408.8 and 709 to divide every story occupied by residents for sleeping, or any other story having an occupant load of 50 or more persons, into no fewer than two smoke compartments.

F. Change Section 408.9 of the IBC and add Sections 408.9.1 through 408.9.3 to the IBC to read:

408.9 Smoke control. Smoke control for each smoke compartment shall be in accordance with Sections 408.9.1 through 408.9.3.

Exception: Smoke compartments with operable windows or windows that are readily breakable.

408.9.1 Locations. An engineered smoke control system shall comply with Section 909 and shall be provided in the following locations:

1. Dormitory areas.

2. Celled areas.

3. General housing areas.

4. Intake areas.

5. Medical celled or medical dormitory areas.

6. Interior recreation areas.

408.9.2 Compliance. The engineered smoke control system shall provide and maintain a tenable environment in the area of origin and shall comply with all of the following:

1. Shall facilitate the timely evacuation and relocation of occupants from the area of origin.

2. Shall be independent of exhaust systems under Chapter 5 of the IMC.

3. Duration of operation in accordance with Section 909.4.6.

4. The pressurization method shall be permitted and shall provide a minimum of 24 air changes per hour of exhaust, and 20 air changes per hour of makeup, and shall comply with Section 909.6. If the pressurization method is not utilized, the exhaust method shall be provided and shall comply with Section 909.8.

408.9.3 Corridors. Egress corridors within smoke compartments shall be kept free and clear of smoke.

G. Add Section 414.6.2 to the IBC to read:

414.6.2 Other regulations. The installation, repair, upgrade, and closure of underground and aboveground storage tanks subject to the Virginia State Water Control Board regulations 9VAC25-91 and 9VAC25-580 shall be governed by those regulations, which are hereby incorporated by reference to be an enforceable part of this code. Where differences occur between the provisions of this code and the incorporated provisions of the State Water Control Board regulations, the provisions of the State Water Control Board regulations shall apply. Provisions of the International Fire Code addressing closure of such tanks that are subject to the Virginia State Water Control Board regulations 9VAC25-91 and 9VAC25-580 shall not be applicable.

H. Change footnote "b" of Table 428.3 of the IBC to read:

b. Shall include walls, floors, ceilings, and construction supporting the floor of the laboratory suite necessary to provide separation from other portions of the building. Fire barriers shall be constructed in accordance with Section 707, and horizontal assemblies shall be constructed in accordance with Section 711.

I. Delete Section 428.3.3 of the IBC.

J. Change Section 428.3.7 of the IBC to read:

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

K. Add IBC Section 429 to read:

Section 429 Manufactured Homes and Industrialized Buildings.

429.1 General. The provisions of this section shall apply to the installation or erection of manufactured homes subject to the Virginia Manufactured Home Safety Regulations (13VAC5-95) and industrialized buildings subject to the Virginia Industrialized Building Safety Regulations (13VAC5-91).

Note: Local building departments are also responsible for the enforcement of certain provisions of the Virginia Manufactured Home Safety Regulations (13VAC5-95) and the Virginia Industrialized Building Safety Regulations (13VAC5-91) as set out in those regulations.

429.2 Site work for manufactured homes. Footing design, basements, grading, drainage, decks, stoops, porches and utility connections shall comply with the provisions of this code applicable to Group R-5 occupancies. Manufactured homes shall be classified as Group R-5 in accordance with Chapter 3 of this code. Additionally, all applicable provisions of Chapter 1 of this code, including requirements for permits, inspections, certificates of occupancy and requiring compliance, are applicable to the installation and set-up of a manufactured home. Where the installation or erection of a manufactured home utilizes components that are to be concealed, the installer shall notify the building official that an inspection is necessary and assure that an inspection is performed and approved prior to concealment of such components, unless the building official has agreed to an alternative method of verification.

429.2.1 Relocated manufactured homes. Installation, set-up, and site work for relocated manufactured homes shall comply with the provisions of this code and shall include the option of using the manufacturer's installations instructions or the federal Model Manufactured Home Installation Standards (24 CFR Part 3285) for the technical requirements.

429.2.2 Alterations and repairs to manufactured homes. Alterations and repairs to manufactured homes shall either be in accordance with federal Manufactured Home Construction and Safety Standards (24 CFR Part 3280) or in accordance with the alteration and repair provisions of this code.

429.2.3 Additions to manufactured homes. Additions to manufactured homes shall comply with this code and shall be structurally independent of the manufactured home, or when not structurally independent, shall be evaluated by an RDP to determine that the addition does not cause the manufactured home to become out of compliance with federal Manufactured Home Construction and Safety Standards (24 CFR Part 3280).

429.3 Wind load requirements for manufactured homes. Manufactured homes shall be anchored to withstand the wind loads established by the federal regulation for the area in which the manufactured home is installed. For the purpose of this code, Wind Zone II of the federal regulation shall include the cities of Chesapeake, Norfolk, Portsmouth, and Virginia Beach.

429.4 Skirting requirements for manufactured homes. As used in this section, "skirting" means a weather-resistant material used to enclose the space from the bottom of the manufactured home to

grade. In accordance with § 36-99.8 of the Code of Virginia, manufactured homes installed or relocated shall have skirting installed within 60 days of occupancy of the home. Skirting materials shall be durable, suitable for exterior exposures and installed in accordance with the manufacturer's installation instructions. Skirting shall be secured as necessary to ensure stability, to minimize vibrations, to minimize susceptibility to wind damage and to compensate for possible frost heave. Each manufactured home shall have a minimum of one opening in the skirting providing access to any water supply or sewer drain connections under the home. Such openings shall be a minimum of 18 inches (457 mm) in any dimension and not less than three square feet (0.28 m^2) in area. The access panel or door shall not be fastened in a manner requiring the use of a special tool to open or remove the panel or door. On-site fabrication of the skirting by the owner or installer of the home shall be acceptable, provided that the material meets the requirements of this code. In addition, as a requirement of this code, skirting for the installation and set-up of a new manufactured home shall also comply with the requirements of 24 CFR Part 3285 - Model Manufactured Home Installation Standards.

429.5 Site work for industrialized buildings. Site work for the erection and installation of an industrialized building shall comply with the manufacturer's installation instructions. To the extent that any aspect of the erection or installation of an industrialized building is not covered by the manufacturer's installation instructions, this code shall be applicable, including the use of the IRC for any construction work where the industrialized building would be classified as a Group R-5 building. In addition, all administrative requirements of this code for permits, inspections, and certificates of occupancy are also applicable. Further, the building official may require the submission of plans and specifications for details of items needed to comprise the finished building that are not included or specified in the manufacturer's instructions, including footings, foundations, supporting structures, proper anchorage, and the completion of the plumbing, mechanical, and electrical systems. Where the installation or erection of an industrialized building utilizes components that are to be concealed, the installer shall notify the building official that an inspection is necessary and assure that an inspection is performed and approved prior to concealment of such components, unless the building official has agreed to an alternative method of verification.

> Exception: Temporary family health care structures installed pursuant to § 15.2-2292.1 of the Code of Virginia shall not be required or permitted to be placed on a permanent foundation, but shall otherwise remain subject to all pertinent provisions of this section.

429.6 Relocated industrialized buildings; alterations and additions. Industrialized buildings constructed prior to January 1, 1972, shall be subject to Section 117 when relocated. Alterations and additions to any existing industrialized buildings shall be subject to pertinent provisions of this code. Building officials shall be permitted to require the submission of plans and specifications for the model to aid in the evaluation of the proposed alteration or addition. Such plans and specifications shall be permitted to be submitted in electronic or other available format acceptable to the building official.

429.7 Change of occupancy of industrialized buildings. Change of occupancy of industrialized buildings is regulated by the Virginia Industrialized Building Safety Regulations (13VAC5-91). When the industrialized building complies with those regulations for the new occupancy, the building official shall issue a new certificate of occupancy under the USBC.

L. Add Section 430 Aboveground Liquid Fertilizer Tanks to the IBC to read:

430.1 General. This section shall apply to the construction of ALFSTs and shall supersede any conflicting requirements in other provisions of this code. ALFSTs shall also comply with any applicable nonconflicting requirements of this code.

430.1.1 When change of occupancy rules apply. A change of occupancy to use a tank as an ALFST occurs when there is a change in the use of a tank from storing liquids other than liquid fertilizers to a use of storing liquid fertilizer and when the type of liquid fertilizer being stored has a difference of at least 20% of the specific gravity or operating temperature, or both, or a significant change in the material's compatibility.

430.2 Standards. Newly constructed welded steel ALFSTs shall comply with API 650 and TFI RMIP, as applicable. Newly constructed ALFSTs constructed of materials other than welded steel shall be constructed in accordance with accepted engineering practice to prevent the discharge of liquid fertilizer and shall be constructed of materials that are resistant to corrosion, puncture or cracking. In addition, newly constructed ALFSTs constructed of materials other than welded steel shall comply with TFI RMIP, as applicable. For the purposes of this code, the use of TFI RMIP shall be construed as mandatory and any language in TFI RMIP, such as, but not limited to, the terms "should" or "may" which indicate that a provision is only a recommendation or a guideline shall be taken as a requirement. ALFSTs shall be placarded in accordance with NFPA 704.

> Exception: Sections 4.1.4, 4.2.5, 5.1.2, 5.2.8, 5.3 and 8.1(d)(i) of TFI RMIP shall not be construed as mandatory.

430.3 Secondary containment. When ALFSTs are newly constructed and when there is a change of occupancy to use a tank as an ALFST, a secondary containment system designed and constructed to prevent any liquid fertilizer from reaching the surface water, groundwater or adjacent land before cleanup occurs shall be provided. The secondary containment system may include dikes, berms or retaining walls, curbing, diversion ponds, holding tanks, sumps, vaults, double-walled tanks, liners external to the tank, or other approved means and shall be capable of holding up to 110% of the capacity of the ALFST as certified by an RDP.

430.4 Repair, alteration and reconstruction of ALFSTs. Repair, alteration and reconstruction of ALFSTs shall comply with applicable provisions of API 653 and TFI RMIP.

430.5 Inspection. Applicable inspections as required by and in accordance with API 653 and TFI RMIP shall be performed for repairs and alterations to ALFSTS, the reconstruction of ALFSTs and when there is a change of occupancy to use a tank as an ALFST. When required by API 653 or TFI RMIP, such inspections shall occur prior to the use of the ALFST.

430.6 Abandoned ALFSTs. Abandoned ALFSTs shall comply with applicable provisions of Section 5704.2.13.2 of the IFC.

M. Add Section 431 Short-term Holding Areas to the IBC to read:

431.1 General. In all groups other than Group E, short-term holding areas shall be permitted to be classified as the main occupancy, provided all of the following are met:

> 1. Provisions are made for the release of all restrained or detained occupants of short-term holding areas at all times.

2. Aggregate area of short-term holding areas shall not occupy more than 10% of the building area of the story in which they are located and shall not exceed the tabular values for building area in Table 506.2 without building area increases.

3. Restrained or detained occupant load of each short-term holding area shall not exceed 20.

4. Aggregate restrained or detained occupant load in short-term holding areas per building shall not exceed 80.

5. Compliance with Sections 408.3.7, 408.3.8, 408.4, and 408.7 as applicable for Group I-3 occupancies.

6. Requirements of the main occupancy in which short-term holding areas are located shall be met.

7. Fire areas containing short-term holding areas shall be provided with a fire alarm system and automatic smoke detection system complying with Section 907.2.6.3 as applicable to I-3 occupancies.

8. Where each fire area containing short-term holding areas exceeds 12,000 square feet (1115 m^2), such fire areas shall be provided with an automatic sprinkler system complying with Section 903.3.

9. Short-term holding areas shall be separated from other short-term holding areas and adjacent spaces by smoke partitions complying with Section 710.

13VAC5-63-224. Chapter 5 General building heights and areas.

Change Section 502.1 to read:

502.1 Address identification. New buildings shall be provided with approved address identification. The address identification shall be legible and placed in a position that is visible from the street or road fronting the property. Address identification characters shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall not be spelled out. Each character shall be a minimum of 4 inches (102 mm) high with a minimum stroke width of 1/2 inch (12.7 mm). Where required by the fire code official, address identification shall be provided in additional approved locations to facilitate emergency response. Where access is by means of a private road and the building address cannot be viewed from the public way, a monument, pole or other approved sign or means shall be used to identify the structure.

~~**13VAC5-63-226. Chapter 6 Types of construction.**~~

~~Add Section 602.1.2 to read:~~

~~602.1.2 Alternative Provisions. As an alternative to the construction types defined in 602.2 through 602.5, buildings and structures erected or to be erected, altered, or extended in height or area may be classified as construction type IV-A, IV-B, or IV-C in accordance with Chapter 6 of the 2021 International Building Code. Buildings and structures classified as IV-A, IV-B, or IV-C shall comply with all provisions of the 2021 International Building Code and 2021 International Fire Code specific to mass timber and the~~

~~construction type of the building or structure, as well as all other applicable provisions of this code, including provisions for buildings of Type IV construction.~~

13VAC5-63-230. Chapter 7 Fire and smoke protection features.

A. Change item 5 of Section ~~703.3~~ 703.2.2 of the IBC to read:

5. Alternative protection methods as allowed by Section 112.2.

B. Change Section ~~703.7~~ 703.5 of the IBC to read:

703.7 Fire-resistance assembly marking. Where there is a concealed floor, floor-ceiling, or attic space, the fire walls, fire barriers, fire partitions, smoke barriers, or any other wall required to have protected openings or penetrations shall be designated above ceilings and on the inside of all ceiling access doors that provide access to such fire rated assemblies by signage having letters no smaller than one inch (25.4 mm) in height. Such signage shall indicate the fire-resistance rating of the assembly and the type of assembly and be provided at horizontal intervals of no more than eight feet (2438 mm).

Note: An example of suggested formatting for the signage would be "ONE HOUR FIRE PARTITION."

C. ~~Change the exception and add an exception~~ Add exception 2 to Section 705.2 of the IBC to read:

~~Exceptions:~~

~~1. Buildings on the same lot and considered as portions of one building in accordance with Section 705.3 are not required to comply with this section.~~

2. Decks and open porches of buildings of Groups R-3 and R-4.

D. Add Exception 4 to Section 706.5.2 of the IBC to read:

4. Decks and open porches of buildings in Groups R-3 and R-4.

E. Change Section 716.2.1.4 of the IBC to read:

716.2.1.4 Smoke and draft control. Fire door assemblies located in smoke barrier walls shall also meet the requirements for a smoke and draft control door assembly tested in accordance with UL 1784.

F. Change Section 717.5.3 of the IBC to read:

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. Fire dampers are not required where penetrations are tested in accordance with ASTM E119 as part of the fire resistance-rated assembly.

3. Fire and smoke dampers are not required where ducts are used as part of an approved smoke control system in accordance with Section 909.

4. Fire and smoke dampers are not required where the penetrations are in parking garage exhaust or supply shafts that are separated from other building shafts by not less than two-hour fire-resistance-rated construction.

5. Smoke dampers are not required where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

G. Add Section 717.6.2.2 to the IBC to read:

717.6.2.2 Equipment shutdown. Where ceiling radiation dampers are listed as static dampers, the HVAC equipment shall be effectively shut down to stop the airflow prior to the damper closing using one of the following methods:

1. A duct detector installed in the return duct.

2. An area smoke detector interlocked with the HVAC equipment.

3. A listed heat sensor installed in the return duct.

13VAC5-63-235. Chapter 8 Interior finishes.

Change Section 806.2 of the IBC to read:

806.2 Combustible decorative materials. In other than Group I-3, curtains, draperies, fabric hangings, and similar combustible decorative materials suspended from walls or ceilings shall comply with Section 806.4 and shall not exceed 10% of the specific wall or ceiling area to which it is attached.

Fixed or movable walls and partitions, paneling, wall pads, and crash pads applied structurally or for decoration, acoustical correction, surface insulation, or other purposes shall be considered interior finish, shall comply with Section 803, and shall not be considered decorative materials or furnishings.

Exceptions:

1. In auditoriums or similar types of spaces in Group A, the permissible amount of curtains, draperies, fabric hangings, and similar combustible decorative materials suspended from walls or ceilings shall not exceed 75% of the aggregate wall area where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, and where the material is installed in accordance with Section 803.15 of this code.

2. In auditoriums or similar types of spaces in Group A, the permissible amount of decorative materials suspended from the ceiling, located no more than 12 inches (305 mm) from the wall, not supported by the floor, and meeting the flame propagation performance criteria of NFPA 701, shall not exceed 75% of the aggregate wall area when the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

3. In Group R-2 dormitories, within sleeping units and dwelling units, the permissible amount of curtains, draperies, fabric hangings, and similar decorative materials suspended from walls or ceiling shall not exceed 50% of the aggregate walls areas where the building is equipped

throughout with an approved automatic sprinkler system installed in accordance with Section 903.3.1.

4. In Groups B and M occupancies, the amount of combustible fabric partitions suspended from the ceiling and not supported by the floor shall comply with Section 806.4 and shall not be limited.

13VAC5-63-240. Chapter 9 Fire protection systems.

A. Change Item 2 of Section 903.2.1.2 of the IBC to read:

2. The fire area has an occupant load of 100 or more in night clubs or 300 or more in other Group A-2 occupancies.

B. Change Item 2 of Section 903.2.1.3 of the IBC to read:

2. In Group A-3 occupancies other than places of religious worship, the fire area has an occupant load of 300 or more.

C. Change Item 1 of Section 903.2.3 of the IBC to read:

1. Throughout all Group E fire areas greater than 20,000 square feet (1858 m^2) in area.

D. Add Exception 4 to Section 903.2.6 to read:

4. An automatic sprinkler system shall not be required for open-sided or chain link-sided buildings and overhangs over exercise yards 200 square feet (18.58 m^2) or less in Group I-3 facilities, provided such buildings and overhangs are of noncombustible construction.

~~E. Delete Item 4 of Section 903.2.7 of the IBC.~~

F. Change Section 903.2.8 of the IBC to read:

903.2.8 Group R. An automatic sprinkler system installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R fire area, except for Group R-2 occupancies listed in the exceptions to this section when the necessary water pressure or volume, or both, for the system is not available:

Exceptions:

1. Group R-2 occupancies that do not exceed two stories, including basements that are not considered as a story above grade, and with a maximum of 16 dwelling units per fire area. Each dwelling unit shall have at least one door opening to an exterior exit access that leads directly to the exits required to serve that dwelling unit.

2. Group R-2 occupancies where all dwelling units are not more than two stories above the lowest level of exit discharge and not more than one story below the highest level of exit discharge of exits serving the dwelling unit and a two-hour fire barrier is provided between each pair of dwelling units. Each bedroom of a dormitory or boarding house shall be considered a dwelling unit under this exception.

G. Add ~~Section 903.3.1.2.3.1~~ item 5 to section 903.3.1.2.3 of the IBC to read:

~~903.3.1.2.3.1 Group R-2 Attics.~~ 5. Sprinkler protection shall be provided for attics in buildings of Type III, IV or V construction in Group R-2 occupancies that are designed or developed and marketed to senior citizens 55 years of age or older and in Group I-1 occupancies in accordance with Section 7.2 of NFPA 13R.

H. Add Section 903.3.5.1.1 to the IBC and change Section 903.3.5.2 of the IBC to Section 903.3.5.1.2; both to read as follows:

903.3.5.1.1 Limited area sprinkler systems. Limited area sprinkler systems serving fewer than 20 sprinklers on any single connection are permitted to be connected to the domestic service where a wet automatic standpipe is not available. Limited area sprinkler systems connected to domestic water supplies shall comply with each of the following requirements:

1. Valves shall not be installed between the domestic water riser control valve and the sprinklers.

Exception: An approved indicating control valve supervised in the open position in accordance with Section 903.4.

2. The domestic service shall be capable of supplying the simultaneous domestic demand and the sprinkler demand required to be hydraulically calculated by NFPA 13, NFPA 13R, or NFPA 13D.

903.3.5.1.2 Residential combination services. A single combination water supply shall be allowed provided that the domestic demand is added to the sprinkler demand as required by NFPA 13R.

I. Delete Sections 903.3.8 through 903.3.8.5 of the IBC.

J. Change Section 903.4.2 of the IBC to read:

903.4.2 Alarms. Approved audible devices shall be connected to every automatic sprinkler system. Such sprinkler water-flow alarm devices shall be activated by water flow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. Alarm devices shall be provided on the exterior of the building in an approved location. Where a fire alarm system is installed, actuation of the automatic sprinkler system shall actuate the building fire alarm system. Group R-2 occupancies that contain 16 or more dwelling units or sleeping units, any dwelling unit or sleeping unit two or more stories above the lowest level of exit discharge, or any dwelling unit or sleeping unit more than one story below the highest level of exit discharge of exits serving the dwelling unit or sleeping unit shall provide a manual fire alarm box at an approved location to activate the suppression system alarm.

K. Change Section 905.3.1 of the IBC to read:

905.3.1 Height. Class III standpipe systems shall be installed throughout buildings where four or more stories are above or below grade plane, the floor level of the highest story is located more than 30 feet (9144 mm) above the lowest level of fire department vehicle access, or where the floor level of the lowest story is located more than 30 feet (9144 mm) below the highest level of fire department vehicle access.

Exceptions:

1. Class I standpipes are allowed in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.

2. Class I manual wet standpipes are allowed in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1 or Section 903.3.2 and where the highest floor is located not more than 150 feet (45,720 mm) above the lowest level of fire department vehicle access.

3. Class I manual standpipes are allowed in open parking garages where the highest floor is located not more than 150 feet (45,720 mm) above the lowest level of fire department vehicle access.

4. Class I manual dry standpipes are allowed in open parking garages that are subject to freezing temperatures, provided that the hose connections are located as required for Class II standpipes in accordance with Section 905.5.

5. Class I standpipes are allowed in basements equipped throughout with an automatic sprinkler system.

6. In determining the lowest level of fire department vehicle access, it shall not be required to consider either of the following:

6.1. Recessed loading docks for four vehicles or less.

6.2. Conditions where topography makes access from the fire department vehicle to the building impractical or impossible.

L. Change Item 1 of Section 906.1 of the IBC to read:

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

Exceptions:

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.

M. Change Section 907.2.1.1 of the IBC to read:

907.2.1.1 System initiation in Group A occupancies with an occupant load of 1,000 or more and in certain night clubs. Activation of the fire alarm in Group A occupancies with an occupant load of 1,000 or more and in night clubs with an occupant load of 300 or more shall initiate a signal using an emergency voice and alarm communications system in accordance with Section 907.5.2.2.

Exception: Where approved, the prerecorded announcement is allowed to be manually deactivated for a period of time, not to exceed three minutes, for the sole purpose of allowing a live voice announcement from an approved, constantly attended location.

N. Change Section 907.2.3 of the IBC to read:

907.2.3 Group E. A manual fire alarm system that activates the occupant notification system meeting the requirements of Section 907.5 and installed in accordance with Section 907.6 shall be installed in Group E occupancies. When automatic sprinkler systems or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system.

Exceptions:

1. A manual fire alarm system is not required in Group E occupancies with an occupant load of 50 or less.

2. Manual fire alarm boxes are not required in Group E occupancies where all of the following apply:

2.1. Interior corridors are protected by smoke detectors.

2.2. Auditoriums, cafeterias, gymnasiums, and similar areas are protected by heat detectors or other approved detection devices.

2.3. Shops and laboratories involving dusts or vapors are protected by heat detectors or other approved detection devices.

3. Manual fire alarm boxes shall not be required in Group E occupancies where the building is equipped throughout with an approved automatic sprinkler system installed in accordance with Section 903.3.1.1, the occupant notification system will activate on sprinkler water flow and manual activation is provided from a normally occupied location.

O. Change Section 907.3.2 of the IBC to read:

907.3.2 Special locking systems. Where special locking systems are installed on means of egress doors in accordance with Section 407.4.1.1 or 1010.1.9.8, an automatic detection system shall be installed as required by that section.

P. Add an exception to Section 907.5.2.1.1 of the IBC to read:

Exception: Sound pressure levels in Group I-3 occupancies shall be permitted to be limited to only the notification of occupants in the affected smoke compartment.

Q. Delete Exception 1 from Section 907.5.2.3 of the IBC.

R. Change Section 909.6 of the IBC to read:

909.6 Pressurization method. When approved by the building official, the means of controlling smoke shall be permitted by pressure differences across smoke barriers. Maintenance of a tenable environment is not required in the smoke-control zone of fire origin.

S. Change Section 911.1.3 of the IBC to read:

911.1.3 Size. The fire command center shall be a minimum of 96 square feet (9 m^2) in area with a minimum dimension of eight feet (2438 mm).

Exception: Where it is determined by the building official, after consultation with the fire official, that specific building characteristics require a larger fire command center, the building official

may increase the minimum required size of the fire command center up to 200 square feet (19 m^2) in area with a minimum dimension of up to 10 feet (3048 mm).

T. Delete Section 912.2.2 of the IBC.

U. Change Sections 912.4 and 912.4.2 of the IBC to read:

912.4 Access. Immediate access to fire department connections shall be provided without obstruction by fences, bushes, trees, walls or any other fixed or moveable object. Access to fire department connections shall be approved by the fire official.

Exception: Fences, where provided with an access gate equipped with a sign complying with the legend requirements of this section and a means of emergency operation. The gate and the means of emergency operation shall be approved by the fire official.

912.4.2 Clear space around connections. A working space of not less than 36 inches (~~762~~ 914 mm) in width, 36 inches (914 mm) in depth and 78 inches (1981 mm) in height shall be provided in front of and to the sides of wall-mounted fire department connections and around the circumference of free-standing fire department connections, except as otherwise required or approved by the fire official.

V. Replace Section 915 of the IBC with the following:

915.1 Carbon monoxide alarms. Carbon monoxide alarms shall comply with this section.

915.2 Group I or R. Group I or R occupancies located in a building containing a fuel-burning appliance or in a building that has an attached garage shall be equipped with single-station carbon monoxide alarms. The carbon monoxide alarms shall be listed as complying with UL 2034 and be installed and maintained in accordance with NFPA 720 and the manufacturer's instructions. An open parking garage, as defined in Chapter 2, or an enclosed parking garage ventilated in accordance with Section 404 of the IMC shall not be considered an attached garage.

Exception: Sleeping units or dwelling units that do not themselves contain a fuel-burning appliance or have an attached garage but that are located in a building with a fuel-burning appliance or an attached garage, need not be equipped with single-station carbon monoxide alarms provided that:

1. The sleeping unit or dwelling unit is located more than one story above or below any story that contains a fuel-burning appliance or an attached garage;

2. The sleeping unit or dwelling unit is not connected by duct work or ventilation shafts to any room containing a fuel-burning appliance or to an attached garage; and

3. The building is equipped with a common area carbon monoxide alarm system.

915.3 Group E. Classrooms in Group E occupancies located in a building containing a fuel-burning appliance or in a building that has an attached garage or small engine or vehicle shop shall be equipped with single-station carbon monoxide alarms. The carbon monoxide alarms shall be listed as complying with UL 2034 and be installed and maintained in accordance with NFPA 720 and the manufacturer's instructions. An open parking garage, as defined in Chapter 2, or an enclosed parking garage ventilated in accordance with Section 404 of the IMC shall not be considered an attached garage.

Exception: Classrooms that do not themselves contain a fuel-burning appliance or have an attached garage but are located in a building with a fuel-burning appliance or an attached garage, need not be equipped with single-station carbon monoxide alarms provided that:

1. The classroom is located more than 100 feet from the fuel burning appliance or attached garage or located more than one story above or below any story which contains a fuel-burning appliance or attached garage; and

2. The classroom is not connected by duct work or ventilation shafts to any room containing a fuel-burning appliance.

915.4 Carbon monoxide detection systems. Carbon monoxide detection systems, which include carbon monoxide detectors and audible notification appliances, installed and maintained in accordance with this section for carbon monoxide alarms and NFPA 720 shall be permitted. The carbon monoxide detectors shall be listed as complying with UL 2075.

W. Change the title of IBC Section 918 to read:

In-Building Emergency Communications Coverage.

X. Change Section 918.1 of the IBC to read:

918.1 General. For localities utilizing public safety wireless communications, dedicated infrastructure to accommodate and perpetuate continuous in-building emergency communication equipment to allow emergency public safety personnel to send and receive emergency communications shall be provided in new buildings and structures in accordance with this section.

Exceptions:

1. Buildings of Use Groups A-5, I-4, within dwelling units of R-2, R-3, R-4, R-5, and U.

2. Buildings of Types IV and V construction without basements, that are not considered unlimited area buildings in accordance with Section 507.

3. Above grade single story buildings of less than 20,000 square feet.

4. Buildings or leased spaces occupied by federal, state, or local governments, or the contractors thereof, with security requirements where the building official has approved an alternative method to provide emergency communication equipment for emergency public safety personnel.

5. Where the owner provides technological documentation from a qualified individual that the structure or portion thereof does not impede emergency communication signals.

6. Buildings in localities that do not provide the additional communication equipment required for the operation of the system.

Y. Add Sections 918.1.1, 918.1.2, and 918.1.3 to the IBC to read:

918.1.1 Installation. The building owner shall install radiating cable, such as coaxial cable or equivalent. The radiating cable shall be installed in dedicated conduits, raceways, plenums, attics, or roofs,

compatible for these specific installations as well as other applicable provisions of this code. The locality shall be responsible for the installation of any additional communication equipment required for the operation of the system.

918.1.2 Operations. The locality will assume all responsibilities for the operation and maintenance of the emergency communication equipment. The building owner shall provide sufficient operational space within the building to allow the locality access to and the ability to operate in-building emergency communication equipment.

918.1.3 Inspection. In accordance with Section 113.3, all installations shall be inspected prior to concealment.

Z. Add Section 918.2 to the IBC to read:

918.2 Acceptance test. Upon completion of installation, after providing reasonable notice to the owner or their representative, emergency public safety personnel shall have the right during normal business hours, or other mutually agreed upon time, to enter onto the property to conduct field tests to verify that the required level of radio coverage is present at no cost to the owner. Any noted deficiencies in the installation of the radiating cable or operational space shall be provided in an inspection report to the owner or the owner's representative.

13VAC5-63-245. Chapter 10 Means of egress.

A. Delete Section 1002.2 of the IBC.

B. Change Section 1004.9 of the IBC to read:

1004.9 Posting of occupant load. Every room or space that is an assembly occupancy and where the occupant load of that room or space is 50 or more shall have the occupant load of the room or space posted for the intended configurations in a conspicuous place, near the main exit or exit access doorway from the room or space. Posted signs shall be of an approved legible permanent design and shall be maintained by the owner or the owner's authorized agent.

C. Change Exception 1 of Section 1005.3.1 of the IBC to read:

> 1. For other than Groups H and I-2 occupancies, the capacity, in inches (mm), of means of egress stairways shall be calculated by multiplying the occupant load served by such stairway by a means of egress capacity factor of 0.2 inch (5.1 mm) per occupant in buildings equipped with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

D. Change Exception 1 of Section 1005.3.2 of the IBC to read:

> 1. For other than Groups H and I-2 occupancies, the capacity, in inches (mm), of means of egress components other than stairways shall be calculated by multiplying the occupant load served by such component by a means of egress capacity factor of 0.15 inch (3.8 mm) per occupant in buildings equipped with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

E. Add Exception ~~3 of~~ 4 to Section 1006.2.1 of the IBC to read:

3. In Group R-2 and R-3 occupancies, one means of egress is permitted within and from individual dwelling units with a maximum occupant load of 20 where the dwelling unit is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and the common path of egress travel does not exceed 125 feet (38,100 mm). This exception shall also apply to Group R-2 occupancies where Section 903.2.8, Exception 1 or 2 is applicable.

F. Change the number "49" to "50" in the "Maximum Occupant Load of Space" column in the "A[c], E, M," "B," "F," and "U" rows of Table 1006.2.1 of the IBC.

G. Change the number "49" to "50" in the "Maximum Occupant Load per Story" column of the "A, B[b], E, F[b], M, U" row of Table ~~1006.3.3(2).~~ 106.3.4.2(2).

H. Change Exception 2 of Section 1007.1.1 of the IBC to read:

> 2. Where a building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, the separation distance of the exit doors or exit access doorways shall not be less than one-fourth of the length of the maximum overall diagonal dimension of the area served.

I. Change Section 1009.6.4 of the IBC to read:

> 1009.6.4 Separation. Each area of refuge shall be separated from the remainder of the story by a smoke barrier complying with Section 709 or a horizontal exit complying with Section 1026. Each area of refuge shall be designed to minimize the intrusion of smoke.
>
> Exceptions:
>
> 1. Areas of refuge located within an enclosure for interior exit stairways complying with Section 1023.
>
> 2. Areas of refuge in outdoor facilities where exit access is essentially open to the outside.
>
> 3. Areas of refuge where the area of refuge and areas served by the area of refuge are equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

J. Change Section ~~1010.1.4.4~~ 1010.2.8 of the IBC to read:

~~1010.1.4.4~~ 1010.2.8 Locking arrangements in educational occupancies. In Group E occupancies, except Group E day care facilities, and Group B educational occupancies, exit access doors from classrooms, offices, and other occupied rooms, except for exit doors and doors across corridors, shall be permitted to be provided with emergency supplemental hardware where all of the following conditions are met:

1. The door shall be capable of being opened from outside the room with a key, proprietary device provided by the manufacturer, or other approved means.

2. The door shall be openable from within the room in accordance with Section ~~1010.1.9~~ 1010.2.3, except emergency supplemental hardware is not required to comply with Chapter 11.

Note: School officials should consult with their legal counsel regarding provisions of the Americans with Disabilities Act of 1990 (42 USC § 12101 et seq.) and any other applicable requirements.

3. Installation of emergency supplemental hardware on fire door assemblies must comply with Section 716.2. Modifications shall not be made to listed panic hardware, fire door hardware, or door closures.

4. The emergency supplemental hardware shall not be capable of being used on other doors not intended to be used and shall have at least one component that requires modification to, or is permanently affixed to, the surrounding wall, floor, door, or frame assembly construction for it to properly function.

5. Employees shall engage in lockdown training procedures on how to deploy and remove the emergency supplemental hardware, and its use shall be incorporated in the approved lockdown plan complying with the SFPC.

6. The emergency supplemental hardware and its components shall be maintained in accordance with the SFPC.

7. Approved emergency supplemental hardware shall be of consistent type throughout a building.

> Exception: The building official may approve alternate types of emergency supplemental hardware in accordance with Section 110.1 when a consistent device cannot be installed.

K. Change Section ~~1010.1.6~~ 1010.1.5 of the IBC to read:

~~1010.1.6~~ 1010.1.5 Landings at doors. Landings shall have a width not less than the width of the stairway or the door, whichever is greater. Doors in the fully open position shall not reduce a required dimension by more than 7 inches (178 mm). Where a landing serves an occupant load of 50 or more, other doors, gates, or turnstiles in any position shall not reduce the landing to less than one-half its required width nor prevent a door, gate, or turnstile from opening to less than one-half of the required landing width. Landings shall have a length measured in the direction of travel of not less than 44 inches (1118 mm).

> Exception: Landing length in the direction of travel in Groups R-3 and U and within individual units of Group R-2 need not exceed 36 inches (914 mm).

L. Add an exception to Sections ~~1010.1.9~~ 1010.2 and ~~1010.1.9.1~~ 1010.2.2 of the IBC to read:

> Exception: Emergency supplemental hardware provided in accordance with Section ~~1010.1.4.4~~ 1010.2.8.

M. Change Section ~~1010.1.9.2~~ 1010.2.3 of the IBC to read:

~~1010.1.9.2~~ 1010.2.3 Hardware height. Door handles, pulls, latches, locks, and other operating devices shall be installed 34 inches (864 mm) minimum and 48 inches (1219 mm) maximum above the finished floor. Emergency supplemental hardware provided in accordance with Section ~~1010.1.4.4~~ 1010.2.8, shall be installed 48 inches (1219 mm) maximum above the finished floor. Locks used only for security purposes and not used for normal operation are permitted at any height.

> Exception: Access doors or gates in barrier walls and fences protecting pools, spas, and hot tubs shall be permitted to have operable parts of the latch release on self-latching devices at 54 inches (1370 mm) maximum above the finished floor or ground, provided that the self-latching devices are not also self-locking devices operated by means of a key, electronic opener, or integral combination lock.

N. Change Item ~~2 of Section 1010.1.9.4~~ 3 of Section 1010.2.4 of the IBC to read:

~~2~~ 3. In buildings in occupancy Groups B, F, M and S, the main exterior door or doors are permitted to be equipped with key-operated locking devices from the egress side provided:

~~2.1~~ 3.1. The locking device is readily distinguishable as locked.

~~2.2~~ 3.2. A readily visible durable sign is posted on the egress side on or adjacent to the door stating: THIS DOOR TO REMAIN UNLOCKED WHEN THIS SPACE IS OCCUPIED. The sign shall be in letters one inch (25 mm) high on a contrasting background.

~~2.3~~ 3.3. The use of the key-operated locking device is revocable by the building official for due cause.

O. Add Items ~~7, 7.1, and 7.2 to Section 1010.1.9.4~~ 11, 11.1 and 11.2 to Section 1010.2.4 of the IBC to read:

~~7~~ 11. Egress doors equipped with emergency supplemental hardware complying with Section ~~1010.1.4.4~~ 1010.2.8, from the egress side provided:

~~7.1~~ ~~11.1~~. A readily visible durable sign is posted on the egress side on or adjacent to the door stating: THIS HARDWARE SHALL BE USED BY AUTHORIZED PERSONNEL ONLY. The sign shall be in letters 1 inch (25 mm) high on a contrasting background.

~~7.2~~ 11.2. The use of the emergency supplemental hardware is revocable by the building official or fire official for due cause.

P. Add Item 6 to Section ~~1010.1.9.5~~ 1010.2.5 of the IBC to read:

6. Emergency supplemental hardware provided in accordance with Section ~~1010.1.4.4~~ 1010.2.8.

Q. Add Item 5 to Section ~~1010.1.9.6~~ 1010.2.1 of the IBC to read:

5. One additional operation shall be permitted for release of emergency supplemental hardware provided in accordance with Section ~~1010.1.4.4~~ 1010.2.8.

R. Delete Section ~~1010.1.9.7~~ 1010.2.14 of the IBC.

S. Add Exceptions ~~2 and 3 to Section 1010.1.9.8~~ 1 and 2 to Section 1010.2.13 of the IBC to read:

Exceptions:

~~2.~~ 1. Approved, listed, delayed egress locks shall be permitted to be installed on doors serving Group A-3 airport facilities, provided they are installed in accordance with this section.

~~3.~~ 2. Emergency supplemental hardware shall not be considered a delayed egress locking system.

T. ~~Delete Exception 1 and change Exception 2 of Section 1010.1.10 of the IBC~~ Renumber exception 4 to exception 3 and exception 3 to exception 2 of Section 1010.2.9; delete Exception 1 of Section 1010.2.9; renumber exception 2 to exception 1 of Section 1010.2.9 of the IBC and change to read:

~~Exception:~~ Exceptions:

1. Doors provided with panic hardware or fire exit hardware and serving a Group A or E occupancy shall be permitted to be electrically locked in accordance with Section ~~1010.1.9.10.~~ 1010.2.11.

U. Add Section ~~1010.1.11~~ 1010.2.9.5 to the IBC to read:

~~1010.1.11~~ 1010.2.9.5 Locking certain residential sliding doors. In dwelling units of Group R-2 buildings, exterior sliding doors which are one story or less above grade, or shared by two dwelling units, or are otherwise accessible from the outside, shall be equipped with locks. The mounting screws for the lock case shall be inaccessible from the outside. The lock bolt shall engage the strike in a manner that will prevent it from being disengaged by movement of the door.

Exception: Exterior sliding doors which are equipped with removable metal pins or charlie bars.

V. Add Section ~~1010.1.12~~ 1010.2.9.6 to the IBC to read:

~~1010.1.12~~ 1010.2.9.6 Door viewers in certain residential buildings. Entrance doors to dwelling units of Group R-2 buildings shall be equipped with door viewers with a field of vision of not less than 180 degrees.

Exception: Entrance doors having a vision panel or side vision panels.

W. Change Exception 3 of Section 1011.5.2 of the IBC to read:

3. In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies; the maximum riser height shall be 8.25 inches (210 mm); the minimum tread depth shall be 9 inches (229 mm); the minimum winder tread depth at the walk line shall be 10 inches (254 mm); and the minimum winder tread depth shall be 6 inches (152 mm). A nosing not less than 0.75 inch (19.1 mm) but not more than 1.25 inches (32 mm) shall be provided on stairways with solid risers where the tread depth is less than 11 inches (279 mm).

X. Delete Exception 4 from Section 1011.5.2 of the IBC.

Y. Add Exception ~~2~~ 4 to Section 1011.6 of the IBC to read:

~~2.~~ 4. A floor or landing is not required at the top of an interior flight of exit access stairs within individual dwelling units and sleeping units of Group R-2 occupancies and dwelling units of Group R-3 occupancies, including stairs in an enclosed private garage serving only an individual dwelling unit, provided that a door does not swing over the stairs.

~~Z. Delete Item 6 from Section 1011.16 of the IBC.~~

AA. Change Section 1015.8 of the IBC to read (IBC items 1-4 to remain as they are):

1015.8 Window openings. Windows in Groups R-2 and R-3 buildings including dwelling units where the top of the sill of an operable window opening is located less than 18 inches (457 mm) above the finished floor and more than 72 inches (1829 mm) above the finished grade or other surface below on the exterior of the building shall comply with one of the following:

~~1. Operable windows where the top of the sill of the opening is located more than 75 feet (22,860 mm) above the finished grade or other surface below and that are provided with window fall prevention devices that comply with ASTM F 2006.~~

~~2. Operable windows where the openings will not allow a 4-inch diameter (102 mm) sphere to pass through the opening when the window is in its largest opened position.~~

~~3. Operable windows where the openings are provided with window fall prevention devices that comply with ASTM F 2090.~~

~~4. Operable windows that are provided with window opening control devices that comply with Section 1015.8.1.~~

BB. Add Exception 3 to Item 5 of Section 1016.2 of the IBC to read:

3. A maximum of one exit access is permitted to pass through kitchens, store rooms, closets or spaces used for similar purposes provided such a space is not the only means of exit access.

CC. Change the following rows and delete footnote "b" in Table ~~1020.1~~ 1020.2 of the IBC.

	Table ~~1020.1~~ 1020.2 Corridor Fire-Resistance Rating			
	Occupancy	Occupant Load Served By Corridor	Required Fire-Resistance Rating (hours)	
			Without sprinkler system	With sprinkler system[b]
	R	Greater than 10	1	0.5
	I-1, I-3	All	Not Permitted	0

DD. Add an additional row to Table ~~1020.2~~ 1020.3 of the IBC to read:

	Occupancy	Width (minimum)
	In corridors of Group I-2 assisted living facilities licensed by the Virginia Department of Social Services serving areas with wheelchair, walker, and gurney traffic where residents are capable of self-preservation or where resident rooms have a means of egress door leading directly to the outside.	44 inches

EE. Add Exception 2 to Section 1023.5 of the IBC to read:

2. For buildings in other than Group H, with no more than two stories above grade plane and are equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, structural members, other than columns, that are part of the primary structural frame

supporting the roof sheathing, roof slab or roof deck only and structural members that are secondary members supporting the roof sheathing, roof slab or roof deck only, shall be permitted to penetrate an interior exit stairway enclosure or a ramp enclosure. Such penetrations shall be protected in accordance with Section 714.

FF. Change Section 1023.9 of the IBC to read:

1023.9 Floor identification signs. A sign shall be provided at each floor landing in exit enclosures connecting more than three stories designating the floor level, the terminus of the top and bottom of the exit enclosure and the identification of the stair or ramp by designation with a letter of the alphabet. The signage shall also state the story of, and the direction to, the exit discharge and the availability of roof access from the enclosure for the fire department. The sign shall be located five feet (1524 mm) above the floor landing in a position that is readily visible when the doors are in the open and closed positions. Floor level identification signs in tactile characters complying with ICC A117.1 shall be located at each floor level landing adjacent to the door leading from the enclosure into the corridor to identify the floor level.

GG. Add Exception 2 to Section 1024.6 of the IBC to read:

2. For buildings in other than Group H, with no more than two stories above grade plane and are equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, structural members, other than columns, which are part of the primary structural frame supporting the roof sheathing, roof slab or roof deck only and structural members which are secondary members supporting the roof sheathing, roof slab or roof deck only, shall be permitted to penetrate an interior exit stairway enclosure or a ramp enclosure. Such penetrations shall be protected in accordance with Section 714.

HH. Change Section 1025.1 of the IBC to read:

1025.1 General. Approved luminous egress path markings delineating the exit path shall be provided in buildings of Groups A, B, E, I, M and R-1 having occupied floors located more than 420 feet (128,016 mm) above the lowest level of fire department vehicle access in accordance with this section.

Exception: Luminous egress path markings shall not be required on the level of exit discharge in lobbies that serve as part of the exit path in accordance with Section 1028.1, Exception 1.

II. Change Section 1026.2 of the IBC to read:

1026.2 Separation. The separation between buildings or refuge areas connected by a horizontal exit shall be provided by a fire wall complying with Section 706, by a fire barrier complying with Section 707 or a horizontal assembly complying with Section 711, or by both. The minimum fire-resistance rating of the separation shall be two hours. Opening protectives in horizontal exits shall also comply with Section 716. Duct and air transfer openings in a fire wall or fire barrier that ~~servers~~ serves as a horizontal exit shall also comply with Section 717. The horizontal exit separation shall extend vertically through all levels of the building unless floor assemblies have a fire-resistance rating of not less than two hours. Openings in horizontal assemblies on the story served by horizontal exits shall be protected in accordance with Sections 712.1.1, 712.1.3, 712.1.13, or item 4 of Section 1019.3.

Exception: A fire-resistance rating is not required at horizontal exits between a building area and an above-grade pedestrian walkway constructed in accordance with Section 3104, provided that the distance between connected buildings is more than 20 feet (6096).

Horizontal exits constructed as fire barriers shall be continuous from exterior wall to exterior wall as to divide completely the floor served by the horizontal exit.

~~JJ. Delete the last sentence from Section 1030.5.~~

13VAC5-63-250. Chapter 11 Accessibility.

A. Add an exception to Section 1102.1 of the IBC to read:

Exception: Wall-mounted visible alarm notification appliances in Group I-3 occupancies shall be permitted to be a maximum of 120 inches (3048 mm) above the floor or ground, measured to the bottom of the appliance. Such appliances shall otherwise comply with all applicable requirements.

B. Change Section to 1103.2.8 of the IBC to read:

1103.2.8 Raised and lowered areas in places of religious worship. Raised or lowered areas, or portions of areas, in places of religious worship are not required to be accessible or to be served by an accessible route, provided such areas are used primarily for the performance of religious ceremonies and are located within an accessible story or mezzanine.

C. Add Section 1103.2.15 to the IBC to read:

1103.2.15 Emergency supplemental hardware. In Group E occupancies, except Group E day care facilities, and Group B educational occupancies, when emergency supplemental hardware is deployed during an active shooter or hostile threat event and provided in accordance with Section ~~1010.1.4.4~~ 1010.2.8, is not required to comply with this chapter.

D. Change Section ~~1106.1~~ 1106.2 of the IBC and replace Table ~~1106.1~~ 1106.2 of the IBC with Tables ~~1106.1(1)~~ 1106.2(1) and ~~1106.1(2)~~ 1106.2(2) to read:

~~1106.1~~ 1106.2 Required. Where parking is provided, accessible parking spaces shall be provided in compliance with Tables ~~1106.1(1)~~ 1106.2(1) and ~~1106.1(2)~~ 1106.2(2), as applicable, except as required by Sections ~~1106.2~~ 1106.3 through ~~1106.4~~ 1106.5. Where more than one parking facility is provided on a site, the number of parking spaces required to be accessible shall be calculated separately for each parking facility.

Exception: This section does not apply to parking spaces used exclusively for buses, trucks, other delivery vehicles, law-enforcement vehicles, or vehicular impound and motor pools where lots accessed by the public are provided with an accessible passenger loading zone.

	Table ~~1106.1(1)~~ 1106.2(1) Accessible Parking Spaces for Groups A, B, E, M, R-1, R-2, and I[a]	
	Total Parking Spaces Provided	Required Minimum Number of Accessible Spaces

	1 - 25	1
	26 - 50	2
	51 - 75	3
	76 - 100	4
	101 - 125	5
	126 - 150	6
	151 - 200	7
	201 - 300	8
	301 - 400	9
	401 - 500	10
	501 - 1,000	2.33% of total
	1,001 and over	23, plus one for each 100, or fraction thereof, over 1,000
	a. Condominium parking in Group R-2 occupancies where parking is part of the unit purchase shall be in accordance with Table 1106.1(2).	
	Table ~~1106.1(2)~~ 1106.2(2) Accessible Parking Spaces for Groups F, S, H, R-3, R-4, and U	
	Total Parking Spaces Provided	Required Minimum Number of Accessible Spaces
	1 - 25	1
	26 - 50	2
	51 - 75	3
	76 - 100	4
	101 - 150	5
	151 - 200	6
	201 - 300	7
	301 - 400	8
	401 - 500	9

	501 - 1,000	2.0% of total
	1,001 and over	20, plus one for each 100, or fraction thereof, over 1,000

E. Add Section ~~1106.8~~ 1106.10 to the IBC to read:

~~1106.8~~ 1106.10 Identification of accessible parking spaces. In addition to complying with applicable provisions of this chapter, all accessible parking spaces shall be identified by above grade signs. A sign or symbol painted or otherwise displayed on the pavement of a parking space shall not constitute an above grade sign. All above grade parking space signs shall have the bottom edge of the sign no lower than four feet (1219 mm) nor higher than seven feet (2133 mm) above the parking surface. All disabled parking signs shall include the following language: PENALTY, $100-500 Fine, TOW-AWAY ZONE. Such language may be placed on a separate sign and attached below existing above grade disabled parking signs, provided that the bottom edge of the attached sign is no lower than four feet above the parking surface.

F. Change Section ~~1109.2~~ 1110.2 (exceptions remain) of the IBC to read:

~~1109.2~~ 1110.2 Toilet and bathing facilities. Each toilet room and bathing room shall be accessible. Where a floor level is not required to be connected by an accessible route, the only toilet rooms or bathing rooms provided within the facility shall not be located on the inaccessible floor. Except as provided for in Sections ~~1109.2.2~~ 1110.2.2 through ~~1109.2.4~~ 1110.2.6, at least one of each type of fixture, element, control, or dispenser in each accessible toilet room and bathing room shall be accessible.

G. Add Section ~~1109.2.4~~ 1110.2.6 to the IBC to read:

~~1109.2.4~~ 1110.2.6 Multi-user gender-neutral toilet facility fixtures. Where multi-user facilities are provided to serve all genders, at least two of each fixture type, but only one urinal if more than one urinal is provided, shall comply with ICC A117.1. Water closet and urinal compartments shall comply with Section ~~1209.3~~ 1210.3.

H. Add Sections ~~1109.16~~ 1110.17 and ~~1109.16.1~~ 1110.17.1 to the IBC to read:

~~1109.16~~ 1110.17 Dwellings containing universal design features for accessibility. Group R-5 occupancies not subject to Section R320.1 of the IRC and Group R-3 occupancies not subject to Section ~~1107.6.3~~ 1107.6.3 may comply with this section and be approved by the local building department as dwellings containing universal design features for accessibility.

~~1109.16.1~~ 1110.17.1 Standards for dwellings containing universal design features for accessibility. When the following requirements are met, approval shall be issued by the local building department indicating that a dwelling has been constructed in accordance with these standards and is deemed to be a dwelling containing universal design features for accessibility.

1. The dwelling must comply with the requirements for Type C units under Section ~~1005~~ 1105 of ICC A117.1 with the following changes to those requirements:

1.1. That at least one bedroom be added to the interior spaces required by Section ~~1005.4~~ 1105.4 of ICC A117.1.

1.2. In the toilet room or bathroom required by Section ~~1005~~ 1105 of ICC A117.1, in addition to the lavatory and water closet, a shower or bathtub complying with Section ~~1004.11.3.2.3~~ 1104.11.3.2.3 of ICC A117.1 shall be provided and shall include reinforcement for future installation of grab bars in accordance with Section ~~1004.11.1~~ 1104.11.1 of ICC A117.1.

1.3. That the exception to Section ~~1005.4~~ 1105.4 of ICC A117.1 is not applicable.

1.4. That there be a food preparation area complying with Section ~~1005.7~~ 1105.7 of ICC A117.1 on the entrance level.

1.5. That any thermostat for heating or cooling on the entrance level comply with Section ~~1002.9~~ 1102.9 of ICC A117.1.

I. Delete the exception for Item 1 of Section 1111.1 of the IBC.

13VAC5-63-260. Chapter 12 Interior environment.

A. Add Section 1202.5.4 to the IBC to read:

1202.5.4 Insect screens in occupancies other than Group R. Every door, window and other outside opening for natural ventilation serving structures classified as other than a residential group containing habitable rooms, food preparation areas, food service areas, or any areas where products to be included or utilized in food for human consumption are processed, manufactured, packaged, or stored, shall be supplied with approved tightly fitting screens of not less than 16 mesh per inch (16 mesh per 25 mm) and every screen door used for insect control shall have a self-closing device.

Exception: Screen doors shall not be required for out swinging doors or other types of openings which make screening impractical, provided other approved means, such as air curtains or insect repellent fans are provided.

B. Add Section 1202.5.5 to the IBC to read:

1202.5.5 Insect screens in Group R occupancies. Every door, window and other outside opening required for natural ventilation purposes which serves a structure classified as a residential group shall be supplied with approved tightly fitted screens of not less than 16 mesh per inch (16 mesh per 25 mm) and every screen door used for insect control shall have a self-closing device.

C. Add Section 1202.7 to the IBC to read:

1202.7 Smoking areas in restaurants. Smoking areas in restaurants, as defined in § 15.2-2820 of the Code of Virginia, shall comply with the following:

1. The area where smoking may be permitted shall be structurally separated from the portion of the restaurant in which smoking is prohibited. For the purposes of this section, structurally separated means a stud wall covered with drywall or other building material or like barrier, which, when completed, extends from the floor to the ceiling, resulting in a physically separated room. Such wall or barrier may include portions that are glass or other

gas-impervious building material and shall be permitted to have a door leading to areas in which smoking is prohibited, provided the door is capable of being closed at all times.

2. The area where smoking may be permitted shall be separately vented to prevent the recirculation of air from such area to the area of the restaurant where smoking is prohibited.

Exception: The above requirements do not apply if a restaurant is exempt from, or meets any of the exceptions to, the Virginia Indoor Clean Air Act (Chapter 28.2 of Title 15.2 (§ 15.2-2820 et seq.) of the Code of Virginia).

D. Change Section 1206.1 of the IBC to read:

1206.1 Scope. Sections 1206.2 and 1206.3 shall apply to common interior walls, partitions and floor or ceiling assemblies between adjacent dwelling units or between dwelling units and adjacent public areas such as halls, corridors, stairs or service areas. Section 1206.4 applies to the construction of the exterior envelope of Group R occupancies within airport noise zones and to the exterior envelope of Groups A, B, E, I and M occupancies in any locality in whose jurisdiction, or adjacent jurisdiction, is located a United States Master Jet Base, a licensed airport or United States government or military air facility, when such requirements are enforced by a locality pursuant to § 15.2-2295 of the Code of Virginia.

E. Add Section 1206.4 to the IBC to read:

1206.4 Airport noise attenuation standards. Where the Ldn is determined to be 65 dBA or greater, the minimum STC rating of structure components shall be provided in compliance with Table 1206.4. As an alternative to compliance with Table 1206.4, structures shall be permitted to be designed and constructed so as to limit the interior noise level to no greater than 45 Ldn. Exterior structures, terrain and permanent plantings shall be permitted to be included as part of the alternative design. The alternative design shall be certified by an RDP.

F. Add Table 1206.4 to the IBC to read:

	Table 1206.4 Airport Noise Attenuation Standards		
	Ldn	STC of exterior walls and roof/ceiling assemblies	STC of doors and windows
	65–69	39	25
	70–74	44	33
	75 or greater	49	38

G. Change Sections ~~1209.3.1~~ 1210.3.1 and ~~1209.3.2~~ 1210.3.2 and add Sections ~~1209.3.1.1, 1209.3.1.2, 1209.3.2.1, and 1209.3.2.2~~ 1210.3.1.1, 1210.3.1.2, 1210.3.2.1 and 1210.3.2.2 to read:

~~1209.3.1~~ 1210.3.1 Water closet compartment. Each water closet utilized by the public or employees shall comply with Sections ~~1209.3.1.1~~ 1210.3.1.1 and ~~1209.3.1.2~~ 1210.3.1.2, as applicable. All fully-enclosed compartments shall be provided with occupancy indicators.

Exceptions:

1. A separate room or compartment shall not be required in a single-occupant toilet room with a lockable door.

2. Toilet rooms located in child day care facilities and containing two or more water closets shall be permitted to have one water closet without an enclosing compartment.

3. This provision is not applicable to toilet areas located within Group I-3 occupancy housing areas.

~~1209.3.1.1~~ 1210.3.1.1 Separate facilities. Each water closet provided in separate facilities shall occupy a separate compartment with walls or partitions and a door enclosing the fixtures to ensure privacy and shall comply with Section 405.3.1 of the VPC. Accessible water closets and compartments shall comply with ICC A117.1.

~~1209.3.1.2~~ 1210.3.1.2 Multi-user gender-neutral facilities. Each water closet provided in a multi-user gender-neutral toilet facility shall occupy a separate compartment with walls or partitions including the doors thereto, which shall extend to the floor and to the ceiling with maximum 1/2-inch (13 mm) clearances at the floor and ceiling, with gaps not exceeding 1/8-inch (3 mm) between the doors and partitions and partitions and walls, and shall comply with Section 405.3.1 of the VPC. Accessible water closet compartments shall comply with ICC A117.1 and the increased toe clearance requirements.

~~1209.3.2~~ 1210.3.2 Urinal separation and partitions. Each urinal utilized by the public or employees shall occupy a separate area with walls or partitions to provide privacy and comply with Sections ~~1209.3.1.1~~ 1210.3.2.1 and ~~1209.3.1.2~~ 1210.3.2.2, as applicable. All fully-enclosed compartments shall be provided with occupy indicators.

Exceptions:

1. Urinal partitions shall not be required in a single-occupant or family or assisted-use toilet room with a lockable door.

2. Toilet rooms located in child day care facilities and containing two or more urinals shall be permitted to have one urinal without partitions.

3. A separate room or compartment shall not be required in a single-occupant toilet room with a lockable door.

4. This provision is not applicable to toilet areas located within Group I-3 occupancy housing areas.

~~1209.3.2.1~~ 1210.3.2.1 Separate facilities. The walls or partitions for urinals in separate facilities shall begin at a height not more than 12 inches (305 mm) from and extend not less than 60 inches (1524 mm) above the finished floor surface. The walls or partitions shall extend from the wall surface at each side of the urinal not less than 18 inches (457 mm) or to a point not less than 6 inches (152 mm) beyond the

outermost front lip of the urinal measured from the finished backwall surface, whichever is greater. ~~1209.3.2.2~~ 1210.3.2.2 Multi-user gender-neutral facilities. Each urinal provided in a multi-user gender-neutral toilet facility shall occupy a separate compartment with walls or partitions, including the doors thereto, where the partitions extend to the floor and to the ceiling with maximum 1/2-inch (13 mm) clearances, with gaps not exceeding 1/8-inch (3 mm) between the doors and partitions and partitions and walls, or shall all be located in a separate room with a door, enclosing the urinals to ensure privacy. Where an accessible urinal is located within a compartment, grab bars shall not be required for the urinal, the door shall be located to allow for a forward approach to the urinal, and increased toe clearances shall be provided in accordance with A117.1.

13VAC5-63-264. Chapter 13 Energy efficiency.

Add Section 1301.1.1.1 to the IBC to read:

1301.1.1.1 Changes to the IECC. The following changes shall be made to the IECC:

~~1. Add Sections C402.1.4.2, C402.1.4.2.1, C402.1.4.2.2, C402.1.4.2.3, C402.2.1.2, C402.2.1.3, C402.2.1.4, and C402.2.1.5 and change Section C402.2.1.1 to read:~~

~~C402.1.4.2 Roof/Ceiling assembly. The maximum roof/ceiling assembly U-factor shall not exceed that specified in Table C402.1.4 based on construction materials used in the roof/ceiling assembly.~~

~~C402.1.4.2.1 Tapered, above-deck insulation based on thickness. Where used as a component of a maximum roof/ceiling assembly U-factor calculation, the tapered roof insulation R-value contribution to that calculation shall use the average thickness in inches (mm) along with the material R-value-per-inch (per-mm) for U-factor compliance as prescribed in Section C402.1.4.~~

~~C402.1.4.2.2 Suspended ceilings. Insulation installed on suspended ceilings having removable ceiling tiles shall not be considered part of the assembly U-factor of the roof/ceiling construction.~~

~~C402.1.4.2.3 Multiple layers and staggered joints. Continuous insulation board shall be installed in not less than two layers and the edge joints between each layer of insulation shall be staggered. Multiple layers and staggered joints are not required where insulation tapers to the roof deck at a gutter edge, roof drain, or scupper.~~

~~C402.2.1 Roof assembly. The minimum thermal resistance (R-value) of the insulating material installed either between the roof framing or continuously on the roof assembly shall be as specified in Table C402.1.3, based on construction materials used in the roof assembly.~~

~~C402.2.1.1 Tapered, above-deck insulation based on thickness. Where used as a component of a roof/ceiling assembly R-value calculation, the tapered roof insulation R-value contribution to that calculation shall use the average thickness in inches (mm) along with the material R-value-per-inch (per-mm) for R-value compliance as prescribed in Section C402.1.3.~~

~~C402.2.1.2 Minimum thickness, lowest point. The minimum thickness of above-deck roof insulation at its lowest point, gutter edge, roof drain, or scupper shall be no less than 1 inch (25 mm).~~

~~C402.2.1.3 Suspended ceilings. Insulation installed on suspended ceilings having removable ceiling tiles shall not be considered part of the minimum thermal resistance (R-value) of roof insulation in roof/ceiling construction.~~

~~C402.2.1.4 Multiple layers and staggered joints. Continuous insulation board shall be installed in not less than two layers and the edge joints between each layer of insulation shall be staggered. Multiple layers and staggered joints are not required where insulation tapers to the roof deck at a gutter edge, roof drain or scupper.~~

~~C402.2.1.5 Skylight curbs. Skylight curbs shall be insulated to the level of roofs with insulation entirely above the deck or R-5, whichever is less.~~

~~Exception: Unit skylight curbs included as a component of a skylight listed and labeled in accordance with NFRC 100 shall not be required to be insulated.~~

2. Change the SHGC for Climate Zone 4 (Except Marine) of Table C402.4 to read:

Table C402.4 Building Envelope Requirements: Fenestration								
Climate Zone				4 (Except Marine)				
SHGC								
SHGC				0.36				

3. Change Sections C402.4.2, C402.4.2.1, and C402.4.2.2 and delete Section C402.4.1.2.

C402.4.2 Skylight area with daylight response controls. The skylight area shall be permitted to be not more than 5.0% of the roof area provided daylight responsive controls complying with Section ~~C405.2.3.1~~ C405.2.4.1 are installed in daylight zones under skylights.

C402.4.2.1 Daylight zone controls under skylights. Daylight responsive controls complying with Section ~~C405.2.3.1~~ C405.2.4.1 shall be provided to control all electric lights within daylight zones under skylights.

C402.4.2.2 Haze factor. Skylights that are installed in office, storage, automotive service, manufacturing, nonrefrigerated warehouse, retail store, and distribution/sorting area spaces shall have a glazing material or diffuser with a haze factor greater than 90% when tested in accordance with ASTM D1003.

> ~~Exception: Skylights designed and installed to exclude direct sunlight entering the occupied space by the use of fixed or automated baffles or the geometry of skylight and light well.~~

4. Change Section C402.4.3 to read:

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.

(Equation 4-5)

PF = A/B

where:

PF = Projection factor (decimal).

A = Distance measured horizontally from the farthest continuous extremity of any overhand, 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 0.20, 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.

5. Add Table C402.4.3 to read:

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

6. Add an exception to the first paragraph of Section C403.7.7 to read:

> Exception: 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.

7. Add Section C403.2.2.1 to read:

C403.2.2.1 Dwelling unit mechanical ventilation. Mechanical ventilation shall be provided for dwelling units in accordance with the IMC.

8. Delete Section C403.7.5 and Table C403.7.5.

9. Delete Sections C404.5 through C404.5.2.1, including Tables.

Change Section C405.4 to read:

C405.4 Exterior lighting (Mandatory). All exterior lighting, other than low-voltage landscape lighting, shall comply with Section C405.4.1.

> Exception: Where approved because of historical, safety, signage, or emergency considerations.

10. Change Section C502.1 to read:

C502.1 General. Additions to an existing building, building system or portion thereof shall conform to the provisions of Section 805 of the VEBC.

11. Delete Sections C502.2 through ~~C502.2.6.2~~ C502.3.6.2.

12. Change Section C503.1 to read:

C503.1 General. Alterations to any building or structure shall comply with the requirements of Chapter 6 of the VEBC.

13. Delete Sections C503.2 through ~~C503.6~~ C503.5.

14. Change Section C504.1 to read:

C504.1 General. Buildings and structures, and parts thereof, shall be repaired in compliance with Section 510 of the VEBC.

15. Delete Section C504.2.

~~16. Change Section R401.2 to read:~~

~~R401.2 Compliance. Projects shall comply with all provisions of Chapter 4 labeled "Mandatory" and one of the following:~~

~~1. Sections R401 through R404.~~

~~2. Section R405.~~

~~3. Section R406.~~

~~4. The most recent version of REScheck, keyed to the 2018 IECC.~~

17. ~~Change~~ Add an exception to Section R401.3 to read:

~~R401.3 A permanent certificate shall be completed by the builder or other approved party and posted on a wall in the space where the furnace is located, a utility room or an approved location inside the building. Where located on an electrical panel, the certificate shall not cover or obstruct the visibility of the circuit directory label, service disconnect label, or other required labels. Where approved, certificates for multi-family dwelling units shall be permitted to be located off-site at an identified location. The certificate shall indicate the predominant R-values of insulation installed in or on ceilings, roofs, walls, foundation components such as slabs, basement walls, crawl space walls and floors, and ducts outside conditioned spaces; U-factors of fenestration and the solar heat gain coefficient (SHGC) of fenestration; and the results from any required duct system and building envelope air leakage testing performed on the building. Where there is more than one value for each component, the certificate shall indicate the value covering the largest area. The certificate shall indicate the types and efficiencies of heating, cooling, and service water heating equipment. Where a gas-fired unvented room heater, electric furnace, or baseboard electric heater is installed in the residence, the certificate shall indicate "gas-fired unvented room heater," "electric furnace," or "baseboard electric heater," as appropriate. An~~

~~efficiency shall not be indicated for gas-fired unvented room heaters, electric furnaces, and electric baseboard heaters.~~

Exception: Where approved, certificates for multi-family dwelling units shall be permitted to be located off-site at an identified location.

18. Change the wood frame wall R-value categories for Climate ~~Zone 4 (Except Marine)~~ Zones 3A, 4A and 5A in Table ~~R402.1.2~~ R402.1.3 to read:

		Wood Frame Wall R-Value
		15 or 13 1[h]

19. Change the ~~ceiling U-factor and~~ frame wall U-factor categories for Climate ~~Zone 4 (Except Marine)~~ Zones 3A, 4A and 5A in Table ~~R402.1.4~~ R402.1.2 to read:

		Frame Wall U-Factor
		0.079

20. Change Section R402.2.4 to read:

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% 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.

21. Change Sections R402.4 and R402.4.1.1 to read:

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 R402.4.5.

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.

22. Change the title of the "Insulation Installation Criteria" category of Table R402.4.1.1; change the "Shower/tub on exterior wall" category of Table R402.4.1.1, and add footnotes ~~"b"~~ and "c" and "d" to Table R402.4.1.1 to read:

	Component	Air Barrier Criteria	Insulation Installation Criteria[~~b~~ d]
	Shower/tub on exterior wall[c]	The air barrier installed at exterior walls adjacent to showers and tubs shall be installed on the interior side and separate the exterior walls from the showers and tubs.	Exterior walls adjacent to showers and tubs shall be insulated.
	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. ~~b.~~ d. Structural integrity of headers shall be in accordance with the applicable building code.		

23. Change Section R402.4.1.2 to read:

R402.4.1.2

Testing. The building or dwelling unit shall be tested and verified as having an air leakage rate not exceeding five air changes per hour in Climate Zone 4. Testing shall be conducted in accordance with RESNET/ICC 380, ASTM E 779, or ASTM E 1827 and reported at a pressure of 0.2 inch w.g. (50 Pascals). 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 conducted by a Virginia licensed general contractor, a Virginia licensed HVAC contractor, a Virginia licensed home inspector, a Virginia registered design professional, a certified BPI Envelope Professional, a certified HERS rater, or a certified duct and envelope tightness rater. The party conducting the test shall have been trained on the equipment used to perform the test. Testing shall be performed at any time after creation of all penetrations of the building thermal envelope.

Note: Should additional sealing be required as a result of the test, consideration may be given to the issuance of a temporary certificate of occupancy in accordance with Section 116.1.1.

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.

24. Change Section R402.4.1.3 to read:

R402.4.1.3 Leakage rate: When complying with Section R401.2.1, the building or dwelling unit shall have an air leakage rate not exceeding 5.0 air changes per hour in Climate Zones 3 through 5, when tested in accordance with Section R402.4.1.2.

25. Change Section R403.3.3 to read:

~~R403.3.3~~ R403.3.5 Duct testing (Mandatory). Ducts shall be pressure tested in accordance with ANSI/RESNET/ICC 380 or ASTM E1554 to determine air leakage by one 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.

A written report of the results of the test shall be signed by the party conducting the test and provided to the code official. The licensed mechanical contractor installing the mechanical system shall be permitted to perform the duct testing. The contractor shall have been trained on the equipment used to perform the test.

~~25~~ 26. Delete item 3 of Section R403.3.6.

Delete Section ~~R403.3.5~~ R403.3.7.

~~26~~ 27. Change Section R403.7 to read:

R403.7 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.

~~27. Delete Sections C404.5 through C404.5.2.1, including Tables.~~

28. Change ~~footnote "a" in Table R406.4~~ Section R406.3.2 to read:

When onsite renewable energy is included for compliance using the ERI analysis per Section R406.4, the building shall meet the mandatory requirements of Section R406.2 and the building thermal envelope shall be greater than or equal to levels of energy efficiency and solar heat gain coefficient in Table R402.1.2, with a ceiling R-value of 49 and a wood frame wall R-value of 20 or 13+5, or Table R402.1.4, with a ceiling U-factor of 0.026 and a frame wall U-factor of 0.060.

~~a. When onsite renewable energy is included for compliance using the ERI analysis per Section R406.4, the building shall meet the mandatory requirements of Section R406.2 and the building thermal envelope shall be greater than or equal to levels of energy efficiency and solar heat gain coefficient in Table R402.1.2, with a ceiling R-value of 49 and a wood frame wall R-value of 20 or 13+5, or Table R402.1.4, with a ceiling U-factor of 0.026 and a frame wall U-factor of 0.060.~~

29. Change Section R501.1 to read:

R501.1 Scope. The provisions of the Virginia Existing Building Code shall control the alteration, repair, addition and change of occupancy of existing buildings and structures.

30. Delete Sections R501.1.1 through R501.6.

31. Change Section R502.1 to read:

R502.1 General. Additions to an existing building, building system or portion thereof shall conform to the provisions of Section 811 of the VEBC.

32. Delete Sections ~~R502.1.1~~ R502.2 through ~~R502.1.2~~ R502.3.4.

33. Change Section R503.1 to read:

R503.1 General. Alterations to any building or structure shall comply with the requirements of Chapter 6 of the VEBC.

34. Delete Sections R503.1.1 through ~~R503.2~~ R503.1.4.

35. Change Section R504.1 to read:

R504.1 General. Buildings, structures and parts thereof shall be repaired in compliance with Section 510 of the VEBC.

36. Delete Section R504.2.

13VAC5-63-267. Chapter 14 Exterior walls.

A. Delete Section 1402.5 of the IBC.

B. Add Section 1402.8 to the IBC to read:

1402.8 Air barriers. The exterior wall envelope shall be designed and constructed by providing air barriers that comply with the IECC.

C. Change Section ~~1406.10.4~~ 1406.10.3 of the IBC to read:

~~1406.10.4~~ 1406.10.3 Full-scale test. The MCM system shall be tested in accordance with, and comply with, the acceptance criteria of NFPA 285. Such testing shall be performed on the MCM system with the MCM in the maximum thickness intended for use. Where noncombustible materials or combustible materials permitted by Section 603, 803, 806, or 1406 differ from assembly to assembly or within an assembly, multiple tests shall not be required.

> Exception: The MCM system is not required to be tested in accordance with, and comply with, acceptance criteria of NFPA 285 in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

13VAC5-63-268. Chapter 15 Roof assemblies and rooftop structures.

A. Change the title of IBC Section 1511 to read:

Roofing and Roofing Repair.

B. Change Section 1511.1 of the IBC to read as follows and delete the remainder of Section 1511 of the IBC:

1511.1 General. Materials and methods of application used for reroofing and roof repair shall comply with the applicable requirements of Chapter 15 and the requirements of Sections ~~302.2~~ 302.1, 501.1, and ~~602.3.4~~ 602.3.2 of the VEBC, as applicable.

13VAC5-63-270. Chapter 16 Structural design.

A. Change Section 1609.3 of the IBC to read:

1609.3 Basic wind speed. The ~~ultimate~~ basic design wind speed, ~~V_{ult}~~ V, in miles per hour (mph), for the determination of the wind loads shall be determined by Figures 1609.3(1), 1609.3(2), 1609.3(3), and 1609.3(4). The ~~ultimate~~ basic design wind speed, ~~V_{ult}~~ V, for use in the design of Risk Category II buildings and structures shall be obtained from Figure 1609.3(1). The ~~ultimate~~ basic design wind speed, ~~V_{ult}~~ V, for use in the design of Risk Categories III and IV buildings and structures shall be obtained from Figures 1609.3(2) and 1609.3(3), respectively. The ~~ultimate~~ basic design wind speed, ~~V_{ult}~~ V, for use in the design of Risk Category I buildings and structures shall be obtained from Figure 1609.3(4). The ~~ultimate~~ basic design wind speeds for localities in special wind regions, near mountainous terrains, and near gorges shall be based on elevation. Areas at 4,000 feet in elevation or higher shall use 142 V mph (~~62.5~~ 62.3 m/s) and areas under 4,000 feet in elevation shall use 116 V mph (~~51~~ 52 m/s). Gorge areas shall be based on the highest recorded speed per locality or in accordance with local jurisdiction requirements determined in accordance with Section 26.5.1 of ASCE 7.

In nonhurricane-prone regions, when the ~~ultimate~~ basic design wind speed, ~~V_{ult}~~ V, is estimated from regional climatic data, the ~~ultimate~~ basic design wind speed, ~~V_{ult}~~ V, shall be determined in accordance with Section 26.5.3 of ASCE 7.

B. Add Section 1612.1.1 to the IBC to read:

1612.1.1 Elevation of manufactured homes. New or replacement manufactured homes to be located in any flood hazard zone shall be placed in accordance with the applicable elevation requirements of this code.

> Exception: Manufactured homes installed on sites in an existing manufactured home park or subdivision shall be permitted to be placed so that the manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than 36 inches (914 mm) above grade in lieu of being elevated at or above the base flood elevation provided no manufactured home at the same site has sustained flood damage exceeding 50% of the market value of the home before the damage occurred.

C. Change Items 1.1 and 2.1 of Section 1612.4 of the IBC to read:

1.1. The elevation of the lowest floor, including the basement, as required by the lowest floor elevation inspection in Section 113.3.2 and for the final inspection in Section 113.3.3.

2.1. The elevation of the bottom of the lowest horizontal structural member as required by the lowest floor elevation inspection in Section 113.3.2 and for the final inspection in Section 113.3.3.

13VAC5-63-280. Chapter 17 Special inspections and tests.

A. Change Section 1703.1 of the IBC to read:

1703.1 Approved agency. An approved agency responsible for laboratory testing or special inspections, or both, must comply with the qualification, certification and experience requirements of ASTM E329 or the alternatives listed herein.

B. Change Section 1703.1.1 of the IBC to read:

1703.1.1 Independence. An approved agency shall be objective and competent. The agency shall also disclose possible conflicts of interest so that objectivity can be confirmed. The special inspector and

their agents shall be independent from the person, persons or contractor responsible for the physical construction of the project requiring special inspections.

C. Change Section 1703.1.3 of the IBC to read:

1703.1.3 Personnel. An approved agency shall employ experienced personnel educated in conducting, supervising and evaluating tests or inspections, or both. Upon request by the building official, documentation shall be provided demonstrating the applicable agency's accreditation as noted in ASTM E329 and individuals' resumes indicating pertinent training, certifications and other qualifications for special inspection personnel associated with the proposed construction requiring special inspections. The building official may prescribe the manner of qualification documentation and frequency of updating information regarding agency or individual inspector approval.

Firms providing special inspection services or individual inspectors seeking approval of alternative certifications or qualifications, or both, listed in ASTM E329 may submit documentation demonstrating equivalency. This documentation may include evidence of meeting other recognized standards or alternative certifications to demonstrate that the minimum qualifications, certification and experience intended by ASTM E329 have been met. The building official may, if satisfied that equivalency has been demonstrated, approve the credentials of the firm or individual.

D. Change Section 1704.2 of the IBC to read:

1704.2 Special inspections. Where application is made for construction as described in this section, the owner shall employ one or more special inspectors to provide inspections and tests during construction on the types of work listed under Section 1705. All individuals or agents performing special inspection functions shall operate under the direct supervision of an RDP in responsible charge of special inspection activities, also known as the "special inspector." The special inspector shall ensure that the individuals under their charge are performing only those special inspections or laboratory testing that are consistent with their knowledge, training and certification for the specified inspection or laboratory testing.

Exceptions:

1. The building official shall be permitted to waive special inspections and tests.

2. Special inspections and tests are not required for:

2.1. One story buildings under 20 feet (6096 mm) in height which do not exceed 5,000 square feet (~~565~~ 465 m^2) in building area; or

2.2. Alterations to Group U structures which do not increase loads in accordance with Sections 603.7.3 and 603.7.4 of the VEBC.

3. Unless otherwise required by the building official, special inspections and tests are not required for occupancies in Group R-3, R-4 or R-5 and occupancies in Group U that are accessory to a residential occupancy including those listed in Section 312.1.

4. Special inspections and tests are not required for portions of structures designed and constructed in accordance with the cold-formed steel light-frame construction provisions of Section 2211.1.2 or the conventional light-frame construction provisions of Section 2308.

5. The contractor is permitted to employ the approved agencies where the contractor is also the owner.

E. Change Section 1704.2.3 of the IBC to read:

1704.2.3 Statement of special inspections. The permit applicant shall submit a statement of special inspections prepared by the RDP in responsible charge in accordance with Section 111.1. This statement shall be in accordance with Section 1704.3.

Exception:

The statement of special inspections is permitted to be prepared by a qualified person approved by the building official for construction not designed by a registered design professional.

F. Change category "~~12~~ 14" of Table 1705.3 of the IBC to read:

Type	Continuous Special Inspection	Periodic Special Inspection	Referenced Standard[a]	IBC Reference
~~12~~ 14. Inspect formwork for shape, location and dimensions of the concrete member being formed, shoring and reshoring.	--	X	ACI 318: 26.11.1.2(b)	--

G. Delete Sections ~~1705.17, 1705.17.1, and 1705.17.2~~ 1705.18, 1705.18.1 and 1705.18.2 of the IBC.

H. Change Sections 1709.5.2 of the IBC to read:

1709.5.2 Exterior windows and door assemblies not provided for in Section 1709.5.1. Exterior window and door assemblies shall be tested in accordance with ASTM E330. Exterior window and door assemblies containing glass shall comply with Section 2403. The design pressure for testing shall be calculated in accordance with Chapter 16. Each assembly shall be tested for 10 seconds at a load equal to 1.5 times the design pressure.

~~I. Add Section 1709.5.2.1 to the IBC to read:~~

~~1709.5.2.1 Garage doors and rolling doors. Garage doors and rolling doors shall be tested in accordance with either ASTM E 330 or ANSI/DASMA 108 and shall meet the pass/fail acceptance criteria of ANSI/DSMA 108. Garage doors and rolling doors shall be labeled with a permanent label identifying the door manufacturer, the door model/series number, the positive and negative design wind pressure rating, the installation drawing reference number, and the applicable test standard.~~

13VAC5-63-290. Chapter 18 Soils and foundations.

A. Change the exception to Section 1804.6 of the IBC to read:

Exception: Compacted fill material less than 12 inches (305 mm) in depth need not comply with an approved report, provided it is a natural non-organic material that is not susceptible to swelling when exposed to moisture and it has been compacted to a minimum of 90% Modified Proctor in accordance with ASTM D1557. The compaction shall be verified by a qualified inspector approved by the building official. Material other than natural material may be used as

fill material when accompanied by a certification from an RDP and approved by the building official.

B. Add an exception to Section 1808.1 of the IBC to read:

Exception: One-story detached accessory structures not exceeding 256 square feet (23.78m^2) of building area, provided all of the following conditions are met:

1. The building eave height is 10 feet (3048 mm) or less.

2. The maximum height from the finished floor level to grade does not exceed 18 inches (457.2 mm).

3. The supporting structural elements in direct contact with the ground shall be placed level on firm soil and when such elements are wood they shall be approved pressure preservative treated suitable for ground contact use.

4. The structure is anchored to withstand wind loads as required by this code.

5. The structure shall be of light-frame construction with walls and roof of light weight material, not slate, tile, brick or masonry.

13VAC5-63-295. Chapter 23 Wood.

Add Exception 2 to Item 2 of Section 2308.2.3 of the IBC to read:

2. Concrete slab-on-grade live load limited only by allowable soil bearing pressure.

13VAC5-63-298. Chapter 26 Plastic.

Change Section 2603.5.5 of the IBC to read:

2603.5.5 Vertical and lateral fire propagation. Exterior wall assemblies shall be tested in accordance with, and comply with, acceptance criteria of NFPA 285. Where noncombustible materials or combustible materials permitted by Section 603, 803, 806 or 1405 differ from assembly to assembly or within an assembly, multiple tests shall not be required.

Exceptions:

1. One-story buildings where the exterior wall covering is noncombustible.

2. Wall assemblies where the foam plastic insulation is covered on each face by not less than 1-inch (25 mm) thickness of masonry or concrete and meeting one of the following:

2.1. There is no air space between the insulation and the concrete or masonry.

2.2. The insulation has a flame spread index of not more than 25 as determined in accordance with ASTM E 84 or UL 723 and the maximum air space between the insulation and the concrete or masonry is not more than 1 inch (25 mm).

3. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

13VAC5-63-300. Chapter 27 Electrical.

A. Change Section 2701.1 of the IBC to read:

2701.1 Scope. This chapter governs the electrical components, equipment and systems used in buildings and structures covered by this code. Electrical components, equipment and systems shall be designed and constructed in accordance with the provisions of this code and NFPA 70.

B. Add Section 2701.1.1 to the IBC to read:

2701.1.1 Changes to NFPA 70. The following changes shall be made to NFPA 70:

1. Change Sections 334.10(2) and 334.10(3) of NFPA 70 to read:

(2) Multifamily dwellings not exceeding four floors above grade and multifamily dwellings of any height permitted to be of Types III, IV and V construction except in any case as prohibited in 334.12.

(3) Other structures not exceeding four floors above grade and other structures of any height permitted to be of Types III, IV and V construction except in any case as prohibited in 334.12. In structures exceeding four floors above grade, cables shall be concealed within walls, floors or ceilings that provide a thermal barrier of material that has at least a 15-minute finish rating as identified in listings of fire-rated assemblies.

For the purpose of Items 2 and 3 above, the first floor of a building shall be that floor that has 50% or more of the exterior wall surface area level with or above finished grade. One additional level that is the first level and not designed for human habitation and used only for vehicle parking, storage or similar use shall be permitted.

2. Change Section 700.12(F)(2)(6) of NFPA 70 to read:

(6) Where the normal power branch circuits that supply luminaires providing illumination immediately on the inside and outside of exit doors are supplied by the same service or feeder, the remote heads providing emergency illumination for the exterior of an exit door shall be permitted to be supplied by the unit equipment serving the area immediately inside the exit door.

~~3. Change Article 555 of NFPA 70 2017 Edition to NFPA 70 2020 Edition for all code requirements related to Marinas, Boatyards, and Commercial and Noncommercial Docking Facilities.~~

C. Add Section 2701.1.2 to the IBC to read:

2701.1.2 Temporary connection to dwelling units. The building official shall give permission to energize the electrical service equipment of a one-family or two-family dwelling unit when all of the following requirements have been approved:

1. The service wiring and equipment, including the meter socket enclosure, shall be installed and the service wiring terminated.

2. The grounding electrode system shall be installed and terminated.

3. At least one receptacle outlet on a ground fault protected circuit shall be installed and the circuit wiring terminated.

4. Service equipment covers shall be installed.

5. The building roof covering shall be installed.

6. Temporary electrical service equipment shall be suitable for wet locations unless the interior is dry and protected from the weather.

D. Add Section 2701.1.3 to the IBC to read:

2701.1.3 Assisted living facility generator requirements. Generators installed to comply with regulations for assisted living facilities licensed by the Virginia Department of Social Services shall be permitted to be optional standby systems.

E. Change Sections 2702.2.8 and 2702.2.9 of the IBC to read:

2702.2.8 Group I-2 occupancies. Emergency power shall be provided in accordance with Section 407.11 for Group I-2 occupancies licensed by the Virginia Department of Health as a hospital, nursing or hospice facility.

2702.2.9 Group I-3 occupancies. Emergency power shall be provided for doors in Group I-3 occupancies in accordance with Section 408.4.2.

13VAC5-63-310. Chapter 28 Mechanical systems.

A. Change Section 2801.1 of the IBC to read:

2801.1 Scope. Mechanical appliances, equipment and systems shall be constructed and installed in accordance with this chapter, the IMC and the IFGC. Masonry chimneys, fireplaces and barbecues shall comply with the IMC and Chapter 21 of this code.

Exception: This code shall not govern the construction of water heaters, boilers and pressure vessels to the extent which they are regulated by the Virginia Boiler and Pressure Vessel Regulations (16VAC25-50). However, the building official may require the owner of a structure to submit documentation to substantiate compliance with those regulations.

B. Add Section 2801.1.1 to the IBC to read:

2801.1.1 Required heating in dwelling units. Heating facilities shall be required in every dwelling unit or portion thereof which is to be rented, leased or let on terms, either expressed or implied, to furnish heat to the occupants thereof. The heating facilities shall be capable of maintaining the room temperature at 65°F (18°C) during the period from October 15 to May 1 during the hours between 6:30 a.m. and 10:30 p.m. of each day and not less than 60°F (16°C) during other hours when measured at a point three feet (914 mm) above the floor and three feet (914 mm) from the exterior walls. The capability of the heating system shall be based on the outside design temperature required for the locality by this code.

C. Add Section 2801.1.2 to the IBC to read:

2801.1.2 Required heating in nonresidential structures. Heating facilities shall be required in every enclosed occupied space in nonresidential structures. The heating facilities shall be capable of producing sufficient heat during the period from October 1 to May 15 to maintain a temperature of not less than 65°F (18°C) during all working hours. The required room temperature shall be measured at a point three feet (914 mm) above the floor and three feet (914 mm) from the exterior walls.

Processing, storage and operation areas that require cooling or special temperature conditions and areas in which persons are primarily engaged in vigorous physical activities are exempt from these requirements.

D. Add Section 2801.1.3 to the IBC to read:

2801.1.3 Changes to the IMC. The following changes shall be made to the IMC:

1. Change Section 401.2 of the IMC to read:

401.2 Ventilation required. Every occupied space shall be ventilated by natural means in accordance with Section 402 or by mechanical means in accordance with Section 403. Group R dwelling units shall be ventilated by mechanical means in accordance with Section 403. Ambulatory care facilities and Group I-2 occupancies shall be ventilated by mechanical means in accordance with Section 407.

2. Change Section 403.3.1.1 of the IMC to read:

403.3.1.1 Outdoor airflow rate. Ventilation systems shall be designed to have the capacity to supply the minimum outdoor airflow rate determined in accordance with this section. In each occupiable space, the ventilation system shall be designed to deliver the required rate of outdoor airflow to the breathing zone. The occupant load utilized for design of the ventilation system shall not be less than the number determined from the estimated maximum occupant load rate indicated in Table 403.3.1.1. Ventilation rates for occupancies not represented in Table 403.3.1.1 shall be those for a listed occupancy classification that is most similar in terms of occupant density, activities and building construction; or shall be determined by an approved engineering analysis. The ventilation system shall be designed to supply the required rate of ventilation air continuously during the period the building is occupied, except as otherwise stated in other provisions of the code.

With the exception of smoking lounges and other designated areas where smoking is permitted, the ventilation rates in Table 403.3.1.1 are based on the absence of smoking in occupiable spaces.

> Exception: The occupant load is not required to be determined based on the estimated maximum occupant load rate indicated in Table 403.3.1.1 where approved statistical data document the accuracy of an alternate anticipated occupant density.

3. Add the following rows to Table 403.3.1.1 of the IMC to read:

OCCUPANCY CLASSIFICATION	Occupant Density #/1000 ft^{2} [a]	People Outdoor Airflow Rate in Breathing	Area Outdoor Airflow Rate in Breathing	Exhaust Airflow Rate Cfm/ft^{2}[a]

		Zone, R_p cfm/person	Zone, R_a cfm/ft^{2a}	
Food and beverage service				
Bars or cocktail lounges designated as an area where smoking is permitted[b]	100	30	--	--
Cafeteria or fast food designated as an area where smoking is permitted[b]	100	20	--	--
Dining rooms designated as an area where smoking is permitted[b]	70	20	--	--
Public spaces				
Lounges designated as an area where smoking is permitted[b]	100	30	--	--
Medical procedure rooms[l]	20	15	-	-
Patient rooms[l]	10	25	-	-
Physical therapy rooms[l]	20	15	-	-

i. For spaces that are not located in an ambulatory care facility or clinic, outpatient as defined in Chapter 2 of the VCC.

4. Change Section ~~504.8.2~~ 504.9.2 of the IMC to read:

~~504.8.2~~ 504.9.2 Duct installation. Exhaust ducts shall be supported at 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 into the inside of the duct.

Where dryer exhaust ducts are enclosed in wall or ceiling cavities, such cavities shall allow the installation of the duct without deformation.

5. Change item 2 of Section 504.10 to read:

2. Dampers shall be prohibited in the exhaust duct. Penetrations of the shaft and ductwork shall be protected in accordance with Section 607.5.5, Exception 1.

6. Change Exception 1 of Section 505.3 of the IMC to read:

> 1. In Group R buildings, where installed in accordance with the manufacturer's installation instructions and where mechanical or natural ventilation is otherwise provided in accordance with Chapter 4, listed and labeled ductless range hoods shall not be required to discharge to the outdoors.

7. Change item 2 in Section 505.5 to read:

2. Penetrations of the shaft and ductwork shall be protected in accordance with Section 607.5.5.

8. Change Section 505.6 of the IMC to read:

505.6 Other than Group R. In other than Group R occupancies, where electric domestic cooking appliances are utilized for domestic purposes, domestic range hoods shall be permitted for such appliances. Hoods and exhaust systems for such electric domestic cooking appliances shall be in accordance with Sections 505.2 and 505.4. In other than Group R occupancies, where fuel-fired domestic cooking appliances are utilized for domestic purposes, a Type I or Type II hood shall be provided as required for the type of appliances and processes in accordance with Section 507.1.

9. Change Section 506.5 of the IMC to read:

506.5 Exhaust equipment. Exhaust equipment, including fans and grease reservoirs, shall comply with Sections 506.5.1 through 506.5.6 and shall be of an approved design or shall be listed for the application.

~~10. Change Section 506.5.2, including Items 1, 3, and 5 of the IMC to read: (Items not shown remain the same.)~~

~~506.5.2 Pollution control units. The installation of pollution control units shall be in accordance with all of the following:~~

~~1. Pollution control units shall be listed and labeled in accordance with UL 8782.~~

~~3. Bracing and supports for pollution control units shall be of noncombustible material securely attached to the structure and designed to carry gravity and seismic loads within the stress limitations of the International Building Code.~~

~~5. Clearances shall be maintained between the pollution control unit and combustible material in accordance with the listing.~~

11. Change Section ~~510.7.1.1~~ 510.6.1.1 of the IMC to read:

~~510.7.1.1~~ 510.6.1.1 Shaft penetrations. Hazardous exhaust ducts that penetrate fire-resistance-rated shafts shall comply with Section 713.11 of the International Building Code.

12. Change Section 607.5.5 of the IMC to read:

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. 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. Fire dampers are not required where penetrations are tested in accordance with ASTM E119 as part of the fire-resistance-rated assembly.

3. Fire and smoke dampers are not required where ducts are used as part of an approved smoke control system in accordance with Section 909 of the International Building Code.

4. Fire and smoke dampers are not required where the penetrations are in parking garage exhaust or supply shafts that are separated from other building shafts by not less than two-hour fire-resistance-rated construction.

5. Smoke dampers are not required where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 of the International Building Code.

13. Add Section 607.6.2.2 to the IMC to read:

607.6.2.2 Equipment shutdown. Where ceiling radiation dampers are listed as static dampers, the HVAC equipment shall be effectively shut down to stop the airflow prior to the damper closing using one of the following methods:

1. A duct detector installed in the return duct.

2. An area smoke detector interlocked with the HVAC equipment.

3. A listed heat sensor installed in the return duct.

E. Add Section 2801.1.4 to the IBC to read:

2801.1.4 Changes to the IFGC. The following changes shall be made to the IFGC:

1. Change Section 301.1 of the IFGC to read:

301.1 Scope. This code shall apply to the installation of fuel gas piping systems, fuel gas utilization equipment, and related accessories as follows:

1. Coverage of piping systems shall extend from the point of delivery to the connections with gas utilization equipment. (See "point of delivery.")

2. Systems with an operating pressure of 125 psig (862 kPa gauge) or less.

Piping systems for gas-air mixtures within the flammable range with an operating pressure of 10 psig (69 kPa gauge) or less.

LP-Gas piping systems with an operating pressure of 20 psig (~~140~~ 138 kPa gauge) or less.

3. Piping systems requirements shall include design, materials, components, fabrication, assembly, installation, testing and inspection.

4. Requirements for gas utilization equipment and related accessories shall include installation, combustion and ventilation air and venting.

This code shall not apply to the following:

1. Portable LP-Gas equipment of all types that are not connected to a fixed fuel piping system.

2. Installation of farm equipment such as brooders, dehydrators, dryers, and irrigation equipment.

3. Raw material (feedstock) applications except for piping to special atmosphere generators.

4. Oxygen-fuel gas cutting and welding systems.

5. Industrial gas applications using gases such as acetylene and acetylenic compounds, hydrogen, ammonia, carbon monoxide, oxygen, and nitrogen.

6. Petroleum refineries, pipeline compressor or pumping stations, loading terminals, compounding plants, refinery tank farms, and natural gas processing plants.

7. Integrated chemical plants or portions of such plants where flammable or combustible liquids or gases are produced by chemical reactions or used in chemical reactions.

8. LP-Gas installations at utility gas plants.

9. Liquefied natural gas (LNG) installations.

10. Fuel gas piping in power and atomic energy plants.

11. Proprietary items of equipment, apparatus, or instruments such as gas generating sets, compressors, and calorimeters.

12. LP-Gas equipment for vaporization, gas mixing, and gas manufacturing.

13. Temporary LP-Gas piping for buildings under construction or renovation that is not to become part of the permanent piping system.

14. Installation of LP-Gas systems for railroad switch heating.

15. Installation of LP-Gas and compressed natural gas (CNG) systems on vehicles.

16. Except as provided in Section 401.1.1, gas piping, meters, gas pressure regulators, and other appurtenances used by the serving gas supplier in the distribution of gas, other than undiluted LP-Gas.

17. Building design and construction, except as specified herein.

2. Change Section 301.3 of the IFGC to read:

301.3 Listed and labeled. Appliances regulated by this code shall be listed and labeled for the application in which they are used unless otherwise approved in accordance with Section 112. The approval of unlisted appliances in accordance with Section 112 shall be based on approved engineering evaluation.

~~3~~. Change Sections 310.1 and 310.2 of the IFGC to read:

~~310.1 Pipe and tubing. Each above-group portion of a gas piping system that is likely to become energized shall be electrically continuous and bonded to an effective ground-fault current path. Gas piping 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/CSA 6.26 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/CSA 6.26, Section 310.2 shall apply.~~

~~310.2 CSST without arc resistant jacket or coating system. 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/CSA 6.26 shall be bonded to the electrical service grounding electrode system or, where provided, the lightning protection electrode system and shall comply with Sections 310.2.1 through 310.2.5.~~

3. Add Section ~~404.11.6~~ 404.11.5 to the IFGC to read:

~~404.11.6~~ 404.11.5 Coating application. Joints in gas piping systems shall not be coated prior to testing and approval.

4. Change Section ~~614.8.2~~ 614.9.2 of the IFGC to read:

~~614.8.2~~ 614.9.2 Duct installation. Exhaust ducts shall be supported at 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 into the inside of the duct.

Where dryer exhaust ducts are enclosed in wall or ceiling cavities, such cavities shall allow the installation of the duct without deformation.

5. Change the following referenced standard in Chapter 8 of the IFGC:

Standard Reference Number	Title	Referenced in Code Section Number
ANSI LC1/CSA 6.26-18	Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing (CSST)	310.1, 310.1.1, ~~403.5.4~~ 403.4.5
~~UL8782-17~~	~~Outline of Investigation for Pollution Control Units for Commercial Cooking~~	~~506.5.2~~

13VAC5-63-320. Chapter 29 Plumbing systems.

A. Change Section 2901.1 of the IBC to read:

2901.1 Scope. The provisions of this chapter and the IPC shall govern the design and installation of all plumbing systems and equipment, except that as provided for in Section 103.5 for functional design, water supply sources and sewage disposal systems are regulated and approved by the Virginia Department of Health and the Virginia Department of Environmental Quality. The approval of pumping and electrical equipment associated with such water supply sources and sewage disposal systems shall, however, be the responsibility of the building official.

Note: See also the Memorandum of Agreement in the "Related Laws Package," which is available from DHCD.

B. Add Section 2901.1.1 to the IBC to read:

2901.1.1 Changes to the IPC. The following changes shall be made to the IPC:

1. Add the following definitions to the IPC to read:

Nonpotable fixtures and outlets. Fixtures and outlets that are not dependent on potable water for the safe operation to perform their intended use. Such fixtures and outlets may include water closets, urinals, irrigation, mechanical equipment, and hose connections to perform operations, such as vehicle washing and lawn maintenance.

Nonpotable water systems. Water systems for the collection, treatment, storage, distribution, and use or reuse of nonpotable water. Nonpotable systems include reclaimed water, rainwater, and gray water systems.

Service sink. A general purpose sink exclusively intended to be used for facilitating the cleaning of a building or tenant space.

Stormwater. Precipitation that is discharged across the land surface or through conveyances to one or more waterways and that may include stormwater runoff, snow melt runoff, and surface runoff and drainage.

2. Change the following definitions in the IPC to read:

Rainwater. Natural precipitation, including snow melt, from roof surfaces only.

Reclaimed water. Reclaimed water means water resulting from the treatment of domestic, municipal, or industrial wastewater that is suitable for a water reuse that would not otherwise occur. Specifically excluded from this definition is "gray water."

3. Change the exception to Section 301.3 of the IPC to read:

> Exception: Bathtubs, showers, lavatories, clothes washers and laundry trays shall not be required to discharge to the sanitary drainage system where such fixtures discharge to an approved nonpotable gray water system in accordance with the applicable provisions of Chapter 13.

4. Delete Section 311 of the IPC in its entirety.

5.

Change Table 403.1 of the IPC to read:

TABLE 403.1

MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES[a] (See Sections 403.1.1 and 403.2)

NO.	CLASSIFICATION	DESCRIPTION	WATER CLOSETS (URINALS: SEE SECTION 424.2)		LAVATORIES		BATHTUBS / SHOWERS	DRINKING FOUNTAINS (SEE SECTION 410)	OTHER
			MALE	FEMALE	MALE	FEMALE			
1	Assembly	Theaters and other buildings for the performing arts and motion pictures[d]	1 per 125	1 per 65	1 per 200		—	1 per 500	1 service sink
			1 per 85.5[h]						
		Nightclubs, bars, taverns, dance halls and buildings for similar purposes[d]	1 per 40	1 per 40	1 per 75		—	1 per 500	1 service sink
		Restaurants, banquet halls and food courts[d]	1 per 75	1 per 75	1 per 200		—	1 per 500	1 service sink
		Gaming areas	1 per 100 for the first 400 and 1 per 250 for the remainder	1 per 50 for the first 400 and 1 per 150 for the remainder	1 per 250 for the first 750 and 1 per 500 for the remainder exceeding 750		—	1 per 1,000	1 service sink

			exceeding 400	exceeding 400				
			1 per 66.67 for the first 800 and 1 per 187.5 for the remainder exceeding 800[h]					
		Auditoriums without permanent seating, art galleries, exhibition halls, museums, lecture halls, libraries, arcades and gymnasiums[d]	1 per 125	1 per 65	1 per 200	—	1 per 500	1 service sink
			1 per 85.5[h]					
		Passenger terminals (other than airport terminals) and transportation facilities[d]	1 per 500	1 per 500	1 per 750	—	1 per 1,000	1 service sink
		Airport terminals	1 per 500	1 per 100 for the first 500 and 1 per 150 for the remainder exceeding 500	1 per 750	—	1 per 1,000	1 service sink
			1 per 150	1 per 75	1 per 200	—	1 per 1,000	

		Places of worship and other religious services[d]	1 per 100[h]					1 service sink
		Coliseums, arenas, skating rinks, pools and tennis courts for indoor sporting events and activities	1 per 75 for the first 1,500 and 1 per 120 for the remainder exceeding 1,500	1 per 40 for the first 1,520 and 1 per 60 for the remainder exceeding 1,520	1 per 200	1 per 150	—	1 per 1,000	1 service sink
			1 per 52.2 for the first 3,025 and 1 per 80 for the remainder exceeding 3, 025[h]		1 per 171.4[h]				
		Stadiums, amusement parks, bleachers and grandstands for outdoor sporting events and activities[f]	1 per 75 for the first 1,500 and 1 per 120 for the remainder exceeding 1,500	1 per 40 for the first 1,520 and 1 per 60 for the remainder exceeding 1,520	1 per 200	1 per 150	—	1 per 1,000	1 service sink
			1 per 52.2 for the first 3,025 and 1 per 80 for the remainder exceeding 3,025[h]		1 per 171.4[h]				

6. Add footnotes "g" and "h" to Table 403.1 of the IPC to read:

g. The occupant load for pools shall be in accordance with the "Skating rinks, swimming pools" category of Table 1004.5 of the IBC.

h. Use this fixture ratio for determining the minimum number of fixtures for multi-user gender-neutral toilet facilities.

7. Add ~~an exception~~ the following exceptions to Section 403.1.1 of the IPC to read:

~~2. In other than Group A Occupancies where occupant ratios differ from 50/50 split, distribution of the sexes is not required where single-user water closets and bathing room fixtures are provided in accordance with Section 403.1.2.~~

2. Where multiuser facilities are designed to serve all genders, the minimum fixture count shall be calculated 100 percent, based on the total occupant load.

3. The total occupant load shall not be required to be divided in half with a distribution of sexes where single-user water closets and bathing room fixtures are provided in accordance with Section 403.1.2.

~~8. Change Section 403.1.2 of the IPC to read:~~

~~403.1.2 Single-user toilet and bathing room fixtures. The plumbing fixtures located in single-user toilet and bathing rooms, including family or assisted use toilet and bathing rooms that are required by Section 1109.2.1 of the International Building Code, shall contribute toward the total number of required plumbing fixtures for a building or tenant space. Single-user toilet and bathing rooms, and family or assisted-use toilet rooms and bathing rooms shall be identified as being available for use by all persons regardless of their sex.~~

~~The total number of fixtures shall be permitted to be based on the required number of separate facilities or based on the aggregate of any combination of single-user or separate facilities.~~

9. Add Section 403.1.4 and Table 403.1.4 to the IPC to read:

403.1.4 Marina fixtures. Notwithstanding any provision to the contrary, plumbing fixtures shall be provided for marinas in the minimum number shown in Table 403.1.4. Fixtures shall be located within 500 feet walking distance from the shore end of any dock they serve. Separate facilities shall be provided for each sex with an equal number of fixtures of each type in each facility, except that separate facilities are not required where the number of slips is less than 25. Urinals may be substituted for up to 50% of water closets.

Table 403.1.4
Minimum Number of Required Plumbing Fixtures for Marinas

Number of Slips	Plumbing Fixtures		
	Water Closets	Lavatories	Showers
1 - 24	1	1	1
25 - 49	4	4	2
50 - 99	6	4	2
100 - 149	8	6	4
150 - 199	10	8	4

	200 - 249	12	10	6
	250 or greater	Two additional fixtures of each type for each 100 additional slips.		

10. ~~Add exceptions 5 and~~ Change exception 6 to Section 403.2 of the IPC to read:

~~5. Separate facilities shall not be required to be designated by sex where single-user toilet rooms are provided in accordance with Section 403.1.2.~~

6. Separate facilities shall not be required where multi-user gender-neutral facilities are provided in accordance with Section 405.3 and Section ~~1109.2.4~~ 1109.2.6 of the VCC.

~~11. Change Section 403.2.1 of the IPC to read~~

12. Change Section 403.3.3 of the IPC and add exception 3 to Section 403.3.3 of the IPC (exceptions 1 and 2 remain as they are), to read:

403.3.3 Location of toilet facilities in occupancies other than malls and airports. In occupancies other than covered and open mall buildings and airport terminals, the required public and employee toilet facilities shall be located not more than one story above or below the space required to be provided with toilet facilities, and the path of travel to such facilities shall not exceed a distance of 500 feet (152 m).

~~Exceptions:~~

~~1. The location and maximum distances of travel to required employee facilities in factory and industrial occupancies are permitted to exceed that required by this section, provided that the location and maximum travel distance are approved.~~

~~2~~ 3. The location and maximum distances of travel to the required public facilities located on cemetery property are permitted to exceed that required by this section, provided that the location and maximum travel distance are located on the same property and approved.

~~13~~ 3. ~~The location and maximum distances of travel to required public and employee facilities in Group S occupancies are permitted to exceed that required by this section, provided that the location and maximum distance of travel are approved.~~

13. Renumber Section 403.3.5 to Section 403.3.6 and Section 403.3.6 to Section 403.3.7; and change Section 403.3.5 to read:

403.3.5 Location of toilet facilities in airport terminals. In airport terminals, the minimum number of public and employee toilet fixtures shall be located before arriving at and after leaving the main security screening checkpoints and shall comply with the following:

1. Shall be based on the actual use and occupant load of those spaces before and after the main security screening checkpoints.

2. Shall not be more than one story above or below the space required to be provided with toilet facilities.

3. The path of travel to such facilities shall not exceed a distance of 300 feet (~~91 mm~~ 91440). For employees' toilet facilities, the maximum distance of travel shall be measured from the employees' work area.

403.3.6 Pay facilities. Where pay facilities are installed, such facilities shall be in excess of the required minimum facilities. Required facilities shall be free of charge.

403.3.7 Door locking. Where a toilet room is provided for the use of multiple occupants, the egress door for the room shall not be lockable from the inside of the room. This section does not apply to family or assisted-use toilet rooms.

14. Add an exception to Section 405.3.2 of the IPC to read:

Exception: In educational use occupancies, the required lavatory shall be permitted to be located adjacent to the room or space containing the water closet provided that not more than one operational door is between the water closet and the lavatory.

15. Change Section 405.3.4 and add Sections 405.3.4.1 and 405.3.4.2 to the IPC to read:

405.3.4 Water closet compartment. Each water closet utilized by the public or employees shall comply with Sections 405.3.4.1 and 405.3.4.2, as applicable. All fully-enclosed compartments shall be provided with occupancy indicators.

Exceptions:

1. Water closet compartments shall not be required in a single-occupant toilet room with a lockable door.

2. Toilet rooms located in child day care facilities and containing two or more water closets shall be permitted to have one water closet without an enclosing compartment.

3. This provision is not applicable to toilet areas located within Group I-3 housing areas.

405.3.4.1 Separate facilities. Each water closet provided in separate facilities shall occupy a separate compartment with walls or partitions and a door enclosing the fixtures to ensure privacy and shall comply with Section 405.3.1. Accessible water closets and compartments shall comply with ICC A117.1.

405.3.4.2 Multi-user gender-neutral facilities. Each water closet provided in a multi-user gender-neutral toilet facility shall occupy a separate compartment with walls or partitions including the doors thereto, which shall extend to the floor and to the ceiling with maximum 1/2-inch (13 mm) clearances at the floor and ceiling, with gaps not exceeding 1/8-inch (3 mm) between the doors and partitions and partitions and walls, and shall comply with Section 405.3.1. Accessible water closet compartments shall comply with ICC A117.1 and the increased toe clearance requirements.

16. Change Section 405.3.5 of the IPC to read:

405.3.5 Urinal separation and partitions. Each urinal utilized by the public or employees shall occupy a separate area with walls or partitions to provide privacy. The horizontal dimension between walls or

partitions at each urinal shall be not less than 30 inches (762 mm). The walls or partitions shall begin at a height not greater than 12 inches (305 mm) from and extend not less than 60 inches (1524 mm) above the finished floor surface. The walls or partitions shall extend from the wall surface at each side of the urinal not less than 18 inches (457 mm) or to a point not less than 6 inches (152 mm) beyond the outermost front lip of the urinal measured from the finished backwall surface, whichever is greater. All fully-enclosed compartments shall be provided with occupancy indicators.

Exceptions:

1. Urinal partitions shall not be required in a single-occupant or family-assisted-use toilet room with a lockable door.

2. Toilet rooms located in child day care facilities and containing two or more urinals shall be permitted to have one urinal without partitions.

17. Add Sections 405.3.5.1 and 405.3.5.2 to the IPC to read:

405.3.5.1 Separate facilities. The walls or partitions for urinals in separate facilities shall begin at a height not more than 12 inches (305 mm) from and extend not less than 60 inches (1524 mm) above the finished floor surface. The walls or partitions shall extend from the wall surface at each side of the urinal not less than 18 inches (457 mm) or to a point not less than 6 inches (152 mm) beyond the outermost front lip of the urinal measured from the finished backwall surface, whichever is greater.

405.3.5.2 Multi-user gender-neutral facilities. Each urinal provided in a multi-user gender-neutral toilet facility shall occupy a separate compartment with walls or partitions, including the doors thereto, where the partitions extend to the floor and to the ceiling with maximum 1/2-inch (13 mm) clearances, with gaps not exceeding 1/8-inch (3 mm) between the doors and partitions and partitions and walls, or shall all be located in a separate room with a door, enclosing the urinals to ensure privacy. Where an accessible urinal is located within a compartment, grab bars shall not be required for the urinal, the door shall be located to allow for a forward approach to the urinal, and increased toe clearances shall be provided in accordance with A117.1.

Exceptions:

1. A separate room or compartment shall not be required in a single-occupant toilet room with a lockable door.

2. This provision is not applicable to toilet areas located within Group I-3 occupancy housing areas.

~~18. Change Section 410.4 of the IPC to read:~~

~~410.4 Substitution. Where restaurants provide drinking water in a container free of charge, drinking fountains shall not be required in those restaurants. In other occupancies where more than two drinking fountains are required, water dispensers shall be permitted to be substituted for not more than 50% of the required number of drinking fountains.~~

19. Change Section 423.1 of the IPC to read:

423.1 Water connections. Baptisteries, ornamental and lily pools, aquariums, ornamental fountain basins, swimming pools, footbaths and pedicure baths, and similar constructions, where provided with water supplies, shall be protected against backflow in accordance with Section 608.

20. Add an exception to Section 424.2 of the IPC to read:

> Exception: In each multi-user gender-neutral bathroom or toilet room, urinals shall not be substituted for more than 22.5 percent of the total number of water closets in Assembly and Educational occupancies. Urinals shall not be substituted for more than 25% of the total number of water closets in all other occupancies.

21. Add Section 602.2.1 to the IPC to read:

602.2.1 Nonpotable fixtures and outlets. Nonpotable water shall be permitted to serve nonpotable type fixtures and outlets in accordance with Chapter 13.

22. Add Section 603.3 to the IPC to read:

603.3 Tracer wire. Nonmetallic water service 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 service 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 service pipe 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.

23. Change Section 605.2.1 to read:

605.2.1 Lead content of drinking water pipe and fittings. Pipe, pipe fittings, joints, valves, faucets and fixture fittings utilized to supply water for drinking or cooking purposes shall comply with NSF 372.

24. Change Section 608.15 to read:

608.15 Location of backflow preventers. Access for inspection, testing, service, repair and replacement shall be provided to backflow prevention assemblies. Backflow prevention assemblies shall be installed between 12 inches (305 mm) and 60 inches (1525 mm) from grade, floor level or service platform and as specified by the manufacturer's instructions. Where the manufacturer's listed installation height conflicts with this requirement, the manufacturer's listed heights shall apply. Access shall be provided to backflow prevention devices and as specified by the manufacturer's instructions.

25. Add Section 703.7 to the IPC to read:

703.7 Tracer wire. Nonmetallic sanitary sewer piping that discharges 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 sewer 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 sewer intersects with the public system. At a minimum, one end of the wire shall terminate above grade in an accessible location that is resistant to physical damage, such as with a cleanout or at the building wall.

26. Delete the exception for Section 705.10.2 of the IPC.

~~27. Add Section 717 Relining Building Sewers and Building Drains to the IPC.~~

~~28. Add Sections 717.1 through 717.10, including subsections, to the IPC to read:~~

~~717.1 General. This section shall govern the relining of existing building sewers and building drainage piping.~~

~~717.2 Applicability. The relining of existing building sewer and building drainage piping shall be limited to gravity drainage piping, 4 inches (102 mm) in diameter and larger. The relined piping shall be of the same nominal size as the existing piping.~~

~~717.3 Pre-installation requirements. Prior to commencement of the relining installation, the existing piping sections to be relined shall be descaled and cleaned. After the cleaning process has occurred and water has been flushed through the system, the piping shall be inspected internally by a recorded video camera survey.~~

~~717.3.1 Pre-installation recorded video camera survey. The video survey shall include verification of the project address location. The video shall include notations of the cleanout and fitting locations, and the approximate depth of the existing piping. The video shall also include notations of the length of piping at intervals no greater than 25 feet.~~

~~717.4 Permitting. Prior to permit issuance, the code official shall review and evaluate the pre-installation recorded video camera survey to determine if the piping system is capable to be relined in accordance with the proposed lining system manufacturer's installation requirements and applicable referenced standards.~~

~~717.5 Prohibited applications. Where review of the pre-installation recorded video camera survey reveals that piping systems are not installed correctly or defects exist, relining shall not be permitted. The defective portions of piping shall be exposed and repaired with pipe and fittings in accordance with this code. Defects shall include backgrade or insufficient slope, complete pipe wall deterioration or complete separations, such as from tree root invasion or improper support.~~

~~717.6 Relining materials. The relining materials shall be manufactured in compliance with applicable standards and certified as required in Section 303. Fold-and-form pipe reline materials shall be manufactured in compliance with ASTM F1504 or ASTM F1871.~~

~~717.7 Installation. The installation of relining materials shall be performed in accordance with the manufacturer's installation instructions, applicable referenced standards and this code.~~

~~717.7.1 Material data report. The installer shall record the data as required by the relining material manufacture and applicable standards. The recorded data shall include the location of the project, relining material type, amount of product installed, and conditions of the installation. A copy of the data report shall be provided to the code official prior to final approval.~~

~~717.8 Post-installation recorded video camera survey. The completed relined piping system shall be inspected internally by a recorded video camera survey after the system has been flushed and flow-tested with water. The video survey shall be submitted to the code official prior to finalization of the~~

~~permit. The video survey shall be reviewed and evaluated to provide verification that no defects exist. Any defects identified shall be repaired and replaced in accordance with this code.~~

~~717.9 Certification. A certification shall be provided in writing to the code official, from the permit holder, that the relining materials have been installed in accordance with the manufacturer's installation instructions, the applicable standards, and this code.~~

~~717.10 Approval. Upon verification of compliance with the requirements of Sections 717.1 through 717.9, the code official shall approve the installation.~~

29. Add an exception to Section 1101.2 of the IPC to read:

> Exception. Rainwater nonpotable water systems shall be permitted in accordance with Chapter 13.

30. Delete the last sentence from Section 1101.7 of the IPC.

31. Delete Section 1105.2 of the IPC.

32. Delete Section 1106.2.1 and change Section 1106.2 of the IPC to read:

1106.2 Vertical conductors and leaders. Vertical conductors and leaders shall be sized for the maximum projected roof area, in accordance with Tables 1106.2(1) and 1106.2(2).

33. Delete Table 1106.2 of the IPC and add Tables 1106.2(1) and 1106.2(2) to the IPC to read:

Table 1106.2(1)

Size of Circular Vertical Conductors and Leaders

Diameter of Leader (inches[a])	Horizontally Projected Roof Area (square feet)											
	Rainfall rate (inches per hour)											
	1	2	3	4	5	6	7	8	9	10	11	12
2	2,280	1,440	960	720	575	480	410	360	320	290	260	240
3	8,800	4,400	2,930	2,200	1,760	1,470	1,260	1,100	980	880	800	730
4	18,400	9,200	6,130	4,600	3,680	3,070	2,630	2,300	2,045	1,840	1,675	1,530
5	34,600	17,300	11,530	8,650	6,920	5,765	4,945	4,325	3,845	3,460	3,145	2,880
6	54,000	27,000	17,995	13,500	10,800	9,000	7,715	6,750	6,000	5,400	4,910	4,500
8	116,000	58,000	38,660	29,000	23,200	19,315	16,570	14,500	12,890	11,600	10,545	9,600

For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m^2.

a. Sizes indicated are the diameter of circular piping. This table is applicable to piping of other shapes, provided the cross-sectional shape fully enclosed a circle of the diameter indicated in this table. For

rectangular leaders, see Table 1106.2(2). Interpolation is permitted for pipe sizes that fall between those listed in this table.

Table 1106.2(2)

Size of Rectangular Vertical Conductors and Leaders

Dimensions of Common Leader Sizes	Horizontally Projected Roof Area (square feet)											
	Rainfall rate (inches per hour)											
width x length (inches)[a,b]	1	2	3	4	5	6	7	8	9	10	11	12
1-3/4 x 2-1/2	3,410	1,700	1,130	850	680	560	480	420	370	340	310	280
2 x 3	5,540	2,770	1,840	1,380	1,100	920	790	690	610	550	500	460
2-3/4 x 4-1/4	12,830	6,410	4,270	3,200	2,560	2,130	1,830	1,600	1,420	1,280	1,160	1,060
3 x 4	13,210	6,600	4,400	3,300	2,640	2,200	1,880	1,650	1,460	1,320	1,200	1,100
3-1/2 x 4	15.900	7,950	5,300	3,970	3,180	2,650	2,270	1,980	1,760	1,590	1,440	1,320
3-1/2 x 5	21,310	10,650	7,100	5,320	4,260	3,550	3,040	2,660	2,360	2,130	1,930	1,770
3-3/4 x 4-3/4	21,960	10,980	7,320	5,490	4,390	3,660	3,130	2,740	2,440	2,190	1,990	1,830
3-3/4 x 5-1/4	25,520	12,760	8,500	6,380	5,100	4,250	3,640	3,190	2,830	2,550	2,320	2,120
3-1/2 x 6	27,790	13,890	9,260	6,940	5,550	4,630	3,970	3,470	3,080	2,770	2,520	2,310
4 x 6	32,980	16,490	10,990	8,240	6,590	5,490	4,710	4,120	3,660	3,290	2,990	2,740
5-1/2 x 5-1/2	44,300	22,150	14,760	11,070	8,860	7,380	6,320	5,530	4,920	4,430	4,020	3,690
7-1/2 x 7-1/2	100,500	50,250	33,500	25,120	20,100	16,750	14,350	12,560	11,160	10,050	9,130	8,370

For SI: 1 inch =m, 1 square foot = 0.0929 m^2.

a. Sizes indicated are nominal width x length of the opening for rectangular piping.

b. For shapes not included in this table, Equation 11-1 shall be used to determine the equivalent circular diameter, De, of rectangular piping for use in interpolation using the data from Table 1106.2(1).

(Equation 11-1)

De = (width x length)1/2

where:

De = equivalent circular diameter and De, width and length are in inches.

34. Change Section 1106.3 and Table 1106.3 of the IPC to read:

1106.3 Building storm drains and sewers. The size of the building storm drain, building storm sewer and their horizontal branches having a slope of 1/2 unit or less vertical in 12 units horizontal (4% slope) shall be based on the maximum projected roof area in accordance with Table 1106.3. The slope of horizontal branches shall be not less than 1/8 unit vertical in 12 units horizontal (1% slope) unless otherwise approved.

Table 1106.3

Size of Horizontal Storm Drainage Piping

Size of Horizontal Piping (inches)	Horizontally Projected Roof Area (square feet)					
	Rainfall rate (inches per hour)					
	1	2	3	4	5	6
1/8 unit vertical in 12 units horizontal (1% slope)						
3	3,288	1,644	1,096	822	657	548
4	7,520	3,760	2,506	1,800	1,504	1,253
5	13,360	6,680	4,453	3,340	2,672	2,227
6	21,400	10,700	7,133	5,350	4,280	3,566
8	46,000	23,000	15,330	11,500	9,200	7,600
10	82,800	41,400	27,600	20,700	16,580	13,800
12	133,200	66,600	44,400	33,300	26,650	22,200
15	218,000	109,000	72,800	59,500	47,600	39,650
1/4 unit vertical in 12 units horizontal (2% slope)						
3	4,640	2,320	1,546	1,160	928	773
4	10,600	5,300	3,533	2,650	2,120	1,766
5	18,880	9,440	6,293	4,720	3,776	3,146
6	30,200	15,100	10,066	7,550	6,040	5,033
8	65,200	32,600	21,733	16,300	13,040	10,866
10	116,800	58,400	38,950	29,200	23,350	19,450
12	188,000	94,000	62,600	47,000	37,600	31,350
15	336,000	168,000	112,000	84,000	67,250	56,000

1/2 unit vertical in 12 units horizontal (4% slope)						
3	6,576	3,288	2,295	1,644	1,310	1,096
4	15,040	7,520	5,010	3,760	3,010	2,500
5	26,720	13,360	8,900	6,680	5,320	4,450
6	42,800	21,400	13,700	10,700	8,580	7,140
8	92,000	46,000	30,650	23,000	18,400	15,320
10	171,600	85,800	55,200	41,400	33,150	27,600
12	266,400	133,200	88,800	66,600	53,200	44,400
15	476,000	238,000	158,800	119,000	95,300	79,250
For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m^2.						

35. Change Section 1106.6 and Table 1106.6 of the IPC to read:

1106.6 Size of roof gutters. The size of semicircular gutters shall be based on the maximum projected roof area in accordance with Table 1106.6.

Table 1106.6

Size of Semicircular Roof Gutters

Diameter of Gutters (inches)	Horizontally Projected Roof Area (square feet)					
	Rainfall rate (inches per hour)					
	1	2	3	4	5	6
1/16 unit vertical in 12 units horizontal (0.5% slope)						
3	680	340	226	170	136	113
4	1,440	720	480	360	288	240
5	2,500	1,250	834	625	500	416
6	3,840	1,920	1,280	960	768	640
7	5,520	2,760	1,840	1,380	1,100	918
8	7,960	3,980	2,655	1,990	1,590	1,325
10	14,400	7,200	4,800	3,600	2,880	2,400
1/8 unit vertical in 12 units horizontal (1% slope)						
3	960	480	320	240	192	160
4	2,040	1,020	681	510	408	340
5	3,520	1,760	1,172	880	704	587
6	5,440	2,720	1,815	1,360	1,085	905
7	7,800	3,900	2,600	1,950	1,560	1,300
8	11,200	5,600	3,740	2,800	2,240	1,870
10	20,400	10,200	6,800	5,100	4,080	3,400

1/4 unit vertical in 12 units horizontal (2% slope)						
3	1,360	680	454	340	272	226
4	2,880	1,440	960	720	576	480
5	5,000	2,500	1,668	1,250	1,000	834
6	7,680	3,840	2,560	1,920	1,536	1,280
7	11,040	5,520	3,860	2,760	2,205	1,840
8	15,920	7,960	5,310	3,980	3,180	2,655
10	28,800	14,400	9,600	7,200	5,750	4,800
1/2 unit vertical in 12 units horizontal (4% slope)						
3	1,920	960	640	480	384	320
4	4,080	2,040	1,360	1,020	816	680
5	7,080	3,540	2,360	1,770	1,415	1,180
6	11,080	5,540	3,695	2,770	2,220	1,850
7	15,600	7,800	5,200	3,900	3,120	2,600
8	22,400	11,200	7,460	5,600	4,480	3,730
10	40,000	20,000	13,330	10,000	8,000	6,660
For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m^2.						

36. Add Section 1114 Values for Continuous Flow to the IPC.

37. Add Section 1114.1 to the IPC to read:

1114.1 Equivalent roof area. Where there is a continuous or semicontinuous discharge into the building storm drain or building storm sewer, such as from a pump, ejector, air conditioning plant, or similar device, each gallon per minute (L/m) of such discharge shall be computed as being equivalent to 96 square feet (9 m^2) of roof area, based on a rainfall rate of 1 inch (25.4 mm) per hour.

38. Change Sections 1301.1 through 1301.12 and add Sections 1301.13 through 1301.18, including subsections, to the IPC to read:

1301.1 Scope. The provisions of Chapter 13 shall govern the materials, design, construction, and installation of nonpotable water systems subject to this code. In addition to the applicable provision of this section, reclaimed water shall comply with the requirements of Section 1304.

1301.1.1 Design of nonpotable water systems. All portions of nonpotable water systems subject to this code shall be constructed using the same standards and requirements for the potable water systems or drainage systems as provided for in this code unless otherwise specified in this chapter.

1301.2 Makeup water. Makeup water shall be provided for all nonpotable water supply systems. The makeup water system shall be designed and installed to provide supply of water in the amounts and at the pressures specified in this code. The makeup water supply shall be potable and be protected against backflow in accordance with the applicable requirements of Section 608.

1301.2.1 Makeup water sources. Potable water shall be provided as makeup water for reclaimed water systems. Nonpotable water shall be permitted to serve as makeup water for gray water and rainwater systems.

1301.2.2 Makeup water supply valve. A full-open valve shall be provided on the makeup water supply line.

1301.2.3 Control valve alarm. Makeup water systems shall be fitted with a warning mechanism that alerts the user to a failure of the inlet control valve to close correctly. The alarm shall activate before the water within the storage tank begins to discharge into the overflow system.

1301.3 Sizing. Nonpotable water distribution systems shall be designed and sized for peak demand in accordance with approved engineering practice methods that comply with the applicable provisions of Chapter 6.

1301.4 Signage required. All nonpotable water outlets, other than water closets and urinals, such as hose connections, open-ended pipes, and faucets shall be identified at the point of use for each outlet with signage that reads as follows: "Nonpotable water is utilized for (insert application name). Caution: nonpotable water. DO NOT DRINK." The words shall be legibly and indelibly printed on a tag or sign constructed of corrosion-resistant waterproof material or shall be indelibly printed on the fixture. The letters of the words shall be not less than 0.5 inches (12.7 mm) in height and in colors in contrast to the background on which they are applied. The pictograph shown in Figure 1301.4 shall appear on the signage required by this section.

Figure 1301.4
Pictograph DO NOT DRINK

1301.5 Potable water supply system connections. Where a potable water supply system is connected to a nonpotable water system, the potable water supply shall be protected against backflow in accordance with the applicable provisions of Section 608.

1301.6 Nonpotable water system connections. Where a nonpotable water system is connected and supplies water to another nonpotable water system, the nonpotable water system that supplies water shall be protected against backflow in accordance with the applicable provisions of Section 608.

1301.7 Approved components and materials. Piping, plumbing components, and materials used in the nonpotable water drainage and distribution systems shall be approved for the intended application and compatible with the water and any disinfection or treatment systems used.

1301.8 Insect and vermin control. Nonpotable water systems shall be protected to prevent the entrance of insects and vermin into storage and piping systems. Screen materials shall be compatible with system material and shall not promote corrosion of system components.

1301.9 Freeze protection. Nonpotable water systems shall be protected from freezing in accordance with the applicable provisions of Chapter 3.

1301.10 Nonpotable water storage tanks. Nonpotable water storage tanks shall be approved for the intended application and comply with Sections 1301.10.1 through 1301.10.12.

1301.10.1 Sizing. The holding capacity of storage tanks shall be sized for the intended use.

1301.10.2 Inlets. Storage tank inlets shall be designed to introduce water into the tank and avoid agitating the contents of the storage tank. The water supply to storage tanks shall be controlled by fill valves or other automatic supply valves designed to stop the flow of incoming water before the tank contents reach the overflow pipes.

1301.10.3 Outlets. Outlets shall be located at least 4 inches (102 mm) above the bottom of the storage tank and shall not skim water from the surface.

1301.10.4 Materials and location. Storage tanks shall be constructed of material compatible with treatment systems used to treat water. Above grade storage vessels shall be constructed using opaque, UV-resistant materials such as tinted plastic, lined metal, concrete, or wood or painted to prevent algae growth. Above grade storage tanks shall be protected from direct sunlight unless their design specifically incorporates the use of the sunlight heat transfer. Wooden storage tanks shall be provided with a flexible liner. Storage tanks and their manholes shall not be located directly under soil or waste piping or sources of contamination.

1301.10.5 Foundation and supports. Storage tanks shall be supported on a firm base capable of withstanding the storage tank's weight when filled to capacity. Storage tanks shall be supported in accordance with the applicable provisions of the IBC.

1301.10.5.1 Ballast. Where the soil can become saturated, an underground storage tank shall be ballasted, or otherwise secured, to prevent the effects of buoyancy. The combined weight of the tank and hold down ballast shall meet or exceed the buoyancy force of the tank. Where the installation requires a foundation, the foundation shall be flat and shall be designed to support the storage tank weight when full, consistent with the bearing capability of adjacent soil.

1301.10.5.2 Structural support. Where installed below grade, storage tank installations shall be designed to withstand earth and surface structural loads without damage.

1301.10.6 Overflow. The storage tank shall be equipped with an overflow pipe having a diameter not less than that shown in Table 606.5.4. The overflow outlet shall discharge at a point not less than 6 inches (152 mm) above the roof or roof drain, floor or floor drain, or over an open water-supplied fixture. The overflow outlet shall terminate through a check valve. Overflow pipes shall not be directed on walkways. The overflow drain shall not be equipped with a shutoff valve. A minimum of one cleanout shall be provided on each overflow pipe in accordance with the applicable provisions of Section 708.

1301.10.7 Access. A minimum of one access opening shall be provided to allow inspection and cleaning of the tank interior. Access openings shall have an approved locking device or other approved method of securing access. Below grade storage tanks, located outside of the building, shall be provided with either a manhole not less than 24 inches (610 mm) square or a manhole with an inside diameter not less than 24 inches (610 mm). The design and installation of access openings shall prohibit surface water from entering the tank. Each manhole cover shall have an approved locking device or other approved method of securing access.

> Exception: Storage tanks under 800 gallons (3028 L) in volume installed below grade shall not be required to be equipped with a manhole, but shall have an access opening not less than 8 inches (203 mm) in diameter to allow inspection and cleaning of the tank interior.

1301.10.8 Venting. Storage tanks shall be vented. Vents shall not be connected to sanitary drainage system. Vents shall be at least equal in size to the internal diameter of the drainage inlet pipe or pipes connected to the tank. Where installed at grade, vents shall be protected from contamination by means of a U-bend installed with the opening directed downward. Vent outlets shall extend a minimum of 12 inches (304.8 mm) above grade, or as necessary to prevent surface water from entering the storage tank. Vent openings shall be protected against the entrance of vermin and insects. Vents serving gray water tanks shall terminate in accordance with the applicable provisions of Sections 903 and 1301.8.

1301.10.9 Drain. Where drains are provided they shall be located at the lowest point of the storage tank. The tank drain pipe shall discharge as required for overflow pipes and shall not be smaller in size than specified in Table 606.5.7. A minimum of one cleanout shall be provided on each drain pipe in accordance with Section 708.

1301.10.10 Labeling and signage. Each nonpotable water storage tank shall be labeled with its rated capacity and the location of the upstream bypass valve. Underground and otherwise concealed storage tanks shall be labeled at all access points. The label shall read: "CAUTION: NONPOTABLE WATER – DO NOT DRINK." Where an opening is provided that could allow the entry of personnel, the opening shall be marked with the words: "DANGER – CONFINED SPACE." Markings shall be indelibly printed on a tag or sign constructed of corrosion-resistant waterproof material mounted on the tank or shall be indelibly printed on the tank. The letters of the words shall be not less than 0.5 inches (12.7 mm) in height and shall be of a color in contrast with the background on which they are applied.

1301.10.11 Storage tank tests. Storage tanks shall be tested in accordance with the following:

> 1. Storage tanks shall be filled with water to the overflow line prior to and during inspection. All seams and joints shall be left exposed and the tank shall remain watertight without leakage for a period of 24 hours.
>
> 2. After 24 hours, supplemental water shall be introduced for a period of 15 minutes to verify proper drainage of the overflow system and verify that there are no leaks.
>
> 3. Following a successful test of the overflow, the water level in the tank shall be reduced to a level that is at 2 inches (50.8 mm) below the makeup water offset point. The tank drain shall be observed for proper operation. The makeup water system shall be observed for proper operation, and successful automatic shutoff of the system at the refill threshold shall be verified. Water shall not be drained from the overflow at any time during the refill test.

4. Air tests shall be permitted in lieu of water testing as recommended by the tank manufacturer or the tank standard.

1301.10.12 Structural strength. Storage tanks shall meet the applicable structural strength requirements of the IBC.

1301.11 Trenching requirements for nonpotable water system piping. Underground nonpotable water system piping shall be horizontally separated from the building sewer and potable water piping by 5 feet (1524 mm) of undisturbed or compacted earth. Nonpotable water system piping shall not be located in, under, or above sewage systems cesspools, septic tanks, septic tank drainage fields, or seepage pits. Buried nonpotable system piping shall comply with the requirements of this code for the piping material installed.

Exceptions:

1. The required separation distance shall not apply where the bottom of the nonpotable water pipe within 5 feet (1524 mm) of the sewer is equal to or greater than 12 inches (305 mm) above the top of the highest point of the sewer and the pipe materials ~~conforms~~ conform to Table 702.3.

2. The required separation distance shall not apply where the bottom of the potable water service pipe within 5 feet (1524 mm) of the nonpotable water pipe is a minimum of 12 inches (305 mm) above the top of the highest point of the nonpotable water pipe and the pipe materials comply with the requirements of Table 605.4.

3. Nonpotable water pipe is permitted to be located in the same trench with building sewer piping, provided that such sewer piping is constructed of materials that comply with the requirements of Table 702.2.

4. The required separation distance shall not apply where a nonpotable water pipe crosses a sewer pipe, provided that the pipe is sleeved to at least 5 feet (1524 mm) horizontally from the sewer pipe centerline on both sides of such crossing with pipe materials that comply with Table 702.2.

5. The required separation distance shall not apply where a potable water service pipe crosses a nonpotable water pipe provided that the potable water service pipe is sleeved for a distance of at least 5 feet (1524 mm) horizontally from the centerline of the nonpotable pipe on both sides of such crossing with pipe materials that comply with Table 702.2.

1301.12 Outdoor outlet access. Sillcocks, hose bibs, wall hydrants, yard hydrants, and other outdoor outlets that are supplied by nonpotable water shall be located in a locked vault or shall be operable only by means of a removable key.

1301.13 Drainage and vent piping and fittings. Nonpotable drainage and vent pipe and fittings shall comply with the applicable material standards and installation requirements in accordance with provisions of Chapter 7.

1301.13.1. Labeling and marking. Identification of nonpotable drainage and vent piping shall not be required.

1301.14 Pumping and control system. Mechanical equipment, including pumps, valves, and filters, shall be accessible and removable in order to perform repair, maintenance, and cleaning. The minimum flow rate and flow pressure delivered by the pumping system shall be designed for the intended application in accordance with the applicable provisions of Section 604.

1301.15 Water-pressure reducing valve or regulator. Where the water pressure supplied by the pumping system exceeds 80 psi (552 kPa) static, a pressure-reducing valve shall be installed to reduce the pressure in the nonpotable water distribution system piping to 80 psi (552 kPa) static or less. Pressure-reducing valves shall be specified and installed in accordance with the applicable provisions of Section 604.8.

1301.16 Distribution pipe. Distribution piping utilized in nonpotable water ~~stems~~ systems shall comply with Sections 1301.16.1 through 1301.16.4.

1301.16.1 Materials, joints, and connections. Distribution piping and fittings shall comply with the applicable material standards and installation requirements in accordance with the applicable provisions of Chapter 6.

1301.16.2 Design. Distribution piping shall be designed and sized in accordance with the applicable provisions of Chapter 6.

1301.16.3 Labeling and marking. Distribution piping labeling and marking shall comply with Section 608.9.

1301.16.4 Backflow prevention. Backflow preventers shall be installed in accordance with the applicable provisions of Section 608.

1301.17 Tests and inspections. Tests and inspections shall be performed in accordance with Sections 1301.17.1 through 1301.17.5.

1301.17.1 Drainage and vent pipe test. Drain, waste, and vent piping used for gray water and rainwater nonpotable water systems shall be tested in accordance with the applicable provisions of Section 312.

1301.17.2 Storage tank test. Storage tanks shall be tested in accordance with the Section 1301.10.11.

1301.17.3 Water supply system test. Nonpotable distribution piping shall be tested in accordance with Section 312.5.

1301.17.4 Inspection and testing of backflow prevention assemblies. The testing of backflow preventers and backwater valves shall be conducted in accordance with Section 312.10.

1301.17.5 Inspection of vermin and insect protection. Inlets and vent terminations shall be visually inspected to verify that each termination is installed in accordance with Section 1301.10.8.

1301.18 Operation and maintenance manuals. Operations and maintenance materials for nonpotable water systems shall be provided as prescribed by the system component manufacturers and supplied to the owner to be kept in a readily accessible location.

39. Change the title of Section 1302 of the IPC to "Gray Water Nonpotable Water Systems."

40. Change Sections 1302.1 through 1302.6, including subsections, of the IPC to read as follows:

1302.1 Gray water nonpotable water systems. This code is applicable to the plumbing fixtures, piping or piping systems, storage tanks, drains, appurtenances, and appliances that are part of the distribution system for gray water within buildings and to storage tanks and associated piping that are part of the distribution system for gray water outside of buildings. This code does not regulate equipment used for, or the methods of, processing, filtering, or treating gray water, that may be regulated by the Virginia Department of Health or the Virginia Department of Environmental Quality.

1302.1.1 Separate systems. Gray water nonpotable water systems, unless approved otherwise under the permit from the Virginia Department of Health, shall be separate from the potable water system of a building with no cross connections between the two systems except as permitted by the Virginia Department of Health.

1302.2 Water quality. Each application of gray water reuse shall meet the minimum water quality requirements set forth in Sections 1302.2.1 through 1302.2.4 unless otherwise superseded by other state agencies.

1302.2.1 Disinfection. Where the intended use or reuse application for nonpotable water requires disinfection or other treatment or both, it shall be disinfected as needed to ensure that the required water quality is delivered at the point of use or reuse.

1302.2.2 Residual disinfectants. Where chlorine is used for disinfection, the nonpotable water shall contain not more than 4 parts per million (4 mg/L) of free chlorine, combined chlorine, or total chlorine. Where ozone is used for disinfection, the nonpotable water shall not exceed 0.1 parts per million (by volume) of ozone at the point of use.

1302.2.3 Filtration. Water collected for reuse shall be filtered as required for the intended end use. Filters shall be accessible for inspection and maintenance. Filters shall utilize a pressure gauge or other approved method to indicate when a filter requires servicing or replacement. Shutoff valves installed immediately upstream and downstream of the filter shall be included to allow for isolation during maintenance.

1302.2.4 Filtration required. Gray water utilized for water closet and urinal flushing applications shall be filtered by a 100 micron or finer filter.

1302.3 Storage tanks. Storage tanks utilized in gray water nonpotable water systems shall comply with Section 1301.10.

1302.4 Retention time limits. Untreated gray water shall be retained in storage tanks for a maximum of 24 hours.

1302.5 Tank Location. Storage tanks shall be located with a minimum horizontal distance between various elements as indicated in Table 1302.5.1.

	Table 1302.5.1 Location of Nonpotable Gray Water Reuse Storage Tanks	
	Element	Minimum Horizontal Distance from Storage Tank (feet)

	Lot line adjoining private lots	5
	Sewage systems	5
	Septic tanks	5
	Water wells	50
	Streams and lakes	50
	Water service	5
	Public water main	10

1302.6 Valves. Valves shall be supplied on gray water nonpotable water drainage systems in accordance with Sections 1302.6.1 and 1302.6.2.

1302.6.1 Bypass valve. One three-way diverter valve certified to NSF 50 or other approved device shall be installed on collection piping upstream of each storage tank, or drainfield, as applicable, to divert untreated gray water to the sanitary sewer to allow servicing and inspection of the system. Bypass valves shall be installed downstream of fixture traps and vent connections. Bypass valves shall be labeled to indicate the direction of flow, connection, and storage tank or drainfield connection. Bypass valves shall be provided with access for operation and maintenance. Two shutoff valves shall not be installed to serve as a bypass valve.

1302.6.2 Backwater valve. Backwater valves shall be installed on each overflow and tank drain pipe to prevent unwanted water from draining back into the storage tank. If the overflow and drain piping arrangement is installed to physically not allow water to drain back into the tank, such as in the form of an air gap, backwater valves shall not be required. Backwater valves shall be constructed and installed in accordance with Section 715.

41. Delete Sections 1302.7 through 1302.13.4, including subsections, of the IPC.

42. Change the title of Section 1303 of the IPC to "Rainwater Nonpotable Water Systems."

43. Change Sections 1303.1 through 1303.10, including subsections, of the IPC to read as follows:

1303.1 General. The provisions of this section shall govern the design, construction, installation, alteration, and repair of rainwater nonpotable water systems for the collection, storage, treatment, and distribution of rainwater for nonpotable applications. The provisions of CSA B805/ICC 805 shall be permitted as an alternative to the provisions contained in this section for the design, construction, installation, alteration, and repair of rainwater nonpotable water systems for the collection, storage, treatment, and distribution of rainwater for nonpotable applications. Roof runoff or stormwater runoff collection surfaces shall be limited to roofing materials, public pedestrian accessible roofs, and subsurface collection identified in CSA B805/ICC 805 Table 7.1. Stormwater runoff shall not be collected from any other surfaces.

1303.2 Water quality. Each application of rainwater reuse shall meet the minimum water quality requirements set forth in Sections 1303.2.1 through 1303.2.4 unless otherwise superseded by other state agencies.

1303.2.1 Disinfection. Where the intended use or reuse application for nonpotable water requires disinfection or other treatment or both, it shall be disinfected as needed to ensure that the required water quality is delivered at the point of use or reuse.

1303.2.2 Residual disinfectants. Where chlorine is used for disinfection, the nonpotable water shall contain not more than 4 parts per million (4 mg/L) of free chlorine, combined chlorine, or total chlorine. Where ozone is used for disinfection, the nonpotable water shall not exceed 0.1 parts per million (by volume) of ozone at the point of use.

1303.2.3 Filtration. Water collected for reuse shall be filtered as required for the intended end use. Filters shall be accessible for inspection and maintenance. Filters shall utilize a pressure gauge or other approved method to indicate when a filter requires servicing or replacement. Shutoff valves installed immediately upstream and downstream of the filter shall be included to allow for isolation during maintenance.

1303.2.4 Filtration required. Rainwater utilized for water closet and urinal flushing applications shall be filtered by a 100 micron or finer filter.

1303.3 Collection surface. Rainwater shall be collected only from aboveground impervious roofing surfaces constructed from approved materials. Overflow or discharge piping from appliances or equipment, or both, including but not limited to evaporative coolers, water heaters, and solar water heaters shall not discharge onto rainwater collection surfaces.

1303.4 Collection surface diversion. At a minimum, the first 0.04 inches (1.016 mm) of each rain event of 25 gallons (94.6 L) per 1,000 square feet (92.9 m^2) shall be diverted from the storage tank by automatic means and not require the operation of manually operated valves or devices. Diverted water shall not drain onto other collection surfaces that are discharging to the rainwater system or to the sanitary sewer. Such water shall be diverted from the storage tank and discharged in an approved location.

1303.5 Pre-tank filtration. Downspouts, conductors, and leaders shall be connected to a pre-tank filtration device. The filtration device shall not permit materials larger than 0.015 inches (0.4 mm).

1303.6 Roof gutters and downspouts. Gutters and downspouts shall be constructed of materials that are compatible with the collection surface and the rainwater quality for the desired end use. Joints shall be made watertight.

1303.6.1 Slope. Roof gutters, leaders, and rainwater collection piping shall slope continuously toward collection inlets. Gutters and downspouts shall have a slope of not less than 1 unit in 96 units along their entire length and shall not permit the collection or pooling of water at any point.

> Exception: Siphonic roof drainage systems installed in accordance with Chapter 11 shall not be required to have slope.

1303.6.2 Size. Gutters and downspouts shall be installed and sized in accordance with Section 1106.6 and local rainfall rates.

1303.6.3 Cleanouts. Cleanouts or other approved openings shall be provided to permit access to all filters, flushes, pipes, and downspouts.

1303.7 Storage tanks. Storage tanks utilized in rainwater nonpotable water systems shall comply with Section 1301.10.

1303.8 Location. Storage tanks shall be located with a minimum horizontal distance between various elements as indicated in Table 1303.8.1.

	Table 1303.8.1 Location of Rainwater Storage Tanks	
	Element	Minimum Horizontal Distance from Storage Tank (feet)
	Lot line adjoining private lots	5
	Sewage systems	5
	Septic tanks	5

1303.9 Valves. Valves shall be installed in collection and conveyance drainage piping of rainwater nonpotable water systems in accordance with Sections 1303.9.1 and 1303.9.2.

1303.9.1 Influent diversion. A means shall be provided to divert storage tank influent to allow maintenance and repair of the storage tank system.

1303.9.2 Backwater valve. Backwater valves shall be installed on each overflow and tank drain pipe to prevent unwanted water from draining back into the storage tank. If the overflow and drain piping arrangement is installed to physically not allow water to drain back into the tank, such as in the form of an air gap, backwater valves shall not be required. Backwater valves shall be constructed and installed in accordance with Section ~~715~~ 714.

1303.10 Tests and inspections. Tests and inspections shall be performed in accordance with Sections 1303.10.1 through 1303.10.2.

1303.10.1 Roof gutter inspection and test. Roof gutters shall be inspected to verify that the installation and slope is in accordance with Section 1303.6.1. Gutters shall be tested by pouring a minimum of one gallon of water into the end of the gutter opposite the collection point. The gutter being tested shall not leak and shall not retain standing water.

1303.10.2 Collection surface diversion test. A collection surface diversion test shall be performed by introducing water into the gutters or onto the collection surface area. Diversion of the first quantity of water in accordance with the requirements of Section 1303.4 shall be verified.

44. Delete Sections 1303.11 through 1303.16.4, including subsections, of the IPC.

45. Change Sections 1304.1 and 1304.2 of the IPC to read as follows:

1304.1 General. Reclaimed water, water reclamation systems, reclaimed water distribution systems, and allowable nonpotable reuses of reclaimed water are as defined or specified in and governed by the Virginia Water Reclamation and Reuse Regulation (9VAC25-740). Permits from the Virginia State Water

Control Board are required for such systems and reuses. The provisions of Section 1304 shall govern the design, construction, installation, alterations, and repair of plumbing fixtures, piping or piping systems, storage tanks, drains, appurtenances, and appliances that are part of the distribution system for reclaimed water within buildings and to storage tanks for reclaimed water as defined in the Virginia Water Reclamation and Reuse Regulation (9VAC25-740) and associated piping outside of buildings that deliver reclaimed water into buildings. Where conflicts occur between this code and the Virginia Water Reclamation and Reuse Regulation (9VAC25-740), the provisions of the Virginia Water Reclamation and Reuse Regulation (9VAC25-740) shall apply unless determined otherwise by the Virginia Department of Environmental Quality and DHCD through a memorandum of agreement.

1304.2 Design of reclaimed water systems. The design of reclaimed water systems shall conform to applicable requirements of Section 1301.

Exception: The design of reclaimed water systems shall conform to applicable requirements of the Virginia Water Reclamation and Reuse Regulation (9VAC25-740) for the following:

1. Identification, labeling, and posting of signage for reclaimed water systems in lieu of signage requirements described in Section 1301.4.

2. Sizing of system storage as defined in the Virginia Water Reclamation and Reuse Regulation (9VAC25-740), in addition to storage sizing requirements described in Section 1301.10.1.

3. Signage and labeling for reclaimed water storage in addition to labeling and signage requirements described in Section 1301.10.10.

4. Minimum separation distances and configurations for in-ground reclaimed water distribution piping in lieu of trenching requirements for nonpotable water systems described in Section 1301.11.

46. Delete Sections 1304.3 and ~~1304.4.2~~ 1304.4, including subsections, of the IPC.

47. Add the following referenced standards to Chapter 15 as follows: (Standards not shown remain the same.)

	Standard Reference Number	Title	Referenced in Code Section Number
	ASTM F1871-2011	Standard Specification for Folded/Formed Poly (Vinyl Chloride) Pipe Type A for Existing Sewer and Conduit Rehabilitation	717.6
	ASTM F1504-2014	Standard Specification for Folded Poly (Vinyl Chloride) (PVC) for Existing Sewer and Conduit Rehabilitation	717.6

	~~CSA B805-18/ICC 805-2018~~	~~Rainwater Harvesting Systems~~	~~1303.1~~

C. Change Section 2902.1 of the IBC to read:

2902.1 Minimum number of fixtures. Plumbing fixtures shall be provided in the minimum number as shown in Table 403.1 of the VPC based on the actual use of the building or space. Uses not shown in Table 403.1 of the VPC shall be considered individually by the code official. The number of occupants shall be determined by this code.

D. Delete Table 2902.1 and Sections 2902.1.1 through ~~2902.6~~ 2902.7

13VAC5-63-330. Chapter 30 Elevators and conveying systems.

A. ~~Change~~ Add an exception to Section 3002.4 of the IBC to read:

~~3002.4 Elevator car to accommodate ambulance stretcher. Where elevators are provided in buildings four or more stories above, or four or more stories below, grade plane, at least one elevator shall be provided for fire department emergency access to all floors. The elevator car shall be of such a size and arrangement to accommodate an ambulance stretcher 24 inches by 84 inches (610 mm by 2134 mm) with not less than five-inch (127 mm) radius corners, in the horizontal, open position and shall be identified by the international symbol for emergency medical services (star of life). The symbol shall not be less than three inches (76 mm) high and shall be placed inside on both sides of the hoistway door frame.~~

Exception: Elevators in multistory dwelling units or guest rooms.

B. Change Section 3003.3 of the IBC to read:

3003.3 Fire service elevator keys. All elevators shall be equipped to operate with either a standardized or non-standardized fire service elevator key in accordance with the IFC.

C. Change Section 3005.4 of the IBC to read:

3005.4 Machine and control rooms, control spaces, and machinery spaces. Elevator machine rooms, rooms and spaces housing elevator controllers, and machinery spaces outside of but attached to a hoistway that have openings into the hoistway shall be enclosed with fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. The fire-resistance rating shall not be less than the required rating of the hoistway enclosure. Openings in the fire barriers shall be protected with assemblies having a fire protection rating not less than that required for the hoistway enclosure doors.

Exceptions:

1. Where elevator machine rooms, rooms and spaces housing elevator controllers, and machinery spaces do not abut and do not have openings to the hoistway enclosure they serve, the fire barrier constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both, shall be permitted to be reduced to a one-hour fire-resistance rating.

2. In buildings four stories or less above grade plane when elevator machine rooms, rooms and spaces housing elevator controllers, and machinery spaces do not abut and have no openings to the hoistway enclosure they serve, the elevator machine rooms, rooms and spaces housing elevator controllers, and machinery spaces are not required to be fire-resistance rated.

D. Add Section 3005.7 to the IBC to read:

3005.7 Machine-room-less designs. Where machine-room-less designs are utilized they shall comply with the provisions of ASME A17.1 and incorporate the following:

1. Where the elevator car-top will be used as a work platform, it shall be equipped with permanently installed guards on all open sides. Guards shall be permitted to be of collapsible design, but otherwise must conform to all applicable requirements of this code for guards.

2. Where the equipment manufacturer's procedures for machinery removal and replacement depend on overhead structural support or lifting points, such supports or lifting points shall be permanently installed at the time of initial equipment installation.

3. Where the structure that the elevator will be located in is required to be fully sprinklered by this code, the hoistway that the elevator machine is located in shall be equipped with a fire suppression system as a machine room in accordance with NFPA 13. Smoke detectors for the automatic initiation of Phase I Emergency Recall Operation, and heat detectors or other approved devices that automatically disconnect the main line power supply to the elevators, shall be installed within the hoistway.

E. Delete Section 3006 of the IBC in its entirety.

F. Change the exception to 3007.6 to read:

Exception: Where a fire service access elevator has two entrances onto a floor, the second entrance shall be permitted to be protected in accordance with ~~IBC~~ Section 3006.3 of the IBC.

G. Change Section 3008.1 of the IBC to read:

3008.1 General. Where elevators in buildings greater than 420 feet (128,016 mm) in building height are to be used for occupant self-evacuation during fires, ~~all~~ passenger elevators for general public use shall comply with this section.

13VAC5-63-336. Chapter 31 Special construction.

A. Change the title of IBC Section 3109 to read:

Swimming Pools, Swimming Pool Enclosures, and Aquatic Recreational Facilities.

B. Change Section 3109.1 of the IBC to read as follows, add Section 3109.1.1 to the IBC to read as follows~~, and delete the remainder of Section 3109 of the IBC~~:

3109.1 General. Swimming pools, swimming pool enclosures, and aquatic recreational facilities, as that term is defined in the ISPSC, shall comply with applicable provisions of the ISPSC.

3109.1.1 Changes to the ISPSC. The following changes shall be made to the ISPSC:

1. Add Section 410.2 and related subsections to the ISPSC to read:

410.2 Showers. Showers shall be in accordance with Sections 410.2.1 through 410.2.5.

410.2.1 Deck hand shower or shower spray unit. Not less than one and not greater than half of the total number of showers required by Section 410.1 shall be a hand shower or spray shower unit located on the deck of or at the entrance of each pool.

410.2.2 Anti-scald device. Where heated water is provided to the showers, the shower water supply shall be controlled by an anti-scald device.

410.2.3 Water heater and mixing valve. Bather access to water heaters and thermostatically controlled mixing valves for showers shall be prohibited.

410.2.4 Flow rate. Each showerhead shall have a water flow of not less than 2 gallons per minute (7.6 lpm).

410.2.5 Temperature. At each showerhead, the heated shower water temperature shall not exceed 120°F (49°C) and shall not be less than 90°F (32°C).

~~2. Change the title of Section 609 of the ISPSC to read:~~

~~Dressing and Sanitary Facilities.~~

3. Change Section 609.3.1 of the ISPSC to read:

609.3.1 Deck hand shower or shower spray unit. Not less than one and not greater than half of the total number of showers required by Section 609.2 shall be a hand shower or shower spray unit located on the deck of or at the entrance of each pool.

C. Delete Section 3113 of the IBC in its entirety.

13VAC5-63-340. Chapter 33 Safeguards during construction.

A. Delete Section 3302.1 of the IBC.

B. Delete IBC Sections 3303 and 3305 in their entirety.

C. Change Section 3310.2 of the IBC to read:

3310.2 Maintenance of means of egress. Means of egress and required accessible means of egress shall be maintained at all times during construction.

13VAC5-63-360. Chapter 35 Referenced standards.

Change the referenced standards in Chapter 35 of the IBC as follows (standards not shown remain the same):

Standard reference number	Title	Referenced in code section number

ASTM E329-02	Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction	1703.1, 1703.1.3
API 650-09	Welded Steel Tanks for Oil Storage	430.2
API 653-09	Tank Inspection, Repair, Alteration and Reconstruction	430.4, 430.5
NFPA 91-15	Standard for Exhaust Systems for Air Conveying of Vapors, Mists and Particulate Solids	428.3.7
~~ISPSC-18~~ ISPSC-21	International Swimming Pool and Spa Code	202, 3109.1, 3109.1.1
TFI RMIP-09	Aboveground Storage Tanks Containing Liquid Fertilizer, Recommended Mechanical Integrity Practices	430.2, 430.4, 430.5
UL 2075-13	Standard for Gas and Vapor Detectors and Sensors	915.4, 915.5.1, 915.5.3

13VAC5-63-365. Appendix E Supplementary accessibility requirements.

Appendix E of the IBC shall be part of this code.

13VAC5-63-370. Appendix F Rodent proofing.

The following provisions of Appendix F of the IBC are part of this code:

F101.2 Foundation wall ventilation openings.

F101.6 Pier and wood construction. (Includes all provisions.)

13VAC5-63-380. Appendix H Signs.

The following provisions of Appendix H of the IBC are part of this code:

H101.2 Signs exempt from permits.

H102 Definitions. (Includes all definitions.)

H103 Location. (Includes Section H103.1.)

H105 through H114. (Includes all provisions.)

13VAC5-63-390. Appendix I Patio covers.

Appendix I of the IBC shall be part of this code.

Part II

Existing Buildings

9/29/2021

13VAC5-63-400. Chapter 1 Administration; Section 101 General.

A. Section 101.1 Short title. The Virginia Uniform Statewide Building Code, Part II, Existing Buildings, may be cited as the "Virginia Existing Building Code" or as the "VEBC."

B. Section 101.2 Incorporation by reference. Chapters 2 - 16 of the ~~2018~~ 2021 International Existing Building Code, published by the International Code Council, Inc., are adopted and incorporated by reference to be an enforceable part of the VEBC. The term "IEBC" means the ~~2018~~ 2021 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.

C. Section 101.3 Numbering system. A dual numbering system is used in the 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 catchlines of the Virginia Administrative Code sections and cross references between sections or chapters of the 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 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.

D. Section 101.4 Arrangement of code provisions. The 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 VEBC, any reference to a provision of Chapter 1 of 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.

E. Section 101.5 Use of terminology and notes. 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 VCC, unless the context clearly indicates otherwise.

4. 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.

5. 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.

6. 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: See Section 101.2 of the VCC for a list of major codes and standards referenced in the VCC.

F. Section 101.6 Order of precedence. The provisions of this code shall be used as follows:

1. The provisions of Chapter 1 of this code supersede any provisions of Chapters 2 - 16 of the IEBC that address the same subject matter and impose differing requirements.

2. The provisions of Chapter 1 of this code supersede any provisions of the codes and standards referenced in the IEBC that address the same subject matter and impose differing requirements.

3. The state amendments to the IEBC supersede any provisions of Chapters 2 - 16 of the IEBC that address the same subject matter and impose differing requirements.

4. The state amendments to the IEBC supersede any provisions of the codes and standards referenced in the IEBC that address the same subject matter and impose differing requirements.

5. The provisions of Chapters 2 - 16 of the IEBC supersede any provisions of the codes and standards referenced in the IEBC that address the same subject matter and impose differing requirements.

G. Section 101.7 Administrative provisions. The provisions of Chapter 1 establish administrative requirements, which include but are not limited to provisions relating to the scope and enforcement of the code. Any provisions of Chapters 2 - 16 of the IEBC or any provisions of the codes and standards referenced in the IEBC that address the same subject matter to a lesser or greater extent are deleted and replaced by the provisions of Chapter 1. Further, any administrative requirements contained in the state amendments to the IEBC shall be given the same precedence as the provisions of Chapter 1. Notwithstanding the above, where administrative requirements of Chapters 2 - 16 of the IEBC or of the codes and standards referenced in the IEBC are specifically identified as valid administrative requirements in Chapter 1 of this code or in the state amendments to the IEBC, then such requirements are not deleted and replaced.

Note: The purpose of this provision is to eliminate overlap, conflicts and duplication by providing a single standard for administrative, procedural and enforcement requirements of this code.

H. Section 101.8 Definitions. The definitions of terms used in this code are contained in Chapter 2 along with specific provisions addressing the use of definitions. Terms may be defined in other chapters or provisions of the code and such definitions are also valid.

13VAC5-63-410. Section 102 Purpose and scope.

A. Section 102.1 Purpose. In accordance with § 36-99.01 of the Code of Virginia, the General Assembly of Virginia has declared that (i) there is an urgent need to improve the housing conditions of low and moderate income individuals and families, many of whom live in substandard housing, particularly in the older cities of the Commonwealth; (ii) there are large numbers of older residential buildings in the Commonwealth, both occupied and vacant, which

are in urgent need of rehabilitation and must be rehabilitated if the state's citizens are to be housed in decent, sound, and sanitary conditions; and (iii) the application of those building code requirements currently in force to housing rehabilitation has sometimes led to the imposition of costly and time-consuming requirements that result in a significant reduction in the amount of rehabilitation activity taking place.

The General Assembly further declares that (i) there is an urgent need to improve the existing condition of many of the Commonwealth's stock of commercial properties, particularly in older cities; (ii) there are large numbers of older commercial buildings in the Commonwealth, both occupied and vacant, that are in urgent need of rehabilitation and that must be rehabilitated if the citizens of the Commonwealth are to be provided with decent, sound and sanitary work spaces; and (iii) the application of the existing building code to such rehabilitation has sometimes led to the imposition of costly and time-consuming requirements that result in a significant reduction in the amount of rehabilitation activity taking place.

B. Section 102.2 Scope. The provisions of this code shall govern construction and rehabilitation activities in existing buildings and structures.

C. 102.2.1 Change of occupancy to Group I-2 or I-3. A change of occupancy to Group I-2 or I-3 shall comply with the provisions of the VCC. 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 change of occupancy. When impractical to achieve compliance with the VCC for the new occupancy classification, the building official shall consider modifications upon application and as provided for in Section 106.3 of the VCC.

D. 102.2.2 Reconstruction, alteration, or repair in Group R-5 occupancies. Compliance with this section shall be an acceptable alternative to compliance with this code at the discretion of the owner or owner's agent. The VCC may be used for the reconstruction, alteration, or repair of Group R-5 buildings or structures subject to the following criteria:

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 the VCC 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 the VCC 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 ~~of~~ or capacity.

Exceptions:

1. This section shall not be construed to permit noncompliance with any applicable flood load or flood-resistant construction requirements of the VCC.

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.

5. In accordance with § 36-99.2 of the Code of Virginia, installation or replacement of glass shall comply with Section R308 or Chapter 24 of the VCC.

E. 102.2.3 Additions. Where one or more newly constructed fire walls that comply with Section 706 of the VCC is provided between an addition and the existing building or structure or portions thereof, the addition shall be considered a separate building, and therefore, not an addition within

the scope of this code. Such separate building, including the fire wall, shall be constructed in accordance with the VCC and shall not place the existing building or structure in nonconformance with the building code under which the existing building or structure or the affected portions thereof was built, or as previously approved.

13VAC5-63-420. Section 103 Application of code.

A. Section 103.1 General. All administrative provisions of the VCC, including requirements for permits, inspections and approvals by the local building department, provisions for appeals from decisions of the local building department and the issuance of modifications, are applicable to the use of this code, except where this code sets out differing requirements. Where there is a conflict between a general requirement and a specific requirement in the VEBC, the specific requirement shall govern.

B. Section 103.1.1 Use of performance code. Compliance with the provisions of a nationally recognized performance code when approved as a modification shall be considered to constitute compliance with this code. All documents submitted as part of such consideration shall be retained in the permanent records of the local building department.

C. Section 103.1.2 Preliminary meeting. When requested by a prospective permit applicant or when determined necessary by the code official, the code official shall meet with the prospective permit applicant prior to the application for a permit to discuss plans for the proposed work or change of occupancy in order to establish the specific applicability of the provisions of this code.

D. Section 103.2 Change of occupancy. Prior to a change of occupancy of the building or structure, the owner or the owner's agent shall make written application to the local building department for a new certificate of occupancy and shall obtain the new certificate of occupancy.

When impractical to achieve compliance with this code for the new occupancy, the building official shall consider modifications upon application and as provided for in Section 106.3 of the VCC.

E. Section 103.3 Retrofit requirements. The local building department shall enforce the provisions of Section 1101 that require certain existing buildings to be retrofitted with fire protection systems and other safety equipment. Retroactive fire protection system requirements contained in the IFC shall not be applicable unless required for compliance with the provisions of Section 1101.

F. Section 103.4 Nonrequired equipment. The following criteria for nonrequired equipment are in accordance with § 36-103 of the Code of Virginia. Building owners may elect to install partial or full fire alarms or other safety equipment that was not required by the edition of the VCC in effect at the time a building was constructed without meeting current requirements of the code, provided the installation does not create a hazardous condition. Permits for installation shall be obtained in accordance with the VCC. In addition, as a requirement of this code, when such nonrequired equipment is to be installed, the building official shall notify the appropriate fire official or fire chief.

G. Section 103.4.1 Reduction in function or discontinuance of nonrequired fire protection systems. When a nonrequired fire protection system is to be reduced in function or discontinued, it shall be done in such a manner so as not to create a false sense of protection. Generally, in such cases, any features visible from interior areas shall be removed, such as sprinkler heads, smoke detectors, or alarm panels or devices, but any wiring or piping hidden within the construction of the building may remain. Approval of the proposed method of reduction or discontinuance shall be obtained from the building official.

H. Section 103.5 Requirements relating to maintenance. Any requirements of the IEBC requiring the maintenance of existing buildings or structures are invalid.

Note: Requirements for the maintenance of existing buildings and structures and for unsafe conditions are contained in the VMC.

I. Section 103.6 Use of Appendix A. Appendix A of the IEBC provides guidelines for the seismic retrofit of existing buildings. The use of this appendix is not mandatory but shall be permitted to be utilized at the option of an owner, the owner's agent or the ~~RDP~~ Registered Design Professional involved in a rehabilitation project. However, in no case shall the use of Appendix A be construed to authorize the lowering of existing levels of health or safety in buildings or structures being rehabilitated.

J. Section 103.7 Use of Appendix B. Appendix B of the IEBC provides supplementary accessibility requirements for existing buildings and facilities. All applicable requirements of Appendix B shall be met in buildings and structures being rehabilitated.

K. Section 103.8 Use of Resource A. Resource A of the IEBC provides guidelines for the evaluation of fire resistance ratings of archaic materials and may be used in conjunction with rehabilitation projects.

L. 103.9 Construction documents. Construction documents shall be submitted with the application for a permit. The work proposed to be performed on an existing building or structure shall be classified on the construction documents as repairs, alterations, change of occupancy, addition, historic building, or moved building. Alterations shall further be classified as Level 1 or Level 2.

Exception: Construction documents or classification of the work does not need to be submitted when the building official determines the proposed work does not require such documents, classification, or identification.

13VAC5-63-430. Chapter 2 Definitions.

A. Change Section 201.3 of the IEBC to read:

201.3 Terms defined in other codes. Where terms are not defined in this code and are defined in the other International Codes, such terms shall have the meanings ascribed to them in those codes, except that terms that are not defined in this code and that are defined in the VCC shall take precedence over other definitions.

B. Change the following definitions in Section 202 of the IEBC to read:

Building. A combination of materials, whether portable or fixed, having a roof to form a structure for the use or occupancy by persons or property. The word "building" shall be construed as though followed by the words "or part or parts thereof" unless the context clearly requires a different meaning. "Building" shall not include roadway tunnels and bridges owned by the Virginia Department of Transportation, which shall be governed by construction and design standards approved by the Commonwealth Transportation Board.

Change of occupancy. Either of the following shall be considered a change of occupancy where the current VCC requires a greater degree of accessibility, structural strength, fire protection, means of egress, ventilation or sanitation than is existing in the current building or structure:

1. Any change in the occupancy classification of a building or structure.

2. Any change in the purpose of, or a change in the level of activity within, a building or structure.

Note: The use and occupancy classification of a building or structure, shall be determined in accordance with Chapter 3 of the VCC.

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 when no legal certificate

of occupancy exists, and that has been occupied for its intended use; or, a building built prior to the initial edition of the USBC.

Existing structure. A structure (i) for which a legal building permit has been issued under any edition of the USBC, (ii) that has been previously approved, or (iii) that was built prior to the initial edition of the USBC. For application of provisions in flood hazard areas, an existing structure is any building or structure for which the start of construction commenced before the effective date of the community's first flood plain management code, ordinance, or standard.

C. Add the following definitions to Section 202 of the IEBC to read:

Moved building or structure. An existing building or structure that is moved to a new location.

Roof covering. The covering applied to the roof deck or spaced supports for weather resistance, energy performance, fire classification, or appearance.

Structure. An assembly of materials forming a construction for occupancy or use including stadiums, gospel and circus tents, reviewing stands, platforms, stagings, observation towers, radio towers, water tanks, storage tanks (underground and aboveground), trestles, piers, wharves, swimming pools, amusement devices, storage bins, and other structures of this general nature but excluding water wells. The word "structure" shall be construed as though followed by the words "or part or parts thereof" unless the context clearly requires a different meaning. "Structure" shall not include roadway tunnels and bridges owned by the Virginia Department of Transportation, which shall be governed by construction and design standards approved by the Virginia Commonwealth Transportation Board.

D. Delete the following definitions from Section 202 of the IEBC:

Approved

Dangerous

Deferred submittal

Facility

Flood hazard area

Registered design professional in responsible charge

Relocatable building

Roof repair

Unsafe

Work area

13VAC5-63-431. Chapter 3 General provisions and special detailed requirements.

Replace Chapter 3 of the IEBC with the following:

~~A. Change IEBC~~ 1. Section 301 ~~to~~ General.

~~B. Change Section 301.1 of the IEBC to read:~~

301.1 Applicability. The applicable provisions of this chapter shall be used in conjunction with the requirements in this code, and shall apply to all construction and rehabilitation.

~~C. Change Section 301.2 to the IEBC to read:~~

301.2 Occupancy and use. When determining the appropriate application of the referenced sections of this code, the occupancy and use of a building shall be determined in accordance with Chapter 3 of the VCC.

~~D. Change IEBC~~ 2. Section 302 ~~to~~ Building Materials and Systems.

~~E. Change Sections 302.1 through 302.3 of the IEBC to read:~~

302.1 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 and alterations, provided no hazard to life, health or property is created. Hazardous materials shall not be used where the VCC would not permit their use in buildings or structures of similar occupancy, purpose, and location.

302.2 Existing seismic force-resisting systems. Where the existing seismic force-resisting system is a type that can be designated ordinary, values of R, Ω_0, and C_d for the existing seismic force-resisting system shall be those specified by the VCC for an ordinary system unless it is demonstrated that the existing system will provide performance equivalent to that of a detailed, intermediate, or special system.

302.3 Smoke alarms. Repair or replacement of smoke alarms shall be with devices listed in accordance with UL217 and that are no more than 10 years from the date of manufacture. Battery-only powered devices shall be powered by a 10-year sealed battery.

~~F. Delete Sections 302.3 through 302.6 of the IEBC.~~

~~G. Change IEBC~~ 3. Section 303 ~~to~~ Fire escapes.

~~H. Change Sections 303.1 through 303.3.2, including subsections, and add Sections 303.4 through 303.6 to the IEBC to read:~~

303.1 Where permitted. Fire escapes shall comply with this section and shall not constitute more than 50% of the required number of exits nor more than 50% of the required exit capacity.

303.1.1 Existing fire escapes. Existing fire escapes shall continue to be accepted as a component in the means of egress.

303.1.2 New fire escapes. For other than Group I-2, newly constructed fire escapes shall be permitted only where exterior stairs cannot be utilized due to lot lines limiting stair size or due to the sidewalks, alleys, or roads at grade level.

Exception: Replacement fire escapes or existing fire escapes undergoing repairs shall comply with Sections 303.3 and 303.4 if feasible, and if not feasible to the greatest extent possible.

303.2 Location. Where located on the front of the building and where projecting beyond the building line, the lowest landing shall not be less than 7 feet (2134 mm) or more than 12 feet (3658 mm) above grade, and shall be equipped with a counterbalanced stairway to the street. In alleyways and thoroughfares less than 30 feet (9144 mm) wide, the clearance under the lowest landing shall not be less than 12 feet (3658 mm).

303.3 Construction. The fire escape shall be designed to support a live load of 100 pounds per square foot (4788 Pa) and shall be constructed of steel or other approved noncombustible materials. Fire escapes constructed of wood not less than nominal 2 inches (51 mm) thick are permitted on buildings of Type V construction. Walkways and railings located over or supported by combustible roofs in buildings of Types III and IV construction are permitted to be of wood not less than nominal 2 inches (51 mm) thick.

303.4 Dimensions. Stairs shall be at least 22 inches (559 mm) wide with risers not more than, and treads not less than, 8 inches (203 mm) and landings at the foot of stairs not less than 40 inches (1016 mm) wide by 36 inches (914 mm) long, located not more than 9 inches (203 mm) below the door.

303.5 Opening protectives. Openings within 10 feet (3048 mm) of newly constructed fire escape stairways shall be protected by fire assemblies having minimum 3/4-hour-fire-resistance ratings.

Exception: Opening protection shall not be required in buildings equipped throughout with an approved automatic sprinkler system.

303.6 Fire escape access and details. Newly constructed fire escapes shall comply with all of the following requirements:

1. Occupants shall have unobstructed access to the fire escape without having to pass through a room subject to locking.

2. Access to a new fire escape shall be through a door, except that windows shall be permitted to provide access from single dwelling units or sleeping units in Groups R-1, R-2 and I-1 occupancies or to provide access from spaces having a maximum occupant load of 10 in other occupancy classifications.

2.1. The window shall have a minimum net clear opening of 5.7 square feet (0.53 m^2) or 5 square feet (0.46 m^2) where located at grade.

2.2. The minimum net clear opening height shall be 24 inches (610 mm) and net clear opening width shall be 20 inches (508 mm).

2.3. The bottom of the clear opening shall not be greater than 44 inches (1118 mm) above the floor.

2.4. The operation of the window shall comply with the operational constraints of the VCC.

3. In all buildings of Group E occupancy, up to and including the 12th grade, buildings of Group I occupancy, rooming houses and child care centers, ladders of any type are prohibited on fire escapes used as a required means of egress.

~~I. Change~~ 4. Section 304 ~~to~~ Glass replacement and replacement windows.

~~J. Change Section 304.1 and add Sections 304.2 through 304.3.1 to the IEBC to read:~~

304.1 Replacement glass. In accordance with § 36-99.2 of the Code of Virginia, installation or replacement of glass shall comply with Chapter 24 of the VCC.

304.2 Replacement window opening devices. In Group R-2 or R-3 buildings containing dwelling units, window opening control devices complying with ASTM F 2090 shall be installed where an existing window is replaced and where all of the following apply to the replacement window:

1. The window is operable;

2. The window replacement includes replacement of the sash and the frame;

3. The top of the sill of the window opening is at a height less than 36 inches (915 mm) above the finished floor;

4. The window will permit openings that will allow passage of a 4-inch diameter (102 mm) sphere when the window is in its largest opened position; and

5. The vertical distance from the top of the sill of the window opening to the finished grade or other surface below, on the exterior of the building, is greater than 72 inches (1829 mm).

The window opening control device, after operation to release the control device allowing the window to fully open, shall not reduce the minimum net clear opening area of the window unit to less than the area required by Section ~~1029.2~~ 1031.3.1 of the VCC.

Exceptions:

1. Operable windows where the top of the sill of the window opening is located more than 75 feet (22 860 mm) above the finished grade or other surface below, on the exterior of the room, space or building, and that are provided with window fall prevention devices that comply with ASTM F 2006.

2. Operable windows with openings that are provided with window fall prevention devices that comply with ASTM F 2090.

304.3 Replacement window emergency escape and rescue openings. Where windows are required by the VCC or International Residential Code to provide emergency escape and rescue openings in Groups R-2 and R-3 occupancies and one-family and two-family dwellings and townhouses regulated by the International Residential Code, replacement windows shall be exempt from the requirements of Sections ~~1030.2, 1030.3, and 1030.4~~ 1031.2.1 and 1031.3 of the VCC or Sections ~~R310.2.1, R310.2.2, and R310.2.3~~ R310.1.1, R310.2.1, R310.2.2, R310.2.3, R310.4.1, R310.4.2, R310.4.2.1, R310.4.2.2 and R310.4.3 of the International Residential Code, provided the replacement window meets the following conditions:

1. The replacement window is the manufacturer's largest standard size window that will fit within the existing frame or existing rough opening. The replacement window shall be permitted to be of the same operating style as the existing window or a style that provides for an equal or greater window opening area than the existing window.

2. The replacement of the window is not part of a change of occupancy.

304.3.1 Operational constraints. Where bars, grilles, grates, or similar devices are installed over emergency escape and rescue openings as permitted by Section ~~1030.4~~ 1031.2.1 of the VCC, smoke alarms shall also be provided in accordance with Section 907.2.11 of the VCC.

~~K. Change~~ 5. Section 305 Seismic force-resisting systems.

~~L. Change Sections 305.1 and 305.2, including subsections, to the IEBC to read:~~

305.1 General. Where this code requires consideration of the seismic force-resisting system of an existing building subject to repair, alteration, change of occupancy, addition or moving of existing buildings, the seismic evaluation and design shall be based on Section 305.2.

305.2 Seismic evaluation and design procedures. The seismic evaluation and design shall be based on the procedures specified in the VCC or ASCE 41. The procedures contained in Appendix A of this code shall be permitted to be used as specified in Section 305.2.2.

305.2.1 Compliance with VCC-level seismic forces. Where compliance with the seismic design provisions of the VCC is required, the criteria shall be in accordance with one of the following:

1. 100% of the values in the VCC. Where the existing seismic force-resisting system is a type that can be designated as "Ordinary," values of R, Ω_0, and C_d used for analysis in accordance with Chapter 16 of the VCC shall be those specified for structural systems classified as "Ordinary" in accordance with Table 12.2-1 of ASCE 7, unless it can be demonstrated that the structural system will provide performance equivalent to that of a "Detailed," "Intermediate" or "Special" system.

2. ASCE 41, using a Tier 3 procedure and the two level performance objective in Table 305.2.1 for the applicable risk category.

Table 305.2.1
Performance Objectives for Use in ASCE 41 for Compliance with VCC-Level Seismic Forces

Risk Category (Based on VCC Table 1604.5)	Structural Performance Level for Use with BSE-1E Earthquake Hazard Level	Structural Performance Level for Use with BSE-2N

		Earthquake Hazard Level
I	Life Safety (S-3)	Collapse Prevention (S-5)
II	Life Safety (S-3)	Collapse Prevention (S-5)
III	Damage Control (S-2)	Limited Safety (S-4)
IV	Immediate Occupancy (S-1)	Life Safety (S-3)

305.2.2 Compliance with reduced VCC-level seismic forces. Where seismic evaluation and design is permitted to meet reduced VCC seismic force levels, the criteria used shall be in accordance with one of the following:

1. The VCC using 75% of the prescribed forces. Values of R, Ω_0 and C_d used for analysis shall be as specified in Section 305.2.1 of this code.

2. Structures or portions of structures that comply with the requirements of the applicable chapter in Appendix A as specified in Items 2.1 through 2.5 and subject to the limitations of the respective Appendix A chapters shall be deemed to comply with this section.

2.1. The seismic evaluation and design of unreinforced masonry bearing wall buildings in Risk Category I or II are permitted to be based on the procedures specified in Appendix Chapter A1.

2.2. Seismic evaluation and design of the wall anchorage system in reinforced concrete and reinforced masonry wall buildings with flexible diaphragms in Risk Category I or II are permitted to be based on the procedures specified in Chapter A2.

2.3. Seismic evaluation and design of cripple walls and sill plate anchorage in residential buildings of light-frame wood construction in Risk Category I or II are permitted to be based on the procedures specified in Chapter A3.

2.4. Seismic evaluation and design of soft, weak, or open-front wall conditions in multiunit residential buildings of wood construction in Risk Category I or II are permitted to be based on the procedures specified in Chapter A4.

2.5. Seismic evaluation and design of concrete buildings assigned to Risk Category I, II, or III are permitted to be based on the procedures specified in Chapter A5.

3. ASCE 41, using the performance objective in Table 305.2.2 for the applicable risk category.

Table 305.2.2
Performance Objectives for Use in ASCE 41 for Compliance with Reduced VCC-Level Seismic Forces

Risk Category (Based on VCC Table 1604.5)	Structural Performance Level for Use with BSE-1E Earthquake Hazard Level
I	Life Safety (S-3)
II	Life Safety (S-3)

III	Damage Control (S-2[a])
IV	Immediate Occupancy (S-1)
a. Tier 1 evaluation at the Damage Control performance level shall use the Tier 1 Life Safety checklists and Tier 1 Quick Check provision midway between those specified for Life Safety and Immediate Occupancy performance	

~~M. Delete Sections 305.3 through 305.9, including subsections, of the IEBC.~~

~~N. Add IEBC~~ 6. Section 306 Higher education laboratories.

~~O. Add Section 306.1, including subsections, to the IEBC to read:~~

306.1 Change of occupancy in existing higher education laboratories. Where the use of new or different hazardous materials or a change in the amount of hazardous materials in existing higher education laboratories 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, such laboratories shall comply with the applicable operational and maintenance requirements in Chapter 38 of the SFPC. Approval under this section is contingent upon operational requirements in the SFPC being complied with and maintained.

306.1.1 Hazardous materials in existing higher education 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 306.1.1(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 Higher Education Laboratories

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
		10	1	2
	10-20	25	2	2
	7-9	50	2	2
	4-6	75	2	1
	3	100	3	1
	2	100	4	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 306.1.1(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 Higher Education Laboratories

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 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.

306.1.2 Automatic fire alarm and detection systems. A 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 the building is not equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 of the VCC.

306.1.3 System supervision and monitoring. Automatic fire alarm and 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 onsite location.

306.1.4 Restricted materials in storage and use. Where approved by the building official, the storage and use of the following hazardous materials prohibited by VCC 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 Sections 3805.2.1 and 3805.2.2 of the SFPC.

~~P. Add IEBC Section 307 Reroofing and roof repair.~~

13VAC5-63-432.5. Chapter 4 Accessibility.

Replace Chapter 4 of the IEBC with the following:

~~A. Change Section 401.1 of the IEBC to read:~~

1. Section 401 General

401.1 Scope. The applicable provisions of this chapter shall apply to all construction and rehabilitation.

~~B. Delete Sections 401.2 through 401.3 of the IEBC.~~

~~C. Change IEBC~~ 2. Section 402 ~~to~~ Change of Occupancy.

~~D. Change Section 402.1 of the IEBC to read:~~

402.1 Change of occupancy. Existing buildings or structures that undergo a change of occupancy are not required to be provided with additional accessibility features. Any alterations undertaken in connection with a change of occupancy shall conform to the applicable requirements of Section 404.

~~E. Change IEBC~~ 3. Section 403 ~~to~~ Additions.

~~F. Change Section 403.1 of the IEBC to read:~~

403.1 Additions. Accessibility provisions for new construction shall apply to additions. An addition that affects the accessibility to, or contains an area of, a primary function shall comply with the requirements in Section 404.3, as applicable.

~~G. Add Sections 403.2 through 403.4 to the IEBC to read:~~

403.2 Accessible dwelling units and sleeping units. Where Group I-1, I-2, I-3, R-1, R-2, or R-4 dwelling or sleeping units are being added, the requirements of Section ~~1107~~ 1108 of the VCC for accessible units apply only to the quantity of spaces being added.

403.3 Type A dwelling or sleeping units. Where more than 20 Group R-2 dwelling or sleeping units are being added, the requirements of Section ~~1107~~ 1108 of the VCC for Type A units and Chapter 9 of the VCC for visible alarms apply only to the quantity of the spaces being added.

403.4 Type B dwelling or sleeping units. Where four or more Group I-1, I-2, R-1, R-2, R-3, or R-4 dwelling or sleeping units are being added, the requirements of Section ~~1107~~ 1108 of the VCC for Type B units and Chapter 9 of the VCC for visible alarms apply only to the quantity of spaces being added.

~~H. Change IEBC~~ 4. Section 404 ~~to~~ Alterations.

~~I. Change Section 404.1 of the IEBC to read:~~

404.1 General. An alteration of an existing facility shall not impose a requirement for greater accessibility than that which would be required for new construction. Alterations shall not reduce or have the effect of reducing accessibility of a facility or portion of a facility.

~~J. Add Sections 404.2 through 404.4.15, including subsections, to the IEBC to read:~~

404.2 Alterations. A facility that is altered shall comply with the applicable provisions in this section and Chapter 11 of the VCC, except as modified by Sections 404.3 and 404.4, unless technically infeasible. Where compliance with this section is technically infeasible, the alteration shall provide access to the maximum extent technically feasible.

Exceptions:

1. The altered element or space is not required to be on an accessible route, unless required by Section 404.3.

2. Accessible means of egress required by Chapter 10 of the VCC are not required to be provided in existing facilities.

3. The alteration to Type A individually owned dwelling units within a Group R-2 occupancy shall be permitted to meet the ~~provision~~ provisions for a Type B dwelling unit.

404.3 Alterations affecting an area containing a primary function. Where an alteration affects or could affect the usability of or access to an area containing a primary function, the route to the primary function area shall be accessible. The accessible route to the primary function area shall include toilet facilities and drinking fountains that shall also be accessible to and ~~useable~~ usable by individuals with disabilities, serving the area of primary function.

Exceptions:

1. The costs of providing the accessible route are not required to exceed 20% of the costs of the alterations affecting the area of primary function.

2. This provision does not apply to alterations limited solely to windows, hardware, operating controls, electrical outlets and signs.

3. This provision does not apply to alterations limited solely to mechanical systems, electrical systems, installation or alteration of fire protection systems and abatement of hazardous materials.

4. This provision does not apply to alterations undertaken for the primary purpose of increasing the accessibility of a facility.

5. This provision does not apply to altered areas limited to Type B dwelling and sleeping units.

404.4 Scoping for alterations. The provisions of Sections 404.4.1 through 404.1.15 shall apply to alterations to existing buildings and facilities.

404.4.1 Entrances. Where an alteration includes alterations to an entrance, and the facility has an accessible entrance on an accessible route, the altered entrance is not required to be accessible unless required by Section 404.3. Signs complying with Section ~~1111~~ 1112 of the VCC shall be provided.

Exception: Where an alteration includes alterations to an entrance, and the facility has an accessible entrance, the altered entrance is not required to be accessible, unless required by Section 404.3. Signs complying with Section ~~1111~~ 1112 of the VCC shall be provided.

404.4.2 Elevators. Altered elements of existing elevators shall comply with ASME A17.1/CSA B44 and ICC A117.1. Such elements shall also be altered in elevators programmed to respond to the same hall call control as the altered elevator.

404.4.3 Platform lifts. Platform (wheelchair) lifts complying with ICC A117.1 and installed in accordance with ASME A18.1 shall be permitted as a component of an accessible route.

404.4.4 Stairways and escalators. Where an escalator or stairway is added where none existed previously and major structural modifications are necessary for installation, an accessible route shall be provided between the levels served by the escalator or stairways in accordance with Section 1104.4 of the VCC.

404.4.5 Ramps. Where steeper slopes than allowed by Section 1012.2 of the VCC are necessitated by space limitations, the slope of ramps in or providing access to existing facilities shall comply with Table 404.4.5.

Table 404.4.5
Ramps

Slope	Maximum Rise
Steeper than 1:10 but not steeper than 1:8	3 inches
Steeper than 1:12 but not steeper than 1:10	6 inches
For SI: 1 inch = 25.4 mm	

404.4.6 Accessible dwelling or sleeping units. Where Group I-1, I-2, I-3, R-1, R-2, or R-4 dwelling or sleeping units are being altered, the requirements of Section ~~1107~~ 1108 of the VCC for Accessible units apply only to the quantity of the spaces being altered.

404.4.7 Type A dwelling or sleeping units. Where more than 20 Group R-2 dwelling or sleeping units are being altered, the requirements of Section ~~1107~~ 1108 of the VCC for Type A units and Chapter 9 of the VCC for visible alarms apply only to the quantity of the spaces being altered.

404.4.8 Type B dwelling or sleeping units. Where four or more Group I-1, I-2, R-1, R-2, R-3, or R-4 dwelling or sleeping units are being altered, the requirements of Section ~~1107~~ 1108 of the VCC for Type B units and Chapter 9 of the VCC for visible alarms apply only to the quantity of the spaces being altered.

Exceptions: Groups I-1, I-2, R-2, R-3, and R-4 dwelling or sleeping units where the first certificate of occupancy was issued before March 15, 1991, are not required to provide Type B dwelling or sleeping units.

404.4.9 Jury boxes and witness stands. In alterations, accessible wheelchair spaces are not required to be located within the defined area of raised jury boxes or witness stands and shall be permitted to be located outside these spaces where ramp or lift access poses a hazard by restricting or projecting into a required means of egress.

404.4.10 Toilet and bathing rooms. Where it is technically infeasible to alter existing toilet and bathing rooms to be accessible, an accessible single-user or family or assisted-use toilet or bathing room constructed in accordance with Section ~~1109.2.1~~ 1110.2.1 of the VCC is permitted. The single-user or family or assisted-use toilet or bathing room shall be located on the same floor and in the same area as the existing toilet or bathing rooms. ~~At~~ Directional signs shall be provided at the inaccessible toilet and bathing rooms~~, provide directional signs~~ indicating the location of the nearest single-user or family or assisted-use

toilet room or bathing room. These directional signs shall include the International Symbol of Accessibility and sign characters shall meet the visual character requirements in accordance with ICC A117.1.

404.4.10.1 Additional toilet and bathing facilities. In assembly and mercantile occupancies, where additional toilet fixtures are added, not fewer than one accessible family or assisted-use toilet room shall be provided where required by Section ~~1109.2.1~~ 1110.2.1 of the International Building Code. In recreational facilities, where additional bathing rooms are being added, not fewer than one family or assisted-use bathing room shall be provided where required by Section ~~1109.2.1~~ 1110.2.1 of the International Building Code.

404.4.11 Dressing, fitting and locker rooms. Where it is technically infeasible to provide accessible dressing, fitting or locker rooms at the same location as similar types of rooms, one accessible room on the same level shall be provided. Where separate-sex facilities are provided, accessible rooms for each sex shall be provided. Separate sex facilities are not required where only unisex rooms are provided.

404.4.12 Fuel dispensers. Operable parts of replacement fuel dispensers shall be permitted to be 54 inches (1370 mm) maximum, measuring from the surface of the vehicular way where fuel dispensers are installed on existing curbs.

404.4.13 Thresholds. The maximum height of thresholds at doorways shall be 3/4 inch (19.1 mm). Such thresholds shall have beveled edges on each side.

404.4.14 Amusement rides. Where the structural or operational characteristics of an amusement ride are altered to the extent that the amusement ride's performance differs from that specified by the manufacturer or the original design, the amusement ride shall comply with requirements for new construction in Section ~~1110.4.8~~ 1111.4.8 of the VCC.

404.4.15 Dining areas. An accessible route to raised or sunken dining areas or to outdoor seating areas is not required provided that the same services and décor are provided in an accessible space usable by any occupant and not restricted to use by people with a disability.

~~K. Change~~ 5. Section 405 ~~to~~ Historic Buildings.

~~L. Change Section 405.1 to read:~~

405.1 General. These provisions shall apply to facilities designated as historic buildings or structures that undergo alterations unless technically infeasible. Where compliance with the requirements for accessible routes, entrances or toilet rooms would threaten or destroy the historic significance of the facility, the alternative requirements of Sections 405.1.1 through 405.1.5 for that element shall be permitted.

~~M. Add Sections 405.1.1 through 405.1.5 to the IEBC to read:~~

405.1.1 Site arrival points. At least one accessible route from a site arrival point to an accessible entrance shall be provided.

405.1.2 Multilevel buildings and facilities. An accessible route from an accessible entrance to public spaces on the level of the accessible entrance shall be provided.

405.1.3 Entrances. Where an entrance cannot be made accessible in accordance with Section 404.4.1, an accessible entrance that is unlocked while the building is occupied shall be provided; or, a locked accessible entrance with a notification system or remote monitoring shall be provided.

Signs complying with Section ~~1111~~ 1112 of the VCC shall be provided at the primary entrances and the accessible entrance.

405.1.4 Toilet and bathing facilities. Where toilet rooms are provided, at least one accessible single-user or family or assisted-use toilet or bathing room complying with Sections ~~1109.2.1~~ 1110.2.1 of the VCC and Section 403.2.1 of the International Plumbing Code shall be provided.

405.1.5 Type B units. Type B dwelling or sleeping units required by Section ~~1107~~ 1108 of the VCC are not required to be provided in historic buildings or structures.

~~N. Delete Sections 405.2 through 405.2.5, including subsections, of the IEBC.~~

~~O. Delete Sections 406, 407, and 408 of the IEBC in their entirety.~~

13VAC5-63-433. Chapter 5 Repairs.

Replace Chapter 5 of the IEBC with the following:

1. Section ~~401~~ 501 General

~~A. Change Section 501.1 and 501.2 of the IEBC to read:~~

501.1 Scope. Repairs, including the patching ~~or~~ , restoration or replacement of damaged materials, elements, equipment or fixtures shall comply with the requirements of this chapter. Repairs to historic buildings need only comply with Chapter 9. Portions of the existing building or structure not being repaired shall not be required to comply with the requirements of this code applicable to newly constructed buildings or structures. Work on nondamaged components that is necessary for the required repair of damaged components shall be considered part of the repair and shall not be subject to the provisions of Chapter 6. Routine maintenance required by Section 302, 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 repairs in this section.

501.2 Conformance. The work shall not make the building less conforming than it was before the repair was undertaken. Repairs shall be done in a manner that maintains the following:

1. Level of fire protection that is existing.

2. Level of protection that is existing for the means of egress.

3. Level of accessibility that is existing.

~~B. Delete Section 501.1.1 of the IEBC.~~

~~C. Change~~ 2. Section 502 ~~to~~ Structural.

D. Change Sections 502.1 through 502.4 and add Section 502.4.1 to the IEBC to read:

502.1 General. Structural repairs shall be in compliance with this section and Section 501.2. Regardless of the scope of repair, new structural members and connections used for repair or rehabilitation shall comply with the detailing provisions of the VCC for new buildings of similar structure, purpose and location.

502.2 Less than substantial structural damage. For damage less than substantial structural damage, repairs shall be allowed that restore the building to its predamage state.

502.3 Substantial structural damage to vertical elements of the lateral force-resisting system. A building that has sustained substantial structural damage to the vertical elements of its lateral force-resisting system shall be evaluated in accordance with Section 502.3.1 and either repaired in accordance with Section 502.3.2 or repaired and rehabilitated in accordance with Section 502.3.3, depending on the results of the evaluation.

Exceptions:

1. Buildings assigned to Seismic Design Category A, B, or C whose substantial structural damage was not caused by earthquake need not be evaluated or rehabilitated for load combinations that include earthquake effects.

2. One-family and two-family dwellings need not be evaluated or rehabilitated for load combinations that include earthquake effects.

502.3.1 Evaluation. The building shall be evaluated by a registered design professional, and the evaluation findings shall be submitted to the building official. The evaluation shall establish whether the damaged building if repaired to its predamage state, would comply with the provisions of the VCC for load combinations that include wind or earthquake effects, except that the seismic forces shall be the reduced VCC-level seismic forces.

Wind loads for this evaluation shall be those prescribed in Section 1609 of the VCC. Earthquake loads for this evaluation, if required, shall be permitted to be 75% of those prescribed in Section 1613 of the VCC. Alternatively, compliance with ASCE 41, using the performance objective in Table 305.2.2 for the applicable risk category, shall be deemed to meet the earthquake evaluation requirement.

502.3.2 Extent of repair for compliant buildings. If the evaluation establishes that the building in its predamage condition complies with the provisions of Section 502.3.1, then repairs shall be permitted that restore the building to its predamage state.

502.3.3 Extent of repair for noncompliant buildings. If the evaluation does not establish that the building in its predamage condition complies with the provisions of Section 502.3.1, then the building shall be rehabilitated to comply with the provisions of this section. The wind loads for the repair shall be as required by the building code in effect at the time of original construction, unless the damage was caused by wind, in which case the wind loads shall be in accordance with the VCC. The earthquake loads for this rehabilitation design shall be those required by the building code in effect at the time of original construction, but not less than the reduced VCC-level seismic forces. New structural members and connections required by this rehabilitation design shall comply with the detailing provisions of the VCC for new buildings of similar structure, purpose and location. Alternatively, compliance with ASCE 41, using the performance objective in Table 305.2.2 for the applicable risk category, shall be deemed to meet the earthquake rehabilitation requirement.

502.4 Substantial structural damage to gravity load-carrying components. Gravity load-carrying components that have sustained substantial structural damage shall be rehabilitated to comply with the applicable provisions for dead and live loads in the VCC. Snow loads shall be considered if the substantial structural damage was caused by or related to snow load effects. Existing gravity load carrying structural elements shall be permitted to be designed for live loads approved prior to the damage. If the approved live load is less than that required by Section 1607 of the VCC, the area designed for the nonconforming live load shall be posted with placards of approved design indicating the approved live load. Nondamaged gravity load-carrying components that receive dead, live, or snow loads from rehabilitated components shall also be rehabilitated if required to comply with the design loads of the rehabilitation design, or shown to have the capacity to carry the design loads of the rehabilitation design. New structural members and connections required by this rehabilitation design shall comply with the detailing provisions of the VCC for new buildings of similar structure purpose and location.

502.4.1 Lateral force-resisting elements. Regardless of the level of damage to gravity elements of the lateral force-resisting system, if substantial structural damage to gravity load-carrying components was caused primarily by wind or earthquake effects, then the building shall

be evaluated in accordance with Section 502.3.1 and, if noncompliant, rehabilitated in accordance with Section 502.3.3.

Exceptions:

1. Buildings assigned to Seismic Design Category A, B, or C whose substantial structural damage was not caused by earthquake need not be evaluated or rehabilitated for load combinations that include earthquake effects.

2. One-family and two-family dwellings need not be evaluated or rehabilitated for load combinations that include earthquake effects.

~~E. Delete Sections 502.5 through 502.8 of the IEBC.~~

~~F. Change~~ 3. Section 503 ~~to~~ Flood Hazard Areas.

~~G. Change Section 503.1 of the IEBC to read:~~

503.1 Flood hazard areas. For buildings and structures, in flood hazard areas established in Section 1612.3 of the VCC, or Section R322 of the International Residential Code, as applicable, any repair that constitutes substantial improvement or repair of substantial damage of the existing building or structure shall comply with the flood design requirements for new construction and all aspects of the existing building or structure shall be brought into compliance with the requirements for new construction for flood design.

For buildings and structures in flood hazard areas established in Section 1612.3 of the VCC, or Section R322 of the International Residential Code, as applicable, any repairs that do not constitute substantial improvement or repair of substantial damage of the existing building or structure are not required to comply with the flood design requirements for new construction.

~~H. Delete Sections 503.2 through 503.16.3, including subsections, of the IEBC.~~

~~I. Change~~ 4. Section 504 ~~to~~ Electrical.

~~J. Change Section 504.1, including subsections, and add section 504.1.5 of the IEBC to read:~~

504.1 Material. Existing electrical wiring and equipment undergoing repair shall be allowed to be repaired or replaced with like material.

504.1.1 Receptacles. Replacement of electrical receptacles shall comply with the applicable requirements of Section 406.4(D) of NFPA 70.

504.1.2 Plug fuses. Plug fuses of the Edison-base type shall be used for replacements only where there is no evidence of over fusing or tampering per applicable requirements of Section 240.51(B) of NFPA 70.

504.1.3 Nongrounding-type receptacles. For replacement of nongrounding-type receptacles with grounding-type receptacles and for branch circuits that do not have an equipment grounding conductor in the branch circuitry, the grounding conductor of a grounding-type receptacle outlet shall be permitted to be grounded to any accessible point on the grounding electrode system or to any accessible point on the grounding electrode conductor in accordance with Section 250.130(C) of NFPA 70.

504.1.4 Group I-2 receptacles. Non-"hospital grade" receptacles in patient bed locations of Group I-2 shall be replaced with "hospital grade" receptacles, as required by NFPA 99 and Article 517 of NFPA 70.

504.1.5 Grounding of appliances. Frames of electric ranges, wall-mounted ovens, counter-mounted cooking units, clothes dryers and outlet or junction boxes that are part of the existing branch circuit for these appliances shall be permitted to be grounded to the grounded circuit conductor in accordance with Section 250.140 of NFPA 70.

~~K. Delete Sections 504.2 through 504.5 of the IEBC.~~

~~L. Change~~ 5. Section 505 ~~to~~ Mechanical.

~~M. Change Sections 505.1 and 505.2 of the IEBC to read:~~

505.1 General. Existing mechanical systems undergoing repair shall not make the building less conforming than it was before the repair was undertaken.

505.2 Mechanical draft systems for manually fired appliances and fireplaces. A mechanical draft system shall be permitted to be used with manually fired appliances and fireplaces where such a system complies with all of the following requirements:

1. The mechanical draft device shall be listed and installed in accordance with the manufacturer's installation instructions.

2. A device shall be installed that produces visible and audible warning upon failure of the mechanical draft device or loss of electrical power at any time that the mechanical draft device is turned on. This device shall be equipped with a battery backup if it receives power from the building wiring.

3. A smoke detector shall be installed in the room with the appliance or fireplace. This device shall be equipped with a battery backup if it receives power from the building wiring.

~~N. Delete Sections 505.3 and 505.4 of the IEBC.~~

~~O. Change~~ 6. Section 506 ~~to~~ Plumbing.

~~P. Change Sections 506.1 and 506.2 of the IEBC to read:~~

506.1 Materials. Plumbing materials and supplies shall not be used for repairs that are prohibited in the International Plumbing Code.

506.2 Water closet replacement. The maximum water consumption flow rates and quantities for all replaced water closets shall be 1.6 gallons (6 L) per flushing cycle.

Exception: Blowout-design water closets 3.5 gallons (13 L) per flushing cycle.

~~Q. Delete Section 506.1.1 and Sections 506.3 through 506.4.4, including subsections, of the IEBC.~~

~~R. Change~~ 7. Section 507 ~~to~~ Energy Conservation.

~~S. Add Sections 507.1 and 507.2 to the IEBC to read:~~

507.1 General. Except as permitted by Sections 302.1 and 501.1, repairs shall comply with the VECC.

Exception: Where a building was constructed to comply with the requirements of the building code under which the building or structure or the affected portion thereof was built, or as previously approved by the building official, repairs need not comply with the VECC, provided the repairs, as documented, do not result in reduced energy efficiency.

507.2 Application. For the purposes of this section, the following shall be considered repairs:

1. Glass-only replacements in an existing sash and frame.

2. Replacement of existing doors that separate conditioned space from the exterior shall not require the installation of a vestibule or revolving door, provided that an existing vestibule that separates a conditioned space from the exterior shall not be removed.

3. Repairs where only the bulb, the ballast or both within the existing luminaires in a space are replaced, provided that the replacement does not increase the installed interior lighting power.

13VAC5-63-433.3. Chapter 6 Alterations.

Replace Chapter 6 of the IEBC with the following:

A. ~~Change Sections 601.1 and 601.2 of the IEBC to read:~~

Section 601 General.

601.1 General. Except as modified in Chapter 9 or this chapter, alterations to any building or structure shall comply with the requirements of the VCC for new construction. Alterations shall be such that the existing building or structure is no less conforming to the provisions of the VCC than the existing building or structure was prior to the alteration. Portions of the building or structure not being altered shall not be required to comply with the requirements of the VCC.

Exceptions:

1. Any stairway replacing an existing stairway shall not be required to comply with the requirements of Section 1011 of the VCC where the existing space and construction does not allow a reduction in pitch or slope.

2. Handrails otherwise required to comply with Section 1011.11 of the VCC shall not be required to comply with the requirements of Section 1014.6 of the VCC regarding full extension of the handrails where such extensions would be hazardous due to plan configuration.

3. Where the current level of safety or sanitation is proposed to be reduced, the portion altered shall conform to the requirements of the VCC.

4. Alterations 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. New structural members added as part of the alteration shall comply with the VCC. Alterations of existing buildings in flood hazard areas shall comply with Section 601.3.

601.2 Levels of alterations. Alterations to any building or structure shall be classified as the following:

~~B. Delete Section 601.1.1.~~

~~C. Add Sections 601.2.1 through 601.5, including subsections, to the IEBC to read:~~

601.2.1 Level 1. Level 1 alterations include the removal and replacement or the covering of existing materials, elements, equipment, or fixtures using new materials, elements, equipment, or fixtures that serve the same purpose, or the removal without replacement of materials, elements, equipment, or fixtures. Level 1 alterations shall comply with the applicable provisions Section 602.

601.2.2 Level 2. Level 2 alterations shall comply with the applicable provisions of Sections 602 and 603 and shall include the following:

1. The addition or elimination of any door or window.

2. The addition of elimination of any wall, floor, or ceiling assembly.

3. The reconfiguration or extension of any system.

4. The installation of any ~~addition~~ additional equipment, materials, elements, or fixtures.

601.3 Flood hazard areas. In flood hazard areas, alterations that constitute substantial improvement shall require that the building comply with Section 1612 of the VCC or Section R322 of the International Residential Code, as applicable.

601.4 Energy conservation. Except as modified by this section, alterations to an existing building, building system, or structure shall conform to the applicable provisions of the Virginia Energy Conservation Code or Virginia Residential Code as they relate to new construction without requiring the unaltered portions of the existing building, building system, or structure to comply with the VECC or VRC.

601.4.1 Opaque walls. Where the existing stud wall cavity that is part of the thermal envelope is exposed during the alteration, such exposed cavities between framing members shall be filled with insulation having a minimum nominal value of not less than ~~R-30/inch~~ R-3/inch or filled to the minimum prescriptive insulation requirement in Table ~~R402.1.2~~ R402.1.3 or Table C402.1.3 of the VECC.

Exception: Where less than 60 square feet (5.574 m^2) of the existing stud cavities that are part of the thermal envelope are exposed.

601.4.2 Floors. Where the existing framed floor cavity that is part of the thermal ~~envelop~~ envelope is exposed during the alteration, such exposed cavities between framing members shall be filled with insulation having a minimum nominal value of not less than ~~R-30/inch~~ R-3/inch or filled to the minimum prescriptive insulation requirement in Table ~~R402.1.2~~ R402.1.3 or Table C402.1.3 of the VECC.

Exception: Where less than 60 square feet (5.574 m^2) of the existing framed floor cavities that are part of the thermal envelope are exposed.

601.4.3 Ceilings and vented attics. Where the existing rafter cavity that is part of the thermal envelope is exposed during the alteration, such exposed cavities between framing members shall be filled with insulation having a minimum nominal value of not less than ~~R-30/inch~~ R-3/inch or filled to the minimum prescriptive insulation requirement in Table ~~R402.1.2~~ R402.1.3 or Table C402.1.3 of the VECC. Where the existing framed floor or truss bottom chord cavity of a vented attic is exposed during the alteration, the exposed cavities shall be filled with insulation having a minimum nominal value of not less than ~~R-30/inch~~ R-3/inch or filled to the minimum prescriptive insulation requirement in Table ~~R402.1.2~~ R402.1.3 or Table C402.1.3 of the VECC. If the existing insulation laying on such vented attic floor is removed, such insulation shall be replaced with insulation complying with the minimum prescriptive insulation requirement in Table ~~R402.1.2~~ R402.1.3 or Table C402.1.3 of the VECC.

Exception: Where less than 60 square feet (5.574 m^2) of the existing rafter, framed vented attic floor, or truss bottom chord cavities that are part of the thermal envelope is exposed.

601.4.4 Fenestration. Where an existing fenestration unit is replaced, the replacement fenestration unit shall comply with the requirements for U-factor and SHGC as specified in Table R402.1.2 or Table C402.4 of the VECC, as applicable. Where more than one fenestration unit is to be replaced, an area-weighted average of the U-factor, SHGC, or both of all replacement fenestration units shall be permitted.

601.4.4.1 Converting fenestration unit to opaque wall. Where existing fenestration units are converted into an opaque exterior wall assembly, the new portion of wall shall comply with Section 601.4.1.

601.4.5 Roof replacement. Roof replacements shall comply with Section C402.2.1 and Section ~~C402.1.~~ C402.1.3 C402.1.4, C402.1.5, or C407 of the VECC where all of the following conditions are met. For purposes of this section, roof area shall mean an area of the existing roof of the same building that is bounded by exterior walls, different roof levels, roof edges or perimeters, roof dividers, building expansion joints, or parapets.

1. The roof replacement exceeds 75% or 30,000 square feet (2787.1 m^2) of the roof area, whichever is less.

2. The roof assembly is part of the building thermal envelope, as defined by the VECC.

3. The roof assembly contains insulation entirely above the roof deck.

601.4.6 Lighting. Lighting alterations shall comply with Section 601.4.6.1 or 601.4.6.2, as applicable.

601.4.6.1 Commercial Lighting. Altered commercial lighting shall comply with Section C405 of the VECC.

Exception: Alterations that replace less than 10% of the luminaires within a space, provided the replacement luminaires do not increase the existing interior lighting power as determined by Section C405.3.1 of the VECC.

601.4.6.2 Residential lighting. Altered residential lighting shall comply with Section R404 of the VECC.

Exception: Alterations that replace less than 50% of the total luminaires within a space, provided the replacement luminaires do not decrease the efficacy of the lighting equipment as required by Section R404.1 of the VECC.

601.4.7 Ducts. In R-5 occupancies, where ducts from an existing heating and cooling system are extended, such duct systems with less than 40 linear feet (12.19 m) in unconditioned spaces shall not be required to be tested in accordance with Section R403.3.3 of the VECC.

601.5 Accessibility. Accessibility shall be provided in accordance with applicable provisions of Section 404.

~~D. Change Sections 602.1 and 602.2 of the IEBC to read:~~

Section 602 Alteration—Level 1.

602.1 Scope. Level 1 alterations as described in Section 601.2.1 shall comply with the requirements of this section.

602.2 Conformance. Alterations shall be done in a manner that maintains the following:

1. Level of fire protection that is existing.

2. Level of protection that is existing for the means of egress.

~~E. Add Sections 602.3 through 602.3.5 to the IEBC to read:~~

602.3 Building elements and materials. Building elements and materials shall comply with the applicable provisions of Sections 302 and 602.3.1 through 602.3.3.

602.3.1 Interior finishes and trim. All newly installed interior finish and trim materials and wall, floor, and ceiling finishes shall comply with Chapter 8 of the VCC.

602.3.2 Materials and methods. All new building elements and materials shall comply with the materials and methods requirements in the VCC, International Energy Conservation Code, International Mechanical Code, and International Plumbing Code, as applicable, that specify material standards, detail of installation and connection, joints, penetrations, and continuity of any element, component, or system in the building.

602.3.2.1 Reroofing. Materials and methods of application used for recovering or replacing an existing roof covering shall comply with Chapter 15 of the VCC, except as modified by Section 302.1 and this section.

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 (2.0% slope) in Section 1507 of the VCC for roofs that provide positive roof drainage.

2. Recovering or replacing an existing roof covering shall not be required to meet the requirement of secondary (emergency overflow) drains or scuppers in Section ~~1503.4~~ 1502 of the VCC for roofs that provide positive roof drainage. For the purposes of this exception, existing secondary drainage or scupper systems required in accordance with the VCC shall not be removed unless they are replaced by secondary drains or scuppers designed and installed in accordance with Section ~~1503.4~~ 1502 of the VCC.

3. 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 VCC.

602.3.2.1.1 Roof recover permitted. 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. Where the application of a new roof covering over wood shingle or shake roofs creates a combustible concealed space, the entire existing surface is covered with gypsum board, mineral fiber, glass fiber or other approved materials securely fastened in place.

3. The application of a new protective coating over an existing spray polyurethane foam roofing system shall be permitted without tearoff of existing roof coverings

4. Where the new roof covering is installed in accordance with the roof covering manufacturer's approved instructions.

602.3.2.1.2 Roof recover not permitted. 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.

602.3.2.1.3 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 counter-flashings shall not be reinstalled where rusted, damaged, or deteriorated. Aggregate surfacing materials shall not be reinstalled. Metal flashing to which bituminous materials are to be adhered shall be primed prior to installation.

602.3.2.2 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 systems.

Exception: Structural elements where the additional dead load from the roofing or equipment does not increase the force in the element by more than 5.0%; or where the addition of a second layer of roof covering weighing three pounds per square foot ~~(0.1437kN/m)~~ (0.1437kN/m2) or less over an existing, single layer of roof covering.

602.3.3 International Fuel Gas Code. The following sections of the International Fuel Gas Code shall constitute the fuel gas materials and methods requirements for Level 1 alterations.

1. All of Chapter 3, entitled "General Regulations," except Sections 303.7 and 306.

2. All of Chapter 4, entitled "Gas Piping Installations," except Sections 401.8 and ~~402.3.2.1~~ 402.3. Sections 401.8 and 402.3 shall apply when the work being performed increases the load on the system such that the existing pipe does not meet the size required by code. Existing systems that are modified shall not require resizing as long as the load on the system is not increased and the system length is not increased even if the altered system does not meet code minimums.

3. All of Chapter 5, entitled "Chimneys and Vents."

4. All of Chapter 6, entitled "Specific Appliances."

~~F. Change Section 603.1 and 603.2, and add Sections 603.3 through 603.7.6, including subsections, to the IEBC to read:~~

Section 603 Alteration—Level 2.

603.1 Scope. Level 2 alterations as described in Section 601.2.2 shall comply with the requirements of this section.

Exception: Buildings in which the alteration is exclusively the result of compliance with the accessibility requirements of Section 404.3 shall be permitted to comply with Section 602.

603.2 Level 1 alteration compliance. In addition to the requirements of this section, all alterations shall comply with the applicable requirements of Section 602.

603.3 Compliance. All new construction elements, components, systems, and spaces shall comply with the requirements of the VCC.

Exceptions:

1. Windows may be added without requiring compliance with the light and ventilation requirements of the VCC.

2. Where an approved automatic sprinkler system is installed throughout the story, the required fire-resistance rating for any corridor located on the story shall be permitted to be reduced in accordance with the VCC. In order to be considered for a corridor rating reduction, such system

shall provide coverage for the stairway landings serving the floor and the intermediate landings immediately below.

3. In other than Groups A and H occupancies, the maximum length of a newly constructed or extended dead-end corridor shall not exceed 50 feet (15240 mm) on floors equipped with an automatic sprinkler system installed in accordance with the VCC.

4. The minimum ceiling height of the newly created habitable and occupiable spaces and corridors shall be 7 feet (2134 mm).

5. Where provided in below-grade transportation stations, new escalators shall be permitted to have a clear width of less than 32 inches (815 mm).

603.4 Fire-resistance ratings. ~~Buildings~~ In buildings where an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 of the VCC has been added, and the building is now sprinklered throughout, the required fire-resistance ratings of building elements and materials shall be permitted to meet the requirements of the current building code.

603.5 Mechanical. In mechanically ventilated spaces, existing mechanical ventilation systems that are altered, reconfigured, or extended shall provide not less than 5 cubic feet per minute (cfm) (0.0024 m^3/s) per person of outdoor air and not less than 15 cfm (0.0071 m^3/s) of ventilation air per person or not less than the amount of ventilation air determined by the Indoor Air Quality Procedure of ASHRAE ~~62~~ 62.1.

603.5.1 Local exhaust. All newly introduced devices, equipment, or operations that produce airborne particulate matter, odors, fumes, vapor, combustion products, gaseous contaminants, pathogenic and allergenic organisms, and microbial contaminants in such quantities as to affect adversely or impair health or cause discomfort to occupants shall be provided with local exhaust.

603.6 Plumbing. Where the occupant load of the story is increased by more than 20%, plumbing fixtures for the story shall be provided in quantities specified in the International Plumbing Code based on the increased occupant load.

603.7 Structural. Structural elements and systems within buildings undergoing Level 2 alterations shall comply with Sections 603.7.1 through 603.7.6.

603.7.1 New structural elements. New structural elements in alterations, including connections and anchorage, shall comply with the VCC.

603.7.2 Minimum design loads. The minimum design loads on existing elements of a structure that do not support additional loads as a result of an alteration shall be the loads applicable at the time the building was constructed.

603.7.3 Existing structural elements carrying gravity loads. Any existing gravity load-carrying structural element for which an alteration causes an increase in design gravity load of more than 5% shall be strengthened, supplemented, replaced or otherwise altered as needed to carry the increased gravity load required by the VCC for new structures. Any existing gravity load-carrying structural element whose gravity load-carrying capacity is decreased as part of the alteration shall be shown to have the capacity to resist the applicable design gravity loads required by the VCC for new structures.

Exception: Buildings of Group R occupancy with not more than five dwelling or sleeping units used solely for residential purposes where the existing building and its alteration comply with the conventional light-frame construction methods of the VCC or the provisions of the International Residential Code.

603.7.3.1 Design live load. Where the alteration does not result in increased design live load, existing gravity load-carrying structural elements shall be permitted to be evaluated and designed for live loads approved prior to the alteration. If the approved live load is less than that required by Section 1607 of the VCC, the area designed for the nonconforming live load shall be posted with placards of approved design indicating the approved live load. Where the alteration does result in increased design live load, the live load required by Section 1607 of the VCC shall be used.

603.7.4 Existing structural elements resisting lateral loads. Except as permitted by Section 603.7.5, where the alteration increases design lateral loads in accordance with Section 1609 or 1613 of the VCC, or where the alteration results in a prohibited structural irregularity as defined in ASCE 7, or where the alteration decreases the capacity of any existing lateral load-carrying structural element, the structure of the altered building or structure shall be shown to meet the requirements of Sections 1609 and 1613 of the VCC. For purposes of this section, compliance with ASCE 41, using a Tier 3 procedure and the two-level performance objective in Table 305.2.2 for the applicable risk category, shall be deemed to meet the requirements of Section 1613 of the VCC.

~~Exception~~ Exceptions:

1. Any existing lateral load-carrying structural element whose demand-capacity ratio with the alteration considered is not more than 10% greater than its demand-capacity ratio with the alteration ignored shall be permitted to remain unaltered. For purposes of calculating demand-capacity ratios, the demand shall consider applicable load combinations with design lateral loads or forces in accordance with VCC Sections 1609 and 1613. Reduced VCC level seismic forces in accordance with Section 305.2.2 shall be permitted. For purposes of this exception, comparisons of demand-capacity ratios and calculation of design lateral loads, forces and capacities shall account for the cumulative effects of additions and alterations since original construction.

2. Buildings of Group R occupancy with no more than five dwelling or sleeping units used solely for residential purposes that are altered based on the conventional light-frame construction methods of the VCC or in compliance with the provisions of the IRC.

3. Where such alterations involve only the lowest story of a building and the change of occupancy provisions of Chapter 7 do not apply, only the lateral force-resisting components in and below that story need comply with this section.

603.7.5 Voluntary lateral force-resisting system alterations. Alterations of existing structural elements and additions of new structural elements that are initiated for the purpose of increasing the lateral force-resisting strength or stiffness of an existing structure and that are not required by other sections of this code shall not be required to be designed for forces conforming to the VCC, provided that an engineering analysis is submitted to show that:

1. The capacity of existing structural elements required to resist forces is not reduced;

2. The lateral loading to existing structural elements is not increased either beyond ~~its~~ their capacity or more than 10%;

3. New structural elements are detailed and connected to the existing structural elements as required by the VCC;

4. New or relocated nonstructural elements are detailed and connected to existing or new structural elements as required by the VCC; and

~~5.~~ Voluntary alterations to lateral force-resisting systems conducted in accordance with Appendix A and the referenced standards of this code shall be permitted.

603.7.6 Voluntary seismic improvements. Alterations to existing structural elements or additions of new structural elements that are not otherwise required by this chapter and are initiated for the purpose of improving the performance of the seismic force resisting system of an existing structure or the performance of seismic bracing or anchorage of existing nonstructural elements shall be permitted, provided that an engineering analysis is submitted demonstrating the following:

1. The altered structure and the altered nonstructural elements are no less conforming to the provisions of the VCC with respect to earthquake design than they were prior to the alteration.

2. New structural elements are detailed as required for new construction.

3. New or relocated nonstructural elements are detailed and connected to existing or new structural elements as required for new construction.

4. The alterations do not create a structural irregularity as defined in ASCE 7 or make an existing structural irregularity more severe.

~~G. Delete Sections 604, 605, 606, 607, and 608 of the IEBC in their entirety.~~

13VAC5-63-433.5. Chapter 7 Change of occupancy.

Replace Chapter 7 of the IEBC with the following:

~~A. Change Sections 701.1 through 701.2 of the IEBC to read:~~

1. Section 701 General.

701.1 Scope. The provisions of this chapter shall apply where a change of occupancy occurs, except as modified by Section 906 for historic buildings. Compliance with the current VCC for the change of occupancy shall only be required as prescribed in this chapter. Compliance shall be only as necessary to meet the specific provisions of the applicable International Codes and is not intended to require the entire building be brought into compliance.

Exception: Compliance with the provisions of Chapter 14 shall be permitted in lieu of complying with this chapter for a change of occupancy.

701.2 Work undertaken in connection with a change of occupancy. Any repairs, alterations, or additions undertaken in connection with a change of occupancy shall conform to the applicable requirements for the work as classified in this code and as modified by this chapter.

~~B. Delete Sections 701.3 and 701.4 of the IEBC.~~

~~C. Change~~ 2. Section 702 ~~to~~ Special Use and Occupancy.

~~D. Change Sections 702.1 and 702.2 of the IEBC to read:~~

702.1 Compliance with the building code. Where a building undergoes a change of occupancy to one of the special use or occupancy categories described in Chapter 4 of the VCC, the building shall comply with all of the requirements of Chapter 4 of the VCC applicable to the special use or occupancy.

702.2 Incidental uses. Where a portion of a building undergoes a change of occupancy to one of the incidental uses listed in Table 509 of the VCC, the incidental use shall comply with the applicable requirements of Section 509 of the VCC.

~~E. Delete Sections 702.3 through 702.6.1, including subsections, of the IEBC.~~

~~F. Change~~ 3. Section 703 ~~to~~ Building Elements and Materials.

~~G. Change Section 703.1 of the IEBC and add Section 703.2, including subsections, to the IEBC to read:~~

703.1 Interior finish. In areas of the building undergoing a change of occupancy classification, the interior finish of walls and ceilings shall comply with the requirements of the VCC for the new occupancy classification.

703.2 Enclosure of vertical openings. When a change of occupancy classification is made to a higher hazard category as shown in Table 705.2, protection of existing vertical openings shall be in accordance with Sections 703.2.1 through 703.2.3.

703.2.1 Stairways. Interior stairways shall be protected as required by Section 705.1.

703.2.2 Other vertical openings. Interior vertical openings, other than stairways, within the area of the change of occupancy shall be protected as required by the VCC.

Exceptions:

1. Existing one-hour interior shaft enclosures shall be accepted where a higher rating is required.

2. Vertical openings, other than stairways, in buildings of other than Group I occupancy and connecting less than six stories shall not be required to be enclosed and are permitted if the entire building is provided with an approved automatic sprinkler system.

703.2.3 Shaft openings. All openings into existing vertical shaft enclosures shall be protected by fire assemblies having a fire protection rating of not less than one hour and shall be maintained self-closing or shall be automatic-closing by actuation of a smoke detector. All other openings shall be fire protected in an approved manner. Existing fusible link-type automatic door-closing devices shall be permitted in all shafts except stairways if the fusible link rating does not exceed 135°F (57°C).

~~H. Change~~ 4. Section 704 ~~to~~ Fire Protection.

~~I. Change Section 704.1 of the IEBC and add Sections 704.2, 704.3 and 704.4 to the IEBC to read:~~

704.1 Fire protection systems. Fire protection systems shall be provided in accordance with Sections 704.2 through 704.4.

704.2 Fire sprinkler system. Where a building undergoes a change of occupancy that requires an automatic fire sprinkler system to be provided based on the new occupancy in accordance with Section 903 of the VCC, such automatic fire sprinkler system shall be provided throughout the area where the change of occupancy occurs.

704.3 Fire alarm and detection system. Where a building undergoes a change of occupancy that requires a fire alarm and detection system to be provided based on the new occupancy in accordance with Section 907 of the VCC, such fire alarm and detection system shall be provided throughout the area where the change of occupancy occurs. 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 shall be provided throughout the area where the change of occupancy occurs in accordance with Section 907 of the VCC as required for new construction.

704.4 Standpipe system. Where a building undergoes a change of occupancy that requires a standpipe system to be provided based on the new occupancy in accordance with Section 905 of the VCC, such standpipe system shall be provided to serve the area where the change of occupancy occurs.

~~J. Change~~ 5. Section 705 ~~to~~ Means of Egress.

~~K. Change Sections 705.1 through 705.4, deleting subsections, and delete Sections 705.5 and 705.6 of the IEBC to read:~~

705.1 General. Means of egress in buildings undergoing a change of occupancy shall comply with Sections 705.2 through 705.4.

705.2 Means of egress, hazards. Hazard categories in regard to life safety and means of egress shall be in accordance with Table 705.2.

TABLE 705.2
MEANS OF EGRESS HAZARD CATEGORIES

RELATIVE HAZARD	OCCUPANCY CLASSIFICATIONS
1 (Highest Hazard)	H
2	I-2, I-3, I-4
3	A, E, I-1, M, R-1, R-2, R-4
4	B, F-1, R-3, S-1, R-5
5 (Lowest Hazard)	F-2, S-2, U

705.3 Means of egress for change to higher hazard category. When a change of occupancy classification is made to a higher hazard category (lower number) as shown in Table 705.2, the means of egress serving the area of the change of occupancy shall comply with the requirements of Chapter 10 of the VCC, except as modified in Sections 705.3.1 through 705.3.7.

705.3.1 Corridor fire-resistance ratings. The following exceptions apply to the fire-resistance rated corridor provisions in the VCC:

1. Existing corridor walls constructed on both sides of wood lath and plaster in good condition or 1/2-inch-thick (12.7 mm) gypsum wallboard are equivalent to a one-hour fire-resistance rating. Such walls shall either terminate at the underside of a ceiling of equivalent construction or extend to the underside of the floor or roof next above.

2. Dwelling unit or sleeping unit corridor doors and transom openings are permitted to comply with any of the following:

2.1 Be at least ~~13/8-inch~~ 1⅜-inch (35 mm) solid-core wood or approved equivalent ~~and~~ , shall not have any glass panels other than approved wired glass or other approved glazing material in metal frames and equipped with approved door closers.

2.2 Meet the requirements of "Guidelines on Fire Ratings of Archaic Materials and Assemblies" (VEBC Resource A) for a rating of 15 minutes or more ~~shall be accepted as meeting the provisions of this requirement~~.

2.3 In buildings protected throughout with an approved automatic sprinkler system, resist smoke, be reasonably tight fitting, and not contain louvers.

2.4 In group homes with a maximum of 15 occupants and that are protected with an approved automatic smoke detection system, closing devices may be omitted.

2.5 Transoms in corridor walls shall be either glazed with 1/4-inch (6.4 mm) wired glass set in metal frames or other glazing assemblies having a fire-protection rating as required for the door and permanently secured in the closed position or sealed with materials consistent with the corridor construction.

3. Openings in a corridor and any window in a corridor not opening to the outside air shall be sealed with materials consistent with the corridor construction.

705.3.2 Dead-end corridors. Dead-end corridors shall not exceed 35 feet (10670 mm).

Exceptions:

1. Where dead-end corridors of greater length are permitted by the VCC.

2. In other than Groups A and H occupancies, the maximum length of an existing dead-end corridor shall be 50 feet (15240 mm) in buildings equipped throughout with an automatic fire alarm system installed in accordance with the VCC.

3. In other than Groups A and H occupancies, the maximum length of an existing dead-end corridor shall be 70 feet (21356 mm) in buildings equipped throughout with an automatic sprinkler system installed in accordance with the VCC.

4. In other than Groups A and H occupancies, the maximum length of an existing, newly constructed, or extended dead-end corridor shall not exceed 50 feet (15240 mm) on floors equipped with an automatic sprinkler system installed in accordance with the VCC.

705.3.3 Emergency escape and rescue openings. An existing operable window with clear opening area ~~no~~ not less than 4 square feet (0.38 m^2) and minimum opening height and width of 22 inches (559 mm) and 20 inches (508 mm), respectively, shall be accepted as an emergency escape and rescue opening.

705.3.4 Fire escapes. Fire escapes shall be in compliance with Section 303.

705.3.5 Interior stairway fire-resistance ratings. Existing interior stairways connecting two or more floors shall be enclosed with approved assemblies having a fire-resistance rating of not less than one hour with approved opening protectives from the highest floor where the change of occupancy classification occurs to, and including, the level of exit discharge and all floors below.

Exceptions:

1. Where interior stairway enclosure is not required by the VCC.

2. Unenclosed existing stairways need not be enclosed in a continuous vertical shaft if each story is separated from other stories by one-hour fire-resistance-rated construction or approved wired glass set in steel frames and all exit corridors are sprinklered. The openings between the corridor and the occupant space shall have at least one sprinkler head above the openings on the tenant side. The sprinkler system shall be permitted to be supplied from the domestic water

supply systems, provided the system is of adequate pressure, capacity, and sizing for the combined domestic and sprinkler requirements.

3. In Group A occupancies, a minimum 30-minute enclosure shall be permitted to protect all interior stairways not exceeding three stories.

4. In Group B occupancies, a minimum 30-minute enclosure shall ~~not~~ be permitted to protect all interior stairways not exceeding three stories. This enclosure shall not be required in the following locations:

4.1 Buildings not exceeding 3,000 square feet (279 m^2) per floor.

4.2 Buildings protected throughout by an approved automatic fire sprinkler system.

5. In Group E occupancies, the enclosure shall not be required for interior stairways not exceeding three stories when the building is protected throughout by an approved automatic fire sprinkler system.

6. In Group F occupancies, the enclosure shall not be required in the following locations:

6.1 Interior stairways not exceeding three stories.

6.2 Special purpose occupancies where necessary for manufacturing operations and direct access is provided to at least one protected stairway.

6.3 Buildings protected throughout by an approved automatic sprinkler system.

7. In Group H occupancies, the enclosure shall not be required for interior stairways not exceeding three stories where stairways are necessary for manufacturing operations and every floor level has direct access to at least two remote enclosed stairways or other approved exits.

8. In Group M occupancies, a minimum 30-minute enclosure shall be permitted to protect all interior stairways not exceeding three stories. This enclosure shall not be required in the following locations:

8.1 Stairways connecting only two floor levels.

8.2 Occupancies protected throughout by an approved automatic sprinkler system.

9. In Group R-1 occupancies, the enclosure shall not be required for interior stairways not exceeding three stories in the following locations:

9.1 Buildings protected throughout by an approved automatic sprinkler system.

9.2 Buildings with fewer 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:

9.2.1 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~~ <u>has</u> at least one of the means of egress separated from the vertical opening by a one-hour fire barrier; and

9.2.2 The building is protected throughout by an automatic fire alarm system, installed and supervised in accordance with the VCC.

10. In Group R-2 occupancies, a minimum 30-minute enclosure shall be permitted to protect interior stairways not exceeding three stories. This enclosure shall not be required in the following locations:

10.1 Interior stairways not exceeding two stories with not more than four dwelling units per floor.

10.2 Buildings protected throughout by an approved automatic sprinkler system.

10.3 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 the VCC.

11. Stairway enclosure is not required in one ~~-family~~ and two-family dwellings.

12. 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.

13. Group S occupancies where stairway protection is not required for open parking garages and ramps.

705.3.6 Stairway geometry. Existing stairways are not required to be altered to meet tread depth and riser height requirements of the VCC.

705.3.7 Stairway handrails. Existing stairways are required to have a VCC-compliant handrail on one side up to a required egress width of 66 inches (1676 mm) and both sides when the required egress width exceeds 66 inches (1676 mm).

705.4 Means of egress for change of occupancy to equal or lower hazard category or without a change in classification. When a change of occupancy classification is made to an equal or lesser hazard category (higher number) as shown in Table 705.2 or a change of occupancy without a change of classification is made, the means of egress shall be deemed acceptable provided the means of egress serving the area of the change of occupancy meets the egress capacity and occupant load-based means of egress provisions in Chapter 10 of the VCC for the new occupancy.

~~L. Change~~ 6. Section 706 ~~to~~ Heights and Areas.

~~M. Change Sections 706.1 through 706.3, including subsections, and add Sections 706.4 and 706.5 of the IEBC to read:~~

706.1 General. Heights and areas of buildings and structures undergoing a change of occupancy classification shall comply with ~~this Section~~ Sections 706.2 through 706.5.

706.2 Heights and areas, hazards. Hazard categories in regard to height and area shall be in accordance with Table 706.2.

TABLE 706.2
HEIGHTS AND AREAS HAZARD CATEGORIES

RELATIVE HAZARD	OCCUPANCY CLASSIFICATIONS
1 (Highest Hazard)	H

2	A-1, A-2, A-3, A-4, I, R-1, R-2, R-4
3	E, F-1, S-1, M
4 (Lowest Hazard)	B, F-2, S-2, A-5, R-3, R-5, U

706.3 Height and area for change to higher hazard category. When a change of occupancy classification is made to a higher hazard category as shown in Table 706.2, heights and areas of buildings and structures shall comply with the requirements of Chapter 5 of the VCC for the new occupancy classification.

Exception: For high-rise buildings constructed in compliance with a previously issued permit, the type of construction reduction specified in Section 403.2.1 of the VCC is permitted. This shall include the reduction for columns. The high-rise building is required to be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 of the VCC.

706.3.1 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 VCC 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 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 VCC without an increase allowed for an automatic sprinkler system in accordance with Section 506 of the VCC.

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 VCC.

Exception: Where horizontal assemblies are used to limit the maximum allowable area, the required fire-resistance rating of the horizontal assemblies shall be permitted to be reduced by one hour provided the height and number of stories increases allowed for an automatic sprinkler system by Section 504 of the VCC are not used for the buildings.

706.4 Height and area for change to equal or lesser hazard category. When a change of occupancy classification is made to an equal or lesser hazard category as shown in Table 706.2, the height and area of the existing building shall be deemed acceptable.

706.5 Fire barriers. When a change of occupancy classification is made to a higher hazard category as shown in Table 706.2, fire barriers in separated mixed-use buildings shall comply with the fire-resistance requirements of the VCC.

Exception: Where the fire barriers are required to have a one-hour-fire-resistance rating, existing wood lath and plaster in good condition or existing 1/2-inch-thick (12.7 mm) gypsum wallboard shall be permitted.

~~N. Change~~ 7. Section 707 ~~to~~ Exterior Wall Fire-Resistance Ratings.

~~O. Change Section 707.1 and add Sections 707.2 through 707.4 to the IEBC to read:~~

707.1 Exterior wall fire-resistance ratings, hazards. Hazard categories in regard to fire-resistance ratings of exterior walls shall be in accordance with Table 707.1.

TABLE 707.1
EXPOSURE OF EXTERIOR WALLS HAZARD CATEGORIES

RELATIVE HAZARD	OCCUPANCY CLASSIFICATIONS
1 (Highest Hazard)	H
2	F-1, M, S-1
3	A, B, E, I, R
4 (Lowest Hazard)	F-2, S-2, U

707.2 Exterior wall rating for change of occupancy classification to a higher hazard category. When a change of occupancy classification is made to a higher hazard category as shown in Table 707.1, exterior walls shall have fire resistance and exterior opening protectives as required by the VCC.

Exception: A two-hour fire-resistance rating shall be allowed where the building does not exceed three stories in height and is classified as one of the following groups: A-2 with an occupant load of less than 300 and A-3 with an occupant load of less than 300, B, F, M, or S.

707.3 Exterior wall rating for change of occupancy classification to an equal or lesser hazard category. When a change of occupancy classification is made to an equal or lesser hazard category as shown in Table 707.1, existing exterior walls, including openings, shall be accepted.

707.4 Opening protectives. Openings in exterior walls shall be protected as required by the VCC. Where openings in the exterior walls are required to be protected because of their distance from the lot line, the sum of the area of such openings shall not exceed 50% of the total area of the wall in each story.

Exceptions:

1. Where the VCC permits openings in excess of 50%.

2. Protected openings shall not be required in buildings of Group R occupancy that do not exceed three stories in height and that are located not less than 3 feet (914 mm) from the lot line.

3. Where exterior opening protectives are required, an automatic sprinkler system throughout may be substituted for opening protection.

4. Exterior opening protectives are not required when the change of occupancy group is to an equal or lower hazard classification in accordance with Table 707.1.

~~P. Add~~ 8. Section 708 Electrical and Lighting.

~~Q. Add Sections 708.1 through 708.4 to the IEBC to read:~~

708.1 Special occupancies. Where a building undergoes a change of occupancy to one of the following special occupancies as described in NFPA 70, the electrical wiring and equipment of

the building that contains the proposed occupancy shall comply with the applicable requirements of NFPA 70:

1. Hazardous locations.

2. Commercial garages, repair, and storage.

3. Aircraft hangars.

4. Gasoline dispensing and service stations.

5. Bulk storage plants.

6. Spray application, dipping, and coating processes.

7. Health care facilities.

8. Places of assembly.

9. Theaters, audience areas of motion picture and television studios, and similar locations.

10. Motion picture and television studios and similar locations.

11. Motion picture projectors.

12. Agricultural buildings.

708.2 Service upgrade. When a new occupancy is required to have a higher electrical load demand per NFPA 70 and the service cannot accommodate the increased demand, the service shall be upgraded to meet the requirements of NFPA 70 for the new occupancy.

708.3 Number of electrical outlets. Where a building undergoes a change of occupancy, the number of electrical outlets shall comply with NFPA 70 for the new occupancy.

708.4 Lighting. Lighting shall comply with the requirements of the VCC for the new occupancy.

~~R. Add~~ 9. Section 709 Mechanical and Ventilation.

~~S. Add Section 709.1 to the IEBC to read:~~

709.1 Mechanical and ventilation requirements. Where a building undergoes a change of occupancy such that the new occupancy is subject to different kitchen exhaust requirements or to increased ventilation requirements in accordance with the International Mechanical Code, the new occupancy shall comply with the respective International Mechanical Code provisions.

~~T. Add~~ 10. Section 710 Plumbing.

~~U. Add Sections 710.1 through 710.3 to the IEBC to read:~~

710.1 Increased demand. Where a building or portion thereof undergoes a change of occupancy, such that the new occupancy is subject to increased or different plumbing fixture requirements or to increased water supply requirements in accordance with the International Plumbing Code, the new occupancy shall comply with the respective International Plumbing Code provisions.

Exception: In other than Group R or I occupancies or child care facilities classified as Group E, where the occupant load is increased by 20% or less in the area where the change of occupancy occurs, additional plumbing fixtures required based on the increased occupant load in quantities specified in the International Plumbing Code are not required.

710.2 Interceptor required. If the new occupancy will produce grease- or oil-laden wastes, interceptors shall be provided as required in the International Plumbing Code.

710.3 Chemical wastes. If the new occupancy will produce chemical wastes, the following shall apply:

1. If the existing piping is not compatible with the chemical waste, the waste shall be neutralized prior to entering the drainage system, or the piping shall be changed to a compatible material.

2. No chemical waste shall discharge to a public sewer system without the approval of the sewage authority.

~~V. Add~~ 11. Section 711 Structural.

~~W. Add Sections 711.1 through 711.3, including subsections, to the IEBC to read:~~

711.1 Gravity loads. Buildings subject to a change of occupancy where such change in the nature of occupancy results in higher uniform or concentrated loads based on Table 1607.1 of the VCC shall comply with the gravity load provisions of the VCC.

Exception: Structural elements whose stress is not increased by more than 5%.

711.2 Snow and wind loads. Buildings and structures subject to a change of occupancy where such change in the nature of occupancy results in higher wind or snow risk categories based on Table 1604.5 of the VCC shall be analyzed and shall comply with the applicable wind or snow load provisions of the VCC.

Exception: Where the new occupancy with a higher risk category is less than or equal to 10% of the total building floor area. The cumulative effect of the area of occupancy changes shall be considered for the purposes of this exception.

711.3 Seismic loads. Existing buildings with a change of occupancy shall comply with the seismic provisions of Sections 711.3.1 and 711.3.2.

711.3.1 Compliance with VCC-level seismic forces. Where a building is subject to a change of occupancy that results in the building being assigned to a higher risk category based on Table 1604.5 of the VCC, the building shall comply with the requirements for VCC-level seismic forces as specified in Section 305.2.1 for the new risk category.

Exceptions:

1. Specific detailing provisions required for a new structure are not required to be met where it can be shown that an equivalent level of performance and seismic safety is obtained for the applicable risk category based on the provision for reduced VCC-level seismic forces as specified in Section 305.2.2.

2. Where the area of the new occupancy with a higher hazard category is less than or equal to 10% of the total building floor area and the new occupancy is not classified as Risk Category IV. For the purposes of this exception, buildings occupied by two or more occupancies not included in the same risk category, shall be subject to the provisions of Section 1604.5.1 of the VCC. The cumulative effect of the area of occupancy changes shall be considered for the purposes of this exception.

3. Unreinforced masonry bearing wall buildings in Risk Category III when assigned to Seismic Design Category A or B shall be allowed to be strengthened to meet the requirements of Appendix ~~Chapter A1 of this code Guidelines for the Seismic Retrofit of Existing Buildings (GSREB)~~ A.

4. Specific seismic detailing requirements of Section 1613 of the VCC for a new structure shall not be required to be met where the seismic performance is shown to be equivalent to that of a new structure. A demonstration of equivalence shall consider the regularity, overstrength, redundancy, and ductility of the structure.

5. When a change of occupancy results in a structure being reclassified from Risk Category I or II to Risk Category III and the structure is located where the seismic coefficient, SDS, is less than 0.33, compliance with the seismic requirements of Section 1613 of the VCC is not required.

711.3.2 Access to Risk Category IV. Where a change of occupancy is such that compliance with Section 711.3.1 is required and the building is assigned to Risk Category IV, the operational access to the building shall not be through an adjacent structure, unless that structure conforms to the requirements for Risk Category IV structures. Where operational access is less than 10 feet (3048 mm) from either an interior lot line or from another structure, access protection from potential falling debris shall be provided by the owner of the Risk Category IV structure.

~~X. Add~~ 12. Section 712 Accessibility.

~~Y. Add Section 712.1 to the IEBC to read:~~

712.1 General. Existing buildings that undergo a change of occupancy classification shall comply with Section 402.

13VAC5-63-434. Chapter 8 Additions.

Replace Chapter 8 of the IEBC with the following:

~~A. Change Sections 801.1 through 801.3 of the IEBC to read:~~

1. Section 801 General.

801.1 Scope. Additions to any building or structure shall comply with the requirements of the VCC for new construction without requiring the existing building or structure to comply with any requirements of those codes or of these provisions, except as required by this chapter. Where an addition impacts the existing building or structure, that portion shall comply with this code. Where a fire wall that complies with Section 706 of the VCC is provided between the addition and the existing building, the addition shall be considered a separate building.

Note: Where one or more newly constructed fire walls that comply with Section 706 of the VCC are provided between an existing building, ~~or~~ structure or portions thereof~~,~~ and a new building, this chapter is not applicable per Section 102.2.3.

801.2 Creation or extension of nonconformity. An addition shall not create or extend any nonconformity in the existing building to which the addition is being made with regard to accessibility, structural strength, fire safety, means of egress, or the capacity of mechanical, plumbing, or electrical systems. Alterations to the existing building or structure shall be made so that the existing building or structure, together with the addition, are no less conforming to the provisions of the VCC than the existing building or structure was prior to the addition.

801.3 Other work. Any repair or alteration work within an existing building to which an addition is being made shall comply with the applicable requirements for the work as classified in this code.

~~B. Change~~ 1. Section 802 ~~to~~ Heights and Areas.

~~C. Change Sections 802.1 through 802.3, deleting subsections, of the IEBC to read:~~

802.1 Height limitations. No addition shall increase the height of an existing building beyond that permitted under the applicable provisions of Chapter 5 of the VCC for new buildings.

802.2 Area limitations. No addition shall increase the area of an existing building beyond that permitted under the applicable provisions of Chapter 5 of the VCC for new buildings unless fire separation as required by the VCC is provided.

Exceptions: The following shall be permitted beyond that permitted by the VCC.

1. In-filling of floor openings.

2. The addition of nonoccupiable spaces such as elevators, stairs, and vestibules.

802.3 Fire protection systems. Existing fire areas increased by the addition shall comply with Chapter 9 of the VCC.

~~D. Delete Sections 802.4 through 802.6, including subsections, of the IEBC.~~

~~E. Change~~ 3. Section 803 ~~to~~ Structural.

~~F. Change Sections 803.1 through 803.4, including subsections, and delete Sections 803.1.1, 803.2.1.1, 803.2.2, 803.2.2.1, 803.2.3, 803.2.4, and 803.4.1 through 803.4.3, including subsections, of the IEBC.~~

803.1 Compliance with the VCC. Additions to existing buildings or structures are new construction and shall comply with the VCC.

803.2 Existing structural elements carrying gravity load. Any existing gravity load-carrying structural element for which an addition and its related alterations cause an increase in design gravity load of more than 5.0% shall be strengthened, supplemented, replaced or otherwise altered as needed to carry the increased gravity load required by the VCC for new structures. Any existing gravity load-carrying structural element whose gravity load-carrying capacity is decreased shall be considered an altered element subject to the requirements of Section 603.7.3. Any existing element that will form part of the lateral load path for any part of the addition shall be considered an existing lateral load-carrying structural element subject to the requirements of Section 803.3.

Exception: Buildings of Group R occupancy with no more than five dwelling units or sleeping units used solely for residential purposes where the existing building and the addition comply with the conventional light-frame construction methods of the VCC or the provisions of the International Residential Code.

803.2.1 Design live load. Where the addition does not result in increased design live load, existing gravity load-carrying structural elements shall be permitted to be evaluated and designed for live loads approved prior to the addition. If the approved live load is less than that required by Section 1607 of the VCC, the area designed for the nonconforming live load shall be posted with placards of approved design indicating the approved live

load. Where the addition does result in increased design live load, the live load required by Section 1607 of the VCC shall be used.

803.3 Existing structural elements carrying lateral load. Where the addition is structurally independent of the existing structure, existing lateral load-carrying structural elements shall be permitted to remain unaltered. Where the addition is not structurally independent of the existing structure, the existing structure and its addition acting together as a single structure shall be shown to meet the requirements of Sections 1609 and 1613 of the VCC. For purposes of this section, compliance with ASCE 41, using a Tier 3 procedure and the two-level performance objective in Table 305.2.1 for the applicable risk category, shall be deemed to meet the requirements of Section 1613.

Exceptions:

1. Any existing lateral load-carrying structural element whose demand-capacity ratio with the addition considered is not more than 10% greater than its demand-capacity ratio with the addition ignored shall be permitted to remain unaltered. For purposes of this exception, comparisons of demand-capacity ratios and calculation of design lateral loads, forces and capacities shall account for the cumulative effects of additions and alterations since original construction. For purposes of calculating demand-capacity ratios, the demand shall consider applicable load combinations involving VCC-level seismic forces in accordance with Section 305.2.1.

2. Buildings of Group R occupancy with no more than five dwelling or sleeping units used solely for residential purposes where the existing building and the addition comply with the conventional light-frame construction methods of the VCC or the provisions of the International Residential Code.

3. Buildings in which the increase in the demand-capacity ratio is due entirely to the addition of rooftop-supported mechanical equipment individually having an operating weight less than 400 pounds (181.4 kg) and where the total additional weight of all rooftop equipment placed after initial construction of the building is less than 10 percent of the roof dead load. For the purposes of this exception, “roof” shall mean the roof level above a particular story.

803.4 Voluntary addition of structural elements to improve the lateral force-resisting system. Voluntary addition of structural elements to improve the lateral force-resisting system of an existing building shall comply with Section 603.7.5.

~~G. Add Section 803.5 to the IEBC to read:~~

803.5 Snow drift loads. Any structural element of an existing building ~~subjected~~ subject to additional loads from the effects of snow drift as a result of an addition shall comply with the VCC.

Exceptions:

1. Structural elements whose stress is not increased by more than 5.0%.

2. Buildings of Group R occupancy with no more than five dwelling units or sleeping units used solely for residential purposes where the existing building and the addition

comply with the conventional light-frame construction methods of the VCC or the provisions of the International Residential Code.

~~H. Change~~ 4. Section 804 ~~to~~ Flood Hazard Areas.

~~I. Change Section 804. of the IEBC to read:~~

804.1 Flood hazard areas. Additions and foundations in flood hazard areas shall comply with the following requirements:

1. For horizontal additions that are structurally interconnected to the existing building:

1.1. If the addition and all other proposed work, when combined, constitute substantial improvement, the existing building and the addition shall comply with Section 1612 of the International Building Code or Section R322 of the International Residential Code, as applicable.

1.2. If the addition constitutes substantial improvement, the existing building and the addition shall comply with Section 1612 of the International Building Code or Section R322 of the International Residential Code, as applicable.

2. For horizontal additions that are not structurally interconnected to the existing building:

2.1. The addition shall comply with Section 1612 of the International Building Code or Section R322 of the International Residential Code, as applicable.

2.2. If the addition and all other proposed work when combined constitute substantial improvement, the existing building and the addition shall comply with Section 1612 of the International Building Code or Section R322 of the International Residential Code, as applicable.

3. For vertical additions and all other proposed work that when combined constitute substantial improvement, the existing building shall comply with Section 1612 of the International Building Code or Section R322 of the International Residential Code, as applicable.

4. For a raised or extended foundation, if the foundation work and all other proposed work when combined constitute substantial improvement, the existing building shall comply with Section 1612 of the International Building Code or Section R322 of the International Residential Code, as applicable.

5. For a new foundation or replacement foundation, the foundation shall comply with Section 1612 of the International Building Code or Section R322 of the International Residential Code, as applicable.

~~J. Change~~ 5. Section 805 ~~to~~ Energy Conservation.

~~K. Change Sections 805.1, 805.2, 805.3, 805.3.1, and 805.3.2 and add Sections 805.2.1, 805.2.1.1, 805.2.1.2, 805.2.1.3, 805.2.1.4, and 805.2.2 to the IEBC to read:~~

805.1 General. Additions to an existing building, or portion thereof, shall conform to the provisions of the VECC as those provisions relate to new construction without requiring the unaltered portion of the existing building to comply with the VECC. Additions

shall not overload existing building systems. An addition shall be deemed to comply with the VECC if the addition alone complies or if the existing building and addition comply with the VECC as a single building.

805.2 Residential compliance. Residential additions shall comply with Section 805.2.1 or 805.2.2.

805.2.1 Prescriptive compliance. Additions shall comply with Sections 805.2.1.1 through 805.2.1.4.

805.2.1.1 Building envelope. New building envelope assemblies that are part of the addition shall comply with Sections R402.1, R402.2, R402.3.1 through R402.3.5, and R402.4 of the VECC.

Exception: The building envelope of the addition shall be permitted to comply through a Total UA analysis, as determined in Section R402.1.5 of the VECC, where the existing building and the addition, and any alterations that are part of the project, is less than or equal to the Total UA generated for the existing building.

805.2.1.2 Heating and cooling systems. New heating, cooling and duct systems that are part of the addition shall comply with Section R403 of the VECC.

805.2.1.3 Service hot water systems. New service hot water systems that are part of the addition shall comply with Section R403.4 of the VECC.

805.2.1.4 Lighting. New lighting systems that are part of the addition shall comply with Section R404.1 of the VECC.

805.2.2 Performance compliance. The addition shall comply with the simulated performance alternative where the annual energy cost or energy use of the addition and the existing building, and any alterations that are part of the project, is less than or equal to the annual energy ~~code~~ cost of the existing building when modeled in accordance with Section R405 of the VECC.

805.3 Commercial Compliance. Commercial additions shall comply with Section 805.3.1 or 805.3.2.

Exception: Commercial additions complying with ANSI/ASHRAE/IESNA 90.1.

805.3.1 Prescriptive compliance. Additions shall comply with Sections C402, C403, C404, and C405 of the VECC.

805.3.2 Performance compliance. The addition shall comply with the simulated performance alternative where the annual energy cost or energy use of the addition and the existing building, and any alterations that are part of the project, is less than or equal to the annual energy cost or use of the existing building when modeled in accordance with Section C407 of the VECC.

~~L. Delete Sections 805.3.1.1, 805.3.1.2, 805.3.1.2.1, 805.3.1.2.2, 805.3.1.2.3, 805.3.3 through 805.11.2, 806, 807, 808, 809, and 810, including Tables, of the IEBC.~~

13VAC5-63-434.5. Chapter 9 Historic buildings.

~~A. Change Sections 901.1 and 901.2 of the IEBC to read:~~

Replace Chapter 9 of the IEBC with the following:

1. Section 901 General.

901.1 Scope. It is the intent of this chapter to provide means for the preservation of historic buildings. The provisions of this code relating to construction involving historic buildings shall not be mandatory unless such construction constitutes a life safety hazard. Accessibility shall be provided in accordance with Section 405.

901.2 Report. The code official shall be permitted to require that a historic building undergoing repair, alteration or change of occupancy be investigated and evaluated by ~~an~~ a ~~RDP~~ Registered Design Professional or other qualified person or agency as a condition of determining compliance with this code.

~~B. Add Section 901.3 to the IEBC to read:~~

901.3 Special occupancy exceptions. When a building in Group R-3 is also used for Group A, B, or M purposes such as museum tours, exhibits, and other public assembly activities, or for museums less than 3,000 square feet (279 m^2), the code official may determine that the occupancy is Group B when life safety conditions can be demonstrated in accordance with Section 901.2. Adequate means of egress in such buildings, which may include a means of maintaining doors in an open position to permit egress, a limit on building occupancy to an occupant load permitted by the means of egress capacity, a limit on occupancy of certain areas or floors, or supervision by a person knowledgeable in the emergency exiting procedures, shall be provided.

~~C. Change~~ 2. Section 902 ~~to~~ Flood hazard areas.

~~D. Change Section 902.1 of the IEBC to read:~~

902.1 Flood hazard areas. In flood hazard areas, if all proposed work, including repairs, work required because of a change of occupancy, and alterations, constitutes substantial improvement, then the existing building shall comply with Section 1612 of the International Building Code or Section R322 of the International Residential Code, as applicable.

Exception: If ~~an~~ a historic building will continue to be ~~an~~ a historic building after the proposed work is completed, then the proposed work is not considered a substantial improvement. For the purposes of this exception, ~~an~~ a historic building is:

1. Listed or preliminarily determined to be eligible for listing in the National Register of Historic Places;

2. Determined by the Secretary of the U.S. Department of Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined to qualify as an historic district; or

3. Designated as historic under a state or local historic preservation program that is approved by the Department of Interior.

~~E. Delete Sections 902.1.1, 902.1.2, and 902.2 of the IEBC.~~

~~F. Change~~ 3. Section 903 ~~to~~ Repairs.

~~G. Change Sections 903.1 through 903.3, deleting subsections, of the IEBC to read:~~

903.1 General. Repairs to any portion of ~~an~~ a historic building or structure shall be permitted with original or like materials and original methods of construction, subject to the provisions of this chapter. Hazardous materials, such as asbestos and lead-based paint,

shall not be used where the code for new construction would not permit their use in buildings of similar occupancy, purpose and location.

903.2 Moved buildings. Foundations of moved historic buildings and structures shall comply with the VCC. Moved historic buildings shall otherwise be considered ~~an~~ historic ~~building~~ buildings for the purposes of this code. Moved historic buildings and structures shall be sited so that exterior wall and opening requirements comply with the VCC or with the compliance alternatives of this code.

903.3 Replacement. Replacement of existing or missing features using original materials shall be permitted. Partial replacement for repairs that match the original in configuration, height, and size shall be permitted. Replacement glazing in hazardous locations shall comply with the safety glazing requirements of Chapter 24 of the VCC.

Exception: Glass block walls, louvered windows, and jalousies repaired with like materials.

~~H. Delete the technical provisions of Section 904 in their entirety and change the title of Section 904 to read:~~

4. SECTION 904 (RESERVED).

~~I. Change~~ 5. Section 905 ~~to~~ Alterations.

~~J. Change Sections 905.1 and 905.2 of the IEBC to read:~~

905.1 General. The provisions of Chapter 6, as applicable, shall apply to facilities designated as historic structures that undergo alterations, unless technically infeasible.

905.2 Exit signs and egress path markings. Where new exit signs or egress path markings would damage the historic character of the building or structure, alternative exit signs and egress path markings are permitted with approval of the code official. Alternative signs and egress path markings shall identify the exits and egress path.

~~K. Delete Section 905.3 of the IEBC.~~

~~L. Change~~ 6. Section 906 ~~to~~ Change of Occupancy.

~~M. Change Sections 906.1 through 906.7 of the IEBC to read:~~

906.1 General. Historic buildings undergoing a change of occupancy shall comply with the applicable provisions of Chapter 7, except as specifically permitted in this chapter. When Chapter 7 requires compliance with specific requirements of Chapter 6 and when those requirements are subject to exceptions elsewhere in this code, the same exceptions shall apply to this section.

906.2 Building area. When a change of occupancy classification is made to a higher hazard category as indicated in Table 706.2, the allowable floor area for historic buildings undergoing a change of occupancy shall be permitted to exceed by 20% the allowable areas specified in Chapter 5 of the VCC.

906.3 Location on property. Historic structures undergoing a change of use to a higher hazard category in accordance with Section 707.1 may use alternative methods to comply with the fire-resistance and exterior opening protective requirements. Such alternatives shall comply with Section 901.2.

906.4 Occupancy separation. Required occupancy separations of one hour may be omitted when the building is provided with an approved automatic sprinkler system throughout.

906.5 Automatic fire-extinguishing systems. Every historical building or portion thereof, that cannot be made to conform to the construction requirements specified in Chapter 7 or this chapter for the occupancy or use and such change constitutes a fire hazard, shall be deemed to be in compliance if those spaces undergoing a change of occupancy are provided with an approved automatic fire-extinguishing system.

Exception: When the building official approves an alternative life-safety system.

906.6 Means of egress. Existing door openings and corridor and stairway widths less than those required elsewhere in this code shall be permitted, provided there is sufficient width and height for a person to pass through the opening or traverse the exit and that the capacity of the exit system is adequate for the occupant load or where other operational controls to limit occupancy are approved by the code official.

906.7 Door swing. Existing front doors need not swing in the direction of exit travel, provided that other approved exits having sufficient capacity to serve the total occupant load are provided.

~~N. Add Sections 906.8 through 906.12 to the IEBC to read:~~

906.8 Transoms. In corridor walls required by Chapter 7 to be fire-resistance rated, existing transoms may be maintained if fixed in the closed position and fixed wired glass set in a steel frame or other approved glazing shall be installed on one side of the transom.

906.9 Interior finishes and trim materials. When a change of occupancy classification is made to a higher hazard category as indicated in Table 705.2, existing nonconforming interior finish and trim materials shall be permitted to be treated with an approved fire-retardant coating in accordance with the manufacturer's instructions to achieve the required fire rating.

Exception: Such nonconforming materials need not be treated with an approved fire-retardant coating where the building is equipped throughout with an automatic sprinkler system installed in accordance with the VCC and the nonconforming materials can be substantiated as being historic in character.

906.10 One-hour-fire-resistant assemblies. Where one-hour-fire-resistance-rated construction is required by this code, it need not be provided, regardless of construction or occupancy, where the existing wall and ceiling finish is wood lath and plaster.

906.11 Stairways, railings, and guards. Existing stairways, railings, and guards shall comply with the requirements of Section 705. The code official shall approve alternative stairways, railings, and guards if found to be acceptable or judged to meet the intent of Section 705.

Exception: For buildings less than 3,000 square feet (279 m^2), existing conditions are permitted to remain at all stairways, railings, and guards.

906.12 Exit stair live load. When a change of occupancy classification is made to a higher hazard category as indicated in Table 706.2, existing stairways shall be permitted to remain where it can be shown that the stairway can support a 75-pounds-per-square-foot (366 kg/m^2) live load.

~~O. Change~~ 7. Section 907 ~~to~~ Structural.

~~P. Change Section 907.1 of the IEBC to read:~~

907.1 General. Historic buildings shall comply with the applicable structural provisions for the work as classified in Section 103.9.

Exception: The code official shall be authorized to accept existing floors and approve operational controls that limit the live load on any such floor.

13VAC5-63-435. Chapter 10 Moved buildings and structures.

Replace Chapter 10 of the IEBC with the following:

~~A. Change~~ 1. Section 1001 ~~to~~ General.

~~B. Change Sections 1001.1 through 1001.3, deleting subsections, of the IEBC to read:~~

1001.1 Scope. This chapter provides requirements for moved buildings and structures.

1001.2 Conformance. Any repair, alteration, or change of occupancy undertaken within the moved building or 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 VCC or the International Residential Code as applicable.

1001.3 Required inspection and repairs. The code official shall be authorized to inspect, or to require approved professionals to inspect at the expense of the owner, the various structural parts of a moved building or structure to verify that structural components and connections have not sustained structural damage. Any repairs required by the code official as a result of such inspection shall be made prior to the final approval.

~~C. Change~~ 2. Section 1002 ~~to~~ Requirements.

~~D. Change Sections 1002.1 and 1002.2 and add Section 1002.2.1 to the IEBC to read:~~

1002.1 Location on the lot. The building or structure shall be located on the lot in accordance with the requirements of the VCC or the International Residential Code as applicable.

1002.2 Foundation. The foundation system of moved buildings and structures shall comply with the VCC or the International Residential Code as applicable.

1002.2.1 Connection to the foundation. The connection of the moved building or structure to the foundation shall comply with the VCC or the International Residential Code as applicable.

~~E. Add Sections 1002.3 through 1002.6, including subsections, to the IEBC to read:~~

1002.3 Wind loads. Buildings and structures shall comply with VCC or International Residential Code wind provisions at the new location as applicable.

Exceptions:

1. Detached one~~-family~~ and two-family dwellings and Group U occupancies where wind loads at the new location are not higher than those at the previous location.

2. Structural elements whose stress is not increased by more than 10%.

1002.4 Seismic loads. Buildings and structures shall comply with VCC or International Residential Code seismic provisions at the new location as applicable.

Exceptions:

1. Structures in Seismic Design Categories A and B and detached one~~-family~~ and two-family dwellings in Seismic Design Categories A, B, and C where the seismic loads at the new location are not higher than those at the previous location.

2. Structural elements whose stress is not increased by more than 10%.

1002.5 Snow loads. Buildings and structures shall comply with VCC or International Residential Code snow loads as applicable where snow loads at the new location are higher than those at the previous location.

Exception: Structural elements whose stress is not increased by more than 5.0%.

1002.6 Flood hazard areas. If moved into a flood hazard area, buildings and structures shall comply with Section 1612 of the VCC, or Section R322 of the International Residential Code, as applicable.

~~F. Delete Sections 1003, 1004, 1005, 1006, 1007, 1008, 1009, 1010, and 1011 of the IEBC in their entirety.~~

Replace Chapter 11 of the IEBC with the following:

Section 1101 General

1101.1 Scope. In accordance with Section 103.3, the following buildings are required to be provided with certain fire protection equipment or systems or other retrofitted components.

1101.2 Smoke alarms in colleges and universities. In accordance with § 36-99.3 of the Code of Virginia, college and university buildings containing dormitories for sleeping purposes shall be provided with battery-powered or AC-powered smoke alarm devices installed therein in accordance with this code in effect on July 1, 1982. All public and private college and university dormitories shall have installed such alarms regardless of when the building was constructed. The chief administrative office of the college or university shall obtain a certificate of compliance with the provisions of this subsection from the building official of the locality in which the college or university is located or, in the case of state-owned buildings, from the Director of the Virginia Department of General Services. The provisions of this section shall not apply to any dormitory at a state-supported military college or university that is patrolled 24 hours a day by military guards.

1101.3 Smoke alarms in certain juvenile care facilities. In accordance with § 36-99.4 of the Code of Virginia, battery-powered or AC-powered smoke alarms shall be installed in all local and regional detention homes, group homes, and other residential care facilities for children and juveniles that are operated by or under the auspices of the Virginia Department of Juvenile Justice, regardless of when the building was constructed, by July 1, 1986, in accordance with the provisions of this code that were in effect on July 1, 1984. Administrators of such homes and facilities shall be responsible for the installation of the smoke alarm devices.

1101.4 Smoke alarms for the deaf and hearing-impaired. In accordance with § 36-99.5 of the Code of Virginia, smoke alarms providing an effective intensity of not less than 100 candela to warn a deaf or hearing-impaired individual shall be provided, upon request by the occupant to the landlord or proprietor, to any deaf or hearing-impaired occupant of any of the following occupancies, regardless of when constructed:

1. All dormitory buildings arranged for the shelter and sleeping accommodations of more than 20 individuals;

2. All multiple-family dwellings having more than two dwelling units, including all dormitories and boarding and lodging houses arranged for shelter and sleeping accommodations of more than five individuals; or

3. All buildings arranged for use as one ~~-family or~~ <u>and</u> two-family dwelling units.

A tenant shall be responsible for the maintenance and operation of the smoke alarm in the tenant's unit.

A hotel or motel shall have available no fewer than one such smoke alarm for each 70 units or portion thereof, except that this requirement shall not apply to any hotel or motel with fewer than 35 units. The proprietor of the hotel or motel shall post in a conspicuous place at the registration desk or counter a permanent sign stating the availability of smoke

alarms for the hearing impaired. Visual alarms shall be provided for all meeting rooms for which an advance request has been made.

1101.5 Assisted living facilities (formerly known as adult care residences or homes for adults). In accordance with § 36-99.5 of the Code of Virginia, existing assisted living facilities licensed by the Virginia Department of Social Services shall comply with Sections 1101.5.1 and 1101.5.2.

1101.5.1 Fire protective signaling system and fire detection system. A fire protective signaling system and an automatic fire detection system meeting the requirements of the USBC, Volume I, 1987 Edition, Third Amendment, shall be installed in assisted living facilities by August 1, 1994.

Exception: Assisted living facilities that are equipped throughout with a fire protective signaling system and an automatic fire detection system.

1101.5.2 Single-station and multiple-station smoke alarms. Battery-powered or AC-powered single-station and multiple-station smoke alarms meeting the requirements of the USBC, Volume I, 1987 Edition, Third Amendment, shall be installed in assisted living facilities by August 1, 1994.

Exception: Assisted living facilities that are equipped throughout with single-station and multiple-station smoke alarms.

1101.6 Smoke alarms in buildings containing dwelling units. AC-powered smoke alarms with battery backup or an equivalent device shall be required to be installed to replace a defective or inoperative battery-powered smoke alarm located in buildings containing one or more dwelling units or rooming houses offering to rent overnight sleeping accommodations when it is determined by the building official that the responsible party of such building or dwelling unit fails to maintain battery-powered smoke alarms in working condition.

1101.7 Fire suppression, fire alarm, and fire detection systems in nursing homes and facilities. In accordance with § 36-99.5 of the Code of Virginia, fire suppression systems as required by the edition of this code in effect on October 1, 1990, shall be installed in all nursing facilities licensed by the Virginia Department of Health by January 1, 1993, regardless of when such facilities or institutions were constructed. Units consisting of certified long-term care beds located on the ground floor of general hospitals shall be exempt from the requirements of this section.

Fire alarm or fire detector systems, or both, as required by the edition of this code in effect on October 1, 1990, shall be installed in all nursing homes and nursing facilities licensed by the Virginia Department of Health by August 1, 1994.

1101.8 Fire suppression systems in hospitals. In accordance with § 36-99.1 of the Code of Virginia, fire suppression systems shall be installed in all hospitals licensed by the Virginia Department of Health as required by the edition of this code in effect on October 1, 1995, regardless of when such facilities were constructed.

1101.9 Identification of disabled parking spaces by above grade signage. In accordance with § 36-99.11 of the Code of Virginia, all parking spaces reserved for the use of persons with disabilities shall be identified by above grade signs, regardless of whether identification of such spaces by above grade signs was required when any particular space was reserved for the use of persons with disabilities. A sign or symbol painted or otherwise displayed on the pavement of a parking space shall not constitute an above grade sign. Any parking space not identified by an above grade sign shall not be a parking space reserved for the disabled within the meaning of this section. All above grade disabled parking space signs shall have the bottom edge of the sign no lower than 4 feet

(1219 mm) nor higher than 7 feet (2133 mm) above the parking surface. Such signs shall be designed and constructed in accordance with the provisions of Chapter 11 of this code. All disabled parking signs shall include the following language: "PENALTY, $100-500 Fine, TOW-AWAY ZONE." Such language may be placed on a separate sign and attached below existing above grade disabled parking signs, provided that the bottom edge of the attached sign is no lower than 4 feet above the parking surface.

1101.10 Smoke alarms in hotels and motels. Smoke alarms shall be installed in hotels and motels as required by the edition of VR 394-01-22, USBC, Volume II, in effect on March 1, 1990, by the dates indicated, regardless of when constructed.

1101.11 Sprinkler systems in hotels and motels. By September 1, 1997, an automatic sprinkler system shall be installed in hotels and motels as required by the edition of VR 394-01-22, USBC, Volume II, in effect on March 1, 1990, regardless of when constructed.

1101.12 Fire suppression systems in dormitories. In accordance with § 36-99.3 of the Code of Virginia, an automatic fire suppression system shall be provided throughout all buildings having a Group R-2 fire area that are more than 75 feet (22,860 mm) or six stories above the lowest level of exit discharge and are used, in whole or in part, as a dormitory to house students by any public or private institution of higher education, regardless of when such buildings were constructed, in accordance with the edition of this code in effect on August 20, 1997, and the requirements for sprinkler systems under the edition of the NFPA 13 standard referenced by that code. The automatic fire suppression system shall be installed by September 1, 1999. The chief administrative office of the college or university shall obtain a certificate of compliance from the building official of the locality in which the college or university is located or, in the case of state-owned buildings, from the Director of the Virginia Department of General Services.

Exceptions:

1. Buildings equipped with an automatic fire suppression system in accordance with Section 903.3.1.1 of the VCC, or the 1983 or later editions of NFPA 13.

2. Any dormitory at a state-supported military college or university that is patrolled 24 hours a day by military guards.

3. Application of the requirements of this section shall be modified in accordance with the following:

3.1. Building systems, equipment, or components other than the fire suppression system shall not be required to be added or upgraded except as necessary for the installation of the fire suppression system and shall only be required to be added or upgraded where the installation of the fire suppression system creates an unsafe condition.

3.2. Residential sprinklers shall be used in all sleeping rooms. Other sprinklers shall be quick response or residential unless deemed unsuitable for a space. Standard response sprinklers shall be used in elevator hoistways and machine rooms.

3.3. Sprinklers shall not be required in wardrobes in sleeping rooms that are considered part of the building construction or in closets in sleeping rooms when such wardrobes or closets (i) do not exceed 24 square feet (2.23 m^2) in area, (ii) have the smallest dimension less than 36 inches (914 mm), and (iii) comply with all of the following:

3.3.1. A single-station smoke alarm monitored by the building fire alarm system is installed in the room containing the wardrobe or closet that will activate the general alarm for the building if the single-station smoke alarm is not cleared within five minutes after activation.

3.3.2. The minimum number of sprinklers required for calculating the hydraulic demand of the system for the room shall be increased by two, and the two additional sprinklers shall be corridor sprinklers where the wardrobe or closet is used to divide the room. Rooms divided by a wardrobe or closet shall be considered one room for the purpose of this requirement.

3.3.3. The ceiling of the wardrobe, closet, or room shall have a fire resistance rating of not less than 1/2 hour.

3.4. Not more than one sprinkler shall be required in bathrooms within sleeping rooms or suites having a floor area between 55 square feet (5.12 m^2) and 120 square feet (11.16 m^2), provided the sprinkler is located to protect the lavatory area and the plumbing fixtures are of a noncombustible material.

3.5. Existing standpipe residual pressure shall be permitted to be reduced when the standpipe serves as the water supply for the fire suppression system, provided the water supply requirements of NFPA 13-94 are met.

3.6. Limited service controllers shall be permitted for fire pumps when used in accordance with their listing.

3.7. Where a standby power system is required, a source of power in accordance with Section 701-11(d) or 701-11(e) of NFPA 70-96 shall be permitted.

1101.13 Fire extinguishers and smoke alarms in State Regulated Care Facilities (SRCFs). SRCFs shall be provided with at least one approved type ABC portable fire extinguisher with a minimum rating of ~~2A10BC~~ 2A:10B:C installed in each kitchen. In addition, SRCFs shall provide at least one approved and properly installed battery-operated smoke alarm outside of each sleeping area in the vicinity of bedrooms and bedroom hallways and on each additional floor.

1101.14 Smoke alarms in adult day care centers. In accordance with § 36-99.5 of the Code of Virginia, battery-powered or AC-powered smoke alarm devices shall be installed in all adult day care centers licensed by the Virginia Department of Social Services, regardless of when the building was constructed. The location and installation of the smoke alarms shall be determined by the provisions of this code in effect on October 1, 1990. The licensee shall obtain a certificate of compliance from the building official of the locality in which the center is located or, in the case of state-owned buildings, from the Director of the Virginia Department of General Services.

1101.15 Posting of occupant load. Every room or space that is an assembly occupancy, and where the occupant load of that room or space is 50 or more, shall have the occupant load of the room or space as determined by the building official posted in a conspicuous place near the main exit or exit access doorway from the room or space. Posted signs shall be of an approved legible permanent design and shall be maintained by the owner or owner's authorized agent.

1101.16 ALFSTs. Existing above-ground liquid fertilizer storage tanks (ALFSTs), regardless of when constructed, shall by October 1, 2011, meet the applicable requirements of API 653 and TFI RMIP for suitability for service and inspections and shall provide a secondary containment system complying with Section 430.3 of the VCC.

1101.17 Address identification. Existing buildings shall be provided with approved address identification. The address identification shall be legible and placed in a position that is visible from the street or road fronting the property. Address identification characters shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall not be spelled out. Each character shall be a minimum of 4 inches (102 mm) high with a minimum stroke width of 1/2 inch (12.7 mm). Address identification

shall be provided in additional approved locations to facilitate emergency response. Where access is by means of private road and the building address cannot be viewed from the public way, a monument, pole or other approved sign or means shall be used to identify the structure.

1101.18 Fire department connection sign. On existing buildings, wherever the fire department connection is not visible to approaching fire apparatus, the fire department connection shall be indicated by an approved sign mounted on the street front or on the side of the building. Such sign shall have the letters "FDC" not less than 6 inches (152 mm) high and words in letters not less than 2 inches (51 mm) high or an arrow to indicate the location. Such signs shall be maintained and subject to the approval of the fire code official.

13VAC5-63-438. Chapter 12 Construction safeguards.

Replace Chapter 12 of the IEBC with the following:

1. Section 1201 General.

1201.1 Scope. The provisions of this chapter shall govern safety during construction that is under the jurisdiction of this code and the protection of adjacent public and private properties.

1201.2 Storage and placement. Construction equipment and materials shall be stored and placed so as not to endanger the public, the workers, or adjoining property for the duration of the construction project.

1201.3 Alterations, repairs, and additions. Required exits, existing structural elements, fire protection devices, and sanitary safeguards shall be maintained at all times during alterations, repairs, or additions to any building or structure.

Exceptions:

1. When such required elements or devices are being altered or repaired, adequate substitute provisions shall be made.

2. When the existing building is not occupied.

1201.4 Manner of removal. Waste materials shall be removed in a manner which prevents injury or damage to persons, adjoining properties, and public rights-of-way.

1201.5 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 Code.

1201.6 Protection of pedestrians. Pedestrians shall be protected during construction and demolition activities as required by Sections 1201.6.1 through 1201.6.7 and Table 1201.6. Signs shall be provided to direct pedestrian traffic.

1201.6.1 Walkways. A walkway shall be provided for pedestrian travel in front of every construction and demolition site unless the applicable governing authority authorizes the sidewalk to be fenced or closed. Walkways shall be of sufficient width to accommodate the pedestrian traffic, but in no case shall they be less than 4 feet (1219 mm) in width. Walkways shall be provided with a durable walking surface. Walkways shall be accessible in accordance with Chapter 11 of the International Building Code and shall be designed to support all imposed loads and in no case shall the design live load be less than 150 pounds per square foot (psf) (7.2 kN/m^2).

1201.6.2 Directional barricades. Pedestrian traffic shall be protected by a directional barricade where the walkway extends into the street. The directional barricade shall be of sufficient size and construction to direct vehicular traffic away from the pedestrian path.

1201.6.3 Construction railings. Construction railings shall be at least 42 inches (1067 mm) in height and shall be sufficient to direct pedestrians around construction areas.

1201.6.4 Barriers. Barriers shall be a minimum of 8 feet (2438 mm) in height and shall be placed on the side of the walkway nearest the construction. Barriers shall extend the entire length of the construction site. Openings in such barriers shall be protected by doors which are normally kept closed.

1201.6.4.1 Barrier design. Barriers shall be designed to resist loads required in Chapter 16 of the International Building Code unless constructed as follows:

1. Barriers shall be provided with 2-inch by 4-inch (51 mm by 102 mm) top and bottom plates.

2. The barrier material shall be a minimum of 3/4-inch (19.1 mm) boards or 1/4-inch (6.4 mm) wood structural use panels.

3. Wood structural use panels shall be bonded with an adhesive identical to that for exterior wood structural use panels.

4. Wood structural use panels 1/4-inch (6.4 mm) or 1/16-inch (1.6 mm) in thickness shall have studs spaced not more than 2 feet (610 mm) on center.

5. Wood structural use panels 3/8-inch (9.5 mm) or 1/2-inch (12.7 mm) in thickness shall have studs spaced not more than 4 feet (1219 mm) on center, provided a 2-inch by 4-inch (51 mm by 102 mm) stiffener is placed horizontally at the mid-height where the stud spacing exceeds 2 feet (610 mm) on center.

6. Wood structural use panels 5/8-inch (15.9 mm) or thicker shall not span over 8 feet (2438 mm).

1201.6.5 Covered walkways. Covered walkways shall have a minimum clear height of 8 feet (2438 mm) as measured from the floor surface to the canopy overhead. Adequate lighting shall be provided at all times. Covered walkways shall be designed to support all imposed loads. In no case shall the design live load be less than 150 psf (7.2 kN/m^2) for the entire structure.

Exception: Roofs and supporting structures of covered walkways for new, light-frame construction not exceeding two stories above grade plane are permitted to be designed for a live load of 75 psf (3.6 kN/m^2) or the loads imposed on them, whichever is greater. In lieu of such designs, the roof and supporting structure of a covered walkway are permitted to be constructed as follows:

1. Footings shall be continuous 2-inch by 6-inch members.

2. Posts not less than 4-inches by 6-inches shall be provided on both sides of the roof and spaced not more than 12 feet (3658 mm) on center.

3. Stringers not less than 4-inches by 12-inches shall be placed on edge upon the posts.

4. Joists resting on the stringers shall be at least 2-inches by 8-inches and shall be spaced not more than 2 feet (610 mm) on center.

5. The deck shall be planks at least 2 inches (51 mm) thick or wood structural panels with an exterior exposure durability classification at least ~~2-3/32-inch~~ 23/32-inch (18.3 mm) thick nailed to the joists.

6. Each post shall be knee-braced to joists and stringers by 2-inch by 4-inch minimum members 4 feet (1219 mm) long.

7. A 2-inch by 4-inch minimum curb shall be set on edge along the outside edge of the deck.

1201.6.6 Repair, maintenance and removal. Pedestrian protection required by Section 1201.6 shall be maintained in place and kept in good order for the entire length of time pedestrians may be endangered. The owner or the owner's agent, upon the completion of the construction activity, shall immediately remove walkways, debris, and other obstructions and leave such public property in as good a condition as it was before such work was commenced.

TABLE 1201.6
PROTECTION OF PEDESTRIANS

HEIGHT OF CONSTRUCTION	DISTANCE OF CONSTRUCTION TO LOT LINE	TYPE OF PROTECTION REQUIRED
8 feet or less	Less than 5 feet	Construction railings
	5 feet or more	None
More than 8 feet	Less than 5 feet	Barrier and covered walkway
	5 feet or more, but not more than 1/4 the height of construction	Barrier and covered walkway
	5 feet or more, but between 1/4 and 1/2 the height of construction	Barrier
	5 feet or more, but exceeding 1/2 the height of construction	None

1201.6.7 Adjacent to excavations. Every excavation on a site located 5 feet (1524 mm) or less from the street lot line shall be enclosed with a barrier not less than 6 feet (1829 mm) high. Where located more than 5 feet (1524 mm) from the street lot line, a barrier shall be erected when required by the code official. Barriers shall be of adequate strength to resist wind pressure as specified in Chapter 16 of the International Building Code.

1201.7 Facilities required. Sanitary facilities shall be provided during construction or demolition activities in accordance with the International Plumbing Code.

2. Section 1202 Protection of Adjoining Properties.

1202.1 Protection required. Adjoining public and private property shall be protected from damage during construction and demolition work. Protection must be provided for footings, foundations, party walls, chimneys, skylights, and roofs. Provisions shall be made to control water runoff and erosion during construction or demolition activities. The person making or causing an excavation to be made shall provide written notice to the owners of adjoining buildings advising them that the excavation is to be made and that the adjoining buildings should be protected. This notification shall be delivered not less than 10 days prior to the scheduled starting date of the excavation.

3. Section 1203 Temporary Use of Streets, Alleys and Public Property.

1203.1 Storage and handling of materials. The temporary use of streets or public property for the storage or handling of materials or equipment required for construction or demolition and the protection provided to the public shall comply with the provisions of the applicable governing authority and this chapter.

1203.2 Obstructions. Construction materials and equipment shall not be placed or stored so as to ~~obstruct~~ interfere with access to fire hydrants, standpipes, fire or police alarm boxes, catch basins, or manholes nor shall such material or equipment be located within

20 feet (6.1 m) of a street intersection or placed so as to obstruct normal observations of traffic signals or to hinder the use of public transit loading platforms.

1203.3 Utility fixtures. Building materials, fences, sheds or any obstruction of any kind shall not be placed to obstruct free approach to any fire hydrant, fire department connection, utility pole, manhole, fire alarm box, or catch basin or to interfere with the passage of water in the gutter. Protection against damage shall be provided to such utility fixtures during the progress of the work, but sight of them shall not be obstructed.

4. Section 1204 Fire Extinguishers.

1204.1 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 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 the storage and use of flammable and combustible liquids.

1204.2 Fire hazards. The provisions of this code and of the International Fire Code shall be strictly observed to safeguard against all fire hazards attendant upon construction operations.

5. Section 1205 Means of Egress.

1205.1 Stairways required. Where a building has been constructed to a building height of 50 feet (15,240 mm) or four stories, or where an existing building exceeding 50 feet (15,240 mm) in building height is altered, at least one temporary lighted stairway shall be provided unless one or more of the permanent stairways are erected as the construction progresses.

1205.2 Maintenance of means of egress. Required means of egress shall be maintained at all times during construction, demolition, remodeling or alterations, and additions to any building.

Exception: Approved temporary means of egress systems and facilities.

6. Section 1206 Standpipe Systems.

1206.1 Where required. In buildings required to have standpipes by Section 905.3.1 of the International Building Code, not less than one standpipe shall be provided for use during construction. Such standpipes shall be installed prior to construction exceeding 40 feet (12,192 mm) in height above the lowest level of fire department vehicle access. Such standpipe shall be provided with fire department hose connections at accessible locations adjacent to usable stairways. Such standpipes shall be extended as construction progresses to within one floor of the highest point of construction having secured decking or flooring.

1206.2 Buildings being demolished. Where a building or portion of a building is being demolished and a standpipe ~~is existing~~ exists within such a building, such standpipe shall be maintained in an operable condition so as to be available for use by the fire department. Such standpipe shall be demolished with the building but shall not be demolished more than one floor below the floor being demolished.

1206.3 Detailed requirements. Standpipes shall be installed in accordance with the provisions of Chapter 9 of the International Building Code.

Exception: Standpipes shall be either temporary or permanent in nature and with or without a water supply, provided that such standpipes conform to the requirements of Section 905 of the International Building Code as to capacity, outlets and materials.

7. Section 1207 Automatic Sprinkler System.

   1207.1 Completion before occupancy. In portions of a building where an automatic sprinkler system is required by this code, it shall be unlawful to occupy those portions of the building until the automatic sprinkler system installation has been tested and approved, except as provided in Section ~~110.3~~ 116.1.1 of the VCC.

   1207.2 Operation of valves. Operation of sprinkler control valves shall be permitted only by properly authorized personnel and shall be accompanied by notification of duly designated parties. When the sprinkler protection is being regularly turned off and on to facilitate connection of newly completed segments, the sprinkler control valves shall be checked at the end of each work period to ascertain that protection is in service.

8. Section 1208 Accessibility.

   1208.1 Construction sites. Structures, sites, and equipment directly associated with the actual process of construction, including scaffolding, bridging, material hoists, material storage, or construction trailers are not required to be accessible.

9. Section 1209 Water Supply for Fire Protection.

   1209.1 When required. An approved water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible material arrives on the site.

10. Section 1210 Demolition.

    1210.1 Construction documents. Construction documents and a schedule for demolition shall be submitted where required by the building official. Where such information is required, no work shall be done until such construction documents, schedule, or both are approved.

    1210.2 Pedestrian protection. The work of demolishing any building shall not be commenced until pedestrian protection is in place as required by Chapter 33 of the VCC.

    1210.3 Means of egress. A horizontal exit shall not be destroyed unless and until a substitute means of egress has been provided and approved.

    1210.4 Vacant lot. Where a structure has been demolished or removed, the vacant lot shall be filled and maintained to the existing grade or in accordance with the ordinances of the jurisdiction having authority.

    1210.5 Water accumulation. ~~Provision~~ Provisions shall be made to prevent the accumulation of water or damage to any foundations on the premises or the adjoining property.

    1210.6 Utility connections. Service utility connections shall be discontinued and capped in accordance with the approved rules and the requirements of the applicable governing authority.

    1210.7 Fire safety during demolition. Fire safety during demolition shall comply with the applicable requirements of the VCC and the applicable provisions of Chapter 33 of the International Fire Code.

13VAC5-63-439. Chapter 13 Referenced standards.

Replace Chapter 13 of the IEBC with the following:

Referenced standards are listed in the following table:

Standard reference number	Title	Referenced in code section number
API 653-09	Tank Inspection, Repair, Alteration and Reconstruction	1101.16
ASCE/SEI 7-16	American Society of Civil Engineers Structural Engineering Institute	305.2.1, 603.7.4, 603.7.6
ASCE/SEI 41-17	American Society of Civil Engineers Structural Engineering Institute	305.2, 305.2.1, 305.2.2, 502.3.1, 502.3.3, 603.7.4, ~~603.7.5, 603.7.6~~, 803.3
ASHRAE 62.1-2016	American Society of Heating, Refrigerating and Air Conditioning Engineers	603.5
ASHRAE 90.1-2016	American Society of Heating, Refrigerating and Air Conditioning Engineers	805.3
ASME A17.1/CSA B44-2016	American Society of Mechanical Engineers	404.4.2
ASME A18.1-2014	American Society of Mechanical Engineers	404.4.3
ASTM F2006-17	ASTM International	304.2
ASTM F2090-17	ASTM International	304.2
IBC-18	International Building Code	404.4.10.1, 706.3.1, 804.1, 902.1, 1201.5, 1201.6.1, 1201.6.4.1, 1201.6.7, 1204.1, 1206.1, 1206.3, ~~1403.19~~
ICC A117.1-09	Accessible and Usable Buildings and Facilities	404.4.2, 404.4.3, 404.4.10
IECC-18	International Energy Conservation Code	602.3.2
IFC-18	International Fire Code	103.3, 1201.5, 1204.2, 1210.7
IFGC-18	International Fuel Gas Code	602.3.3
IMC-18	International Mechanical Code	602.3.2, 709.1, 1403.7.1, 1403.8, 1403.8.1

IPC-18	International Plumbing Code	506.1, 602.3.2, 603.6, 710.1, 710.2, 1201.7
IRC-18	International Residential Code	304.3, 503.1, 601.3, 603.7.3, 803.2, 803.3, 803.5, 804.1, 902.1, 1001.2, 1002.1, 1002.2, 1002.3, 1002.5, 1002.6, 1401.3, ~~1401.5~~
NFPA ~~13-16~~ 13	Standard for the Installation of Sprinkler Systems	1101.12
NFPA 70-96	National Electrical Code	1101.12
NFPA ~~70-17~~ 70-20	National Electrical Code	504.1.1, 504.1.2, 504.1.3, 504.1.4, 504.1.5, 708.1, 708.2, 708.3
NFPA 99-18	Health Care Facilities Code	504.1.4
UL ~~217-06~~ 2017-15	Single and Multiple Station Smoke Alarms - with revisions through ~~October 2015~~ November 2016	302.3
TFI RMIP-09	Aboveground Storage Tanks Containing Liquid Fertilizer, Recommended Mechanical Integrity Practices	1101.16

13VAC5-63-440. Chapter 14 Compliance alternative - Change of occupancy.

Replace Chapter 14 of the IEBC with the following:

Section 1401 General

1401.1 Scope. The provisions of this chapter are intended to maintain or increase the current degree of public safety, health, and general welfare in existing buildings or structures, while permitting changes of occupancy without requiring full compliance with Chapter 7, except where compliance with other provisions of this code is specifically required in this chapter.

Exception: The provisions of this chapter shall not apply to buildings with occupancies in Group H or I.

1401.2 Complete change of occupancy. Where an entire existing building undergoes a change of occupancy, the applicable provisions of this chapter for the new occupancy shall be used to determine compliance with this code.

Exception: Plumbing, mechanical, and electrical systems in buildings undergoing a change of occupancy shall be subject to any applicable requirements of Chapter 7.

1401.3 Partial change of occupancy. Where a portion of the building undergoes a change of occupancy and that portion is separated from the remainder of the building with fire barrier or horizontal assemblies having a fire-resistance rating as required by Table 508.4 of the VCC or Section ~~R317~~ R302 of the International Residential Code for the separate occupancies, or with approved compliance alternatives, the portion changed shall be made to conform to the provisions of this chapter. Only the portion separated shall be required to be evaluated for compliance.

Where a portion of the building undergoes a change of occupancy and that portion is not separated from the remainder of the building with fire barriers or horizontal assemblies having a fire-resistance rating as required by Table 508.4 of the VCC or Section ~~R317~~ R302 of the International Residential Code for the separate occupancies, or with approved compliance alternatives, the provisions of this chapter which apply to each occupancy shall apply to the entire building. Where there are conflicting provisions, those requirements that are the most restrictive shall apply to the entire building or structure.

1401.4 Accessibility requirements. All portions of the building proposed for a change of occupancy shall conform to the applicable accessibility provisions of Chapter 4.

1401.5 Compliance with flood hazard provisions. In flood hazard areas, buildings or structures that are evaluated in accordance with this chapter shall comply with Section 1612 of the VCC or Section R322 of the VRC, as applicable if the work covered by this chapter constitutes substantial improvement.

Section 1402 Evaluation Process

1402.1 Evaluation process. The evaluation process specified herein shall be followed in its entirety to evaluate existing buildings for work covered by this chapter. The existing building shall be evaluated in accordance with the provisions of this section and Sections 1403 and 1401.4. The evaluation shall be comprised of three categories as described in Sections 1402.1.1 through 1402.1.3.

1402.1.1 Fire safety. Included within the fire safety category are the structural fire resistance, automatic fire detection, fire alarm, automatic sprinkler system, and fire suppression system features of the facility.

1402.1.2 Means of egress. Included within the means of egress category are the configuration, characteristics, and support features for means of egress in the facility.

1402.1.3 General safety. Included within the general safety category are the fire safety parameters and the means-of-egress parameters.

1402.2 Structural evaluation. The existing building shall be evaluated to determine adequacy of the existing structural systems for the proposed change of occupancy. The evaluation shall demonstrate that the existing building with the work completed is capable of resisting the loads specified in Chapter 16 of the VCC.

1402.3 Submittal. The results of the evaluation as required in Section 1402.1 shall be submitted to the code official. Table 1404.1 shall be utilized for tabulating the results of the evaluation. References to other sections of this code indicate that compliance with those sections is required in order to gain credit in the evaluation herein outlined.

Section 1403 Evaluation data

1403.1 Building height and number of stories. The value for building height and number of stories shall be the lesser value determined by the formula in Section 1403.1.1. Section 504 of the VCC shall be used to determine the allowable height and number of stories of the building. Subtract the actual building height from the allowable height and divide by 12-1/2 feet (3810 mm). Enter the height value and its sign (positive or negative) in Table 1404.1 under Safety Parameter 1403.1, Building Height, for fire safety, means of egress, and general safety. The maximum score for a building shall be 10.

1403.1.1 Height formula. The following formulas shall be used in computing the building height value~~.~~ :

Equation 14-1:

~~$$\text{Height value, feet} = \frac{(AH) - (EBH)}{125} \times CF$$~~

$$\text{Height value, feet} = \frac{(AH) - (EBH)}{12.5} \times CF$$

(Equation 14-1)

Note: Where mixed occupancies are separated and individually evaluated as indicated in Section 1404.3.1, the values AH, AS, EBH, and EBS shall be based on the height of the occupancy being evaluated.

Equation 14-2:

$$\text{Height value, stories} = (AS - EBS) \times CF$$

(Equation 14-2)

AH = Allowable height in feet (mm) from Section 504 of the VCC.

EBH = Existing building height in feet (mm).

AS = Allowable height in stories from Section 504 of the VCC.

EBS = Existing building height in stories. CF = 1 if (AH) - (EBH) is positive.

CF = Construction-type factor shown in Table 1403.6(2) if (AH) - (EBH) is negative.

1403.2 Building area. The value for building area shall be determined by the formula in Section 1403.2.2. Section 506 of the VCC and the formula in Section 1403.2.1 shall be used to determine the allowable area of the building. Subtract the actual building area from the allowable area and divide by 1,200 square feet (112 m^2). Enter the area value and its sign (positive or negative) in Table 1404.1 under Safety Parameter 1403.2, Building Area, for fire safety, means of egress and general safety. In determining the area value, the maximum permitted positive value for area is 50% of the fire safety score as listed in Table 1404.2, Mandatory Safety Scores.

1403.2.1 Allowable area formula. The following formula shall be used in computing allowable area:

Equation 14-3:

~~$A_a = A_t(NS \times I_f)$~~ $A_a = A_t + (NS \times I_f)$ Equation (14-3)

where:

A_a = Allowable building area per story (square feet).

A_t = Tabular allowable area factor (NS, S1, S13R, or SM value, as applicable) in accordance with Table 506.2 of the VCC.

N_S = Tabular allowable area factor in accordance with Table 506.2 of the VCC for a nonsprinklered building (regardless of whether the building is sprinklered).

I_f = Area factor increase due to frontage as calculated in accordance with Section 506.3 of the VCC.

1403.2.2 Area formula. The following formula shall be used in computing the area value. Determine the area value for each occupancy floor area on a floor-by-floor basis. For each occupancy, choose the minimum area value of the set of values obtained for the particular occupancy.

Equation 14-4:

~~$$Actual\ value_i = \frac{Allowable\ area_i}{1200\ square\ feet}\left[1-\left(\frac{Actual\ area_i}{Allowable\ area_i}+\ldots+\frac{Actual\ area_n}{Allowable\ area_n}\right)\right]$$~~

$$\text{Area value}_i = \frac{\text{Allowable area}_i}{1200\,\text{square feet}}\left[1-\left(\frac{\text{Actual area}_i}{\text{Allowable area}_i}+\ldots+\frac{\text{Actual area}_n}{\text{Allowable area}_n}\right)\right]$$

Equation (14-4)

where:

i = Value for an individual separated occupancy on a floor.

n = Number of separated occupancies on a floor.

1403.3 Compartmentation. Evaluate the compartments created by fire barriers or horizontal assemblies that comply with Sections 1403.3.1 and 1403.3.2 and which are exclusive of the wall elements considered under Sections 1403.4 and 1403.5. Conforming compartments shall be figured as the net area and do not include shafts, chases, stairways, walls, or columns. Using Table 1403.3, determine the appropriate compartmentation value (CV) and enter that value into Table 1404.1 under Safety Parameter 1403.3, Compartmentation, for fire safety, means of egress, and general safety. For compartment sizes that fall between categories, the determination of the CV shall be permitted to be obtained by linear interpolation.

TABLE 1403.3 COMPARTMENTATION VALUES

OCCUPANCY	**CATEGORIES**				
	a Compartment size equal to or greater than 15,000 square feet	b Compartment size of 10,000 square feet	c Compartment size of 7,500 square feet	d Compartment size of 5,000 square feet	e Compartment size of 2,500 square feet or less
A-1, A-3	0	6	10	14	18
A-2	0	4	10	14	18
A-4, B, E, S-2	0	5	10	15	20
F, M, R, S-1	0	4	10	16	22

For SI: 1 square foot = 0.0929m^2.

1403.3.1 Wall construction. A wall used to create separate compartments shall be a fire barrier conforming to Section 707 of the VCC with a fire-resistance rating of not less than two hours. Where the building is not divided into more than one compartment, the compartment size shall be taken as the total floor area on all floors. Where there is more than one compartment within a story, each compartmented area on such story shall be provided with a horizontal exit conforming to Section 1026 of the VCC. The fire door

serving as the horizontal exit between compartments shall be so installed, fitted, and gasketed that such fire door will provide a substantial barrier to the passage of smoke.

1403.3.2 Floor/ceiling construction. A floor/ceiling assembly used to create compartments shall conform to Section 711 of the VCC and shall have a fire-resistance rating of not less than two hours.

1403.4 Tenant and dwelling unit separations. Evaluate the fire-resistance rating of floors and walls separating tenants, including dwelling units, and not evaluated under Sections 1403.3 and 1403.5.

Table 1403.4 SEPARATION VALUES

OCCUPANCY	**CATEGORIES**				
	a	**b**	**c**	**d**	**e**
A-1	0	0	0	0	1
A-2	-5	-3	0	1	3
R	-4	-2	0	2	4
A-3, A-4, B, E, F, M, S-1	-4	-3	0	2	4
S-2	-5	-2	0	2	4

1403.4.1 Categories. The categories for tenant and dwelling unit separations are:

1.Category a—No fire partitions; incomplete fire partitions; no doors; doors not self-closing or automatic-closing.

2. Category b—Fire partitions or floor assemblies with less than one-hour fire-resistance ratings or not constructed in accordance with Section 708 or 711 of the VCC, respectively.

3. Category c—Fire partitions with 1-hour or greater fire-resistance ratings constructed in accordance with Section 708 of the VCC and floor assemblies with one-hour but less than two-hour fire-resistance ratings constructed in accordance with Section 711 of the VCC or with only one tenant within the floor area.

4. Category d—Fire barriers with one-hour but less than two-hour fire-resistance ratings constructed in accordance with Section 707 of the VCC and floor assemblies with two-hour or greater fire-resistance ratings constructed in accordance with Section 711 of the VCC.

5. Category e—Fire barriers and floor assemblies with two-hour or greater fire-resistance ratings and constructed in accordance with Sections 707 and 711 of the VCC, respectively.

1403.5 Corridor walls. Evaluate the fire-resistance rating and degree of completeness of walls which create corridors serving the floor and that are constructed in accordance with Section 1020 of the VCC. This evaluation shall not include the wall elements considered under Sections 1403.3 and 1403.4. Under the categories and groups in Table 1403.5, determine the appropriate value and enter that value into Table 1404.1 under Safety Parameter 1403.5, Corridor Walls, for fire safety, means of egress, and general safety.

Table 1403.5 CORRIDOR WALL VALUES

OCCUPANCY	**CATEGORIES**			
	a	**b**	**c[a]**	**d[a]**
A-1	-10	-4	0	2

A-2	-30	-12	0	2
A-3, F, M, R, S-1	-7	-3	0	2
A-4, B, E, S-2	-5	-2	0	5

a. Corridors not providing at least one-half the exit access travel distance for all occupants on a floor shall use Category b.

1403.5.1 Categories. The categories for corridor walls are:

1. Category a—No fire partitions; incomplete fire partitions; no doors; or doors not self-closing.

2. Category b—Less than one-hour fire-resistance rating or not constructed in accordance with Section 708.4 of the VCC.

3. Category c—one-hour to less than 2-hour fire-resistance rating, with doors conforming to Section 716 of the VCC or without corridors as permitted by Section 1020 of the VCC.

4. Category d—two-hour or greater fire-resistance rating, with doors conforming to Section 716 of the VCC.

1403.6 Vertical openings. Evaluate the fire-resistance rating of interior exit stairways or ramps, hoistways, escalator openings, and other shaft enclosures within the building, and openings between two or more floors. Table 1403.6(1) contains the appropriate protection values. Multiply that value by the construction-type factor found in 1403.6(2). Enter the vertical opening value and its sign (positive or negative) in Table 1404.1 under Safety Parameter 1403.6, Vertical Openings, for fire safety, means of egress, and general safety. If the structure is a one-story building or if all the unenclosed vertical openings within the building conform to the requirements of Section 713 of the VCC, enter a value of two. The maximum positive value for this requirement shall be two.

Table 1403.6(1) VERTICAL OPENING PROTECTION VALUE

PROTECTION	**VALUE**
None (unprotected opening)	-2 times number of floors connected
Less than 1 hour	-1 times number of floors connected
1 to less than 2 hours	1
2 hours or more	2

TABLE 1403.6(2) CONSTRUCTION-TYPE FACTOR

	TYPE OF CONSTRUCTION								
FACTOR	**IA**	**IB**	**IIA**	**IIB**	**IIIA**	**IIIB**	**IV**	**VA**	**VB**
	1.2	1.5	2.2	3.5	2.5	3.5	2.3	3.3	7

1403.6.1 Vertical opening formula. The following formula shall be used in computing vertical opening value.

$$VO = PV \times CF$$

VO = Vertical opening value.

PV = Protection value from Table 1403.6(1).

CF = Construction-type factor from Table 1403.6(2).

1403.7 HVAC systems. Evaluate the ability of the HVAC system to resist the movement of smoke and fire beyond the point of origin. Under the categories in Section 1403.7.1, determine the appropriate value and enter that value into Table 1404.1 under Safety Parameter 1403.7, HVAC Systems, for fire safety, means of egress, and general safety.

1403.7.1 Categories. The categories for HVAC systems are:

1. Category a—Plenums not in accordance with Section 602 of the International Mechanical Code. - 10 points.

2. Category b—Air movement in egress elements not in accordance with Section 1018.5 of the VCC. - 5 points.

3. Category c—Both Categories a and b are applicable. - 15 points.

4. Category d—Compliance of the HVAC system with Section ~~1020.5~~ 1020.6 of the VCC and Section 602 of the International Mechanical Code. - 0 points.

5. Category e—Systems serving one story; or a central boiler/chiller system without ductwork connecting two or more stories. - 5 points.

1403.8 Automatic fire detection. Evaluate the smoke detection capability based on the location and operation of automatic fire detectors in accordance with Section 907 of the VCC and Section 606 of the International Mechanical Code. Under the categories and occupancies in Table 1403.8, determine the appropriate value and enter that value into Table 1404.1 under Safety Parameter 1403.8, Automatic Fire Detection, for fire safety, means of egress, and general safety.

Table 1403.8 AUTOMATIC FIRE DETECTION VALUES

OCCUPANCY	**CATEGORIES**					
	a	**b**	**c**	**d**	**e**	**f**
A-1, A-3, F, M, R, S-1	-10	-5	0	2	6	-
A-2	-25	-5	0	5	9	-
A-4, B, E, S-2	-4	-2	0	4	8	-

1403.8.1 Categories. The categories for automatic fire detection are:

1. Category a - None.

2. Category b - Existing smoke detectors in HVAC systems.

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.

1403.9 Fire alarm systems. Evaluate the capability of the fire alarm system in accordance with Section 907 of the VCC. Under the categories and occupancies in Table 1403.9, determine the appropriate value and enter that value into Table 1404.1 under Safety Parameter 1403.9, Fire Alarm System, for fire safety, means of egress, and general safety.

Table 1403.9 FIRE ALARM SYSTEM VALUES

OCCUPANCY	**CATEGORIES**			
	a	**b[a]**	**c**	**d**

A-1, A-2, A-3, A-4, B, E, R	-10	-5	0	5
F, M, S	0	5	10	15

a. For buildings equipped throughout with an automatic sprinkler system, add two points for activation by a sprinkler water-flow device.

1403.9.1 Categories. The categories for fire alarm systems are:

1. Category a—None.

2. Category b—Fire alarm system with manual fire alarm boxes in accordance with Section 907.4 of the VCC and alarm notification appliances in accordance with Section 907.5.2 of the VCC.

3. Category c—Fire alarm system in accordance with Section 907 of the VCC.

4. Category d—Category c plus a required emergency voice/alarm communications system and a fire command station that conforms to Section 911 of the VCC and contains the emergency voice/alarm communications system controls, fire department communication system controls, and any other controls specified in Section 911 of the VCC where those systems are provided.

1403.10 Smoke control. Evaluate the ability of a natural or mechanical venting, exhaust, or pressurization system to control the movement of smoke from a fire. Under the categories and occupancies in Table 1403.10, determine the appropriate value and enter that value into Table 1404.1 under Safety Parameter 1403.10, Smoke Control, for means of egress and general safety.

Table 1403.10 SMOKE CONTROL VALUES

OCCUPANCY	**CATEGORIES**					
	a	**b[a]**	**c**	**d**	**e**	**f**
A-1, A-2, A-3	0	1	2	3	6	6
A-4, E	0	0	0	1	3	5
B, M, R	0	2a	3a	3a	3a	4a
F, S	0	2a	2s	3a	3a	3a

a. This value shall be zero if compliance with Category d or e in Section 1403.8.1 has not been obtained.

1403.10.1 Categories. The categories for smoke control are:

1. Category a—None.

2. Category b—The building is equipped throughout with an automatic sprinkler system. Openings are provided in exterior walls at the rate of 20 square feet (1.86 m^2) per 50 linear feet (15 240 mm) of exterior wall in each story and distributed around the building perimeter at intervals not exceeding 50 feet (15 240 mm). Such openings shall be readily openable from the inside without a key or separate tool and shall be provided with ready access thereto. In lieu of operable openings, clearly and permanently marked tempered glass panels shall be used.

3. Category c—One enclosed exit stairway, with ready access thereto, from each occupied floor of the building. The stairway has operable exterior windows, and the building has openings in accordance with Category b.

4. Category d—One smokeproof enclosure and the building has openings in accordance with Category b.

5. Category e—The building is equipped throughout with an automatic sprinkler system. Each floor area is provided with a mechanical airhandling system designed to accomplish smoke containment. Return and exhaust air shall be moved directly to the outside without recirculation to other floor areas of the building under fire conditions. The system shall exhaust not less than six air changes per hour from the floor area. Supply air by mechanical means to the floor area is not required. Containment of smoke shall be considered as confining smoke to the floor area involved without migration to other floor areas. Any other tested and approved design that will adequately accomplish smoke containment is permitted.

6. Category f—Each stairway shall be one of the following: a smokeproof enclosure in accordance with Section 1023.11 of the VCC, pressurized in accordance with Section 909.20.5 of the VCC, or shall have operable exterior windows.

1403.11 Means of egress capacity and number. Evaluate the means of egress capacity and the number of exits available to the building occupants. In applying this section, the means of egress are required to conform to the following sections of the VCC: 1003.7, 1004, 1005, 1006, 1007, 1016.2, 1026.1, ~~1028.2~~ 1028.3, 1028.5, ~~1029.2, 1029.3, 1029.4, and 1030~~ 1030.2, 1030.3, 1030.4 and 1031. The number of exits credited is the number that is available to each occupant of the area being evaluated. Existing fire escapes shall be accepted as a component in the means of egress when conforming to Section ~~405~~ 303.

Under the categories and occupancies in Table 1403.11, determine the appropriate value and enter that value into Table 1404.1 under Safety Parameter 1403.11, Means of Egress Capacity, for means of egress and general safety.

Table 1403.11 MEANS OF EGRESS VALUES[a]

OCCUPANCY	**CATEGORIES**				
	a	**b**	**c**	**d**	**e**
A-1, A-2, A-3, A-4, E	-10	0	2	8	10
M	-3	0	1	2	4
B, F, S	-1	0	0	0	0
R	-3	0	0	0	0

a. The values indicated are for buildings six stories or less in height. For buildings over six stories above grade plane, add an additional -10 points.

1403.11.1 Categories. The categories for means-of-egress capacity and number of exits are:

1. Category a—Compliance with the minimum required means-of-egress capacity or number of exits is achieved through the use of a fire escape in accordance with Section ~~405~~ 303.

2. Category b—Capacity of the means of egress complies with Section 1005 of the VCC, and the number of exits complies with the minimum number required by Section 1006 of the VCC.

3. Category c—Capacity of the means of egress is equal to or exceeds 125% of the required means-of-egress capacity, the means of egress complies with the minimum required width dimensions specified in the VCC, and the number of exits complies with the minimum number required by Section 1006 of the VCC.

4. Category d—The number of exits provided exceeds the number of exits required by Section 1006 of the VCC. Exits shall be located a distance apart from each other equal to not less than that specified in Section 1007 of the VCC.

5. Category e—The area being evaluated meets both Categories c and d.

1403.12 Dead ends. In spaces required to be served by more than one means of egress, evaluate the length of the exit access travel path in which the building occupants are confined to a single path of travel. Under the categories and occupancies in Table 1403.12, determine the appropriate value and enter that value into 1404.1 under Safety Parameter 1403.12, Dead Ends, for means of egress and general safety.

Table 1403.12 DEAD-END VALUES

OCCUPANCY	**CATEGORIES[a]**			
	a	**b**	**c**	**d**
A-1, A-3, A-4, B, F, M, R, S	-2	0	2	-4
A-2, E	-2	0	2	-4

a. For dead-end distances between categories, the dead-end value shall be obtained by linear interpolation.

1403.12.1 Categories. The categories for dead ends are:

1. Category a—Dead end of 35 feet (10 670 mm) in nonsprinklered buildings or 70 feet (21 340 mm) in sprinklered buildings.

2. Category b—Dead end of 20 feet (6096 mm); or 50 feet (15 240 mm) in Group B in accordance with Section 1020.4, Exception 2, of the VCC.

3. Category c—No dead ends; or ratio of length to width (l/w) is less than 2.5:1.

4. Category d—Dead ends exceeding Category a.

1403.13 Maximum exit access travel distance to an exit. Evaluate the length of exit access travel to an approved exit. Determine the appropriate points in accordance with the following equation and enter that value into Table 1404.1 under Safety Parameter 1403.13, Maximum Exit Access Travel Distance for means of egress and general safety. The maximum allowable exit access travel distance shall be determined in accordance with Section 1017.1 of the VCC.

1403.14 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 building code under which the building or the affected portion thereof was constructed or previously approved. Under the categories and occupancies in Table 1403.14, determine the appropriate value and enter that value into Table 1404.1 under Safety Parameter 1403.14, Elevator Control, for fire safety, means of egress and general safety. The values shall be zero for a single-story building.

Table 1403.14 Elevator Control Values

ELEVATOR TRAVEL	**CATEGORIES**			
	a	b	c	d
Less than 25 feet of travel above or below the primary level of elevator access for emergency fire-fighting or rescue personnel	-2	0	0	2
Travel of 25 feet or more above or below the primary level of elevator access for emergency fire-fighting or rescue personnel	-4	NP	0	4

For SI: 1 foot = 304.8 mm.
NP = Not permitted.

1403.14.1 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 building code under which the building or the affected portion thereof 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 ~~there is~~ at least one elevator that complies with new construction requirements serves all occupied floors.

1403.15 Means-of-egress emergency lighting. Evaluate the presence of and reliability of means-of-egress emergency lighting. Under the categories and occupancies in Table 1403.15, determine the appropriate value and enter that value into Table 1404.1 under Safety Parameter 1403.15, Means-of-Egress Emergency Lighting, for means of egress and general safety.

Table 1403.15 MEANS-OF-EGRESS EMERGENCY LIGHTING VALUES

NUMBER OF EXITS REQUIRED BY SECTION 1015 OF THE INTERNATIONAL BUILDING ~~BODE~~ CODE	**CATEGORIES**		
	a	**b**	**c**
Two or more exits	NP	0	4
Minimum of one exit	0	1	1

NP= Not permitted

1403.15.1 Categories. The categories for means-of-egress emergency lighting are:

1. Category a—Means-of-egress lighting and exit signs not provided with emergency power in accordance with Section 2702 of the VCC.

2. Category b—Means-of-egress lighting and exit signs provided with emergency power in accordance with Section 2702 of the VCC.

3. Category c—Emergency power provided to means-of-egress lighting and exit signs, which provides protection in the event of power failure to the site or building.

1403.16 Mixed occupancies. Where a building has two or more occupancies that are not in the same occupancy classification, the separation between the mixed occupancies shall be evaluated in accordance with this section. Where there is no separation between the mixed occupancies or the separation between mixed occupancies does not qualify for any of the categories indicated in Section 1403.16.1, the building shall be evaluated as indicated in Section 1404.3.1, and the value for mixed occupancies shall be zero. Under the categories and occupancies in Table 1403.16, determine the appropriate value and enter that value into Table 1404.1 under Safety Parameter 1403.16, Mixed Occupancies, for fire safety and general safety. For buildings without mixed occupancies, the value shall be zero.

Table 1403.16 MIXED OCCUPANCY VALUES[a]

OCCUPANCY	**CATEGORIES**		
	a	**b**	**c**
A-1, A-2, R	-10	0	10
A-3, A-4, B, E, F, M, S	-5	0	5

a. For fire-resistance ratings between categories, the value shall be obtained by linear interpolation.

1403.16.1 Categories. The categories for mixed occupancies are:

1. Category a—Occupancies separated by minimum one-hour fire barriers or minimum one-hour horizontal assemblies, or both.

2. Category b—Separations between occupancies in accordance with Section 508.4 of the VCC.

3. Category c—Separations between occupancies having a fire-resistance rating of not less than twice that required by Section 508.4 of the VCC.

1403.17 Automatic sprinklers. Evaluate the ability to suppress a fire based on the installation of an automatic sprinkler system in accordance with Section 903.3.1.1 of the VCC. "Required sprinklers" shall be based on the requirements of this code. Under the categories and occupancies in Table 1403.17, determine the appropriate value and enter that value into Table 1404.1 under Safety Parameter 1403.17, Automatic Sprinklers, for fire safety, means of egress divided by two, and general safety. High-rise buildings defined in Chapter 2 of the VCC that undergo a change of occupancy to Group R shall be equipped throughout with an automatic sprinkler system in accordance with Section 403 of the VCC and Chapter 9 of the VCC.

Table 1403.17 SPRINKLER SYSTEM VALUES

OCCUPANCY	**CATEGORIES**					
	a[a]	**b[a]**	**c**	**d**	**e**	**f**
A-1, A-3, F, M, R, S-1	-6	-3	0	2	4	6
A-2	-4	-2	0	1	2	4
A-4, B, E, S-2	-12	-6	0	3	6	12

a. These options cannot be taken if Category a in Section 1403.18 is used.

1403.17.1 Categories. The categories for automatic sprinkler system protection are:

1. Category a—Sprinklers are required throughout; sprinkler protection is not provided or the sprinkler system design is not adequate for the hazard protected in accordance with Section 903 of the VCC.

2. Category b—Sprinklers are required in a portion of the building; sprinkler protection is not provided or the sprinkler system design is not adequate for the hazard protected in accordance with Section 903 of the VCC.

3. Category c—Sprinklers are not required; none are provided.

4. Category d—Sprinklers are required in a portion of the building; sprinklers are provided in such portion; the system is one that complied with the code at the time of installation and is maintained and supervised in accordance with Section 903 of the VCC.

5. Category e—Sprinklers are required throughout; sprinklers are provided throughout in accordance with Chapter 9 of the VCC.

6. Category f—Sprinklers are not required throughout; sprinklers are provided throughout in accordance with Chapter 9 of the VCC.

1403.18 Standpipes. Evaluate the ability to initiate attack on a fire by a making supply of water available readily through the installation of standpipes in accordance with Section 905 of the VCC. "Required Standpipes" shall be based on the requirements of the VCC. Under the categories and occupancies in Table 1403.18, determine the appropriate value

and enter that value into Table 1404.1 under Safety Parameter 1403.18, Standpipes, for fire safety, means of egress, and general safety.

Table 1403.18 STANDPIPE SYSTEM VALUES

OCCUPANCY	CATEGORIES			
	a[a]	b	c	d
A-1, A-3, F, M, R, S-1	-6	0	4	6
A-2	-4	0	2	4
A-4, B, E, S-2	-12	0	6	12

1403.18.1 Standpipe categories. The categories for standpipe systems are:

1. Category a—Standpipes are required; standpipe is not provided or the standpipe system design is not in compliance with Section 905.3 of the VCC.

2. Category b—Standpipes are not required; none are provided.

3. Category c—Standpipes are required; standpipes are provided in accordance with Section 905 of the VCC.

4. Category d—Standpipes are not required; standpipes are provided in accordance with Section 905 of the VCC.

1403.19 Incidental uses. Evaluate the protection of incidental uses in accordance with Section 509.4.2 of the VCC. Do not include those where this code requires automatic sprinkler systems throughout the building, including covered and open mall buildings, high-rise buildings, public garages, and unlimited-area buildings. Assign the lowest score from Table 1403.19 for the building or floor area being evaluated and enter that value into Table 1404.1 under Safety Parameter 1403.19, Incidental Uses, for fire safety, means of egress and general safety. If there are no specific occupancy areas in the building or floor area being evaluated, the value shall be zero.

Table 1403.19 INCIDENTAL USE AREA VALUES

PROTECTION REQUIRED BY TABLE 509 OF THE VCC	PROTECTION PROVIDED						
	None	1 hour	AS	AS with CRS	1 hour and AS	2 hours	2 hours and AS
2 hours and AS	-4	-3	-2	-2	-1	-2	0
2 hours, or 1 hour and AS	-3	-2	-1	-1	0	0	0
1 hour and AS	-3	-2	-1	-1	0	-1	0
1 hour	-1	0	-1	-1	0	0	0
1 hour, or AS with CRS	-1	0	-1	-1	0	0	0
AS with CRS	-1	-1	-1	-1	0	-1	0
1 hour or AS	-1	0	0	0	0	0	0

AS = Automatic sprinkler system;

CRS - Construction capable of resisting the passage of smoke (see Section 509.4.2 of the VCC).

~~1403.20 Smoke compartmentation. Evaluate the smoke compartments for compliance with Section 407.5 of the VCC. Under the categories and occupancies in Table 1403.20, determine the appropriate smoke compartmentation value (SCV) and enter that value into~~

~~Table 1404.1 under Safety Parameter 1403.20, Smoke Compartmentation, for fire safety, means of egress and general safety.~~

~~TABLE 1403.20 SMOKE COMPARTMENT VALUES~~

~~OCCUPANCY~~	~~CATEGORIES[a]~~		
	~~a~~	~~b~~	~~c~~
~~A, B, E, F, M, R and S~~	~~0~~	~~0~~	~~0~~

~~For SI: 1 square foot = 0.093 m^2~~

~~NP = Not permitted~~

~~a. For areas between categories, the smoke compartmentation value shall be obtained by linear interpolation.~~

~~1403.20.1 Categories. Categories for smoke compartment size are:~~

~~Category a - Smoke compartment size equal to or less than 22,500 square feet (2092 m^2).~~

~~Category b - Smoke compartment size is greater than 22,500 square feet (2092 m^2).~~

~~Category c - Smoke compartments are not provided.~~

Section 1404 Evaluation Scores

1404.1 Building Score. After determining the appropriate data from Section 1403, enter those data in Table ~~1404.2~~ 1404.1 and total the building score.

TABLE 1404.1 SUMMARY SHEET-BUILDING CODE

Existing occupancy _____			Proposed Occupancy _____		
Year building was constructed _____			Number of stories_____ Height in feet _____		
Type of construction _____			Area per floor _____		
Percentage of open perimeter increase _____%					
Completely suppressed:	Yes____	No____	Corridor wall rating_____		
			Type: _____		
Fire-resistance rating of vertical opening enclosures _____					
Type of HVAC system _____, serving number of floors _____					
Automatic fire detection:	Yes____	No____	Type and Location: _____		
Fire alarm system:	Yes____	No____	Type: _____		
Smoke control:	Yes____	No____	Type: _____		
Adequate exit ~~route~~ routes:	Yes____	No____	Dead ends: _____	Yes___	No____
Maximum exist access travel distance _____			Elevator controls:	Yes____	No____

Means of egress emergency lighting:	Yes____	No____	Mixed occupancies:	Yes____	No____
Standpipes	Yes____	No____	Patient ability for self-preservation _____		
Incidental use	Yes____	No____	Patient concentration _____		
Smoke compartmentation less than 22,500 sq. feet (2092 m^2)	Yes____	No____	Attendant-to-patient ratio _____		

SAFETY PARAMETERS	**FIRE SAFETY (FS)**	**MEANS OF EGRESS (ME)**	**GENERAL SAFETY (GS)**
1403.1 Building Height			
1403.2 Building Area			
1403.3 Compartmentation			
1403.4 Tenant and Dwelling Unit Separations			
1403.5 Corridor Walls			
1403.6 Vertical Openings			
1403.7 HVAC Systems			
1403.8 Automatic Fire Detection			
1403.9 Fire Alarm System			
1403.10 Smoke Control	****		
1403.11 Means of Egress	****		
1403.12 Dead Ends	****		
1403.13 Maximum Exit Access Travel Distance	****		
1403.14 Elevator Control			
1403.15 Means of Egress Emergency Lighting	****		
1403.16 Mixed Occupancies		****	
1403.17 Automatic Sprinklers		÷ 2 =	
1403.18 Standpipes			
1403.19 Incidental Use			
1403.20 Smoke Compartmentation			
Building score - total value			

****No applicable value to be inserted.

1404.2 Safety scores. The values in Table 1404.2 are the required mandatory safety scores for the evaluation process listed in Section 1403.

TABLE 1404.2 MANDATORY SAFETY SCORES[a]

OCCUPANCY	FIRE SAFETY (MFS)	MEANS OF EGRESS (MME)	GENERAL SAFETY (MGS)
A-1	20	31	31
A-2	21	32	32
A-3	22	33	33
A-4, E	29	40	40
B	30	40	40
F	24	34	34
M	23	40	40
R	21	38	38
S-1	19	29	29
S-2	29	39	39

a. MFS = Mandatory Fire Safety, MME = Mandatory Means of Egress, MGS = Mandatory General Safety

1404.3 Final scores. The mandatory safety score in Table 1404.2 shall be subtracted from the building score in Table ~~1404.2~~ 1404.1 for each category. Where the final score for any category equals zero or more, the building is in compliance with the requirements of this section for that category. Where the final score for any category is less than zero, the building is not in compliance with the requirements of this section.

1404.3.1 Mixed occupancies. For mixed occupancies, the following provisions shall apply:

1. Where the separation between mixed occupancies does not qualify for any category indicated in Section 1403.16, the mandatory safety scores for the occupancy with the lowest general safety score in Table 1404.2 shall be utilized. (See Section 1404.3.1).

2. Where the separation between mixed occupancies qualifies for any category indicated in Section 1403.16, the mandatory safety scores for each occupancy shall be placed against the evaluation scores for the appropriate occupancy.

TABLE 1404.3 FINAL SCORES[a]

FORMULA	~~T1401.7~~ T1404.1	~~T1401.8~~ T1404.2		SCORE	PASS	FAIL
FS - MFS ≥ 0	_____ (FS) -	_____ (MFS)	=	_____	_____	_____
ME - MME ≥ 0	_____ (ME) -	_____ (MME)	=	_____	_____	_____
GS - MGS ≥ 0	_____ (GS) -	_____ (MGS)	=	_____	_____	_____

a. ~~FE~~ FS = Fire Safety
MFS = Mandatory Fire Safety,
ME = Means of Egress
MME = Mandatory Means of Egress,
GS = General Safety
MGS = Mandatory General Safety

13VAC5-63-441. Chapter 15 Construction safeguards.

Delete Chapter 15 of the IEBC in its entirety.

13VAC5-63-443. Chapter 16 Referenced standards.

Delete Chapter 16 of the IEBC in its entirety.

13VAC5-63-444. Appendix B Supplementary accessibility requirements for existing buildings and facilities.

A. Change Sections B101.3 and B101.4 of the IEBC to read:

B101.3 Qualified historic buildings and facilities subject to Section 106 of the National Historic Preservation Act. Where an alteration or change of occupancy is undertaken to a qualified historic building or facility that is subject to Section 106 of the National Historic Preservation Act, the federal agency with jurisdiction over the undertaking shall follow the Section 106 process. Where the state historic preservation officer or Advisory Council on Historic Preservation determines that compliance with the requirements for accessible routes, ramps, entrances, or toilet facilities would threaten or destroy the historic significance of the building or facility, the alternative requirements of Section 405 for that element are permitted.

B101.4. Qualified historic buildings and facilities not subject to Section 106 of the National Historic Preservation Act. Where an alteration or change of occupancy is undertaken to a qualified historic building or facility that is not subject to Section 106 of the National Historic Preservation Act, and the entity undertaking the alterations believes that compliance with the requirements for accessible routes, ramps, entrances, or toilet facilities would threaten or destroy the historic significance of the building or facility, the entity shall consult with the state historic preservation officer. Where the state historic preservation officer determines that compliance with the accessibility requirements for accessible routes, ramps, entrances, or toilet facilities would threaten or destroy the historical significance of the building or facility, the alternative requirements of Section 405 for the element are permitted.

B. Change the first sentence in Section B101.5 of the IEBC to read:

B101.5 Displays. In qualified historic buildings and facilities where alternative requirements of Section 405 are permitted, displays and written information shall be located where they can be seen by a seated person.

C. Change the first sentence in Section 102.2.3 of the IEBC to read:

B102.2.3 Direct connections. New direct connections to commercial, retail, or residential facilities shall, to the maximum extent feasible, have an accessible route complying with Section 404.3 from the point of connection to boarding platforms and transportation system elements used by the public.

Part III

Maintenance

9/29/2021

13VAC5-63-450. Chapter 1 Administration; Section 101 General.

A. Section 101.1 Short title. The Virginia Uniform Statewide Building Code, Part III, Maintenance, may be cited as the "Virginia Maintenance Code," or as the "VMC."

B. Section 101.2 Incorporation by reference. Chapters 2 - 8 of the ~~2018~~ 2021 International Property Maintenance Code, published by the International Code Council, Inc., are adopted and incorporated by reference to be an enforceable part of the VMC. The term "IPMC" means the ~~2018~~ 2021 International Property Maintenance Code, published by the International Code Council, Inc. Any codes and standards referenced in the IPMC 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.

C. Section 101.3 Numbering system. A dual numbering system is used in the VMC to correlate the numbering system of the Virginia Administrative Code with the numbering system of the IPMC. IPMC numbering system designations are provided in the catchlines of the Virginia Administrative Code sections and cross references between sections or chapters of the Virginia Maintenance Code use only the IPMC numbering system designations. The term "chapter" is used in the context of the numbering system of the IPMC and may mean a chapter in the VMC, a chapter in the IPMC 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.

D. Section 101.4 Arrangement of code provisions. The VMC is comprised of the combination of (i) the provisions of Chapter 1, Administration, which are established herein, (ii) Chapters 2 - 8 of the IPMC, which are incorporated by reference in Section 101.2, and (iii) the changes to the text of the incorporated chapters of the IPMC which are specifically identified. The terminology "changes to the text of the incorporated chapters of the IPMC which are specifically identified" shall also be referred to as the "state amendments to the IPMC." Such state amendments to the IPMC are set out using corresponding chapter and section numbers of the IPMC numbering system.

E. Section 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 - 8 of the IPMC, or in the state amendments to the IPMC, means the VMC, unless the context clearly indicates otherwise. The term "this code," or "the code," where used in a code or standard referenced in the IPMC, 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, 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 IPMC, in the codes and standards referenced in the IPMC, and in the state amendments to the IPMC, 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.

F. Section 101.6 Order of precedence. The provisions of this code shall be used as follows:

1. The provisions of Chapter 1 of this code supersede any provisions of Chapters 2 - 8 of the IPMC that address the same subject matter and impose differing requirements.

2. The provisions of Chapter 1 of this code supersede any provisions of the codes and standards referenced in the IPMC that address the same subject matter and impose differing requirements.

3. The state amendments to the IPMC supersede any provisions of Chapters 2 - 8 of the IPMC that address the same subject matter and impose differing requirements.

4. The state amendments to the IPMC supersede any provisions of the codes and standards referenced in the IPMC that address the same subject matter and impose differing requirements.

5. The provisions of Chapters 2 - 8 of the IPMC supersede any provisions of the codes and standards referenced in the IPMC that address the same subject matter and impose differing requirements.

G. Section 101.7 Definitions. The definitions of terms used in this code are contained in Chapter 2 along with specific provisions addressing the use of definitions. Terms may be defined in other chapters or provisions of the code and such definitions are also valid.

13VAC5-63-460. Section 102 Purpose and scope.

A. Section 102.1 Purpose. In accordance with § 36-103 of the Code of Virginia, the Virginia Board of Housing and Community Development may adopt and promulgate as part of the Virginia Uniform Statewide Building Code, building regulations that facilitate the maintenance, rehabilitation, development and reuse of existing buildings at the least possible cost to ensure the protection of the public health, safety and welfare. Further, in accordance with § 36-99 of the Code of Virginia, the purpose of this code is to protect the health, safety and welfare of the residents of the Commonwealth of Virginia, provided that buildings and structures should be permitted to be maintained at the least possible cost consistent with recognized standards of health, safety, energy conservation and water conservation, including provisions necessary to prevent overcrowding, rodent or insect infestation, and garbage accumulation; and barrier-free provisions for the physically handicapped and aged.

B. Section 102.2 Scope. In accordance with § 36-98 of the Code of Virginia, the VMC shall supersede the building codes and regulations of the counties, municipalities and other political subdivisions and state agencies.

C. Section 102.3 Exemptions. This code shall not regulate those buildings and structures specifically exempt from the VCC, except that existing industrialized buildings and manufactured homes shall not be exempt from this code.

13VAC5-63-470. Section 103 Application of code.

A. Section 103.1 General. This code prescribes regulations for the maintenance of all existing buildings and structures and associated equipment, including regulations for unsafe buildings and structures.

B. Section 103.2 Maintenance requirements. Buildings, structures and systems shall be maintained and kept in good repair in accordance with the requirements of this code and when applicable in accordance with the USBC under which such building or structure was constructed. No provision of this code shall require alterations to be made to an existing building or structure or to equipment unless conditions are present which meet the definition of an unsafe structure or a structure unfit for human occupancy.

C. 103.2.1 Maintenance of nonrequired components and systems. Nonrequired components and systems may be discontinued in use provided that no hazard results from such discontinuance of use.

D. 103.2.2 Maintenance of nonrequired fire protection systems. Nonrequired fire protection systems shall be maintained to function as originally installed. If any such systems are to be reduced in function or discontinued, approval shall be obtained from the building official in accordance with Section 103.3.1 of the VCC.

E. 103.2.3 Responsibility. The owner of a structure shall provide and maintain all buildings, structures, systems, facilities and associated equipment in compliance with this code unless it is specifically expressed or implied that it is the responsibility of the tenant or occupant.

Note: Where an owner states that a tenant is responsible for performing any of the owner's duties under this code, the code official may request information needed to verify the owner's statement, as allowed by § 55-1-1209 A 5 of the Code of Virginia.

F. Section 103.3 Continued approval. Notwithstanding any provision of this code to the contrary, alterations shall not be required to be made to existing buildings or structures which are occupied in accordance with a certificate of occupancy issued under any edition of the USBC.

G. Section 103.4 Rental Inspections. In accordance with § 36-105.1:1 of the Code of Virginia, these provisions are applicable to rental inspection programs. For purposes of this section:

"Dwelling unit" means a building or structure or part thereof that is used for a home or residence by one or more persons who maintain a household.

"Owner" means the person shown on the current real estate assessment books or current real estate assessment records.

"Residential rental dwelling unit" means a dwelling unit that is leased or rented to one or more tenants. However, a dwelling unit occupied in part by the owner thereof shall not be construed to be a residential rental dwelling unit unless a tenant occupies a part of the dwelling unit that has its own cooking and sleeping areas, and a bathroom, unless otherwise provided in the zoning ordinance by the local governing body.

The local governing body may adopt an ordinance to inspect residential rental dwelling units for compliance with this code and to promote safe, decent and sanitary housing for its citizens, in accordance with the following:

1. Except as provided for in subdivision 3 of this subsection, the dwelling units shall be located in a rental inspection district established by the local governing body in accordance with this section; and

2. The rental inspection district is based upon a finding by the local governing body that (i) there is a need to protect the public health, safety and welfare of the occupants of dwelling units inside the designated rental inspection district; (ii) the residential rental dwelling units within the designated rental inspection district are either (a) blighted or in the process of deteriorating or (b) the residential rental dwelling units are in the need of inspection by the building department to prevent deterioration, taking into account the number, age and condition of residential dwelling rental units inside the proposed rental inspection district; and (iii) the inspection of residential rental dwelling units inside the proposed rental inspection district is necessary to maintain safe, decent and sanitary living conditions for tenants and other residents living in the proposed rental inspection district. Nothing in this section shall be construed to authorize one or more locality-wide rental inspection districts and a local governing body shall limit the boundaries of the proposed rental inspection districts to such areas of the locality that meet the criteria set out in this subsection; or

3. An individual residential rental dwelling unit outside of a designated rental inspection district is made subject to the rental inspection ordinance based upon a separate finding for each individual dwelling unit by the local governing body that (i) there is a need to protect the public health, welfare and safety of the occupants of that individual dwelling unit; (ii) the individual dwelling unit is either (a) blighted or (b) in the process of deteriorating; or (iii) there is evidence of violations of this code that affect the safe, decent and sanitary living conditions for tenants living in such individual dwelling unit.

For purposes of this section, the local governing body may designate a local government agency other than the building department to perform all or part of the duties contained in the enforcement authority granted to the building department by this section.

Before adopting a rental inspection ordinance and establishing a rental inspection district or an amendment to either, the governing body of the locality shall hold a public hearing on the proposed ordinance. Notice of the hearing shall be published once a week for two successive weeks in a newspaper published or having general circulation in the locality.

Upon adoption by the local governing body of a rental inspection ordinance, the building department shall make reasonable efforts to notify owners of residential rental dwelling units in the designated rental inspection district, or their designated managing agents, and to any individual dwelling units subject to the rental inspection ordinance, not located in a rental inspection district, of the adoption of such ordinance, and provide information and an explanation of the rental inspection ordinance and the responsibilities of the owner thereunder.

The rental inspection ordinance may include a provision that requires the owners of dwelling units in a rental inspection district to notify the building department in writing if the dwelling unit of the owner is used for residential rental purposes. The building department may develop a form for such purposes. The rental inspection ordinance shall not include a registration requirement or a fee of any kind associated with the written notification pursuant to this subdivision. A rental inspection ordinance may not require that the written notification from the owner of a dwelling unit subject to a rental inspection ordinance be provided to the building department in less than 60 days after the adoption of a rental inspection ordinance. However, there shall be no penalty for the failure of an owner of a residential rental dwelling unit to comply with the provisions of this subsection, unless and until the building department provides personal or written notice to the property owner, as provided in this section. In any event, the sole penalty for the willful failure of an owner of a dwelling unit who is using the dwelling unit for residential rental purposes to comply with the written notification requirement shall be a civil penalty of up to $50. For purposes of this subsection, notice sent by regular first-class mail to the last known address of the owner as shown on the current real estate tax assessment books or current real estate tax assessment records shall be deemed compliance with this requirement.

Upon establishment of a rental inspection district in accordance with this section, the building department may, in conjunction with the written notifications as provided for above, proceed to inspect dwelling units in the designated rental inspection district to determine if the dwelling units are being used as a residential rental property and for compliance with the provisions of this code that affect the safe, decent and sanitary living conditions for the tenants of such property.

If a multifamily development has more than 10 dwelling units, in the initial and periodic inspections, the building department shall inspect only a sampling of dwelling units, of not less than two and not more than 10% of the dwelling units, of a multifamily development, that includes all of the multifamily buildings that are part of that multifamily development. In no event, however, shall the building department charge a fee authorized by this section for inspection of more than 10 dwelling units. If the building department determines upon inspection of the sampling of dwelling units that there are violations of this code that affect the safe, decent and sanitary living conditions for the tenants of such multifamily development, the building department may inspect as many dwelling units as necessary to enforce these provisions, in which case, the fee shall be based upon a charge per dwelling unit inspected, as otherwise provided in the fee schedule established pursuant to this section.

Upon the initial or periodic inspection of a residential rental dwelling unit subject to a rental inspection ordinance, the building department has the authority under these provisions to require the owner of the dwelling unit to submit to such follow-up inspections of the dwelling unit as the building department deems necessary, until such time as the dwelling unit is brought into

compliance with the provisions of this code that affect the safe, decent and sanitary living conditions for the tenants.

Except as provided for above, following the initial inspection of a residential rental dwelling unit subject to a rental inspection ordinance, the building department may inspect any residential rental dwelling unit in a rental inspection district, that is not otherwise exempted in accordance with this section, no more than once each calendar year.

Upon the initial or periodic inspection of a residential rental dwelling unit subject to a rental inspection ordinance for compliance with these provisions, provided that there are no violations of this code that affect the safe, decent and sanitary living conditions for the tenants of such residential rental dwelling unit, the building department shall provide, to the owner of such residential rental dwelling unit, an exemption from the rental inspection ordinance for a minimum of four years. Upon the sale of a residential rental dwelling unit, the building department may perform a periodic inspection as provided above, subsequent to such sale. If a residential rental dwelling unit has been issued a certificate of occupancy within the last four years, an exemption shall be granted for a minimum period of four years from the date of the issuance of the certificate of occupancy by the building department. If the residential rental dwelling unit becomes in violation of this code during the exemption period, the building department may revoke the exemption previously granted under this section.

A local governing body may establish a fee schedule for enforcement of these provisions, which includes a per dwelling unit fee for the initial inspections, follow-up inspections and periodic inspections under this section.

The provisions of this section shall not in any way alter the rights and obligations of landlords and tenants pursuant to the applicable provisions of Chapter 13 (§ 55-217 et seq.) or Chapter 13.2 (§ 55-248.2 et seq.) of Title 55 of the Code of Virginia.

The provisions of this section shall not alter the duties or responsibilities of the local building department under § 36-105 of the Code of Virginia to enforce the USBC.

Unless otherwise provided for in § 36-105.1:1 of the Code of Virginia, penalties for violation of this section shall be the same as the penalties provided for violations of other sections of the USBC.

13VAC5-63-480. Section 104 Enforcement, generally.

A. Section 104.1 Scope of enforcement. This section establishes the requirements for enforcement of this code in accordance with subdivision C 1 of § 36-105 of the Code of Virginia. The local governing body may also inspect and enforce the provisions of the USBC for existing buildings and structures, whether occupied or not. Such inspection and enforcement shall be carried out by an agency or department designated by the local governing body.

In accordance with subdivision C 3 of § 36-105 of the Code of Virginia, if the local building department receives a complaint that a violation of this code exists that is an immediate and imminent threat to the health or safety of the owner, tenant, or occupants of any building or structure, or the owner, occupant, or tenant of any nearby building or structure, and the owner, occupant, or tenant of the building or structure that is the subject of the complaint has refused to allow the code official or his agent to have access to the subject building or structure, the code official or his agent may make an affidavit under oath before a magistrate or a court of competent jurisdiction and request that the magistrate or court grant the code official or his agent an inspection warrant to enable the code official or his agent to enter the subject building or structure for the purpose of determining whether violations of this code exist. After issuing a warrant under this section, the magistrate or judge shall file the affidavit in a manner prescribed by § 19.2-54 of the Code of Virginia. After executing the warrant, the code official or his agents shall return the warrant to the clerk of the circuit court of the city or county wherein the inspection was made. The code official or his agent shall make a reasonable effort to obtain consent from the owner,

occupant, or tenant of the subject building or structure prior to seeking the issuance of an inspection warrant under this section.

Note: Generally, official action must be taken by the local government to enforce the VMC. Consultation with the legal counsel of the jurisdiction when initiating or changing such action is advised.

B. Section 104.1.1 Transfer of ownership. In accordance with subdivision C 4 of § 36-105 of the Code of Virginia, if the local building department has initiated an enforcement action against the owner of a building or structure and such owner subsequently transfers the ownership of the building or structure to an entity in which the owner holds an ownership interest greater than 50%, the pending enforcement action shall continue to be enforced against the owner.

C. Section 104.2 Fees. In accordance with subdivision C 7 of § 36-105 of the Code of Virginia, fees may be levied by the local governing body in order to defray the cost of enforcement and appeals. For the purposes of this section, "defray the cost" may include the fair and reasonable costs incurred for such enforcement during normal business hours, but shall not include overtime costs unless conducted outside of the normal working hours established by the locality. A schedule of such costs shall be adopted by the local governing body in a local ordinance. A locality shall not charge overtime rate for inspections conducted during the normal business hours established by the locality. Nothing in this provision shall be construed to prohibit a private entity from conducting such inspections, provided the private entity has been approved to perform such inspections in accordance with the written policy of the code official for the locality.

D. Section 104.3 State buildings. In accordance with § 36-98.1 of the Code of Virginia, this code shall be applicable to state-owned buildings and structures. Acting through the Division of Engineering and Buildings, the Department of General Services shall function as the building official for state-owned buildings.

E. Section 104.3.1 Certification of state enforcement personnel. State enforcement personnel shall comply with the applicable requirements of Sections 104.4.2 and 104.4.3 for certification.

Note: Continuing education and periodic training requirements for DHCD certifications are set out in the VCS.

F. Section 104.4 Local enforcing agency. In jurisdictions enforcing this code, the local governing body shall designate the agency within the local government responsible for such enforcement and appoint a code official. The local governing body may also utilize technical assistants to assist the code official in the enforcement of this code. A permanently appointed code official shall not be removed from office except for cause after having been afforded a full opportunity to be heard on specific and relevant charges by and before the appointing authority. DHCD shall be notified by the appointing authority within 30 days of the appointment or release of a permanent or acting code official and within 60 days after retaining or terminating a technical assistant.

Note: Code officials and technical assistants are subject to sanctions in accordance with the VCS.

G. Section 104.4.1 Qualifications of code official and technical assistants. The code official shall have at least five years of building experience as a licensed professional engineer or architect, building, fire or trade inspector, contractor, housing inspector or superintendent of building, fire or trade construction or at least five years of building experience after obtaining a degree in architecture or engineering, with at least three years in responsible charge of work. Any combination of education and experience that would confer equivalent knowledge and ability shall be deemed to satisfy this requirement. The code official shall have general knowledge of sound engineering practice in respect to the design and construction of structures, the basic principles of fire prevention, the accepted requirements for means of egress and the installation of elevators

and other service equipment necessary for the health, safety and general welfare of the occupants and the public. The local governing body may establish additional qualification requirements.

A technical assistant shall have at least three years 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, fire protection, elevators or property maintenance work. Any combination of education and experience which would confer equivalent knowledge and ability shall be deemed to satisfy this requirement. The locality may establish additional certification requirements.

H. Section 104.4.2 Certification of code official and technical assistants. An acting or permanent code official shall be certified as a code official in accordance with the VCS within one year after being appointed as acting or permanent code official. A technical assistant shall be certified in the appropriate subject area within 18 months after becoming a technical assistant. When required by a locality to have two or more certifications, a technical assistant shall obtain the additional certifications within three years from the date of such requirement.

Exception: A code official or technical assistant in place prior to April 1, 1995, shall not be required to meet the certification requirements in this section while continuing to serve in the same capacity in the same locality.

I. Section 104.4.3 Noncertified code official. Except for a code official exempt from certification under the exception to Section 104.4.2, any acting or permanent code official who is not certified as a code official in accordance with the VCS shall attend the core module of the Virginia Building Code Academy or an equivalent course in an individual or regional code academy accredited by DHCD within 180 days of appointment. This requirement is in addition to meeting the certification requirement in Section 104.4.2.

Note: Continuing education and periodic training requirements for DHCD certifications are set out in the VCS.

J. Section 104.4.4 Conflict of interest. The standards of conduct for code officials and technical assistants shall be in accordance with the provisions of the State and Local Government Conflict of Interests Act, Chapter 31 (§ 2.2-3100 et seq.) of Title 2.2 of the Code of Virginia.

K. Section 104.4.5 Records. The local enforcing agency shall retain a record of applications received, permits, certificates, notices and orders issued, fees collected and reports of inspections in accordance with The Library of Virginia's General Schedule Number Six.

L. Section 104.5 Powers and duties, generally. The code official shall enforce this code as set out herein and as interpreted by the State Review Board and shall issue all necessary notices or orders to ensure compliance with the code.

M. Section 104.5.1 Delegation of authority. The code official may delegate powers and duties except where such authority is limited by the local government. When such delegations are made, the code official shall be responsible for assuring that they are carried out in accordance with the provisions of this code.

N. Section 104.5.2 Issuance of modifications. Upon written application by an owner or an owner's agent, the code official may approve a modification of any provision of this code provided the spirit and intent of the code are observed and public health, welfare and safety are assured. The decision of the code official concerning a modification shall be made in writing and the application for a modification and the decision of the code official concerning such modification shall be retained in the permanent records of the local enforcing agency.

O. Section 104.5.2.1 Substantiation of modification. The code official may require or may consider a statement from a professional engineer, architect or other person competent in the subject area of the application as to the equivalency of the proposed modification.

P. Section 104.5.3 Inspections. The code official may inspect buildings or structures to determine compliance with this code and shall carry proper credentials when performing such inspections. The code official is authorized to engage such expert opinion as deemed necessary to report upon unusual, detailed, or complex technical issues in accordance with local policies.

Q. Section 104.5.3.1 Observations. When, during an inspection, the code official or authorized representative observes an apparent or actual violation of another law, ordinance, or code not within the official's authority to enforce, such official shall report the findings to the official having jurisdiction in order that such official may institute the necessary measures.

R. Section 104.5.3.2 Approved inspection agencies and individuals. The code official may accept reports of inspections or tests from individuals or inspection agencies approved in accordance with the code official's written policy required by Section 104.5.3.3. The individual or inspection agency shall meet the qualifications and reliability requirements established by the written policy. Reports of inspections by approved individuals or agencies shall be in writing, shall indicate if compliance with the applicable provisions of this code have been met, and shall be certified by the individual inspector or by the responsible officer when the report is from an agency. Reports of inspections conducted for the purpose of verifying compliance with the requirements of the USBC for elevators, escalators, and related conveyances shall include the name and certification number of the elevator mechanic performing the tests witnessed by the third-party inspector or agency. The code official shall review and approve the report unless there is cause to reject it. Failure to approve a report shall be in writing within five working days of receiving it, stating the reasons for rejection.

S. Section 104.5.3.3 Third-party inspectors. Each code official charged with the enforcement of this code and who accepts third-party reports shall have a written policy establishing the minimum acceptable qualifications for third-party inspectors. The policy shall include the format and time frame required for submission of reports, any prequalification or preapproval requirements before conducting a third-party inspection, and any other requirements and procedures established by the code official.

T. Section 104.5.3.4 Qualifications. In determining third-party qualifications, the code official may consider such items as DHCD inspector certification, other state or national certifications, state professional registrations, related experience, education, and any other factors that would demonstrate competency and reliability to conduct inspections.

U. 104.5.4 Manufactured home park tenant notification. If a notice of violation is issued to a manufactured home park owner for violations of this code that jeopardize the health or safety of tenants of the park, a copy of the notice shall be provided to each affected tenant of the manufactured home park. The terms, "manufactured home park" and "owner," as used in this section, shall be as defined in the Manufactured Home Lot Rental Act (Chapter 13.3 (§ 55-248.41 et seq.) of Title 55 of the Code of Virginia).

13VAC5-63-485. Section 105 Violations.

105.1 Violation a misdemeanor; civil penalty. In accordance with § 36-106 of the Code of Virginia, it shall be unlawful for any owner or any other person, firm or corporation, on or after the effective date of any code provisions, to violate any such provisions. Any locality may adopt an ordinance that establishes a uniform schedule of civil penalties for violations of specified provisions of the code that are not abated or remedied promptly after receipt of a notice of violation from the local enforcement officer.

Note: See the full text of § 36-106 of the Code of Virginia for additional requirements and criteria pertaining to legal action relative to violations of the code.

105.2 Notices, reports and orders. Upon findings by the code official that violations of this code exist, the code official shall issue a correction notice or notice of violation to the owner, tenant or the person responsible for the maintenance of the structure. Work done to correct

violations of this code subject to the permit, inspection and approval provisions of the VCC shall not be construed as authorization to extend the time limits established for compliance with this code. When the owner is not the responsible party to whom the notice of violation or correction notice is issued, a copy of the notice shall also be delivered to the owner.

105.3 Correction notice. The correction notice shall be a written notice of the defective conditions. The correction notice shall require correction of the violation within a reasonable time unless an emergency condition exists as provided under the unsafe building provisions of Section 106. Upon request, the correction notice shall reference the code section that serves as the basis for the defects and shall state that such defects shall be corrected and reinspected in a reasonable time designated by the code official.

105.4 Notice of violation. If the code official determines there are violations of this code a written notice of violation may be issued to the owner, tenant, or the person responsible for the maintenance or use of the building or structure in lieu of a correction notice as provided for in Section 105.3. In addition, the code official shall issue a notice of violation for any uncorrected violation remaining from a correction notice established in Section 105.3. The code official shall provide the section numbers for any code provisions cited in the notice of violation to the owner, tenant, or the person responsible for the maintenance or use of the building or structure. The notice shall require correction of the violation within a reasonable time. The owner, tenant, or person to whom the notice of violation has been issued shall be responsible for contacting the code official within the timeframe established for any reinspections to assure the violations have been corrected. The code official will be responsible for making such inspection and verifying the violations have been corrected. In addition, the notice of violation shall indicate the right of appeal by referencing the appeals section of this code.

Exceptions:

1. Notices issued and legal proceedings or emergency actions taken under Section 106 for unsafe structures, unsafe equipment, or structures unfit for human occupancy.

2. Notices issued for failing to maintain buildings and structures as required by Section 103.2, as evidenced by multiple or repeated violations on the same property are not required to include a compliance deadline for correcting defects.

105.5 Coordination of inspections. The code official shall coordinate inspections and administrative orders with any other state or local agencies having related inspection authority and shall coordinate those inspections required by the Virginia Statewide Fire Prevention Code (13VAC5-51) for maintenance of fire protection devices, equipment, and assemblies so that the owners and occupants will not be subjected to numerous inspections or conflicting orders.

Note: The Fire Prevention Code requires the fire official to coordinate such inspections with the code official.

105.6 Further action when violation not corrected. If the responsible party has not complied with the notice of violation, the code official may request the legal counsel of the locality to institute the appropriate legal proceedings to restrain, correct or abate the violation or to require the removal or termination of the use of the building or structure involved. In cases where the locality or legal counsel so authorizes, the code official may issue or obtain a summons or warrant.

105.6.1 Further action for corrected violations: Compliance with a notice of violation notwithstanding, the code official may request legal proceedings be instituted for prosecution when a responsible party is served with three or more separate notices of violation for the same property within any five consecutive years. Legal proceedings shall not be instituted under this section for violation notices issued pursuant to the initial inspection of the property. Legal proceedings for violations that have been abated in residential rental dwelling units within a multifamily apartment development may only be instituted for such violations that affect safe, decent, or sanitary living conditions.

Exception: Legal proceedings shall not be instituted for violations that have been abated on owner-occupied single family dwellings.

105.7 Penalties and abatement. Penalties for violations of this code shall be as set out in § 36-106 of the Code of Virginia. The successful prosecution of a violation of the code shall not preclude the institution of appropriate legal action to require correction or abatement of a violation.

13VAC5-63-490. Section 106 Unsafe structures or structures unfit for human occupancy.

A. Section 106.1 General. This section shall apply to existing structures which are classified as unsafe or unfit for human occupancy. All conditions causing such structures to be classified as unsafe or unfit for human occupancy shall be remedied or as an alternative to correcting such conditions, the structure may be vacated and secured against public entry or razed and removed. Vacant and secured structures shall still be subject to other applicable requirements of this code. Notwithstanding the above, when the code official determines that an unsafe structure or a structure unfit for human occupancy constitutes such a hazard that it should be razed or removed, then the code official shall be permitted to order the demolition of such structures in accordance with applicable requirements of this code.

Note: Structures which become unsafe during construction are regulated under the VCC.

B. Section 106.2 Inspection of unsafe or unfit structures. The code official shall inspect any structure reported or discovered as unsafe or unfit for human habitation and shall prepare a report to be filed in the records of the local enforcing agency and a copy issued to the owner. The report shall include the use of the structure and a description of the nature and extent of any conditions found.

C. Section 106.3 Notice of unsafe structure or structure unfit for human occupancy. When a structure is determined to be unsafe or unfit for human occupancy by the code official, a written notice of unsafe structure or structure unfit for human occupancy shall be issued by personal service to the owner, the owner's agent or the person in control of such structure. The notice shall specify the corrections necessary to comply with this code, or if the structure is required to be demolished, the notice shall specify the time period within which the demolition must occur. Requirements in Section 105.2 for notices of violation are also applicable to notices issued under this section to the extent that any such requirements are not in conflict with the requirements of this section.

Note: Whenever possible, the notice should also be given to any tenants of the affected structure.

D. Section 106.3.1 Vacating unsafe structure. If the code official determines there is actual and immediate danger to the occupants or public, or when life is endangered by the occupancy of an unsafe structure, the code official shall be authorized to order the occupants to immediately vacate the unsafe structure. When an unsafe structure is ordered to be vacated, the code official shall post a notice with the following wording at each entrance: "THIS STRUCTURE IS UNSAFE AND ITS OCCUPANCY (OR USE) IS PROHIBITED BY THE CODE OFFICIAL." After posting, occupancy or use of the unsafe structure shall be prohibited except when authorized to enter to conduct inspections, make required repairs or as necessary to demolish the structure.

E. Section 106.4 Posting of notice. If the notice is unable to be issued by personal service as required by Section 106.3, then the notice shall be sent by registered or certified mail to the last known address of the responsible party and a copy of the notice shall be posted in a conspicuous place on the premises.

F. Section 106.5 Posting of placard. In the case of a structure unfit for human habitation, at the time the notice is issued, a placard with the following wording shall be posted at the entrance to the structure: "THIS STRUCTURE IS UNFIT FOR HABITATION AND ITS USE OR OCCUPANCY HAS BEEN PROHIBITED BY THE CODE OFFICIAL." In the case of an unsafe

structure, if the notice is not complied with, a placard with the above wording shall be posted at the entrance to the structure. After a structure is placarded, entering the structure shall be prohibited except as authorized by the code official to make inspections, to perform required repairs or to demolish the structure. In addition, the placard shall not be removed until the structure is determined by the code official to be safe to occupy, nor shall the placard be defaced.

G. Section 106.6 Revocation of certificate of occupancy. If a notice of unsafe structure or structure unfit for human habitation is not complied with within the time period stipulated on the notice, the code official shall be permitted to request the local building department to revoke the certificate of occupancy issued under the VCC.

H. Section 106.7 Vacant and open structures. When an unsafe structure or a structure unfit for human habitation is open for public entry at the time a placard is issued under Section 106.5, the code official shall be permitted to authorize the necessary work to make such structure secure against public entry whether or not legal action to compel compliance has been instituted.

I. Section 106.8 Emergency repairs and demolition. To the extent permitted by the locality, the code official may authorize emergency repairs to unsafe structures or structures unfit for human habitation when it is determined that there is an imminent danger of any portion of the unsafe structure or structure unfit for human habitation collapsing or falling and when life is endangered. Emergency repairs may also be authorized where there is a code violation resulting in the immediate serious and imminent threat to the life and safety of the occupants. The code official shall be permitted to authorize the necessary work to make the structure temporarily safe whether or not legal action to compel compliance has been instituted. In addition, whenever an owner of an unsafe structure or structure unfit for human habitation fails to comply with a notice to demolish issued under Section 106.3 in the time period stipulated, the code official shall be permitted to cause the structure to be demolished. In accordance with §§ 15.2-906 and 15.2-1115 of the Code of Virginia, the legal counsel of the locality may be requested to institute appropriate action against the property owner to recover the costs associated with any such emergency repairs or demolition and every such charge that remains unpaid shall constitute a lien against the property on which the emergency repairs or demolition were made and shall be enforceable in the same manner as provided in Articles 3 (§ 58.1-3940 et seq.) and 4 (§ 58.1-3965 et seq.) of Chapter 39 of Title 58.1 of the Code of Virginia.

Note: Code officials and local governing bodies should be aware that other statutes and court decisions may impact on matters relating to demolition, in particular whether newspaper publication is required if the owner cannot be located and whether the demolition order must be delayed until the owner has been given the opportunity for a hearing. In addition, historic building demolition may be prevented by authority granted to local historic review boards in accordance with § 15.2-2306 of the Code of Virginia unless determined necessary by the code official.

J. Section 106.9 Closing of streets. When necessary for public safety, the code official shall be permitted to order the temporary closing of sidewalks, streets, public ways or premises adjacent to unsafe or unfit structures and prohibit the use of such spaces.

13VAC5-63-500. Section 107 Appeals.

A. Section 107.1 Establishment of appeals board. In accordance with § 36-105 of the Code of Virginia, there shall be established within each local enforcing agency a LBBCA. Whenever a county or a municipality does not have such a LBBCA, the local governing body shall enter into an agreement with the local governing body of another county or municipality or with some other agency, or a state agency approved by DHCD for such appeals resulting therefrom. Fees may be levied by the local governing body in order to defray the cost of such appeals. The LBBCA for hearing appeals under the VCC shall be permitted to serve as the appeals board required by this section. The locality is responsible for maintaining a duly constituted LBBCA prepared to hear appeals within the time limits established in this section. The LBBCA shall meet 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.

B. Section 107.2 Membership of board. The LBBCA shall consist of at least five members appointed by the locality for a specific term 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 locality. 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.

C. Section 107.3 Officers and qualifications of members. The LBBCA shall annually select one of its regular members to serve as chairman. When the chairman is not present at an appeal hearing, the members present shall select an acting chairman. The locality or the chief executive officer of the locality shall appoint a secretary to the LBBCA to maintain a detailed record of all proceedings. Members of the LBBCA shall be selected by the locality on the basis of their ability to render fair and competent decisions regarding application of the USBC and shall to the extent possible, represent different occupational or professional fields relating to the construction industry. At least one member should be an experienced builder; at least one member should be an RDP, and at least one member should be an experienced property manager. Employees or officials of the locality shall not serve as members of the LBBCA.

D. Section 107.4 Conduct of members. No member shall hear an appeal in which that member has a conflict of interest in accordance with the State and Local Government Conflict of Interests Act (§ 2.2-3100 et seq. of the Code of Virginia). Members shall not discuss the substance of an appeal with any other party or their representatives prior to any hearings.

E. Section 107.5 Right of appeal; filing of appeal application. Any person aggrieved by the local enforcing agency's application of this code or the refusal to grant a modification to the provisions of this code may appeal to the LBBCA. The applicant shall submit a written request for appeal to the LBBCA within 14 calendar days of the receipt of the decision being appealed. The application shall contain the name and address of the owner of the building or structure and, in addition, the name and address of the person appealing, when the applicant is not the owner. A copy of the code official's decision shall be submitted along with the application for appeal and maintained as part of the record. The application shall be marked by the LBBCA to indicate the date received. Failure to submit an application for appeal within the time limit established by this section shall constitute acceptance of a code official's decision.

F. Section 107.6 Meetings and postponements. The LBBCA shall meet within 30 calendar days after the date of receipt of the application for appeal, except that a period of up to 45 calendar days shall be permitted where the LBBCA has regularly scheduled monthly meetings. A longer time period shall be permitted if agreed to by all the parties involved in the appeal. A notice indicating the time and place of the hearing shall be sent to the parties in writing to the addresses listed on the application at least 14 calendar days prior to the date of the hearing, except that a lesser time period shall be permitted if agreed to by all the parties involved in the appeal. When a quorum of the LBBCA is not present at a hearing to hear an appeal, any party involved in the appeal shall have the right to request a postponement of the hearing. The LBBCA shall reschedule the appeal within 30 calendar days of the postponement, except that a longer time period shall be permitted if agreed to by all the parties involved in the appeal.

G. Section 107.7 Hearings and decision. All hearings before the LBBCA shall be open meetings and the appellant, the appellant's representative, the locality's representative and any person whose interests are affected by the code official's decision in question shall be given an opportunity to be heard. The chairman shall have the power and duty to direct the hearing, rule

upon the acceptance of evidence and oversee the record of all proceedings. The LBBCA shall have the power to uphold, reverse, or modify the decision of the official by a concurring vote of a majority of those present. Decisions of the LBBCA shall be final if no further appeal is made. The decision of the LBBCA shall be explained in writing, signed by the chairman and retained as part of the record of the appeal. Copies of the written decision shall be sent to all parties by certified mail. In addition, the written decision shall contain the following wording:

"Any person who was a party to the appeal may appeal to the State Review Board by submitting an application to such Board within 21 calendar days upon receipt by certified mail of the written decision. Application forms are available from the Office of the State Review Board, 600 East Main Street, Richmond, Virginia 23219, (804) 371-7150."

H. Section 107.8 Appeals to the State Review Board. After final determination by the LBBCA in an appeal, any person who was a party to the appeal may further appeal to the State Review Board. In accordance with § 36-98.2 of the Code of Virginia for state-owned buildings and structures, appeals by an involved state agency from the decision of the code official for state-owned buildings or structures shall be made directly to the State Review Board. The application for appeal shall be made to the State Review Board within 21 calendar days of the receipt of the decision to be appealed. Failure to submit an application within that time limit shall constitute an acceptance of the code official's decision. For appeals from a LBBCA, a copy of the code official's decision and the written decision of the LBBCA shall be submitted with the application for appeal to the State Review Board. Upon request by the Office of the State Review Board, the LBBCA shall submit a copy of all pertinent information from the record of the appeal. In the case of appeals involving state-owned buildings or structures, the involved state agency shall submit a copy of the code official's decision and other relevant information with the application for appeal to the State Review Board. Procedures of the State Review Board are in accordance with Article 2 (§ 36-108 et seq.) of Chapter 6 of Title 36 of the Code of Virginia. Decisions of the State Review Board shall be final if no further appeal is made.

13VAC5-63-510. Chapter 2 Definitions.

A. Change Section 201.3 of the IPMC to read:

201.3 Terms defined in other codes. Where terms are not defined in this code and are defined in the IBC, IFC, IFGC, IPC, IMC, International Existing Building Code, IRC, International Zoning Code or NFPA 70, such terms shall have the meanings ascribed to them as stated in those codes, except that terms defined in the VCC shall be used for this code and shall take precedence over other definitions.

B. ~~Change Section 201.5 of the IPMC to read:~~

~~201.5 Parts. Whenever the words "dwelling unit," "dwelling," "premises," "building," "rooming unit," "housekeeping unit," or "story" are stated in this code, they shall be construed as though they were followed by the words "or part thereof."~~

C. Add the following definitions to Section 202 of the IPMC to read:

Applicable building code. The local or statewide building code and referenced standards in effect at the time the building or portion thereof was constructed, altered, renovated or underwent a change of occupancy. See Section 103 for the application of the code.

Maintained. To keep unimpaired in an appropriate condition, operation, and continuance as installed in accordance with the applicable building code, or as previously approved, and in accordance with the applicable operational and maintenance provisions of this code.

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 maintenance,

ventilation, illumination, sanitary or heating facilities or other essential equipment, or (ii) the required plumbing and sanitary facilities are inoperable.

Unsafe equipment. Unsafe equipment includes any boiler, heating equipment, elevator, moving stairway, electrical wiring or device, flammable liquid containers or other equipment that is in such disrepair or condition that such equipment is determined by the code official to be dangerous to the health, safety and welfare of the occupants of a structure or the public.

Unsafe structure. An existing structure (i) determined by the code official to be dangerous to the health, safety and welfare of the occupants of the structure or the public, (ii) that contains unsafe equipment, or (iii) that is so damaged, decayed, dilapidated, structurally unsafe or of such faulty construction or unstable foundation that partial or complete collapse is likely. A vacant existing structure unsecured or open shall be deemed to be an unsafe structure.

D. Change the following definition in Section 202 of the IPMC to read:

Infestation. The presence of insects, rodents, vermin, or other pests in sufficient number to adversely affect the structure or health, safety, and welfare of the occupants.

E. Delete the following definitions from Section 202 of the IPMC:

Condemn

Cost of such demolition of emergency repairs

Equipment support

Inoperable motor vehicle

Labeled

Neglect

Openable area

Pest elimination

Strict liability offense

Ultimate deformation

Workmanlike

13VAC5-63-520. Chapter 3 General requirements.

A. Delete the following sections from Chapter 3 of the IPMC:

1. Section 301.2 Responsibility.
2. Section 302.1 Sanitation.
3. Section 302.4 Weeds.
4. Section 302.6 Exhaust vents.
5. Section 302.8 Motor vehicles.
6. Section 302.9 Defacement of property.
7. Section 303.2 Enclosures.
8. Section 304.1.1 Unsafe conditions.
9. Section 304.18.1 Doors.
10. Section 304.18.2 Windows.
11. Section 304.18.3 Basement hatchways.
12. Section 305.1.1 Unsafe conditions.
13. Section 306 Component serviceability (all provisions).

14. Section 308.2 Disposal of rubbish.

15. Section 308.2.1 Rubbish storage facilities.

16. Section 308.2.2 Refrigerators.

17. Section 308.3 Disposal of garbage.

18. Section 308.3.1 Garbage facilities.

19. Section 308.3.2 Containers.

20. Section 309.2 Owner.

21. Section 309.3 Single occupant.

22. Section 309.4 Multiple occupancy.

23. Section 309.5 Occupant.

B. Change the following sections in Chapter 3 of the IPMC to read:

1. Section 301.1 Scope. The provisions of this chapter shall govern the minimum conditions for the maintenance of structures and equipment and for the maintenance of exterior property to the extent that this code is applicable.

2. Section 301.3 Vacant structures. Vacant structures shall be maintained in a clean, safe, secure, and sanitary condition as provided for in this code.

3. Section 302.2 Grading and drainage. All premises shall be graded and maintained to protect the foundation walls or slab of the structure from the accumulation and drainage of surface or stagnant water in accordance with the applicable building code.

4. Section 302.3 Sidewalks and driveways. All sidewalks, walkways, stairs, driveways, parking spaces, and similar spaces regulated under the VCC shall be kept in a proper state of repair and maintained free from hazardous conditions.

5. Section 302.5 Rodent harborage. All structures shall be kept free from rodent harborage and infestation. Structures in which rodents are found shall be promptly exterminated by approved processes that will not be injurious to human health. After extermination, proper precautions shall be taken to prevent reinfestation.

6. Section 303.2 Enclosures. Swimming pool, hot tub, and spa barriers shall be maintained in accordance with the applicable building code or ordinance under which such barriers were constructed.

7. Section 304.1 General. The exterior of a structure shall be maintained in good repair and structurally sound.

8. Section 304.3 Premises identification. Address numbers of buildings shall be maintained in accordance with the applicable building code or when required by ordinance.

9. Section 304.7 Roofs and drainage. The roof and flashing shall be sound, tight, and not have defects that admit rain. Roof drainage shall be adequate to prevent dampness or deterioration in the walls or interior portion of the structure. Roof water shall be discharged in a manner to protect the foundation or slab of buildings and structures from the accumulation of roof drainage.

10. Section 304.14 Insect screens. During the period from April 1 to December 1, every door, window, and other outside opening required for ventilation of habitable rooms, food preparation areas, food service areas, or any areas where products to be included or utilized in food for human consumption are processed, manufactured, packaged, or stored shall be supplied with an approved tightly fitting screens of not less than 16 mesh per inch (16 mesh per 25 mm) and every screen door used for insect control shall have a self-closing device in good working condition.

Exception: Screens shall not be required where other approved means, such as mechanical ventilation, air curtains, or insect repellant fans, are used.

11. Section 304.18 Building security. Devices designed to provide security for the occupants and property within, when required by the applicable building code or when provided, shall be maintained unless their removal is approved by the building official.

12. Section 304.19 Gates. To the extent required by the applicable building code or to the extent provided when constructed, exterior gates, gate assemblies, operator systems if provided, and hardware shall be maintained in good condition. Latches at all entrances shall tightly secure the gates.

13. Section 305.1 General. The interior of a structure and equipment therein shall be maintained in good repair, structurally sound, and in a sanitary condition.

14. Section 307.1 General. Handrails and guards required or provided when a building was constructed shall be maintained in accordance with the applicable building code.

15. Section 308.1 Accumulation of rubbish or garbage. The interior of every structure shall be free from excessive accumulation of rubbish or garbage.

16. Section 309 Pest Infestation and extermination.

17. Section 309.1 Infestation. All structures shall be kept free from insect and rodent infestation. Structures in which insects or rodents are found shall be promptly exterminated by approved processes that will not be injurious to human health. After extermination, proper precautions shall be taken to prevent reinfestation.

C. Add the following sections to Chapter 3 of the IPMC:

1. Section 305.7 Carbon monoxide alarms. Carbon monoxide alarms shall be maintained as approved.

2. Section 310 Lead-based paint.

3. Section 310.1 General. Interior and exterior painted surfaces of dwellings and child care facilities, including fences and outbuildings, that contain lead levels equal to or greater than 1.0 milligram per square centimeter or in excess of 0.50% lead by weight shall be maintained in a condition free from peeling, chipping, and flaking paint or removed or covered in an approved manner. Any surface to be covered shall first be identified by an approved warning as to the lead content of such surface.

4. Section 311 Aboveground liquid fertilizer storage tanks (ALFST).

5. Section 311.1 General. ALFSTs shall be maintained in accordance with the requirements of Section 1101.16 of the VEBC and the requirements of the VCC applicable to such ALFSTs when newly constructed and the requirements of the VEBC when undergoing a change of occupancy to an ALFST and when repaired, altered, or reconstructed, including the requirements for inspections and for a secondary containment system.

13VAC5-63-524. Chapter 4 Light, ventilation, and occupancy limitations.

A. Delete the following sections from Chapter 4 of the IPMC:

1. Section 401.2 Responsibility.

2. Section 401.3 Alternative devices.

3. Section 402.2 Common halls and stairways.

4. Section 402.3 Other spaces.

5. Section 403.2 Bathrooms and toilet rooms.

6. Section 403.5 Clothes dryer exhaust.

B. Change the following sections in Chapter 4 of the IPMC to read:

1. Section 401.1 Scope. The provisions of this chapter shall govern the maintenance of structures for light, ventilation, and space for occupancy.

2. Section 402.1 Natural or artificial light. Every habitable space, hallway, stairway, bathroom, and other spaces shall be maintained to provide natural or artificial light to the extent required or provided in accordance with the applicable building code.

3. Section 403.1 Natural or mechanical ventilation. Every habitable space, hallway, stairway, bathroom, and other spaces shall be maintained to provide natural or mechanical ventilation to the extent required by the applicable building code.

4. Section 403.4 Process ventilation. Local exhaust systems required by the applicable building code or that are provided that exhaust injurious, toxic, irritating, or noxious fumes, gases, dusts, or mists to the exterior of a building shall be maintained to prevent compromising the required ventilation system.

C. Add the following section to Chapter 4 of the IPMC:

Section 404.05 Limitation of application of section. The provisions of Section 404 that address construction aspects of occupancy limitations shall apply only to the extent that such requirements were part of the applicable building code. Operational requirements such as the use of rooms or minimum areas per occupant are part of this code only to the extent that they do not require alterations to be made to a building.

13VAC5-63-530. Chapter 5 Plumbing requirements.

A. Change the title of Chapter 5 of the IPMC to "Plumbing Requirements."

B. Delete the following sections from Chapter 5 of the IPMC:

1. Section 501.2 Responsibility.

2. Section 502 Required facilities (all provisions).

3. Section 503 Toilet rooms (all provisions).

4. Section 505.3 Supply.

5. Section 505.5.1 Abandonment of systems.

C. Change the following sections in Chapter 5 of the IPMC to read:

1. Section 501.1 General. The provisions of this chapter shall govern the maintenance of structures for plumbing systems, facilities, and fixtures.

2. Section 504.1 General. Required or provided plumbing systems and facilities shall be maintained in accordance with the applicable building code.

3. Section 504.2 Plumbing fixtures. All plumbing fixtures shall be maintained in a safe, sanitary, and working condition. A kitchen sink shall not be used as a substitute for a required lavatory.

4. Section 504.3 Plumbing system hazards. Where it is found that a plumbing system in a structure constitutes a hazard to the public, the occupants, or the structure, the code official shall require the defects to be corrected to eliminate the hazard.

5. Section 505.1 Supply. Required or provided water supply systems shall be maintained in accordance with the applicable building code. All water supply systems shall be free from obstructions, defects, and leaks.

6. Section 505.2 Protection of water supply systems. Protection of water supply systems shall be provided and maintained in accordance with the applicable building code.

7. Section 505.3 Inspection and testing of backflow prevention systems. Inspection and testing shall comply with Sections 505.3.1 and 505.3.2.

8. Section 505.4 Water heating facilities. Water heating facilities shall be maintained. Combination temperature and pressure-relief valves and relief valve discharge pipes shall be maintained on water heaters.

9. Section 505.5 Nonpotable water reuse systems. Where installed, nonpotable water reuse and rainwater collection and conveyance systems shall be maintained in a safe and sanitary condition. Where such systems are not property maintained, the systems shall be repaired to provide for safe and sanitary conditions, or the system shall be abandoned in accordance with the following:

1. All system piping connecting to a utility provided or private water system shall be removed or disabled. Proper cross-connection control and backwater prevention measures shall comply with the applicable building code.

2. Where required, the distribution piping system shall be replaced with an approved potable water supply piping system.

3. The storage tank shall be secured from accidental access by sealing or locking tank inlets and access points or filling with sand or equivalent.

10. Section 506.1 Drainage and venting. Required or provided sanitary drainage and venting systems shall be maintained in accordance with the applicable building code.

11. Section 506.2 Maintenance. Every building drainage and sewer system shall function properly and be kept free from obstructions, leaks, and defects.

12. Section 507.1 General. Drainage of roofs and paved areas, yards and courts, and other open areas on the premises shall be discharged in a manner to protect the buildings and structures from the accumulation of overland water runoff.

D. Add the following sections to Chapter 5 of the IPMC:

1. Section 504.1.1 Public and employee facilities. Except for periodic maintenance or cleaning, access and use shall be provided to facilities at all times during occupancy of the premises in accordance with the applicable building code.

2. Section 504.2.1 Fixture clearances. Adequate clearances for usage and cleaning of plumbing fixtures shall be maintained as approved when installed.

3. Section 505.1.1 Tempered water. Tempered water shall be supplied to fixtures and facilities when required by the applicable building code.

4. Section 505.2.1 Attached hoses. Shampoo basin faucets, janitor sink faucets, and other hose bibs or faucets to which hoses are attached and left in place shall be protected by an approved atmospheric-type vacuum breaker or an approved permanently attached hose connection vacuum breaker.

5. Section 505.3.1 Inspections. Inspections shall be made of all backflow assemblies and air gaps to determine whether they are operable.

6. Section 505.3.2 Testing. Reduced pressure principle backflow preventer assemblies, double check-valve assemblies, double-detector check valve assemblies, and pressure vacuum breaker assemblies shall be tested at the time of installation, immediately after repairs or relocation and at least annually. The testing procedure shall be performed in accordance with one of the following standards: ASSE 5010-1013-1, Sections 1 and 2; ASSE 5010-1015-1, Sections 1 and 2; ASSE 5010-1015-2; ASSE 5010-1015-3, Sections 1 and 2; ASSE 5010-1015-4, Sections 1 and 2; ASSE 5010-1020-1, Sections 1 and 2; ASSE 5010-1047-1, Sections 1, 2, 3 and 4; ASSE 5010-1048-1, Sections 1, 2, 3 and 4; ASSE 5010-1048-2; ASSE 5010-1048-3, Sections 1, 2, 3 and 4; ASSE 5010-1048-4, Sections 1, 2, 3 and 4; or CAN/CSA B64.10.

13VAC5-63-540. Chapter 6 Mechanical and electrical requirements.

A. Delete the following sections from Chapter 6 of the IPMC:

1. Section 601.2 Responsibility.

2. Section 603.6 Energy conservation devices.

3. Section 604.2 Service.

4. Section 604.3.2 Abatement of electrical hazards associated with fire exposure.

B. Change the following sections in Chapter 6 of the IPMC to read:

1. Section 601.1 General. The provisions of this chapter shall govern the maintenance of mechanical and electrical facilities and equipment.

2. Section 602 Heating and cooling facilities.

3. Section 602.1 Facilities required. Heating and cooling facilities shall be maintained and operated in structures as required by this section.

4. Section 602.2 Heat supply. Every owner and operator of a Group R-2 apartment building or other residential building who rents, leases, or lets one or more dwelling unit, rooming unit, dormitory, or guestroom on terms, either expressed or implied, to furnish heat to the occupants thereof shall supply heat during the period from October 15 to May 1 to maintain a temperature of not less than 68°F (20°C) in all habitable rooms, bathrooms, and toilet rooms. The code official may also consider modifications as provided in Section 104.5.2 when requested for unusual circumstances or may issue notice approving building owners to convert shared heating and cooling piping HVAC systems 14 calendar days before or after the established dates when extended periods of unusual temperatures merit modifying these dates.

Exception: When the outdoor temperature is below the winter outdoor design temperature for the locality, maintenance of the minimum room temperature shall not be required provided that the heating system is operating at its full design capacity. The winter outdoor design temperature for the locality shall be as indicated in Appendix D of the IPC.

5. Section 602.3 Occupiable work spaces. Indoor occupiable work spaces shall be supplied with heat during the period from October 1 to May 15 to maintain a minimum temperature of 65°F (18°C) during the period the spaces are occupied.

Exceptions:

1. Processing, storage, and operation areas that require cooling or special temperature conditions.

2. Areas in which persons are primarily engaged in vigorous physical activities.

6. Section 602.4 Cooling supply. Every owner and operator of a Group R-2 apartment building who rents, leases, or lets one or more dwelling units, rooming units, or guestrooms on terms, either expressed or implied, to furnish cooling to the occupants thereof shall supply cooling during the period from May 15 to October 1 to maintain a temperature of not more than 77°F (25°F) in all habitable rooms. The code official may also consider modifications as provided in Section 104.5.2 when requested for unusual circumstances or may issue notice approving building owners to convert shared heating and cooling piping HVAC systems 14 calendar days before or after the established dates when extended periods of unusual temperatures merit modifying these dates.

Exception: When the outdoor temperature is higher than the summer design temperature for the locality, maintenance of the room temperature shall not be required provided that the cooling system is operating at its full design capacity. The summer outdoor design temperature for the locality shall be as indicated in the IECC.

7. Section 603.1 Mechanical equipment and appliances. Required or provided mechanical equipment, appliances, fireplaces, solid fuel-burning appliances, cooking appliances, chimneys, vents, and water heating appliances shall be maintained in compliance with the code under which the appliances, system, or equipment was installed, kept in safe working condition, and capable of performing the intended function.

8. Section 603.2 Removal of combustion products. Where required by the code under which installed, fuel-burning equipment and appliances shall be connected to an approved chimney or vent.

9. Section 603.5 Combustion air. Where required by the code under which installed, a supply of air for complete combustion of the fuel shall be provided for the fuel-burning equipment.

10. Section 604.1 Electrical system. Required or provided electrical systems and facilities shall be maintained in accordance with the applicable building code.

11. Section 604.3 Electrical system hazards. Where it is found that the electrical system in a structure constitutes a hazard to the occupants or the structure by reason of deterioration or damage or for similar reasons, the code official shall require the defects to be corrected to eliminate the hazard.

12. Section 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 VEBC.

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 inspector per Section 113.7 of the VCC, 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-voltage 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; or

18. Electronic control, signaling, and communication equipment.

13. 604.3.2.1 Electrical equipment. Electrical switches, receptacles and fixtures, including furnace, water heating, security system and power distribution circuits, that have been exposed to fire shall be replaced in accordance with the provisions of the VEBC.

Exception: Electrical switches, receptacles and fixtures that shall be allowed to be repaired or reused where an inspection report from the equipment manufacturer or an approved representative of the equipment manufacturer, a third party licensed or certified electrician, or an electrical engineer indicates that the equipment has not sustained damage that requires replacement.

14. Section 605.1 Electrical components. Electrical equipment, wiring, and appliances shall be maintained in accordance with the applicable building code.

15. Section 605.2 Power distribution and receptacles. Required or provided power circuits and receptacles shall be maintained in accordance with the applicable building code, and ground fault and arc-fault circuit interrupter protection shall be provided where required by the applicable building code. All receptacle outlets shall have the appropriate faceplate cover for the location when required by the applicable building code.

16. Section 605.3 Lighting distribution and luminaires. Required or provided lighting circuits and luminaires shall be maintained in accordance with the applicable building code.

17. Section 605.4 Flexible cords. Flexible cords shall not be run through doors, windows, or cabinets or concealed within walls, floors, or ceilings.

18. Section 606.1 General. Elevators, dumbwaiters, and escalators shall be maintained in compliance with ASME A17.1. The most current certificate of inspection shall be on display at all times within the elevator or attached to the escalator or dumbwaiter, be available for public inspection in the office of the building operator, or be posted in a publicly conspicuous location approved by the code official. Where not displayed in the elevator or attached on the escalator or dumbwaiter, there shall be a notice of where the certificate of inspection is available for inspection. An annual periodic inspection and test is required of elevators and escalators. A locality shall be permitted to require a six-month periodic inspection and test. All periodic inspections shall be performed in accordance with Section 8.11 of ASME A17.1. The code official may also provide for such inspection by an approved agency or through agreement with other local certified elevator inspectors. An approved agency includes any individual, partnership, or corporation who has met the certification requirements established by the VCS.

C. Add the following sections to Chapter 6 of the IPMC:

1. Section 602.2.1 Prohibited use. In dwelling units subject to Section 602.2, one or more unvented room heaters shall not be used as the sole source of comfort heat in a dwelling unit.

2. Section 603.7 Fuel tanks and systems. Fuel gas or combustible or flammable liquid containers, tanks, and piping systems shall be maintained in compliance with the code under which they were installed, kept in safe working condition, and capable of performing the intended function, or removed or abandoned in accordance with the Virginia Statewide Fire Prevention Code.

3. Section 607.2 Clothes dryer exhaust duct. Required or provided clothes dryer exhaust systems shall be maintained in accordance with the applicable building code.

13VAC5-63-545. Chapter 7 Fire safety requirements.

A. Delete the following sections from Chapter 7 of the IPMC:

1. Section 701.2 Responsibility.

2. Section 704.5 Fire department connection.

3. Section 704.6.1 Where required.

4. Section 704.6.1.1 Group R-1.

5. Section 704.6.1.2 Groups R-2, R-3, R-4, and I-1.

6. Section 704.6.1.3 Installation near cooking appliances.

7. Section 704.6.1.4 Installation near bathrooms.

8. Section 704.6.2 Interconnection.

9. Section 704.6.3 Power source.

10. Section 704.6.4 Smoke detection system.

11. Section 704.7 Single-station and multiple-station smoke alarms.

B. Change the following sections in Chapter 7 of the IPMC:

1. Section 701.1 General. The provisions of this chapter shall govern the maintenance of fire safety facilities and equipment.

2. Section 702.1 General. The means of egress system shall be maintained in accordance with the applicable building code and Chapter 10 of the SFPC to provide a safe, continuous, and unobstructed path of travel from any point in a building or structure to the public way.

3. Section 702.2 Aisles. The required width of aisles shall be maintained in accordance with the applicable building code.

4. Section 702.3 Doors. Means of egress doors shall be maintained and, to the extent required by the code in effect at the time of construction, shall be readily openable from the side from which egress is to be made without the need for keys, special knowledge, or effort.

5. Section 702.4 Emergency escape and rescue openings. Required emergency escape and rescue openings shall be maintained in accordance with the code in effect at the time of construction and to the extent required by the code in effect at the time of construction shall be operational from the inside of the room without the use of keys or tools. Bars, grilles, grates, or similar devices are permitted to be placed over emergency escape and rescue openings provided the minimum net clear opening size complies with the code that was in effect at the time of construction and such devices shall be releasable or removable from the inside without the use of a key, tool, or force greater than that which is required for normal operation of the escape and rescue opening.

6. Section 704.1 General. Systems, devices, and equipment to detect a fire, actuate an alarm, or suppress or control a fire or any combination thereof shall be maintained in an operable condition at all times.

7. Section 704.1.1 Maintenance and alterations. Fire protection systems shall be maintained in accordance with the original installation standards for that system. Alterations and repairs to fire protection systems shall be done in accordance with the applicable building code and the applicable standards.

8. Section 704.1.2 Required fire protection systems. Fire protection systems shall be repaired, operated, tested, and maintained in accordance with this code. A fire protection system for which a design option, exception, or reduction to the provisions of this code or

the applicable building code has been granted shall be considered to be a required system.

9. Section 704.1.3 Fire protection systems. Fire protection systems shall be maintained in accordance with the Statewide Fire Prevention Code.

10. Section 704.3.1 Preplanned impairment programs. Preplanned impairments shall be authorized by the impairment coordinator. Before authorization is given, a designated individual shall be responsible for verifying that all of the following procedures have been implemented:

1. The extent and expected duration of the impairment have been determined.

2. The areas or buildings involved have been inspected, and the increased risks determined.

3. Recommendations have been submitted to management or the building owner or manager.

4. The fire department has been notified.

5. The insurance carrier, the alarm company, the building owner or manager, and other authorities having jurisdiction have been notified.

6. The supervisors in the areas to be affected have been notified.

7. A tag impairment system has been implemented.

8. Necessary tools and materials have been assembled on the impairment site.

11. Section 704.4 Removal of or tampering with equipment. It shall be unlawful for any person to remove, tamper with, or otherwise disturb any fire ~~hydrant, fire detection and alarm system, fire suppression system, or other fire appliance~~ protection or life safety system required by ~~this code or~~ the applicable building code except for the purpose of extinguishing fire, for training purposes, for recharging or making necessary repairs, or where approved by the fire code official.

12. Section 704.4.2 Removal of existing occupant-use hose lines. The fire code official is authorized to permit the removal of existing occupant-use hose lines where all of the following conditions exist:

1. Installation is not required by ~~this code or~~ the applicable building code.

2. The hose line would not be utilized by trained personnel or the fire department.

3. The remaining outlets are compatible with local fire department fittings.

13. Section 704.6 Single-station and multiple-station smoke alarms. Required or provided single-station and multiple-station smoke alarms shall be maintained in accordance with the applicable building code.

13VAC5-63-549. Chapter 8 Referenced standards.

Change the referenced standards in Chapter 8 of the IPMC as follows (standards not shown remain the same):

Standard reference number	Title	Referenced in code section number
ASSE 5010-1013-1	Field Test Procedure for a Reduced Pressure Principle Assembly Using a Differential Pressure Gauge, 1991	505.3.2

ASSE 5010-1015-1	Field Test Procedure for a Double Check Valve Assembly Using a Duplex Gauge, 1991	505.3.2
ASSE 5010-1015-2	Field Test Procedure for a Double Check Valve Assembly Using a Differential Pressure Gauge - High- and Low-Pressure Hose Method, 1991	505.3.2
ASSE 5010-1015-3	Field Test Procedure for a Double Check Valve Assembly Using a Differential Pressure Gauge - High Pressure Hose Method, 1991	505.3.2
ASSE 5010-1015-4	Field Test Procedure for a Double Check Valve Assembly Using a Site Tube, 1991	505.3.2
ASSE 5010-1020-1	Field Test Procedures for a Pressure Vacuum Breaker Assembly, 1991	505.3.2
ASSE 5010-1047-1	Field Test Procedure for a Reduced Pressure Detector Assembly Using a Differential Pressure Gauge, 1991	505.3.2
ASSE 5010-1048-1	Field Test Procedure for a Double Check Detector Assembly Using a Duplex Gauge, 1991	505.3.2
ASSE 5010-1048-2	Field Test Procedure for a Double Check Detector Assembly Using a Differential Pressure Gauge - High- and Low-Pressure Hose Method, 1991	505.3.2
ASSE 5010-1048-3	Field Test Procedure for a Double Check Detector Assembly Using a Differential Pressure Gauge - High-Pressure Hose Method, 1991	505.3.2
ASSE 5010-1048-4	Field Test Procedure for a Double Check Detector Assembly Using a Site Tube, 1991	505.3.2
CAN/CSA-B64.10-01	Manual for the Selection and Installation of Backflow Prevention Devices/Manual for the Maintenance and Field Testing of Backflow Prevention Devices	505.3.2

Tab 2

USBC Proposals Recommended by Workgroups as Consensus for Approval

Proposal ID	Description	Page
FP1207	SFPC Sub-Workgroup proposal to address Energy Storage Systems **(USBC Portion of Proposal Only; See Tab 2 – Page 19)**	Tab 2 – Page 1
B432(2)-21	Incorporates safety requirements and minimum safeguards for the installation of electrical Energy Storage Systems	Tab 2 – Page 21
B918.1(2)-21	Provides a reference to the IFC for the technical provisions and installation requirements for in-building emergency communication systems	Tab 2 – Page 43
B102.3(1)-21	Requires children's play structures installed inside buildings to be subject to the children's play structures section in Chapter 4 of the VCC	Tab 2 – Page 45
B102.3(2)-21	Clarifies that playground equipment that you typically see in a backyard, at a school, in a public park, etc, are not USBC regulated structures	Tab 2 – Page 47
B107.1-21	Updates the VCC with the current law by stating that, with the exception of the levy collected pursuant to Section 107.2, fees levied pursuant to this section shall be used only to support the functions of the local building department	Tab 2 – Page 49
B108.2-21	Deletes the qualifier for pools to not exceed 5,000 gallons to be exempt from permitting since there is no combination of sizes under this exemption that would allow a pool to be greater than 5,000 gallons	Tab 2 – Page 53
B108.3-21	Allows for jurisdictions to not be forced to accept applications by mail when an online permit application option exists	Tab 2 – Page 57
B110.9-21	Provides a mechanism to allow for the proactive cancellation or discontinuance of building permits by the permit holder or the owner	Tab 2 – Page 59
B118-21	Cleans up the Unsafe Buildings or Structures section of the VCC and removes confusion between buildings that are a threat to public safety and unsafe buildings or structures	Tab 2 – Page 61
B202-21	Correlates definitions in the IBC with the NFIP	Tab 2 – Page 63
B310.6-21	Provides clarification to the scoping provisions of the Virginia Residential Code	Tab 2 – Page 65
B313.3-21	Oversight for Family Day Homes has been transferred from the Department of Social Services to the Department of Education. The proposal updates the code provisions with the appropriate licensing authority for these facilities	Tab 2 – Page 67
B407.4-21	Removes a broken link to Section 1002.2 in the VCC	Tab 2 – Page 77

B432-21	Provides the connection between the VCC and the IFC for Plant Processing or Extraction Facilities (IFC Chapter 39)	Tab 2 – Page 79
B706.1-21	Makes it clear that fire walls create separate buildings for application of Chapter 9 of the VCC and other provisions beyond allowable height and area	Tab 2 – Page 81
B706.1.1-21	Deletes the exception that states party walls and fire walls on lot lines dividing certain buildings for ownership purposes are not required	Tab 2 – Page 83
B907.5.2.3.2-21	Editorial change that adds the words "or dwelling units" to the table so that it can be properly utilized as charged by the section.	Tab 2 – Page 87
B918.1.1-21	Removes the antiquated language of "radiating cable" and replaces it with the term "cabling"	Tab 2 – Page 89
B1020.1-21	Separates I-1 and I-3 occupancies in the Corridor Fire-Resistance Rating Table and provides specific ratings for each occupancy based on the presence of a sprinkler system	Tab 2 – Page 91
B1026.2-21	Corrects an incorrect reference in the VCC from Section 1019.3, Item 4 to 712.1.13	Tab 2 – Page 95
B1103.2.15-21	Language clean-up with revised wording to make it a complete sentence	Tab 2 – Page 97
B1112.1-21	Deletes an exception that does not require accessible parking spaces to be identified when there are four or fewer parking spaces	Tab 2 – Page 99
B1602-21	Incorporates provisions and design parameters for buildings in tornado prone regions	Tab 2 – Page 101
B3005.4-21	Correlates the VA exceptions with the IBC requirements for fire service access elevators and occupant evacuation elevators	Tab 2 – Page 113
B3006.1-21	Fixes several broken links to the requirements for elevator lobbies, in other parts of the code, by reinstating Section 3006	Tab 2 – Page 115
B3008.1-21	Maintains the VA amendment limiting the applicability of occupant evacuation elevator (OEE) requirements to buildings over 420 feet in building height	Tab 2 – Page 117
B3302.4-21	Clean up of Chapter 33, Fire Safety During Construction, to relocate construction provisions from the SFPC and correlate better with the SFPC and VEBC	Tab 2 – Page 119
EC-C402.4-21	Removes the Virginia amendments to solar heat gain coefficients	Tab 2 – Page 123
EC-C403.7.7-21	Corrects language to prohibit the use of dampers where grease ducts serving a Type 1 hood are installed	Tab 2 – Page 127
EC-C503.3.2-21	Requires new heating and cooling equipment that are part of a commercial alteration to be sized in accordance with Section C403.1.1 of the VECC	Tab 2 – Page 129
M410.2-21	Expands the list of acceptable pressure test ports beyond a simple tee fitting by recognizing integral test ports in devices that meet the intent of the code	Tab 2 – Page 133
M403.3.1.1-21	Corrects a 2018 error related to ventilation rates for general doctor or dentist offices and brings forward the original intent	Tab 2 – Page 135

M1101.2-21	Removes refrigeration fittings from table 1101.2, which is included in Section 1107.5	Tab 2 – Page 141
M1101.2(2)-21	Removes refrigeration fittings from table 1101.2, which is included in Section 1107.5 and adds referenced standards refrigeration equipment	Tab 2 – Page 147
M1101.2.1-21	Incorporates new reference standards for Group A2L, A2, A3, and B1 refrigerants	Tab 2 – Page 153
M1101.7-21	Provides provisions for the changing of refrigerant from one safety class to another	Tab 2 – Page 157
M1103.1-21	Updates the refrigerant table with new refrigerants added to ASHRAE Standard 34	Tab 2 – Page 161
M1104.3.1-21	Requires high probability systems used for human comfort to use Group A1 or A2L refrigerant and restricts group A3 and B3 refrigerants to laboratories and industrial occupancies	Tab 2 – Page 171
M1104.3.1(2)-21	Provides exceptions to the prohibition of group A2, A3, B2, and B3 refrigerants in high probability systems	Tab 2 – Page 177
M1106.3-21	Revises the section from "flammable refrigerants" to specific classes of refrigerant: "Class 2 and 3 refrigerants"	Tab 2 – Page 183
M1106.4-21 PT 1	Correlates the machinery room requirements in the International Mechanical Code with the 2019 edition of ASHRAE 15	Tab 2 – Page 187
M1106.4-21 PT 2	Deletes the ventilation system activation provisions for machinery rooms using Group A2L refrigerant	Tab 2 – Page 193
M-Chapter 15-21	Updates UL 60335-2-89 to the most recent version which was published in October of 2021	Tab 2 – Page 197
P605.15.2-21	Revises P2906.9.1.2 IRC and 605.15.2 IPC to include one-step solvent cement in the color green, which has already been approved in the 2024 IPC	Tab 2 – Page 201
P1003.3.2-21	Allows food waste grinders to connect to grease interceptors if the discharge passes through a solid interceptor first	Tab 2 – Page 205
RB202-21	Correlates definitions in the IRC with the NFIP	Tab 2 – Page 207
RB324.6.2-21	Clarifies the access requirements where PV systems are installed on roofs	Tab 2 – Page 211
RB330.1-21	Exempts accessory dwelling units from the sound transmission requirements between dwelling units	Tab 2 – Page 213
RE2701.1.1-21	Deletes the GFCI protection requirements in Section 210.8(F) of NFPA 70	Tab 2 – Page 215
RE3902.17-21	Deletes the GFCI protection requirements for outdoor outlets (other than the receptacles covered in 3902.3)	Tab 2 – Page 221
REC-R403.1.2-21	Restricts the installation of electric resistance heating and of heat pumps that are designed to activate resistance back-up when outdoor temperatures are above 40ºF	Tab 2 – Page 227
REC-R403.3.3-21	Updates the code provisions related to duct testing to be consistent with the 2021 IECC	Tab 2 – Page 231
REC-R503.1.2-21	Requires new heating and cooling equipment that are part of a residential alteration to be sized in accordance with the IECC	Tab 2 – Page 235

RM1404.1-21	Requires refrigeration cooling equipment to comply with applicable UL standards	Tab 2 – Page 239
RM1411-21	Mandates a UL listing for any equipment using A2L refrigerant and field installed items to be installed per the manufacturer's installation instructions	Tab 2 – Page 243
EB102.2.1-21	Clarifies when to bypass the VEBC and when to use the VEBC when an I-2 or I-3 is involved	Tab 2 – Page 247
EB102.2.2-21	Correlates the repair or replacement of smoke alarms in the VEBC with the VRC	Tab 2 – Page 249
EB103.9-21	Requires elevation certificates to be prepared by a certified land surveyor or registered professional engineer licensed in Virginia	Tab 2 – Page 251
EB202-21	Removes accessibility as a trigger to determine change of occupancy since there is no change of occupancy driven accessibility requirements	Tab 2 – Page 253
EB304.3.1-21	Provides a pointer to the VRC requirements for operational constraints of emergency escape and rescue openings	Tab 2 – Page 255
EB404.3-21	Clarifies how to apply the accessibility provisions to existing toilet facilities and drinking fountains	Tab 2 – Page 257
EB502.1.1-21	Adds a new referenced standard for assessing, designing, and repairing structural concrete: ACI 562	Tab 2 – Page 259
EB603.6-21	Deletes Section 603.6 to remove the potential for conflicts with the exception to Section 710.1	Tab 2 – Page 265
EB701.1-21	Continuation of the clean-up editorial work that has been done each cycle to Chapter 14	Tab 2 – Page 267
EB707.2-21	Removes the exception to 707.2 of the VEBC as it would never be applicable	Tab 2 – Page 271
EB1201.7-21	Deletes Section 1201.7 to be congruent with the VPC	Tab 2 – Page 273
EB1209.1-21	Clean up of the construction safeguards provisions to better correlate with the VCC and SFPC	Tab 2 – Page 275
PM101.1-21	Revises the short title of the Virginia Maintenance Code (VMC) to the Virginia Property Maintenance Code (VPMC) to resolve the historical and practical issue of confusion with the Virginia Mechanical Code (VMC)	Tab 2 – Page 277
PM103.2.3-21	Clarifies that a tenant's responsibility is limited and protected under the Virginia Residential Landlord and Tenant Act	Tab 2 – Page 279
PM505.3-21	Deletes construction and construction inspection provisions as they are not within the scope of the Virginia Maintenance Code	Tab 2 – Page 307
PM606.1-21	Clarifies the applicability of Appendix N of ASME A17.1	Tab 2 – Page 309
PM703.2-21	Deletes invalid provisions in Section 703.2 and 703.7 and revises 703.3 and 703.8 to remove invalid retrofit provisions	Tab 2 – Page 311
PM704.1.1-21	Revises Section 704.1.1 to reference the applicable building code regarding how existing fire protection systems are to be maintained; deletes the alteration provisions of 704.1	Tab 2 – Page 313

PM704.2-21	Removes the inspection, testing and maintenance of fire protection systems from theVMC since they are already in the SFPC	Tab 2 – Page 315
PM704.3-21	Removes provisions from the IPMC and VMC that fall under the jurisdiction of the fire official and belong in the SFPC	Tab 2 – Page 319
PM704.4-21	Removes provisions from the IPMC and VMC that fall under the jurisdiction of the fire official and belong in the SFPC	Tab 2 – Page 321
PM704.5-21	Removes provisions from the IPMC and VMC that fall under the jurisdiction of the fire official and belong in the SFPC	Tab 2 – Page 323
PM705.1-21	Removes invalid retrofit provisions in the IPMC	Tab 2 – Page 325
B1020.2.1	Removes an invalid reference to deleted elevator hoistway provisions	Tab 2 – Page 327

FP1207-21

Proponents: DHCD Staff (sbco@dhcd.virginia.gov) on behalf of the SFPC Sub-workgroup.

2018 Virginia Statewide Fire Prevention Code

Revise as follows:

SECTION ~~1206~~ 1207 ELECTRICAL ENERGY STORAGE SYSTEMS. Revise Section 1207 as shown on the attached documents "20220418 SFPC SWG Meeting - Section 1207 Results" and "FP1207-21 Floor Modification".

Reason Statement: Section 1207 of the IFC - Energy Storage Systems - has received numerous revisions from the 2018 to the 2021 version of the code. A number of said revisions contain construction requirements which do not belong in the SFPC - a maintenance and operation code. The entire Section has been reviewed and edited by the SFPC Sub-workgroup to delete construction provisions, or, revise with maintenance type language where appropriate. These efforts are a continuation of the edit efforts that occurred over the previous code development cycles. The attached document "20220418 SFPC SWG Meeting - Section 1207 Results" shows all the proposed changes in legislative format.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
It could be argued that the revisions proposed could potentially reduce costs as a result of clarifying which code provisions are to be applied to any given scenario.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
Although it may appear that the proposal deletes certain construction code provisions, those requirements are in fact addressed by the applicable building code.

Attached Files

- **FP1207-21 Floor Modification.pdf**
  https://va.cdpaccess.com/proposal/1137/1682/files/download/786/
- **20220418 SFPC SWG Meeting - Section 1207 Results.pdf**
  https://va.cdpaccess.com/proposal/1137/1682/files/download/655/

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: FP1207-21

Discussion by Florin Moldovan

Jun 13, 2022 19:43 UTC

See attached floor modification discussed at the GSWG meeting on 06/10/2022.
Attachments: https://va.cdpaccess.com/proposal/1137/discuss/178/file/download/785/FP1207-21%20Floor%20Modification.pdf

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2018 VIRGINIA STATEWIDE FIRE PREVENTION CODE

Make the following change to Chapter 1 of the SFPC:

TABLE 107.2 OPERATIONAL PERMIT REQUIREMENTS (to be filled in by local jurisdiction)

An operational permit is required for stationary and mobile energy storage systems regulated by Section 1207.

2021 INTERNATIONAL FIRE CODE

Make the following changes to Section 1207 of the 2021 IFC (2021 IFC 1207-series sections and subsections not listed here to remain unchanged):

SECTION 1207
ELECTRICAL ENERGY STORAGE SYSTEMS (ESS)

1207.1.2 Permits. Permits shall be ~~obtained for ESS as follows:~~ required as set forth in Section 107.2.

1. ~~Construction permits shall be obtained for stationary ESS installations and for mobile ESS charging and storage installations covered by Section 1207.10.1. Permits shall be obtained in accordance with Section 105.6.5.~~
2. ~~Operational permits shall be obtained for stationary ESS installations and for mobile ESS deployment operations covered by Section 1207.10.3. Permits shall be obtained in accordance with Section 105.5.14.~~

1207.1.3 ~~Construction documents.~~ Documents. ~~The~~ At the minimum, the following information shall be provided with the operational permit application:

1. Location and layout diagram of the room or area in which the ESS is ~~to be installed.~~ located.
2. Details on the hourly *fire-resistance ratings* of assemblies enclosing the ESS.
3. The quantities and types of ESS ~~to be installed~~.
4. Manufacturer's specifications, ratings and listings of each ESS.
5. Description of energy (battery) management systems and their operation.
6. Location and content of required signage.
7. Details on fire suppression, smoke or fire detection, thermal management, ventilation, exhaust and *deflagration* venting systems, if provided.
8. Support arrangement ~~associated with the installation~~, including any required seismic restraint.
9. ~~A commissioning plan complying with Section 1207.2.1.~~
10. A decommissioning plan ~~complying~~ in accordance with Section 1207.2.3.

1207.1.4 Hazard mitigation analysis. ~~A~~ As part of the operational permit application, a failure modes and effects analysis (FMEA) or other ~~*approved*~~ hazard mitigation analysis approved in accordance with the applicable building

code, shall be provided ~~in accordance with Section 104.8.2~~ to the Fire Official under any of the following conditions:

1. Where ESS technologies not specifically identified in ~~Table 1207.1.1~~ the applicable building code are provided.
2. More than one ESS technology is provided in a room or enclosed area where there is a potential for adverse interaction between technologies.
3. Where allowed as a basis for increasing maximum allowable ~~quantities. See Section 1207.5.2.~~ quantities in accordance with the applicable building code.

The FMEA shall be prepared by a qualified engineer, specialist, laboratory or fire safety specialty organization acceptable to the *fire code official* and shall analyze the fire safety properties of the design, operation or use of the building or premises and the facilities and appurtenances situated thereon, to recommend necessary changes. The *fire code official* is authorized to require that the FMEA be prepared by, and bear the stamp of, a *registered design professional*.

~~**1207.1.4.1 Fault condition.** The hazard mitigation analysis shall evaluate the consequences of the following failure modes. Only single failure modes shall be considered.~~

~~1. A thermal runaway condition in a single ESS rack, module or unit.~~

~~2. Failure of any battery (energy) management system.~~

~~3. Failure of any required ventilation or exhaust system.~~

~~4. Voltage surges on the primary electric supply.~~

~~5. Short circuits on the load side of the ESS.~~

~~6. Failure of the smoke detection, fire detection, fire suppression or gas detection system.~~

~~7. Required spill neutralization not being provided or failure of a required secondary containment system.~~

~~**1207.1.4.2 Analysis approval.** The *fire code official* is authorized to approve the hazardous mitigation analysis provided that the consequences of the hazard mitigation analysis demonstrate:~~

~~1. Fires will be contained within unoccupied ESS rooms or areas for the minimum duration of the fire-resistance rated separations identified in Section 1207.7.4.~~

~~2. Fires in occupied work centers will be detected in time to allow occupants within the room or area to safely evacuate.~~

~~3. Toxic and highly toxic gases released during fires will not reach concentrations in excess of the IDLH level in the building or adjacent *means of egress* routes during the time deemed necessary to evacuate occupants from any affected area.~~

~~4. Flammable gases released from ESS during charging, discharging and normal operation will not exceed 25 percent of their lower flammability limit (LFL).~~

~~5. Flammable gases released from ESS during fire, overcharging and other abnormal conditions will be controlled through the use of ventilation of the gases, preventing accumulation, or by *deflagration* venting.~~

1207.1.4.3 Additional protection measures. ~~Construction, equipment~~ Equipment and systems that are required for the ESS to comply with the hazardous mitigation analysis, ~~including but not limited to those specifically described in Section 1207,~~ shall be ~~installed,~~ maintained ~~and tested~~ in accordance with ~~nationally recognized standards and specified design parameters.~~ the applicable building code.

1207.1.5 Large-scale fire test. ~~Where required elsewhere in Section 1207,~~ ESS approved by the building official based on large-scale fire testing ~~shall be conducted on a representative ESS in accordance with UL 9540A. The testing shall be~~ conducted or witnessed and reported by an *approved* testing laboratory in accordance with the applicable building code, shall be maintained such ~~and show~~ that a fire involving one ESS will not propagate to an adjacent ESS, and where installed within buildings, enclosed areas and walk-in units will be contained within the room, enclosed area or walk-in unit for a duration equal to the *fire-resistance rating* of the room separation specified in ~~Section 1207.7.4.~~ the applicable building code. ~~The test report shall be provided to the *fire code official* for review and approval in accordance with Section 104.8.2.~~

1207.2.1 Commissioning. ~~Commissioning of~~ Prior to operational permit issuance, newly installed ESS and existing ESS that have been retrofitted, replaced or previously decommissioned and are returning to service shall

be ~~conducted prior to the ESS being placed in service in accordance with a commissioning plan that has been *approved* prior to initiating commissioning. The commissioning plan shall include the following:~~ commissioned in accordance with the applicable building code. The fire official shall be provided, upon request, with documentation of personnel who are qualified to service, maintain and decommission the ESS, and respond to incidents involving the ESS, including documentation that such service has been contracted for.

~~1. A narrative description of the activities that will be accomplished during each phase of commissioning, including the personnel intended to accomplish each of the activities.~~

~~2. A listing of the specific ESS and associated components, controls and safety related devices to be tested, a description of the tests to be performed and the functions to be tested.~~

~~3. Conditions under which all testing will be performed, which are representative of the conditions during normal operation of the system.~~

~~4. Documentation of the owner's project requirements and the basis of design necessary to understand the installation and operation of the ESS.~~

~~5. Verification that required equipment and systems are installed in accordance with the *approved* plans and specifications.~~

~~6. Integrated testing for all fire and safety systems.~~

~~7. Testing for any required thermal management, ventilation or exhaust systems associated with the ESS installation.~~

~~8. Preparation and delivery of operation and maintenance documentation.~~

~~9. Training of facility operating and maintenance staff.~~

~~10. Identification and documentation of the requirements for maintaining system performance to meet the original design intent during the operation phase.~~

~~11. Identification and documentation of personnel who are qualified to service, maintain and decommission the ESS, and respond to incidents involving the ESS, including documentation that such service has been contracted for.~~

~~12. A decommissioning plan for removing the ESS from service, and from the facility in which it is located. The plan shall include details on providing a safe, orderly shutdown of energy storage and safety systems with notification to the code officials prior to the actual decommissioning of the system. The decommissioning plan shall include contingencies for removing an intact operational ESS from service, and for removing an ESS from service that has been damaged by a fire or other event.~~

Exception: Commissioning shall not be required for lead-acid and nickel-cadmium battery systems at facilities under the exclusive control of communications utilities that comply with NFPA 76 and operate at less than 50 VAC and 60 VDC. A decommissioning plan shall be provided and maintained where required by the *fire code official*.

~~**1207.2.1.1 Initial acceptance testing.** During the commissioning process an ESS shall be evaluated for proper operation in accordance with the manufacturer's instructions and the commissioning plan prior to final approval.~~

1207.2.1.2 Commissioning report. A report describing the results of the system commissioning, including the results of the initial acceptance testing required ~~in Section 1207.2.1.1~~ by the applicable building code, shall be provided to the *fire code official* ~~prior to final inspection~~ , upon request. ~~and approval and~~ A copy of the report shall be maintained at an *approved* on-site location.

1207.2.3 Decommissioning. ~~The code official shall be notified prior to the decommissioning of an ESS.~~ Decommissioning shall be performed in accordance with the decommissioning plan ~~that includes the following:~~ approved in accordance with the applicable building code. The fire code official shall also be notified by the ESS owner prior to the decommissioning of an ESS.

~~1. A narrative description of the activities to be accomplished for removing the ESS from service, and from the facility in which it is located.~~

~~2. A listing of any contingencies for removing an intact operational ESS from service, and for removing an ESS from service that has been damaged by a fire or other event.~~

1207.3.3 Utility interactive systems. ~~Inverters~~ When required by the applicable building code, inverters shall be *listed* and *labeled* in accordance with UL 1741. Only inverters *listed* and *labeled* for utility interactive system use and identified as interactive shall be allowed to operate in parallel with the electric utility power system to supply power to common loads.

1207.3.4 Energy storage management system. ~~Where required by the ESS listing, an *approved*~~ Approved energy storage management ~~system~~ systems, required by the ESS listing, that ~~monitors~~ monitor and ~~balances~~ balance cell voltages, currents and temperatures within the manufacturer's specifications shall be ~~provided.~~ maintained. The system shall disconnect electrical connections to the ESS or otherwise place it in a safe condition if potentially hazardous temperatures or other conditions such as short circuits, over voltage or under voltage are detected.

1207.3.5 Enclosures. Enclosures of ESS shall be ~~of noncombustible construction.~~ maintained in accordance with the applicable building code.

1207.3.6 ~~Repairs.~~ Repairs or Alterations. Repairs or alterations of ESS shall only be done by qualified personnel. Repairs and alterations ~~with other than identical parts~~ shall be ~~considered retrofitting and comply with Section 1207.3.7.~~ in accordance with the applicable building code. Repairs shall be documented in the service records log.

~~**1207.3.7 Retrofits.** Retrofitting of an existing ESS shall comply with the following:~~

~~1. A construction permit shall be obtained in accordance with Section 105.6.5.~~

~~2. New batteries, battery modules, capacitors and similar ESS components shall be *listed*.~~

~~3. Battery management and other monitoring systems shall be connected and installed in accordance with the manufacturer's instructions.~~

~~4. The overall installation shall continue to comply with UL 9540 listing requirements, where applicable.~~

~~5. Systems that have been retrofitted shall be commissioned in accordance with Section 1207.2.1.~~

~~6. Retrofits shall be documented in the service records log.~~

~~**1207.3.7.1 Retrofitting lead acid and nickel cadmium.** Section 1207.3.7 shall not apply to retrofitting of lead acid and nickel cadmium batteries with other lead acid and nickel cadmium batteries at facilities under the exclusive control of communications utilities that comply with NFPA 76 and operate at less than 50 VAC and 60 VDC.~~

~~**1207.3.8 Replacements.** Replacements of ESS shall be considered new ESS installations and shall comply with the provisions of Section 1207 as applicable to new ESS. The ESS being replaced shall be decommissioned in accordance with Section 1207.2.3.~~

~~**1207.3.9 Reused and repurposed equipment.** Equipment and materials shall only be reused or reinstalled as permitted in Section 104.8.1. Storage batteries previously used in other applications, such as electric vehicle propulsion, shall not be reused in applications regulated by Chapter 12 unless *approved* by the *fire code official* and unless the equipment is refurbished by a battery refurbishing company *approved* in accordance with UL 1974.~~

1207.4 General ~~installations~~ maintenance requirements. Stationary and mobile ESS shall comply with the requirements of Sections 1207.4.1 through 1207.4.12.

1207.4.2 Working clearances. Access and working space shall be ~~provided and~~ maintained about all electrical equipment to permit ready and safe operation and maintenance of such equipment in accordance with the applicable NFPA 70 and the manufacturer's instructions.

1207.4.3 Fire-resistance-rated separations. ~~Rooms~~ Fire-resistance-rated separations for rooms and other indoor areas containing ESS shall be ~~separated from other areas of the building in accordance with Section 1207.7.4. ESS shall be permitted to be in the same room with the equipment they support.~~ maintained in accordance with the applicable building code and Chapter 7.

~~**1207.4.4 Seismic and structural design.** Stationary ESS shall comply with the seismic design requirements in Chapter 16 of the *International Building Code*, and shall not exceed the floor loading limitation of the building.~~

1207.4.7 Toxic and highly toxic gases. Hazardous exhaust systems for ESS that have the potential to release toxic and highly toxic gas during charging, discharging and normal use conditions ~~shall be provided with a hazardous exhaust system in accordance with Section 502.8 of the *International Mechanical Code*.~~ shall be operated and maintained.

1207.4.10 Occupied work centers. ~~Electrochemical~~ Cabinets containing electromechanical ESS located in rooms or areas occupied by personnel not directly involved with maintenance, service and testing of the systems shall ~~comply with the following:~~ be secured and provided with signage complying with Section 1207.4.8.

1. ~~Electrochemical ESS located in occupied work centers shall be housed in locked noncombustible cabinets or other enclosures to prevent access by unauthorized personnel.~~
2. ~~Where electrochemical ESS are contained in cabinets in occupied work centers, the cabinets shall be located within 10 feet (3048 mm) of the equipment that they support.~~
3. ~~Cabinets shall include signage complying with Section 1207.4.8.~~

1207.4.11 Open rack installations. Where electrochemical ESS are ~~installed~~ located in a separate equipment room and only authorized personnel have access to the room, they shall be permitted to be ~~installed~~ located on an open rack for ease of maintenance.

1207.5 Electrochemical ESS protection. The protection of electrochemical ESS shall be maintained in accordance with Sections 1207.5.1 through 1207.5.8 ~~where required by Sections 1207.7 through 1207.10~~.

~~**TABLE 1207.5**~~
~~**MAXIMUM ALLOWABLE QUANTITIES OF ELECTROCHEMICAL ESS**~~

~~TECHNOLOGY~~	~~MAXIMUM ALLOWABLE QUANTITIES [a]~~
~~STORAGE BATTERIES~~	
~~Flow batteries[b]~~	~~600 kWh~~
~~Lead-acid, all types~~	~~Unlimited~~
~~Lithium-ion~~	~~600 kWh~~
~~Nickel metal hydride (Ni-MH)~~	~~Unlimited~~
~~Nickel-cadmium (Ni-Cd)~~	~~Unlimited~~
~~Other battery technologies~~	~~200 kWh~~
~~CAPACITORS~~	
~~All types~~	~~20 kWh~~
~~OTHER ELECTROCHEMICAL ESS~~	
~~All types~~	~~20 kWh~~

~~For SI: 1 kilowatt hour = 3.6 megajoules.~~
~~a. For electrochemical ESS units rated in amp-hours, kWh shall equal rated voltage times the amp-hour rating divided by 1,000.~~
~~b. Shall include vanadium, zinc-bromine, polysulfide-bromide and other flowing electrolyte-type technologies.~~

1207.5.1 Size and separation. ~~Electrochemical ESS shall be segregated into groups not exceeding 50 kWh (180 megajoules). Each group shall be separated a minimum of 3 feet (914 mm) from other groups and from walls in the storage room or area. The storage arrangements shall comply with Chapter 10.~~ The configuration and size of electromechanical ESS groups approved in accordance with the applicable building code shall be maintained in accordance with the applicable building code. The separation between different electromechanical ESS groups and between electromechanical ESS and walls in the storage room or area shall be maintained in accordance with the applicable building code.

~~**Exceptions:**~~

1. ~~Lead-acid and nickel-cadmium battery systems in facilities under the exclusive control of communications utilities and operating at less than 50 VAC and 60 VDC in accordance with NFPA 76.~~

2. The *fire code official* is authorized to approve larger capacities or smaller separation distances based on large-scale fire testing complying with Section 1207.1.5.

1207.5.2 Maximum allowable quantities. *Fire areas* within rooms, areas and walk-in units containing electrochemical ESS shall not exceed the maximum allowable quantities in Table 1207.5. the applicable building code.

Exceptions:

1. Where approved by the fire code official, rooms, areas and walk-in units containing electrochemical ESS that exceed the amounts in Table 1207.5 shall be permitted based on a hazardous mitigation analysis in accordance with Section 1207.1.4 and large-scale fire testing complying with Section 1207.1.5.
2. Lead-acid and nickel-cadmium battery systems installed in facilities under the exclusive control of communications utilities, and operating at less than 50 VAC and 60 VDC in accordance with NFPA 76.
3. Dedicated-use buildings in compliance with Section 1207.7.1.

1207.5.2.1 Mixed electrochemical energy systems. Where rooms, areas and walk-in units contain different types of electrochemical energy technologies, the total aggregate quantities of the systems shall be determined based on the sum of percentages of each technology-type quantity divided by the maximum allowable quantity of each technology type. The sum of the percentages shall not exceed 100 percent of the maximum allowable quantity. not exceed those allowed by the applicable building code.

1207.5.3 Elevation. Electrochemical Unless otherwise approved in accordance with the applicable building code, electromechanical ESS shall not be located in the following areas:

1. Where the floor is located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access.
2. Where the floor is located below the lowest *level of exit discharge*.

Exceptions:

1. Lead-acid and nickel-cadmium battery systems less than 50 VAC and 60 VDC installed in facilities under the exclusive control of communications utilities in accordance with NFPA 76.
2. Where *approved*, installations shall be permitted in underground vaults complying with NFPA 70, Article 450, Part III.
3. Where *approved* by the *fire code official,* installations shall be permitted on higher and lower floors.

1207.5.4 Fire detection. An Where required or provided in accordance with the applicable building code, *approved* automatic smoke detection system systems or radiant energy-sensing fire detection system systems complying with Section 907.2 shall be installed in rooms, indoor areas and walk-in units containing electrochemical ESS. ESS, shall be maintained in accordance with Chapter 9 and the applicable building code. An Where required or provided in accordance with the applicable building code, *approved* radiant energy-sensing fire detection system systems shall be installed to protect open parking garage and rooftop installations. , installations shall be maintained in accordance with Chapter 9 and the applicable building code. Alarm Where required or provided in accordance with the applicable building code, signals from detection systems shall continue to be transmitted to a central station, proprietary or remote station service in accordance with NFPA 72, or where *approved* to a constantly attended location.

1207.5.4.1 System status. Where required by the *fire code official*, or provided in accordance with the applicable building code, visible annunciation shall be provided on cabinet exteriors or in other *approved* locations to indicate that potentially hazardous conditions associated with the ESS exist. exist, it shall be maintained in accordance with the applicable building code.

1207.5.5 Fire suppression systems. Rooms Automatic fire suppression systems required by the applicable building code for rooms and areas within buildings and walk-in units containing electrochemical ESS shall be protected by an automatic fire suppression system designed and installed maintained in accordance with one of the following: Chapter 9 and the applicable building code.

1. An *automatic sprinkler system* designed and installed in accordance with Section 903.3.1.1 with a minimum density of 0.3 gpm/ft^2 (1.14 L/min) based on the *fire area* or 2,500 square foot (232 m^2) design area, whichever is smaller.

2. Where *approved*, an *automatic sprinkler system* designed and installed in accordance with Section 903.3.1.1 with a sprinkler hazard classification based on large-scale fire testing complying with Section 1207.1.5.

3. The following alternative automatic fire-extinguishing systems designed and installed in accordance with Section 904, provided that the installation is *approved* by the *fire code official* based on large-scale fire testing complying with Section 1207.1.5:

   3.1. NFPA 12, *Standard on Carbon Dioxide Extinguishing Systems*.

   3.2. NFPA 15, *Standard for Water Spray Fixed Systems for Fire Protection*.

   3.3. NFPA 750, *Standard on Water Mist Fire Protection Systems*.

   3.4. NFPA 2001, *Standard on Clean Agent Fire Extinguishing Systems*.

   3.5. NFPA 2010, *Standard for Fixed Aerosol Fire Extinguishing Systems*.

Exception: Fire suppression systems for lead-acid and nickel-cadmium battery systems at facilities under the exclusive control of communications utilities that operate at less than 50 VAC and 60 VDC shall be provided where required by NFPA 76.

1207.5.5.1 Water-reactive systems. Electrochemical ESS that utilize water-reactive materials shall be protected by an *approved* alternative Alternative automatic fire-extinguishing system systems approved in accordance with Section 904, where the installation is *approved* by the *fire code official* the applicable building code, based on large-scale fire testing complying with Section 1207.1.5. , for the protection of electrochemical ESS that utilize water-reactive materials, shall be maintained in accordance with the applicable building code.

1207.5.6 Maximum enclosure size. Outdoor Unless otherwise approved in accordance with the applicable building code, outdoor walk-in units housing ESS shall not exceed 53 feet by 8 feet by 9.5 feet high (16 154 mm × 2438 mm × 2896 mm), not including bolt-on HVAC and related equipment, as *approved*. Outdoor walk-in units exceeding these limitations shall be considered indoor installations and comply with the requirements in Section 1207.7.

1207.5.8 Means of egress separation. ESS located outdoors and in open parking garages shall continue to be separated from any *means of egress* as required by the *fire code official* in accordance with the applicable building code to ensure safe egress under fire conditions, but in no case less than 10 feet (3048 mm).

Exception: The fire code official is authorized to approve a reduced separation distance if large-scale fire testing complying with Section 1207.1.5 is provided that shows that a fire involving the ESS will not adversely impact occupant egress.

1207.6 Electrochemical ESS technology-specific protection. Electrochemical ESS installations shall comply with the requirements of this section in accordance with the applicable requirements of Table 1207.6. be maintained in accordance with this section and the applicable building code.

TABLE 1207.6
ELECTROCHEMICAL ESS TECHNOLOGY-SPECIFIC REQUIREMENTS

COMPLIANCE REQUIRED[b]		BATTERY TECHNOLOGY				OTHER ESS AND BATTERY TECHNOLOGIES[b]	CAPACITOR ESS[b]
Feature	Section	Lead-acid	Ni-Cd and Ni-MH	Lithium-ion	Flow		
Exhaust ventilation	1207.6.1	Yes	Yes	No	Yes	Yes	Yes
Explosion control	1207.6.3	Yes[a]	Yes[a]	Yes	No	Yes	Yes
Safety caps	1207.6.4	Yes	Yes	No	No	Yes	Yes
Spill control and neutralization	1207.6.2	Yes[c]	Yes[c]	No	Yes	Yes	Yes
Thermal runaway	1207.6.5	Yes[d]	Yes	Yes[c]	No	Yes[c]	Yes

a. Not required for lead-acid and nickel-cadmium batteries at facilities under the exclusive control of communications utilities that comply with NFPA 76 and operate at less than 50 VAC and 60 VDC.

b. Protection shall be provided unless documentation acceptable to the fire code official is provided in accordance with Section 104.8.2 that provides justification why the protection is not necessary based on the technology used.

c. Applicable to vented-type (i.e., flooded) nickel-cadmium and lead-acid batteries.

d. Not required for vented-type (i.e., flooded) lead-acid batteries.

e. The thermal runaway protection is permitted to be part of a battery management system that has been evaluated with the battery as part of the evaluation to UL 1973.

1207.6.1 Exhaust ventilation. Where required by Table 1207.6 or elsewhere in this or provided in accordance with the applicable building code, exhaust ventilation of rooms, areas and walk-in units containing electrochemical ESS shall be provided maintained in accordance with the *International Mechanical Code* and Section 1207.6.1.1 or 1207.6.1.2. applicable building code.

1207.6.1.1 Ventilation based on LFL. The Where required or provided in accordance with the applicable building code, exhaust ventilation system shall be systems designed to limit the maximum concentration of flammable gas to 25 percent of the lower flammable limit (LFL) of the total volume of the room, area or walk-in unit during the worst-case event of simultaneous charging of batteries at the maximum charge rate, in accordance with nationally recognized standards. shall be maintained in accordance with the applicable building code.

1207.6.1.2 Ventilation based on exhaust rate. Mechanical Continuous mechanical exhaust ventilation, or activated by a gas detection system, shall required by the applicable building code to be provided at a rate of not less than 1 $ft^3/min/ft^2$ (5.1 $L/sec/m^2$) of floor area of the room, area or walk-in unit. unit, shall be maintained in accordance with the applicable building code. The ventilation shall be either continuous or shall be activated by a gas detection system in accordance with Section 1207.6.1.2.4.

1207.6.1.2.1 Standby power. Mechanical Where standby power is required by the applicable building code for exhaust ventilation shall be provided with a minimum of 2 hours of standby power in accordance with Section 1203.2.5. , the standby power shall be maintained in accordance with the applicable building code.

1207.6.1.2.2 Installation instructions. Required mechanical exhaust ventilation systems shall be installed in accordance with the manufacturer's installation instructions and the *International Mechanical Code*.

1207.6.1.2.3 Supervision. Required Where mechanical exhaust ventilation systems shall are required by the applicable building code to be supervised by an *approved* central station, proprietary or remote station service in accordance with the applicable NFPA 72, the system shall continue to be supervised. or Or, it shall initiate an audible and visible signal at an *approved* constantly attended on-site location. location in accordance with the applicable building code.

1207.6.1.2.4 Gas detection system. Where required by Section 1207.6.1.2, Continuous gas detection systems required by the applicable building code for rooms, areas and walk-in units containing ESS shall be protected by an *approved* continuous gas detection system that complies with Section 916 and with the following: maintained in accordance with the applicable building code.

1. The gas detection system shall be designed to activate the mechanical ventilation system when the level of flammable gas in the room, area or walk-in unit exceeds 25 percent of the LFL.
2. The mechanical ventilation system shall remain on until the flammable gas detected is less than 25 percent of the LFL.
3. The gas detection system shall be provided with a minimum of 2 hours of standby power in accordance with Section 1203.2.5.
4. Failure of the gas detection system shall annunciate a trouble signal at an approved central station, proprietary or remote station service in accordance with NFPA 72, or shall initiate an audible and visible trouble signal at an approved constantly attended on-site location.

1207.6.2 Spill control and neutralization. Where required by Table 1207.6 or elsewhere in this code, Spill control and neutralization required by the applicable building code for areas containing free-flowing liquid electrolyte or hazardous materials shall be provided with spill control and neutralization in accordance with this section. maintained in accordance with the applicable building code.

1207.6.2.1 Spill control. Spill control shall be provided to prevent the flow of liquid electrolyte or hazardous materials to adjoining rooms or areas. The method shall be capable of containing a spill from the single largest battery or vessel.

1207.6.2.2 Neutralization. An *approved* method that is capable of neutralizing spilled liquid electrolyte from the largest battery or vessel to a pH between 5.0 and 9.0 shall be provided.

1207.6.3 Explosion control. ~~Where required by Table 1207.6 or elsewhere in this code, explosion control complying with Section 911 shall be provided for rooms, areas or walk-in units containing electrochemical ESS technologies.~~ Explosion control shall be maintained in accordance with Chapter 9 and the applicable building code.

~~**Exceptions:**~~

1. ~~Where approved, explosion control is permitted to be waived by the fire code official based on large-scale fire testing complying with Section 1207.1.5 that demonstrates that flammable gases are not liberated from electrochemical ESS cells or modules where tested in accordance with UL 9540A.~~
2. ~~Where approved, explosion control is permitted to be waived by the fire code official based on documentation provided in accordance with Section 104.7 that demonstrates that the electrochemical ESS technology to be used does not have the potential to release flammable gas concentrations in excess of 25 percent of the LFL anywhere in the room, area, walk-in unit or structure under thermal runaway or other fault conditions.~~

1207.6.4 Safety caps. ~~Where required by Table 1207.6 or elsewhere in this code, vented batteries and other ESS shall be provided with flame arresting safety caps.~~ Flame-arresting safety caps for vented batteries, provided or required in accordance with the applicable building code, shall be maintained.

1207.6.5 Thermal runaway. Where ~~required by Table 1207.6 or elsewhere in this code,~~ the applicable building code requires batteries and other ESS ~~shall~~ to be provided with a *listed* device or other *approved* method to prevent, detect and minimize the impact of thermal ~~runaway.~~ runaway, such listed devices or approved methods shall be maintained in accordance with the applicable building code.

1207.7 Indoor installations. Indoor ESS installations shall be maintained in accordance with ~~Sections 1207.7.1 through 1207.7.4.~~ the applicable building code.

~~**TABLE 1207.7**~~
~~**INDOOR ESS INSTALLATIONS**~~

~~COMPLIANCE REQUIRED~~		~~DEDICATED-USE BUILDINGS[a]~~	~~NONDEDICATED-USE BUILDINGS[b]~~
~~Feature~~	~~Section~~		
~~Dwelling units and sleeping units~~	~~1207.7.3~~	~~NA~~	~~Yes~~
~~Elevation~~	~~1207.5.3~~	~~Yes~~	~~Yes~~
~~Fire suppression systems~~	~~1207.5.5~~	~~Yes[c]~~	~~Yes~~
~~Fire-resistance-rated separations~~	~~1207.7.4~~	~~Yes~~	~~Yes~~
~~General installation requirements~~	~~1207.4~~	~~Yes~~	~~Yes~~
~~Maximum allowable quantities~~	~~1207.5.2~~	~~No~~	~~Yes~~
~~Size and separation~~	~~1207.5.1~~	~~Yes~~	~~Yes~~
~~Smoke and automatic fire detection[e]~~	~~1207.5.4~~	~~Yes[d]~~	~~Yes~~
~~Technology specific protection~~	~~1207.6~~	~~Yes~~	~~Yes~~

~~NA = Not Allowed.~~
~~a. See Section 1207.7.1.~~
~~b. See Section 1207.7.2.~~
~~c. Where approved by the fire code official, fire suppression systems are permitted to be omitted in dedicated-use buildings located more than 100 feet (30.5 m) from buildings, lot lines, public ways, stored combustible materials, hazardous materials, high-piled stock and other exposure hazards.~~
~~d. Where approved by the fire code official, alarm signals are not required to be transmitted to a central station, proprietary or remote station service in accordance with NFPA 72, or a constantly attended location where local fire alarm annunciation is provided and trained personnel are always present.~~
~~e. Lead-acid and nickel-cadmium battery systems installed in Group U buildings and structures less than 1,500 square feet (139 m^2) under the exclusive control of communications utilities, and operating at less than 50 VAC and 60 VDC in accordance with NFPA 76, are not required to have an approved automatic smoke or fire detection system.~~

1207.7.1 Dedicated-use buildings. ~~For the purpose of Table 1207.7, dedicated-use ESS buildings shall be~~ Buildings classified as Group F-1 occupancies and ~~comply with all the following:~~ approved as dedicated-use ESS buildings in accordance with the applicable building code, shall only be used and occupied as approved.

~~1. The building shall only be used for ESS, electrical energy generation and other electrical grid related operations.~~

~~2. Occupants in the rooms and areas containing ESS are limited to personnel that operate, maintain, service, test and repair the ESS and other energy systems.~~

~~3. No other occupancy types shall be permitted in the building.~~

~~4. Administrative and support personnel shall be permitted in areas within the buildings that do not contain ESS, provided that:~~

~~4.1. The areas do not occupy more than 10 percent of the building area of the story in which they are located.~~

~~4.2. A means of egress is provided from the incidental use areas to the public way that does not require occupants to traverse through areas containing ESS or other energy system equipment.~~

1207.7.2 Nondedicated-use buildings. ~~For the purpose of Table 1207.7, nondedicated use buildings include all buildings~~ Buildings that contain ESS and ~~do not comply with Section 1207.7.1 dedicated use building requirements.~~ were approved as nondedicated-use buildings in accordance with the applicable building code, shall be used or occupied as approved.

1207.7.3 Dwelling units and sleeping units. Unless otherwise approved in accordance with the applicable building code, ESS shall not be ~~installed~~ allowed in *sleeping units* or in *habitable spaces* of *dwelling units*.

1207.7.4 Fire-resistance-rated separations. *Fire-resistance-rated* separations for ~~Rooms~~ rooms and areas containing ESS ~~shall include *fire resistance rated* separations as follows:~~ , required by the applicable building code, shall be maintained in accordance with the applicable building code.

~~1. In dedicated use buildings, rooms and areas containing ESS shall be separated from areas in which administrative and support personnel are located.~~

~~2. In nondedicated use buildings, rooms and areas containing ESS shall be separated from other areas in the building.~~

~~Separation shall be provided by 2 hour *fire barriers* constructed in accordance with Section 707 of the *International Building Code* and 2 hour *horizontal assemblies* constructed in accordance with Section 711 of the *International Building Code*, as appropriate.~~

1207.8 Outdoor installations. Outdoor installations shall be maintained in accordance with ~~Sections 1207.8.1 through 1207.8.3. Exterior wall installations for individual ESS units not exceeding 20 kWh shall be in accordance with Section 1207.8.4.~~ the applicable building code.

~~**TABLE 1207.8**~~
~~**OUTDOOR ESS INSTALLATIONS[a]**~~

~~COMPLIANCE REQUIRED~~		~~REMOTE INSTALLATIONS[a]~~	~~INSTALLATIONS NEAR EXPOSURES[b]~~
~~Feature~~	~~Section~~		
~~All ESS installations~~	~~1207.4~~	~~Yes~~	~~Yes~~
~~Clearance to exposures~~	~~1207.8.3~~	~~Yes~~	~~Yes~~
~~Fire suppression systems~~	~~1207.5.5~~	~~Yes[c]~~	~~Yes~~
~~Maximum allowable quantities~~	~~1207.5.2~~	~~No~~	~~Yes~~
~~Maximum enclosure size~~	~~1207.5.6~~	~~Yes~~	~~Yes~~
~~Means of egress separation~~	~~1207.5.8~~	~~Yes~~	~~Yes~~
~~Size and separation~~	~~1207.5.1~~	~~No~~	~~Yes[d]~~
~~Smoke and automatic fire detection~~	~~1207.5.4~~	~~Yes~~	~~Yes~~

~~Technology-specific protection~~	~~1207.6~~	~~Yes~~	~~Yes~~
~~Vegetation control~~	~~1207.5.7~~	~~Yes~~	~~Yes~~

~~a. See Section 1207.8.1.~~
~~b. See Section 1207.8.2.~~
~~c. Where approved by the fire code official, fire suppression systems are permitted to be omitted.~~
~~d. In outdoor walk-in units, spacing is not required between ESS units and the walls of the enclosure.~~

1207.8.1 Remote outdoor installations. For the purpose of ~~Table~~ Section 1207.8, ~~remote outdoor installations include~~ ESS located more than 100 feet (30 480 mm) from buildings, lot lines, public ways, stored combustible materials, hazardous materials, high-piled stock and other exposure ~~hazards.~~ , shall be considered remote outdoor installations.

1207.8.2 Installations near exposures. For the purpose of ~~Table~~ Section 1207.8, ~~installations near exposures include~~ all outdoor ESS installations that do not ~~comply with~~ meet the criteria set forth by Section 1207.8.1 ~~remote outdoor location requirements.~~ , shall be considered installations near exposures.

1207.8.3 Clearance to exposures. Where the applicable building code requires a minimum of 10 feet (3048 mm) separation between ESS located outdoors ~~shall be separated by a minimum of 10 feet (3048 mm) from~~ and the following ~~exposures:~~ exposures, the separation shall be maintained in accordance with the applicable building code:

1. Lot lines.
2. Public ways.
3. Buildings.
4. Stored combustible materials.
5. Hazardous materials.
6. High-piled stock.
7. Other exposure hazards.

~~**Exceptions:**~~

~~1. Clearances are permitted to be reduced to 3 feet (914 mm) where a 1 hour free standing fire barrier suitable for exterior use and extending 5 feet (1524 mm) above and 5 feet (1524 mm) beyond the physical boundary of the ESS installation is provided to protect the exposure.~~

~~2. Clearances to buildings are permitted to be reduced to 3 feet (914 mm) where noncombustible exterior walls with no openings or combustible overhangs are provided on the wall adjacent to the ESS and the fire resistance rating of the exterior wall is a minimum of 2 hours.~~

~~3. Clearances to buildings are permitted to be reduced to 3 feet (914 mm) where a weatherproof enclosure constructed of noncombustible materials is provided over the ESS, and it has been demonstrated that a fire within the enclosure will not ignite combustible materials outside the enclosure based on large scale fire testing complying with Section 1207.1.5.~~

1207.8.4 Exterior wall installations. Where the applicable building code allows ESS ~~shall be permitted~~ to be installed outdoors on exterior walls of buildings ~~when all of the following conditions are met:~~ , they shall be maintained in accordance with the applicable building code.

~~1. The maximum energy capacity of individual ESS units shall not exceed 20 kWh.~~

~~2. The ESS shall comply with applicable requirements in Section 1207.~~

~~3. The ESS shall be installed in accordance with the manufacturer's instructions and their listing.~~

~~4. Individual ESS units shall be separated from each other by at least 3 feet (914 mm).~~

~~5. The ESS shall be separated from doors, windows, operable openings into buildings or HVAC inlets by at least 5 feet (1524 mm).~~

~~**Exception:** Where approved, smaller separation distances in Items 4 and 5 shall be permitted based on large-scale fire testing complying with Section 1207.1.5.~~

1207.9 Special installations. Rooftop and open parking garage ESS installations shall ~~comply with Sections 1207.9.1 through 1207.9.6.~~ be maintained in accordance with the applicable building code.

~~TABLE 1207.9~~
~~SPECIAL ESS INSTALLATIONS~~

~~COMPLIANCE REQUIRED~~		~~ROOFTOPS[a]~~	~~OPEN PARKING GARAGES[b]~~
~~Feature~~	~~Section~~		
~~All ESS installations~~	~~1207.4~~	~~Yes~~	~~Yes~~
~~Clearance to exposures~~	~~1207.9.3~~	~~Yes~~	~~Yes~~
~~Fire suppression systems~~	~~1207.9.4~~	~~Yes~~	~~Yes~~
~~Maximum allowable quantities~~	~~1207.5.2~~	~~Yes~~	~~Yes~~
~~Maximum enclosure size~~	~~1207.5.6~~	~~Yes~~	~~Yes~~
~~Means of egress separation~~	~~1207.5.8~~	~~Yes~~	~~Yes~~
~~Open parking garage installations~~	~~1207.9.6~~	~~No~~	~~Yes~~
~~Rooftop installations~~	~~1207.9.5~~	~~Yes~~	~~No~~
~~Size and separation~~	~~1207.5.1~~	~~Yes~~	~~Yes~~
~~Smoke and automatic fire detection~~	~~1207.5.4~~	~~Yes~~	~~Yes~~
~~Technology-specific protection~~	~~1207.6~~	~~Yes~~	~~Yes~~

~~a. See Section 1207.9.1.~~
~~b. See Section 1207.9.2.~~

1207.9.1 Rooftop installations. For the purpose of ~~Table~~ Section 1207.9, rooftop ESS installations are those located on the roofs of buildings.

1207.9.2 Open parking garage installations. For the purpose of ~~Table~~ Section 1207.9, open parking garage ESS installations are those located in a structure or portion of a structure that complies with ~~Section 406.5 of the *International Building Code*.~~ the Open Parking Garage provisions set forth by the applicable building code.

1207.9.3 Clearance to exposures. Where the applicable building code requires a minimum of 10 feet (3048 mm) separation between ESS located on rooftops ~~and~~ or in open parking garages ~~shall be separated by a minimum of 10 feet (3048 mm) from~~ and the following ~~exposures:~~ exposures, the separation shall be maintained in accordance with the applicable building code.

1. Buildings, except the building on which rooftop ESS is mounted.
2. Any portion of the building on which a rooftop system is mounted that is elevated above the rooftop on which the system is installed.
3. Lot lines.
4. Public ways.
5. Stored combustible materials.
6. Locations where motor vehicles can be parked.
7. Hazardous materials.
8. Other exposure hazards.

~~**Exceptions:**~~

~~1. Clearances are permitted to be reduced to 3 feet (914 mm) where a 1 hour free standing fire barrier suitable for exterior use and extending 5 feet (1524 mm) above and 5 feet (1524 mm) beyond the physical boundary of the ESS installation is provided to protect the exposure.~~

2. Clearances are permitted to be reduced to 3 feet (914 mm) where a weatherproof enclosure constructed of noncombustible materials is provided over the ESS, and it has been demonstrated that a fire within the enclosure will not ignite combustible materials outside the enclosure based on large-scale fire testing complying with Section 1207.1.5.

1207.9.4 Fire suppression systems. ESS located in walk-in units on rooftops or in walk-in units in open parking garages shall be provided with automatic fire suppression systems within the ESS enclosure in accordance with Section 1207.5.5. Areas containing ESS other than walk-in units in open parking structures on levels not open above to the sky shall be provided with an automatic fire suppression system complying with Section 1207.5.5.

Exception: A fire suppression system is not required in open parking garages if large-scale fire testing complying with Section 1207.1.5 is provided that shows that a fire will not impact the exposures in Section 1207.9.3.

Automatic fire suppression systems required by the applicable building code for the following, shall be maintained in accordance with Chapter 9 and the applicable building code:

1. Automatic fire suppression systems, installed within the ESS enclosure, for ESS located in walk-in units on rooftops.
2. Automatic fire suppression systems, installed within the ESS enclosure, for ESS located in walk-in units in open parking garages.
3. Automatic fire suppression systems in areas containing ESS other than walk-in units in open parking structures on levels not open above to the sky.

1207.9.5 Rooftop installations. The following features required by the applicable building code for ESS and associated equipment that are located on rooftops and not enclosed by building construction shall comply with the following: be maintained in accordance with the applicable building code.

1. Stairway access to the roof for emergency response and fire department personnel shall be provided either through a bulkhead from the interior of the building or a stairway on the exterior of the building.
2. Service walkways at least 5 feet (1524 mm) in width shall be provided for service and emergency personnel from the point of access to the roof to the system.
3. Distance required by the applicable building code between ESS and associated equipment shall be located from , and the edge of the roof a distance equal to at least the height of the system, equipment or component but not less than 5 feet (1524 mm).
4. The roofing materials under and within 5 feet (1524 mm) horizontally the horizontal distance, specified by the applicable building code, from an ESS or associated equipment shall be noncombustible or shall have a Class A rating when tested in accordance with ASTM E108 or UL 790.
5. A Class I standpipe outlet outlets shall be installed at an approved location on the roof level of the building or in the stairway bulkhead at the top level.
6. The ESS shall be the minimum of 10 feet (3048 mm) separation from the fire service access point on the rooftop.

1207.9.6 Open parking garages. ESS and associated equipment that are located in open parking garages shall comply with all of the following: be maintained in accordance with the applicable building code.

1. ESS shall not be located within 50 feet (15 240 mm) of air inlets for building HVAC systems.

   Exception: This distance shall be permitted to be reduced to 25 feet (7620 mm) if the automatic fire alarm system monitoring the radiant energy sensing detectors de-energizes the ventilation system connected to the air intakes upon detection of fire.
2. ESS shall not be located within 25 feet (7620 mm) of *exits* leading from the attached building where located on a covered level of the parking structure not directly open to the sky above.
3. An *approved* fence with a locked gate or other *approved* barrier shall be provided to keep the general public at least 5 feet (1524 mm) from the outer enclosure of the ESS.

TABLE 1207.10
MOBILE ENERGY STORAGE SYSTEMS (ESS)

COMPLIANCE REQUIRED		DEPLOYMENT[a]
Feature	Section	
All ESS installations	1207.4	Yes[b]
Fire suppression systems	1207.5.5	Yes[c]
Maximum allowable quantities	1207.5.2	Yes
Maximum enclosure size	1207.5.6	Yes
Means of egress separation	1207.5.8	Yes
Size and separation	1207.5.1	Yes[d]
Smoke and automatic fire detection	1207.5.4	Yes[e]
Technology-specific protection	1207.6	Yes
Vegetation control	1207.5.7	Yes

a. See Section 1207.10.2.

~~b. Mobile operations on wheeled vehicles and trailers shall not be required to comply with Section 1207.4.4 seismic and structural load requirements.~~

~~c. Fire suppression system connections to the water supply shall be permitted to use approved temporary connections.~~

~~d. In walk-in units, spacing is not required between ESS units and the walls of the enclosure.~~

~~e. Alarm signals are not required to be transmitted to an approved location for mobile ESS deployed 30 days or less.~~

1207.10.3 Permits. ~~Construction and operational permits shall be provided for charging and storage of mobile ESS and operational permits shall be provided for deployment of mobile ESS as required by Section 1207.1.2.~~ Permits shall be required as set forth in Section 107.2.

1207.10.4 ~~Construction documents.~~ ~~*Construction documents*~~ **Documents.** Documents complying with Section 1207.1.3 shall be provided with the ~~construction~~ operational permit application for mobile ESS charging and storage locations.

1207.10.4.1 Deployment documents. ~~The~~ At the minimum, the following information shall be provided with the ~~operation~~ operational permit applications for mobile ESS deployments:

1. Relevant information for the mobile ESS equipment and protection measures in the ~~*construction documents*~~ required by Section 1207.1.3.
2. Location and layout diagram of the area in which the mobile ESS is to be deployed, including a scale diagram of all nearby exposures.
3. Location and content of signage, including no smoking signs.
4. Description of fencing to be provided around the ESS, including locking methods.
5. Details on fire suppression, smoke and automatic fire detection, system monitoring, thermal management, exhaust ventilation and explosion control, if provided.
6. For deployment, the intended duration of operation, including anticipated connection and disconnection times and dates.
7. Location and description of local staging stops during transit to the deployment site. See Section 1207.10.7.5.
8. Description of the temporary wiring, including connection methods, conductor type and size, and circuit overcurrent protection to be provided.
9. Description of how fire suppression system connections to water supplies or extinguishing agents are to be provided.
10. Contact information for personnel who are responsible for maintaining and servicing the equipment, and responding to emergencies as required by Section 1207.1.6.1.

1207.10.5 Approved locations. Locations where mobile ESS are charged, stored and deployed shall be restricted to the locations approved in accordance with the applicable building code and ~~established~~ identified on the ~~construction and~~ operational permits.

1207.10.6 Charging and storage. Installations where mobile ESS are charged and stored shall be treated as permanent ESS indoor or outdoor installations, and shall comply with the following sections, as applicable:

1. Indoor charging and storage shall comply with Section 1207.7.
2. Outdoor charging and storage shall comply with Section 1207.8.
3. Charging and storage on rooftops and in open parking garages shall comply with Section 1207.9.

Exceptions:

1. Electrical connections ~~shall be~~ permitted by the applicable building code to be made using temporary wiring complying with the manufacturer's instructions, the UL 9540 listing and ~~NFPA 70.~~ NFPA 70, shall be maintained in accordance with the applicable building code.
2. Fire suppression system connections to the water supply ~~shall be~~ permitted by the applicable building code to use approved temporary ~~connections.~~ connections, shall be maintained in accordance with the applicable building code.

1207.10.7.2 Restricted locations. ~~Deployed~~ Unless otherwise approved in accordance with the applicable building code, mobile ESS operations shall not be located indoors, in covered parking garages, on rooftops, below grade or under building overhangs.

1207.10.7.3 Clearance to exposures. ~~Deployed~~ Where the applicable building code requires a minimum of 10 feet (3048 mm) separation between deployed mobile ESS ~~shall be separated by a minimum of 10 feet (3048 mm) from~~ and the following ~~exposures:~~ exposures, the separation shall be maintained in accordance with the applicable building code.

1. Public ways.
2. Buildings.
3. Stored combustible materials.
4. Hazardous materials.
5. High-piled storage.
6. Other exposure hazards.

~~Deployed~~ Where the applicable building code requires deployed mobile ESS ~~shall~~ to be separated by a minimum of 50 feet (15 240 mm) from public seating areas and from tents, canopies and membrane structures with an *occupant load* of 30 or ~~more.~~ more, the separation shall be maintained.

1207.10.7.4 Electrical connections. Electrical connections shall be ~~made~~ maintained in accordance with the manufacturer's instructions ~~and~~ , the UL 9540 ~~listing.~~ listing and the applicable building code. Temporary wiring for electrical power connections shall comply with NFPA 70. ~~Fixed~~ Unless otherwise allowed by the applicable building code, fixed electrical wiring shall not be provided.

1207.10.7.5 Local staging. Mobile ESS in transit from the charging and storage location to the deployment location and back shall not be parked within 100 feet (30 480 mm) of an occupied building for more than 1 hour during transit, unless specifically *approved* by the *fire code official* when the operational permit is issued.

1207.10.7.6 Fencing. ~~An *approved* fence~~ Fences with ~~a~~ locked ~~gate~~ gates or other *approved* ~~barrier~~ barriers ~~shall be~~ required or provided in accordance with the applicable building code to keep the general public at least 5 feet (1524 mm) from the outer enclosure of a deployed mobile ~~ESS.~~ ESS, shall be maintained in accordance with the applicable building code.

1207.11 ESS in Group R-3 and R-4 occupancies. ESS in Group R-3 and R-4 occupancies shall be ~~installed and~~ maintained in accordance with Sections 1207.11.1 through 1207.11.9. The temporary use of an *owner* or occupant's electric-powered vehicle as an ESS shall be in accordance with Section 1207.11.10.

1207.11.1 Equipment listings. ESS shall be *listed* and *labeled* in accordance with UL 9540. Unless otherwise approved in accordance with the applicable building code, ESS *listed* and *labeled* solely for utility or commercial use shall not be used for residential applications.

~~**Exceptions:**~~

~~1. Where approved, repurposed unlisted battery systems from electric vehicles are allowed to be installed outdoors or in detached dedicated cabinets located not less than 5 feet (1524 mm) from exterior walls, property lines and public ways.~~

~~2. ESS less than 1 kWh (3.6 megajoules).~~

1207.11.2 ~~Installation.~~ Maintenance. ESS shall be ~~installed~~ maintained in accordance with the manufacturer's instructions ~~and~~ , their ~~listing.~~ listing and the applicable building code.

1207.11.2.1 Spacing. ~~Individual~~ Where individual units ~~shall~~ are required by the applicable building code to be separated from each other by at least 3 feet (914 mm) of spacing unless smaller separation distances are documented to be adequate based on large-scale fire testing ~~complying with Section 1207.1.5.~~ , the separation shall be maintained in accordance with the applicable building code.

1207.11.3 Location. Unless otherwise approved in accordance with the applicable building code, ESS shall be ~~installed~~ located only in the following locations:

1. Detached garages and detached accessory structures.
2. Attached garages separated from the *dwelling unit* living space and *sleeping units* in accordance with Section 406.3.2 of the ~~*International Building Code.*~~ Virginia Construction Code.
3. Outdoors on exterior walls located a minimum of 3 feet (914 mm) from doors and windows.
4. Utility closets and storage or utility spaces within *dwelling units* and *sleeping units.*

1207.11.4 Energy ratings. ~~Individual~~ Unless otherwise approved in accordance with the applicable building code, individual ESS units shall have a maximum rating of 20 kWh. The aggregate rating structure shall not exceed:

1. 40 kWh within utility closets and storage or utility spaces.
2. 80 kWh in attached or detached garages and detached accessory structures.
3. 80 kWh on exterior walls.
4. 80 kWh outdoors on the ground.

1207.11.5 ~~Electrical installation.~~ Inverters. ~~ESS shall be installed in accordance with NFPA 70. Inverters~~ Where required by the applicable building code, inverters shall be *listed* and *labeled* in accordance with UL 1741 or provided as part of the UL 9540 listing. Systems connected to the utility grid shall use inverters *listed* for utility ~~interaction.~~ interaction in accordance with the applicable building code.

1207.11.6 Fire detection. ~~Rooms~~ Smoke alarms required by the applicable building code for rooms and areas within *dwellings units*, *sleeping units* and attached garages in which ESS are installed, shall be ~~protected by smoke alarms in accordance with Section 907.2.10~~. maintained in accordance with the applicable building code. ~~A~~ Where smoke alarms cannot be installed based on their listing, *heat ~~detector~~* detectors *listed* and interconnected to the smoke alarms ~~shall be~~ installed in accordance with the applicable building code ~~locations~~ within *dwelling units*, *sleeping units* and attached garages ~~where smoke alarms cannot be installed based on their listing.~~ , shall be maintained in accordance with Chapter 9 and the applicable building code.

1207.11.7 Protection from impact. Stationary storage battery systems installed in a location subject to vehicle damage shall be protected by *approved* barriers. Appliances in garages ~~shall also be~~ installed in accordance with ~~Section 304.3 of the *International Mechanical Code*.~~ the applicable building code, shall be maintained in accordance with the applicable building code.

1207.11.8 Ventilation. ~~Indoor~~ Exhaust ventilation installed in accordance with the applicable building code for indoor installations of ESS that include batteries that produce hydrogen or other flammable gases during charging, shall be ~~provided with exhaust ventilation in accordance with Section 1207.6.1.~~ maintained in accordance with the applicable building code.

1207.11.9 Toxic and highly toxic gas. Unless otherwise approved in accordance with the applicable building code, ESS that have the potential to release toxic or highly toxic gas during charging, discharging and normal use conditions shall not be installed within Group R-3 or R-4 occupancies.

1207.11.10 Electric vehicle use. The temporary use of an *owner* or occupant's electric-powered vehicle to power a *dwelling unit* or *sleeping unit* while parked in an attached or detached garage or outside shall comply with the vehicle manufacturer's instructions and the applicable NFPA 70.

2018 VIRGINIA CONSTRUCTION CODE

Add Section 433 (exact Section number TBD based on other, unrelated proposals), to read:

SECTION 433
ELECTRICAL ENERGY STORAGE SYSTEMS (ESS)

433.1 Scope. Electrical Energy Storage Systems shall comply with the applicable provisions of the International Fire Code.

FP1207-21 Floor Modification

1207.1.4 Hazard mitigation analysis. As part of the operational permit application, a failure modes and effects analysis (FMEA) or other hazard mitigation analysis approved in accordance with the applicable building code, shall be provided to the Fire Official under any of the following conditions:

1. Where ESS technologies not specifically ~~identified in the applicable building code are provided.~~ in Table 1207.1.1 are provided.

2. More than one ESS technology is provided in a room or enclosed area where there is a potential for adverse interaction between technologies.

3. Where allowed as a basis for increasing maximum allowable quantities in accordance with the applicable building code.

The FMEA shall be prepared by a qualified engineer, specialist, laboratory or fire safety specialty organization acceptable to the fire code official and shall analyze the fire safety properties of the design, operation or use of the building or premises and the facilities and appurtenances situated thereon, to recommend necessary changes. The fire code official is authorized to require that the FMEA be prepared by, and bear the stamp of, a registered design professional.

1207.11.6 Fire detection. Smoke alarms required by the applicable building code for rooms and areas within dwellings units, sleeping units and attached garages in which ESS are installed, shall be maintained in accordance with Chapter 9 and the applicable building code. Where smoke alarms cannot be installed based on their listing, heat detectors listed and interconnected to the smoke alarms installed in accordance with the applicable building code within dwelling units, sleeping units and attached garages, shall be maintained in accordance with Chapter 9 and the applicable building code.

1207.11.8 Ventilation. Exhaust ventilation installed in accordance with the applicable building code for indoor installations of ESS that include batteries that produce hydrogen or other flammable gases during charging, shall be operated and maintained in accordance with the applicable building code.

NOTE: the underlined and strikethrough text identifies changes to the cdpVA proposal and not changes to the 2021 IFC/2018 SFPC.

B432(2)-21

Proponents: Shahriar Amiri (samiri@arlingtonva.us)

2018 Virginia Construction Code

Add new text as follows:

432 Energy Storage Systems (ESS). Proponents: Shahriar Amiri (samiri@arlingtonva.us) 3/15/2022

Revision 1: 3/21/2022

2021 Virginia Construction Code

SECTION 432

ELECTRICAL ENERGY STORAGE SYSTEMS (ESS)

432.1 General. The provisions of this Section shall apply to installation, testing, and of stationary and mobile electrical energy storage systems (ESS).

Exceptions:

1. ESS in Group R-3 and R-4 occupancies shall comply with Section 432.11.
2. Lead-acid and nickel-cadmium battery systems that are designed in accordance with IEEE C2, used for DC power for control of substations and control or safe shutdown of generating stations under the exclusive control of the electric utility, and locations outdoors or in building spaces used exclusively for such installations shall not be required to comply with this Section.

432.1.1 Scope. ESS having capacities exceeding the values shown in Table 432.1.1 shall comply with this section.

TABLE 432.1.1 ENERGY STORAGE SYSTEM (ESS) THRESHOLD QUANTITIES

TECHNOLOGY	ENERGY CAPACITY[a]
Capacitor ESS	3 kWh
Flow batteries[b]	20 kWh
Lead-acid batteries, all types	70 kWh[c]
Lithium-ion batteries	20 kWh
Nickel metal hydride (Ni-MH)	70 kWh
Nickel-cadmium batteries (Ni-Cd)	70 kWh
Other battery technologies	10 kWh
Other electrochemical ESS technologies	3 kWh

For SI: 1 kilowatt hour = 3.6 megajoules.

a. Energy capacity is the total energy capable of being stored (nameplate rating), not the usable energy rating. For units rated in amp-hours, kWh shall equal rated voltage times amp-hour rating divided by 1,000.

b. Shall include vanadium, zinc-bromine, polysulfide-bromide and other flowing electrolyte-type technologies.

c. Fifty gallons of lead-acid battery electrolyte shall be considered equivalent to 70 kWh.

432.1.2 Construction documents. The following information shall be provided with the permit application:

1. Location and layout diagram of the room or area in which the ESS is to be installed.

2. Details on the hourly *fire-resistance ratings* of assemblies enclosing the ESS.

3. The quantities and types of ESS to be installed.

4. Manufacturer's specifications, ratings and listings of each ESS.

5. Description of energy (battery) management systems and their operation.

6. Location and content of required signage.

7. Details on fire suppression, smoke or fire detection, thermal management, ventilation, exhaust and *deflagration* venting systems, if provided.

8. Support arrangement associated with the installation, including any required seismic restraint.

9. A commissioning plan complying with Section 432.2.1.

10. A decommissioning plan complying with Section 432.2.3.

432.1.3 Hazard mitigation analysis. A failure modes and effects analysis (FMEA) or other *approved* hazard mitigation analysis shall be provided in accordance with Section 104.8.2 under any of the following conditions:

1. Where ESS technologies not specifically identified in Table 432.1.1 are provided.

2. More than one ESS technology is provided in a room or enclosed area where there is a potential for adverse interaction between technologies.

3. Where allowed as a basis for increasing maximum allowable quantities. See Section 432.5.2.

432.1.3.1 Fault condition. The hazard mitigation analysis shall evaluate the consequences of the following failure modes. Only single failure modes shall be considered.

1. A thermal runaway condition in a single ESS rack, module or unit.

2. Failure of any battery (energy) management system.

3. Failure of any required ventilation or exhaust system.

4. Voltage surges on the primary electric supply.

5. Short circuits on the load side of the ESS.

6. Failure of the smoke detection, fire detection, fire suppression or gas detection system.

7. Required spill neutralization not being provided or failure of a required secondary containment system.

432.1.3.2 Analysis approval. The *code official* is authorized to approve the hazardous mitigation analysis provided that the consequences of the hazard mitigation analysis demonstrate:

1. Fires will be contained within unoccupied ESS rooms or areas for the minimum duration of the fire-resistance-rated separations identified in Section 432.7.4.

2. Fires in occupied work centers will be detected in time to allow occupants within the room or area to safely evacuate.

3. Toxic and highly toxic gases released during fires will not reach concentrations in excess of the IDLH level in the building or adjacent *means of egress* routes during the time deemed necessary to evacuate occupants from any affected area.

4. Flammable gases released from ESS during charging, discharging and normal operation will not exceed 25 percent of their lower flammability limit (LFL).

5. Flammable gases released from ESS during fire, overcharging and other abnormal conditions will be controlled through the use of ventilation of the gases, preventing accumulation, or by *deflagration* venting.

432.1.4 Large-scale fire test. Where required elsewhere in Section 432, large-scale fire testing shall be conducted on a representative ESS in accordance with UL 9540A. The testing shall be conducted or witnessed and reported by an *approved* testing laboratory and show that a fire involving one ESS will not propagate to an adjacent ESS, and where installed within buildings, enclosed areas and walk-in units will be contained within the room, enclosed area or walk-in unit for a duration equal to the *fire-resistance rating* of the room separation specified in Section 432.7.4. The test report shall be provided to the *code official* for review and approval in accordance with Section 104.8.2.

432.2 Commissioning shall be conducted in accordance with this section.

432.2.1 Commissioning. Commissioning of newly installed ESS shall be subject to *special inspection* and conducted prior to the ESS being placed in service in accordance with a commissioning plan that has been *approved* prior to initiating commissioning. The commissioning plan shall include the following:

1. A narrative description of the activities that will be accomplished during each phase of commissioning, including the personnel intended to accomplish each of the activities.

2. A listing of the specific ESS and associated components, controls and safety-related devices to be tested, a description of the tests to be performed and the functions to be tested.

3. Conditions under which all testing will be performed, which are representative of the conditions during normal operation of the system.

4. Documentation of the owner's project requirements and the basis of design necessary to understand the installation and operation of the ESS.

5. Verification that required equipment and systems are installed in accordance with the *approved* plans and specifications.

6. Integrated testing for all fire and safety systems.

7. Testing for any required thermal management, ventilation or exhaust systems associated with the ESS installation.

8. Preparation and delivery of operation and maintenance documentation.

9. Training of facility operating and maintenance staff.

10. Identification and documentation of the requirements for maintaining system performance to meet the original design intent during the operation phase.

11. Identification and documentation of personnel who are qualified to service, maintain and decommission the ESS, and respond to incidents involving the ESS, including documentation that such service has been contracted for.

12. A decommissioning plan for removing the ESS from service, and from the facility in which it is located. The plan shall include details on providing a safe, orderly shutdown of energy storage and safety systems with notification to the code officials prior to the actual decommissioning of the system. The decommissioning plan shall include contingencies for removing an intact operational ESS from service, and for removing an ESS from service that has been damaged by a fire or other event.

Exception: Commissioning shall not be required for lead-acid and nickel-cadmium battery systems at facilities under the exclusive control of communications utilities that comply with NFPA 76 and operate at less than 50 VAC and 60 VDC. A decommissioning plan shall be provided and maintained where required by the *code official* .

432.2.1.1 Initial acceptance testing. During the commissioning process an ESS shall be evaluated for proper operation in accordance with the manufacturer's instructions and the commissioning plan prior to final approval.

432.2.1.2 Commissioning report. A report describing the results of the system commissioning, including the results of the initial acceptance testing required in Section 432.2.1.1, shall be provided to the *code official* prior to final inspection and approval and maintained at an *approved* on-site location.

432.2.3 Decommissioning. Decommissioning shall be performed in accordance with the decommissioning plan that includes the following:

1. A narrative description of the activities to be accomplished for removing the ESS from service, and from the facility in which it is located.

2. A listing of any contingencies for removing an intact operational ESS from service, and for removing an ESS from service that has been damaged by a fire or other event.

432.3 Equipment. ESS equipment shall be in accordance conform with to Sections 432.3.1 through 432.3.9.

432.3.1 Energy storage system listings. ESS shall be *listed* in accordance with UL 9540.

Exception: Lead-acid and nickel-cadmium battery systems installed in facilities under the exclusive control of communications utilities and operating at less than 50 VAC and 60 VDC in accordance with NFPA 76, are not required to be *listed* .

432.3.2 Equipment listing. Chargers, inverters and energy storage management systems shall be covered as part of the UL 9540 listing or shall be *listed* separately.

432.3.3 Utility interactive systems. Inverters shall be *listed* and *labeled* in accordance with UL 1741. Only inverters *listed* and *labeled* for utility interactive system use and identified as interactive shall be allowed to operate in parallel with the electric utility power system to supply power to common loads.

432.3.4 Energy storage management system. Where required by the ESS listing, an *approved* energy storage management system that monitors and balances cell voltages, currents and temperatures within the manufacturer's specifications shall be provided. The system shall disconnect electrical connections to the ESS or otherwise place it in a safe condition if potentially hazardous temperatures or other conditions such as short circuits, over voltage or under voltage are detected.

432.3.5 Enclosures. Enclosures of ESS shall be of noncombustible construction.

432.4 General installations requirements. Stationary and mobile ESS shall comply with the requirements of Sections 432.4.1 through 432.4.12.

432.4.1 Electrical disconnects. Where the ESS disconnecting means is not within sight of the main electrical service disconnecting means, placards or directories shall be installed at the location of the main electrical service disconnecting means indicating the location of stationary storage battery system disconnecting means in accordance with NFPA 70.

Exception: Electrical disconnects for lead-acid and nickel-cadmium battery systems at facilities under the exclusive control of communications utilities and operating at less than 50 VAC and 60 VDC shall be permitted to have electrical disconnects signage in accordance with NFPA 76.

432.4.2 Working clearances. Access and working space shall be provided and maintained about all electrical equipment to permit ready and safe operation and maintenance of such equipment in accordance with NFPA 70 and the manufacturer's instructions.

432.4.3 Fire-resistance-rated separations. Rooms and other indoor areas containing ESS shall be separated from other areas of the building in accordance with Section 432.7.4. ESS shall be permitted to be in the same room with the equipment they support.

432.4.4 Seismic and structural design. Stationary ESS shall comply with the seismic design requirements in Chapter 16 , and shall not exceed the floor loading limitation of the building.

432.4.5 Vehicle impact protection. Where ESS are subject to impact by a motor vehicle, including forklifts, vehicle impact protection shall be provided in accordance with Section 312 of the International Fire Code.

432.4.6 Combustible storage. Combustible materials shall not be stored in ESS rooms, areas or walk-in units. Combustible materials in occupied work centers covered by Section 432.4.10 shall be stored at least 3 feet (914 mm) from ESS cabinets.

432.4.7 Toxic and highly toxic gases. ESS that have the potential to release toxic and highly toxic gas during charging, discharging and normal use conditions shall be provided with a hazardous exhaust system in accordance with Section 502.8 of the *International Mechanical Code* .

432.4.8 Signage. *Approved* signs shall be provided on or adjacent to all entry doors for ESS rooms or areas and on enclosures of ESS cabinets and walk-in units located outdoors, on rooftops or in open parking garages. Signs designed to meet both the requirements of this section and NFPA 70 shall be permitted. The signage shall include the following or equivalent:

1. “ENERGY STORAGE SYSTEM,” “BATTERY STORAGE SYSTEM,”“CAPACITOR ENERGY STORAGE SYSTEM” or the equivalent.

2. The identification of the electrochemical ESS technology present.

3. “ENERGIZED ELECTRICAL CIRCUITS.”

4. Where water-reactive electrochemical ESS are present, the signage shall include “APPLY NO WATER.”

5. Current contact information, including phone number, for personnel authorized to service the equipment and for fire mitigation personnel required by Section 432.1.6.1.

432.4.9 Security of installations. Rooms, areas and walk-in units in which electrochemical ESS are located shall be secured against unauthorized entry and safeguarded in an *approved* manner. Security barriers, fences, landscaping and other enclosures shall not inhibit the required air flow to or exhaust from the electrochemical ESS and its components.

432.4.10 Occupied work centers. Electrochemical ESS located in rooms or areas occupied by personnel not directly involved with maintenance, service and testing of the systems shall comply with the following:

1. Electrochemical ESS located in occupied work centers shall be housed in locked noncombustible cabinets or other enclosures to prevent access by unauthorized personnel.

2. Where electrochemical ESS are contained in cabinets in occupied work centers, the cabinets shall be located within 10 feet (3048 mm) of the equipment that they support.

3. Cabinets shall include signage complying with Section 432.4.8.

432.4.11 Open rack installations. Where electrochemical ESS are installed in a separate equipment room and only authorized personnel have access to the room, they shall be permitted to be installed on an open rack for ease of maintenance.

432.4.12 Walk-in units. Walk-in units shall be entered only for inspection, maintenance and repair of ESS units and ancillary equipment, and shall not be occupied for other purposes.

432.5 Electrochemical ESS protection. The protection of electrochemical ESS shall be in accordance with Sections 432.5.1 through 432.5.8 where required by Sections 432.7 through 432.10.

TABLE 432.5 MAXIMUM ALLOWABLE QUANTITIES OF ELECTROCHEMICAL ESS

TECHNOLOGY	MAXIMUM ALLOWABLE QUANTITIES [a]
STORAGE BATTERIES	
Flow batteries[b]	600 kWh
Lead-acid, all types	Unlimited
Lithium-ion	600 kWh
Nickel metal hydride (Ni-MH)	Unlimited
Nickel-cadmium (Ni-Cd)	Unlimited
Other battery technologies	200 kWh
CAPACITORS	
All types	20 kWh
OTHER ELECTROCHEMICAL ESS	
All types	20 kWh

For SI: 1 kilowatt hour = 3.6 megajoules.

a. For electrochemical ESS units rated in amp-hours, kWh shall equal rated voltage times the amp-hour rating divided by 1,000.

b. Shall include vanadium, zinc-bromine, polysulfide-bromide and other flowing electrolyte-type technologies.

432.5.1 Size and separation. Electrochemical ESS shall be segregated into groups not exceeding 50 kWh (180 megajoules). Each group shall be separated a minimum of 3 feet (914 mm) from other groups and from walls in the storage room or area. The storage arrangements shall comply with Chapter 10.

1. Lead-acid and nickel-cadmium battery systems in facilities under the exclusive control of communications utilities and operating at less than 50 VAC and 60 VDC in accordance with NFPA 76.

2. The *code official* is authorized to approve larger capacities or smaller separation distances based on large-scale fire testing complying with Section 432.1.5.

432.5.2 Maximum allowable quantities. *Fire areas* within rooms, areas and walk-in units containing electrochemical ESS shall not exceed the maximum allowable quantities in Table 432.5.

Exceptions:

1. Where *approved* by the *code official* , rooms, areas and walk-in units containing electrochemical ESS that exceed the amounts in Table 432.5 shall be permitted based on a hazardous mitigation analysis in accordance with Section 432.1.4 and large-scale fire testing complying with Section 432.1.5.

2. Lead-acid and nickel-cadmium battery systems installed in facilities under the exclusive control of communications utilities and operating at less than 50 VAC and 60 VDC in accordance with NFPA 76.

3. Dedicated-use buildings in compliance with Section 432.7.1.

432.5.2.1 Mixed electrochemical energy systems. Where rooms, areas and walk-in units contain different types of electrochemical energy technologies, the total aggregate quantities of the systems shall be determined based on the sum of percentages of each technology-type quantity divided by the maximum allowable quantity of each technology type. The sum of the percentages shall not exceed 100 percent of the maximum allowable quantity.

432.5.3 Elevation. Electrochemical ESS shall not be located in the following areas:

1. Where the floor is located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access.

2. Where the floor is located below the lowest *level of exit discharge* .

Exceptions:

1. Lead-acid and nickel-cadmium battery systems less than 50 VAC and 60 VDC installed in facilities under the exclusive control of communications utilities in accordance with NFPA 76.

2. Where*approved* , installations shall be permitted in underground vaults complying with NFPA 70, Article 450, Part III.

432.5.4 Fire detection. An *approved* automatic smoke detection system or radiant energy-sensing fire detection system complying with Section 907.2 shall be installed in rooms, indoor areas and walk-in units containing electrochemical ESS. An *approved* radiant energy-sensing fire detection system shall be installed to protect open parking garage and rooftop installations. Alarm signals from detection systems shall be transmitted to a central station, proprietary or remote station service in accordance with NFPA 72, or where *approved* to a constantly attended location.

432.5.4.1 System status. Where required by the *code official*, visible annunciation shall be provided on cabinet exteriors or in other *approved*

locations to indicate that potentially hazardous conditions associated with the ESS exist.

432.5.5 Fire suppression systems. Rooms and areas within buildings and walk-in units containing electrochemical ESS shall be protected by an automatic fire suppression system designed and installed in accordance with one of the following:

1. An *automatic sprinkler system* designed and installed in accordance with Section 903.3.1.1 with a minimum density of 0.3 gpm/ft^2 (1.14 L/min) based on the *fire area* or 2,500 square-foot (232 m^2) design area, whichever is smaller.

2. Where *approved* , an *automatic sprinkler system* designed and installed in accordance with Section 903.3.1.1 with a sprinkler hazard classification based on large-scale fire testing complying with Section 432.1.5.

Exception: Fire suppression systems for lead-acid and nickel-cadmium battery systems at facilities under the exclusive control of communications utilities that operate at less than 50 VAC and 60 VDC shall be provided where required by NFPA 76.

432.5.5.1 Water-reactive systems. Electrochemical ESS that utilize water-reactive materials shall be protected by an *approved* alternative automatic fire-extinguishing system in accordance with Section 904, where the installation is *approved* by the *code official* based on large-scale fire testing complying with Section 432.1.5.

432.5.6 Maximum enclosure size. Outdoor walk-in units housing ESS shall not exceed 53 feet by 8 feet by 9.5 feet high (16 154 mm × 2438 mm × 2896 mm), not including bolt-on HVAC and related equipment, as *approved* . Outdoor walk-in units exceeding these limitations shall be considered indoor installations and comply with the requirements in Section 432.7.

432.5.7 Vegetation control. Areas within 10 feet (3048 mm) on each side of outdoor ESS shall be cleared of combustible vegetation and other combustible growth. Single specimens of trees, shrubbery or cultivated ground cover such as green grass, ivy, succulents or similar plants used as ground cover shall be permitted to be exempt provided that they do not form a means of readily transmitting fire.

432.5.8 Means of egress separation. ESS located outdoors and in open parking garages shall be separated from any *means of egress* as required by the *code official* to ensure safe egress under fire conditions, but in no case less than 10 feet (3048 mm).

Exception: The *code official* is authorized to approve a reduced separation distance if large-scale fire testing complying with Section 432.1.5 is provided that shows that a fire involving the ESS will not adversely impact occupant egress.

432.6 Electrochemical ESS technology-specific protection. Electrochemical ESS installations shall comply with the requirements of this section in accordance with the applicable requirements of Table 432.6.

TABLE 432.6 ELECTROCHEMICAL ESS TECHNOLOGY-SPECIFIC REQUIREMENTS

COMPLIANCE REQUIRED[b]		BATTERY TECHNOLOGY					
Feature	Section	Lead-acid	Ni-Cd and Ni-MH	Lithium-ion	Flow	OTHER ESS AND BATTERY TECHNOLOGIES[b]	CAPACITOR ESS[b]
Exhaust ventilation	432.6.1	Yes	Yes	No	Yes	Yes	Yes
Explosion control	432.6.3	Yes[a]	Yes[a]	Yes	No	Yes	Yes
Safety caps	432.6.4	Yes	Yes	No	No	Yes	Yes
Spill control and neutralization	432.6.2	Yes[c]	Yes[c]	No	Yes	Yes	Yes
Thermal runaway	432.6.5	Yes[d]	Yes	Yes[e]	No	Yes[e]	Yes

a. Not required for lead-acid and nickel-cadmium batteries at facilities under the exclusive control of communications utilities that comply with NFPA 76 and operate at less than 50 VAC and 60 VDC.

b. Protection shall be provided unless documentation acceptable to the code official is provided in accordance with Section 104.8.2 that provides justification why the protection is not necessary based on the technology used.

c. Applicable to vented-type (i.e., flooded) nickel-cadmium and lead-acid batteries.

d. Not required for vented-type (i.e., flooded) lead-acid batteries.

e. The thermal runaway protection is permitted to be part of a battery management system that has been evaluated with the battery as part of the evaluation to UL 1973.

432.6.1 Exhaust ventilation. Where required by Table 432.6 or elsewhere in this code, exhaust ventilation of rooms, areas and walk-in units containing electrochemical ESS shall be provided in accordance with the *International Mechanical Code* and Section 432.6.1.1 or 432.6.1.2.

432.6.1.1 Ventilation based on LFL. The exhaust ventilation system shall be designed to limit the maximum concentration of flammable gas to 25 percent of the lower flammable limit (LFL) of the total volume of the room, area or walk-in unit during the worst-case event of simultaneous charging of batteries at the maximum charge rate, in accordance with nationally recognized standards.

432.6.1.2 Ventilation based on exhaust rate. Mechanical exhaust ventilation shall be provided at a rate of not less than 1 ft^3/min/ft^2 (5.1 L/sec/m^2) of floor area of the room, area or walk-in unit. The ventilation shall be either continuous or shall be activated by a gas detection system in accordance with Section 432.6.1.2.4.

432.6.1.2.1 Standby power. Mechanical exhaust ventilation shall be provided with a minimum of 2 hours of standby power in accordance with Section 1203.2.5 of the International Fire Code.

432.6.1.2.2 Installation instructions. Required mechanical exhaust ventilation systems shall be installed in accordance with the manufacturer's installation instructions and the *International Mechanical Code* .

432.6.1.2.3 Supervision. Required mechanical exhaust ventilation systems shall be supervised by an *approved* central station, proprietary or remote station service in accordance with NFPA 72, or shall initiate an audible and visible signal at an *approved* constantly attended on-site location.

432.6.1.2.4 Gas detection system. Where required by Section 432.6.1.2, rooms, areas and walk-in units containing ESS shall be protected by an *approved* continuous gas detection system that complies with Section 916 and with the following:

1. The gas detection system shall be designed to activate the mechanical ventilation system when the level of flammable gas in the room, area or walk-in unit exceeds 25 percent of the LFL.

2. The mechanical ventilation system shall remain on until the flammable gas detected is less than 25 percent of the LFL.

3. The gas detection system shall be provided with a minimum of 2 hours of standby power in accordance with Section 1203.2.5. of the International Fire Code.

4. Failure of the gas detection system shall annunciate a trouble signal at an *approved* central station, proprietary or remote station service in accordance with NFPA 72 or shall initiate an audible and visible trouble signal at an *approved* constantly attended on-site location.

432.6.2 Spill control and neutralization. Where required by Table 432.6 or elsewhere in this code, areas containing free-flowing liquid electrolyte or hazardous materials shall be provided with spill control and neutralization in accordance with this section.

432.6.2.1 Spill control. Spill control shall be provided to prevent the flow of liquid electrolyte or hazardous materials to adjoining rooms or areas. The method shall be capable of containing a spill from the single largest battery or vessel.

432.6.2.2 Neutralization. An *approved* method that is capable of neutralizing spilled liquid electrolyte from the largest battery or vessel to a pH between 5.0 and 9.0 shall be provided.

432.6.2.3 Communications utilities. The requirements of Section 432.6.2 shall apply only when the aggregate capacity of multiple vessels exceeds 1,000 gallons (3785 L) for lead-acid and nickel-cadmium battery systems operating at less than 50 VAC and 60 VDC that are located at facilities under the exclusive control of communications utilities, and those facilities comply with NFPA 76 in addition to applicable requirements of this code.

432.6.3 Explosion control. Where required by Table 432.6 or elsewhere in this code, explosion control complying with Section 911 of IFC shall be provided for rooms, areas or walk-in units containing electrochemical ESS technologies.

Exceptions:

1. Where *approved* , explosion control is permitted to be waived by the *code official* based on large-scale fire testing complying with Section 432.1.5 that demonstrates that flammable gases are not liberated from electrochemical ESS cells or modules where tested in accordance with UL 9540A.

2. Where*approved* , explosion control is permitted to be waived by the *code official* based on documentation provided that demonstrates that the electrochemical ESS technology to be used does not have the potential to release flammable gas concentrations in excess of 25 percent of the LFL anywhere in the room, area, walk-in unit or structure under thermal runaway or other fault conditions.

432.6.4 Safety caps. Where required by Table 432.6 or elsewhere in this code, vented batteries and other ESS shall be provided with flame-arresting safety caps.

432.6.5 Thermal runaway. Where required by Table 432.6 or elsewhere in this code, batteries and other ESS shall be provided with a *listed* device or other *approved* method to prevent, detect and minimize the impact of thermal runaway.

432.7 Indoor installations. Indoor ESS installations shall be in accordance with Sections 432.7.1 through 432.7.4.

TABLE 432.7 INDOOR ESS INSTALLATIONS

COMPLIANCE REQUIRED			
Feature	Section	DEDICATED-USE BUILDINGS[a]	NONDEDICATED-USE BUILDINGS[b]
Dwelling units and sleeping units	432.7.3	NA	Yes
Elevation	432.5.3	Yes	Yes
Fire suppression systems	432.5.5	Yes[c]	Yes
Fire-resistance-rated separations	432.7.4	Yes	Yes
General installation requirements	432.4	Yes	Yes
Maximum allowable quantities	432.5.2	No	Yes
Size and separation	432.5.1	Yes	Yes
Smoke and automatic fire detection[e]	432.5.4	Yes[d]	Yes
Technology specific protection	432.6	Yes	Yes

NA = Not Allowed.

a. See Section 432.7.1.

b. See Section 432.7.2.

c. Where approved by the code official, fire suppression systems are permitted to be omitted in dedicated-use buildings located more than 100 feet (30.5 m) from buildings, lot lines, public ways, stored combustible materials, hazardous materials, high-piled stock and other exposure hazards.

d. Where approved by the code official, alarm signals are not required to be transmitted to a central station, proprietary or remote station service in accordance with NFPA 72, or a constantly attended location where local fire alarm annunciation is provided and trained personnel are always present.

e. Lead-acid and nickel-cadmium battery systems installed in Group U buildings and structures less than 1,500 square feet (139 m^2) under the exclusive control of communications utilities, and operating at less than 50 VAC and 60 VDC in accordance with NFPA 76, are not required to have an approved automatic smoke or fire detection system.

432.7.1 Dedicated-use buildings. For the purpose of Table 432.7, dedicated-use ESS buildings shall be classified as Group F-1 occupancies and comply with all the following:

1. The building shall only be used for ESS, electrical energy generation and other electrical grid-related operations.

2. Occupants in the rooms and areas containing ESS are limited to personnel that operate, maintain, service, test and repair the ESS and other energy systems.

3. No other occupancy types shall be permitted in the building.

4. Administrative and support personnel shall be permitted in areas within the buildings that do not contain ESS, provided that:

4.1. The areas do not occupy more than 10 percent of the *building area* of the story in which they are located.

4.2. A *means of egress* is provided from the incidental use areas to the *public way* that does not require occupants to traverse through areas containing ESS or other energy system equipment.

432.7.2 Nondedicated-use buildings. For the purpose of Table 432.7, nondedicated-use buildings include all buildings that contain ESS and do not comply with Section 432.7.1 dedicated-use building requirements.

432.7.3 Dwelling units and sleeping units. ESS shall not be installed in *sleeping units* or in *habitable spaces* of *dwelling units* .

432.7.4 Fire-resistance-rated separations. Rooms and areas containing ESS shall include *fire-resistance-rated* separations as follows:

1. In dedicated-use buildings, rooms and areas containing ESS shall be separated from areas in which administrative and support personnel are located.

2. In nondedicated-use buildings, rooms and areas containing ESS shall be separated from other areas in the building.

Separation shall be provided by 2-hour*firebarriers* and 2-hour *horizontal assemblies* , as appropriate.

432.8 Outdoor installations. Outdoor installations shall be in accordance with Sections 432.8.1 through 432.8.3. Exterior wall installations for individual ESS units not exceeding 20 kWh shall be in accordance with Section 432.8.4.

TABLE 432.8 OUTDOOR ESS INSTALLATIONS[a]

COMPLIANCE REQUIRED			
Feature	Section	REMOTE INSTALLATIONS[a]	INSTALLATIONS NEAR EXPOSURES[b]
All ESS installations	432.4	Yes	Yes
Clearance to exposures	432.8.3	Yes	Yes
Fire suppression systems	432.5.5	Yes[c]	Yes
Maximum allowable quantities	432.5.2	No	Yes

Maximum enclosure size	432.5.6	Yes	Yes
Means of egress separation	432.5.8	Yes	Yes
Size and separation	432.5.1	No	Yes[d]
Smoke and automatic fire detection	432.5.4	Yes	Yes
Technology-specific protection	432.6	Yes	Yes
Vegetation control	432.5.7	Yes	Yes

a. See Section 432.8.1.

b. See Section 432.8.2.

c. Where approved by the code official, fire suppression systems are permitted to be omitted.

d. In outdoor walk-in units, spacing is not required between ESS units and the walls of the enclosure.

432.8.1 Remote outdoor installations. For the purpose of Table 432.8, remote outdoor installations include ESS located more than 100 feet (30 480 mm) from buildings, lot lines, public ways, stored combustible materials, hazardous materials, high-piled stock and other exposure hazards.

432.8.2 Installations near exposures. For the purpose of Table 432.8, installations near exposures include all outdoor ESS installations that do not comply with Section 432.8.1 remote outdoor location requirements.

432.8.3 Clearance to exposures. ESS located outdoors shall be separated by a minimum of 10 feet (3048 mm) from the following exposures:

1. Lot lines.

2. Public ways.

3. Buildings.

4. Stored combustible materials.

5. Hazardous materials.

6. High-piled stock.

7. Other exposure hazards.

Exceptions:

1. Clearances are permitted to be reduced to 3 feet (914 mm) where a 1-hour *fire-resistance-rated construction* suitable for exterior use and extending 5 feet (1524 mm) above and 5 feet (1524 mm) beyond the physical boundary of the ESS installation is provided to protect the exposure.

2. Clearances to buildings are permitted to be reduced to 3 feet (914 mm) where noncombustible exterior walls with no openings or combustible overhangs are provided on the wall adjacent to the ESS and the *fire-resistance rating* of the exterior wall is a minimum of 2 hours.

3. Clearances to buildings are permitted to be reduced to 3 feet (914 mm) where a weatherproof enclosure constructed of noncombustible

materials is provided over the ESS, and it has been demonstrated that a fire within the enclosure will not ignite combustible materials outside the enclosure based on large-scale fire testing complying with Section 432.1.5.

432.8.4 Exterior wall installations. ESS shall be permitted to be installed outdoors on exterior walls of buildings when all of the following conditions are met:

1. The maximum energy capacity of individual ESS units shall not exceed 20 kWh.

2. The ESS shall comply with applicable requirements in Section 432.

3. The ESS shall be installed in accordance with the manufacturer's instructions and their listing.

4. Individual ESS units shall be separated from each other by at least 3 feet (914 mm).

5. The ESS shall be separated from doors, windows, operable openings into buildings or HVAC inlets by at least 5 feet (1524 mm).

Exception: Where *approved* , smaller separation distances in Items 4 and 5 shall be permitted based on large-scale fire testing complying with Section 432.1.5.

432.9 Special installations. Rooftop and open parking garage ESS installations shall comply with Sections 432.9.1 through 432.9.6.

TABLE 432.9 SPECIAL ESS INSTALLATIONS

COMPLIANCE REQUIRED			
Feature	Section	ROOFTOPS[a]	OPEN PARKING GARAGES[b]
All ESS installations	432.4	Yes	Yes
Clearance to exposures	432.9.3	Yes	Yes
Fire suppression systems	432.9.4	Yes	Yes
Maximum allowable quantities	432.5.2	Yes	Yes
Maximum enclosure size	432.5.6	Yes	Yes
Means of egress separation	432.5.8	Yes	Yes
Open parking garage installations	432.9.6	No	Yes
Rooftop installations	432.9.5	Yes	No
Size and separation	432.5.1	Yes	Yes
Smoke and automatic fire detection	432.5.4	Yes	Yes
Technology-specific protection	432.6	Yes	Yes

a. See Section 432.9.1.

b. See Section 432.9.2.

432.9.1 Rooftop installations. For the purpose of Table 432.9, rooftop ESS installations are those located on the roofs of buildings.

432.9.2 Open parking garage installations. For the purpose of Table 432.9, open parking garage ESS installations are those located in a structure or portion of a structure that complies with Section 406.5.

432.9.3 Clearance to exposures. ESS located on rooftops and in open parking garages shall be separated by a minimum of 10 feet (3048 mm) from the following exposures:

1. Buildings, except the building on which rooftop ESS is mounted.

2. Any portion of the building on which a rooftop system is mounted that is elevated above the rooftop on which the system is installed.

3. Lot lines.

4. Public ways.

5. Stored combustible materials.

6. Locations where motor vehicles can be parked.

7. Hazardous materials.

8. Other exposure hazards.

Exceptions:

1. Clearances are permitted to be reduced to 3 feet (914 mm) where a 1-hour fire-resistance-rated construction suitable for exterior use and extending 5 feet (1524 mm) above and 5 feet (1524 mm) beyond the physical boundary of the ESS installation is provided to protect the exposure.

2. Clearances are permitted to be reduced to 3 feet (914 mm) where a weatherproof enclosure constructed of noncombustible materials is provided over the ESS, and it has been demonstrated that a fire within the enclosure will not ignite combustible materials outside the enclosure based on large-scale fire testing complying with Section 432.1.5.

432.9.4 Fire suppression systems. ESS located in walk-in units on rooftops or in walk-in units in open parking garages shall be provided with automatic fire suppression systems within the ESS enclosure in accordance with Section 432.5.5. Areas containing ESS other than walk-in units in open parking structures on levels not open above to the sky shall be provided with an automatic fire suppression system complying with Section 432.5.5.

Exception: A fire suppression system is not required in open parking garages if large-scale fire testing complying with Section 432.1.5 is provided that shows that a fire will not impact the exposures in Section 432.9.3.

432.9.5 Rooftop installations. ESS and associated equipment that are located on rooftops and not enclosed by building construction shall comply with the following:

1. Stairway access to the roof for emergency response and fire department personnel shall be provided.

2. Service walkways at least 5 feet (1524 mm) in width shall be provided for service and emergency personnel from the point of access to the roof to the system.

3. ESS and associated equipment shall be located from the edge of the roof a distance equal to at least the height of the system, equipment or component but not less than 5 feet (1524 mm).

4. The roofing materials under and within 5 feet (1524 mm) horizontally from an ESS or associated equipment shall be noncombustible or shall have a Class A rating when tested in accordance with ASTM E108 or UL 790.

5. A Class I standpipe outlet shall be installed at an*approved* location on the roof level of the building or in the stairway at the top level.

6. The ESS shall be the minimum of 10 feet (3048 mm) from the fire service access point on the rooftop.

432.9.6 Open parking garages. ESS and associated equipment that are located in open parking garages shall comply with all of the following:

1. ESS shall not be located within 50 feet (15 240 mm) of air inlets for building HVAC systems.

Exception: This distance shall be permitted to be reduced to 25 feet (7620 mm) if the automatic fire alarm system monitoring the radiant- energy sensing detectors de-energizes the ventilation system connected to the air intakes upon detection of fire.

2. ESS shall not be located within 25 feet (7620 mm) of *exits* leading from the attached building where located on a covered level of the parking structure not directly open to the sky above.

3. An *approved* fence with a locked gate or other *approved* barrier shall be provided to keep the general public at least 5 feet (1524 mm) from the outer enclosure of the ESS.

432.10 Mobile ESS equipment and operations. Mobile ESS equipment shall comply with Sections 432.10.1 through 432.10.7.7.

TABLE 432.10 MOBILE ENERGY STORAGE SYSTEMS (ESS)

COMPLIANCE REQUIRED		
Feature	Section	DEPLOYMENT[a]
All ESS installations	432.4	Yes[b]
Fire suppression systems	432.5.5	Yes[c]
Maximum allowable quantities	432.5.2	Yes
Maximum enclosure size	432.5.6	Yes
Means of egress separation	432.5.8	Yes
Size and separation	432.5.1	Yes[d]
Smoke and automatic fire detection	432.5.4	Yes[e]
Technology-specific protection	432.6	Yes
Vegetation control	432.5.7	Yes

a. See Section 432.10.2.

b. Mobile operations on wheeled vehicles and trailers shall not be required to comply with Section 432.4.4 seismic and structural load requirements.

c. Fire suppression system connections to the water supply shall be permitted to use approved temporary connections.

d. In walk-in units, spacing is not required between ESS units and the walls of the enclosure.

e. Alarm signals are not required to be transmitted to an approved location for mobile ESS deployed 30 days or less.

432.10.1 Charging and storage. For the purpose of Section 432.10, charging and storage covers the operation where mobile ESS are charged and stored so they are ready for deployment to another site, and where they are charged and stored after a deployment.

432.10.2 Deployment. For the purpose of Section 432.10, deployment covers operations where mobile ESS are located at a site other than the charging and storage site and are being used to provide power.

432.10.3 Permits. Construction permits shall be provided for charging and storage of mobile ESS.

432.10.4 Construction documents. *Construction documents* complying with Section 432.1.3 shall be provided with the construction permit application for mobile ESS charging and storage locations.

432.10.4.1 Deployment documents. The following information shall be provided with the permit applications for mobile ESS deployments:

1. Relevant information for the mobile ESS equipment and protection measures in the *construction documents* required by Section 432.1.3.

2. Location and layout diagram of the area in which the mobile ESS is to be deployed, including a scale diagram of all nearby exposures.

3. Location and content of signage, including no smoking signs.

4. Description of fencing to be provided around the ESS, including locking methods.

5. Details on fire suppression, smoke and automatic fire detection, system monitoring, thermal management, exhaust ventilation and explosion control, if provided.

6. For deployment, the intended duration of operation, including anticipated connection and disconnection times and dates.

7. Location and description of local staging stops during transit to the deployment site. See Section 432.10.7.5.

8. Description of the temporary wiring, including connection methods, conductor type and size, and circuit overcurrent protection to be provided.

9. Description of how fire suppression system connections to water supplies or extinguishing agents are to be provided.

10. Contact information for personnel who are responsible for maintaining and servicing the equipment and responding to emergencies as required by Section 432.1.6.1.

432.10.5 Approved locations. Locations where mobile ESS are charged, stored and deployed shall be restricted to the locations established on the construction permits.

432.10.6 Charging and storage. Installations where mobile ESS are charged and stored shall be treated as permanent ESS indoor or outdoor installations, and shall comply with the following sections, as applicable:

1. Indoor charging and storage shall comply with Section 432.7.

2. Outdoor charging and storage shall comply with Section 432.8.

3. Charging and storage on rooftops and in open parking garages shall comply with Section 432.9.

Exceptions:

1. Electrical connections shall be permitted to be made using temporary wiring complying with the manufacturer's instructions, the UL 9540 listing and NFPA 70.

2. Fire suppression system connections to the water supply shall be permitted to use *approved* temporary connections.

432.10.7 Deployed mobile ESS requirements. Deployed mobile ESS equipment shall comply with this section and Table 432.10.

432.10.7.1 Duration. The duration of mobile ESS deployment shall not exceed 30 days.

Exceptions:

1. Mobile ESS deployments that provide power for durations longer than 30 days shall comply with Section 432.10.6.

2. Mobile ESS deployments shall not exceed 180 days unless additional permits are obtained.

432.10.7.2 Restricted locations. Deployed mobile ESS operations shall not be located indoors, in covered parking garages, on rooftops, below grade or under building overhangs.

432.10.7.3 Clearance to exposures. Deployed mobile ESS shall be separated by a minimum of 10 feet (3048 mm) from the following exposures:

1. Public ways.

2. Buildings.

3. Stored combustible materials.

4. Hazardous materials.

5. High-piled storage.

6. Other exposure hazards.

Deployed mobile ESS shall be separated by a minimum of 50 feet (15 240 mm) from public seating areas and from tents, canopies and membrane structures with an *occupant load* of 30 or more.

432.10.7.4 Electrical connections. Electrical connections shall be made in accordance with the manufacturer's instructions and the UL 9540 listing. Temporary wiring for electrical power connections shall comply with NFPA 70. Fixed electrical wiring shall not be provided.

432.10.7.5 Fencing. An *approved* fence with a locked gate or other *approved* barrier shall be provided to keep the general public at least 5 feet (1524 mm) from the outer enclosure of a deployed mobile ESS.

432.10.7.6 Smoking. Smoking shall be prohibited within 10 feet (3048 mm) of mobile ESS. Signs shall be posted in accordance with Section 310 of IFC.

432.11 ESS in Group R-3, and R-4. occupancies. ESS in Group R-3, and R-4 occupancies shall be installed and maintained in accordance with Sections 432.11.1 through 432.11.9. The temporary use of an *owner* or occupant's electric-powered vehicle as an ESS shall be in accordance with Section 432.11.10.

432.11.1 Equipment listings. ESS shall be *listed* and *labeled* in accordance with UL 9540. ESS *listed* and *labeled* solely for utility or commercial use shall not be used for residential applications.

Exceptions:

ESS less than 1 kWh (3.6 megajoules).

432.11.2 Installation. ESS shall be installed in accordance with the manufacturer's instructions and their listing.

432.11.2.1 Spacing. Individual units shall be separated from each other by at least 3 feet (914 mm) of spacing unless smaller separation distances are documented to be adequate based on large-scale fire testing complying with Section 432.1.5.

432.11.3 Location. ESS shall be installed only in the following locations:

1. Detached garages and detached accessory structures.

2. Attached garages separated from the *dwelling unit* living space and *sleeping units* in accordance with Section 406.3.2.

3. Outdoors on exterior walls located a minimum of 3 feet (914 mm) from doors and windows.

4. Utility closets and storage or utility spaces within *dwelling units* and *sleeping units*.

432.11.4 Energy ratings. Individual ESS units shall have a maximum rating of 20 kWh. The aggregate rating structure shall not exceed:

1. 40 kWh within utility closets and storage or utility spaces.

2. 80 kWh in attached or detached garages and detached accessory structures.

3. 80 kWh on exterior walls.

4. 80 kWh outdoors on the ground.

432.11.5 Electrical installation. ESS shall be installed in accordance with NFPA 70. Inverters shall be *listed* and *labeled* in accordance with UL 1741 or provided as part of the UL 9540 listing. Systems connected to the utility grid shall use inverters *listed* for utility interaction.

432.11.6 Fire detection. Rooms and areas within *dwellings units* , *sleeping units* and attached garages in which ESS are installed shall be protected by smoke alarms in accordance with Section 907.2.11 A *heat detector listed* and interconnected to the smoke alarms shall be installed in locations within *dwelling units* , *sleeping units* and attached garages where smoke alarms cannot be installed based on their listing.

432.11.7 Protection from impact. Stationary storage battery systems installed in a location subject to vehicle damage shall be protected by

approved barriers. Appliances in garages shall also be installed in accordance with Section 304.3 of the *International Mechanical Code* .

432.11.8 Ventilation. Indoor installations of ESS that include batteries that produce hydrogen or other flammable gases during charging shall be provided with exhaust ventilation in accordance with Section 432.6.1.

432.11.9 Toxic and highly toxic gas. ESS that have the potential to release toxic or highly toxic gas during charging, discharging and normal use conditions shall not be installed within Group R-3 or R-4 occupancies.

432.11.10 Electric vehicle use. The temporary use of an *owner* or occupant's electric-powered vehicle to power a *dwelling unit* or *sleeping unit*

while parked in an attached or detached garage or outside shall comply with the vehicle manufacturer's instruction s and NFPA 70.

1705.19 Commissioning and decommissioning of Energy Storage System. Commissioning and decommissioning of energy storage system shall be subject to *special inspection.* Special inspector shall ensure that the commissioning and decommissioning is conducted in accordance with Section 432 , as applicable.

Reason Statement: An increased number of electrical energy storage systems (ESS) utilizing stationary storage batteries are appearing on the market to help meet the energy needs of society. This proposal does not mandate that ESS or stationary battery storage systems be provided but includes basic safety requirements and minimum safeguards for the installation that should be applied if such systems are provided.

This proposal incorporates the building related provisions from the 2021 edition of the International Fire Code into the Virginia Construction Code. Doing so is intended to reduce confusion and clearly define the building parameters necessary for the evolving technology, distinct from the operational needs.

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

Cost Impact: The code change proposal will not increase or decrease the cost of construction. Some of the requirements in this proposal have the potential to increase the cost of providing ESS installations. However, the provisions in this proposal better address risks and owner/user needs in buildings and outdoor installations. Any increased cost addresses the hazards that were not contemplated in previous code editions due to energy storage technology advancements.

Attached Files

- **Energy Storage Systems with Revisions.docx**
  https://va.cdpaccess.com/proposal/1188/1672/files/download/680/

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: B432(2)-21

This proposal doesn't have any public comments.

Proposal # 1188

B918.1(2)-21

Proponents: DHCD Staff on behalf of the following stakeholders represented at the In-Building Emergency Communications Study Group: The Apartment & Office Building Association/Virginia Apartment Management Association, Backhaul Engineering, Virginia Restaurant, Lodging & Travel Association, Virginia Fire Prevention Association, and the Virginia Fire Chiefs Association

2018 Virginia Construction Code

SECTION 918
IN-BUILDING EMERGENCY COMMUNICATIONS COVERAGE

918.1 General. For localities utilizing public safety wireless communications, dedicated infrastructure to accommodate and perpetuate continuous in-building emergency communication *equipment* to allow *emergency public safety personnel* to send and receive emergency communications shall be provided in new *buildings* and *structures* in accordance with this section.
Exceptions:

1. *Buildings* of Use Groups A-5, I-4, within *dwelling units* of R-2, R-3, R-4, R-5, and U.
2. Buildings of Types IV and V *construction* without basements, that are not considered unlimited area *buildings* in accordance with Section 507.
3. Above grade single story buildings of less than 20,000 square feet (1858 m^2).
4. *Buildings* or leased spaces occupied by federal, state, or local governments, or the contractors thereof, with security requirements where the *building official* has *approved* an alternative method to provide emergency communication equipment for *emergency public safety personne*l.
5. Where the *owner* provides technological documentation from a qualified individual that the *structure* or portion thereof does not impede emergency communication signals.
6. *Buildings* in *localities* that do not provide the additional communication *equipment* required for the operation of the system.

Revise as follows:

918.1.1 Installation. In-building two-way emergency responder communication coverage systems shall comply with Sections 510.4 and 510.5 of the International Fire Code, except that the acceptance testing procedure required by Section 510.5.4 of the *International Fire Code* shall be the responsibility of the *locality*. The *building owner* shall install radiating cable, such as coaxial cable or equivalent. The radiating cable shall be installed in dedicated conduits, raceways, plenums, attics, or roofs, compatible for these specific installations as well as other applicable provisions of this code. The *locality* shall be responsible for the installation of any additional communication *equipment* required for the operation of the system.

918.1.2 Operations. The *locality* will assume all responsibilities for the operation and maintenance of the emergency communication *equipment*. The *building owner* shall provide sufficient operational space within the *building* to allow the *locality* access to and the ability to operate in-building emergency communication *equipment*.

918.1.3 Inspection. In accordance with Section 113.3, all installations shall be inspected prior to concealment.

918.2 Acceptance test. Upon completion of installation, after providing reasonable notice to the *owner* or their representative, *emergency public safety personnel* shall have the right during normal business hours, or other mutually agreed upon time, to enter onto the property to conduct field tests to verify that the required level of radio coverage is present at no cost to the *owner*. Any noted deficiencies in the installation of the radiating cable or operational space shall be provided in an inspection report to the *owner* or the *owner's* representative.

2021 International Building Code

Delete without substitution:

~~**[F] 2702.2.3 Emergency responder communication coverage systems.** Standby power shall be provided for in-building 2-way emergency responder communication coverage systems required in Section 918 and the *International Fire Code*. The standby power supply shall be capable of operating the in-building 2-way emergency responder communicationcoverage system at 100-percent system operation capacity for a duration of not less than 12 hours.~~

Reason Statement: This proposal was developed during the in-building emergency communications (IBEC) study group to provide references to the IFC, which in turn provides technical provisions for IBEC systems that otherwise do not exist in the building code.

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

Resiliency Impact Statement: This proposal will increase Resiliency
This proposal will increase the resiliency of buildings by providing technical references to the IFC that will enhance in-building emergency

communications to allow emergency personnel to better respond to building emergencies.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: B918.1(2)-21

This proposal doesn't have any public comments.

Proposal # 965

B102.3(1)-21

Proponents: Ronald Clements (clementsro@chesterfield.gov)

2018 Virginia Construction Code

Revise as follows:

102.3 Exemptions. The following are exempt from this code:

1. *Equipment* and wiring used for providing utility, communications, information, cable television, broadcast or radio service in accordance with all of the following conditions:

   1.1. The *equipment* and wiring are located on either rights-of-way or property for which the service provider has rights of occupancy and entry.

   1.2. Buildings housing exempt *equipment* and wiring shall be subject to the USBC.

   1.3. The *equipment* and wiring exempted by this section shall not create an unsafe condition prohibited by the USBC.

2. Support *structures* owned or controlled by a provider of publicly regulated utility service or its affiliates for the transmission and distribution of electric service in accordance with all of the following conditions:

   2.1. The support *structures* are located on either rights-of-way or property for which the service provider has rights of occupancy and entry.

   2.2. The support *structures* exempted by this section shall not create an unsafe condition prohibited by the USBC.

3. Direct burial poles used to support *equipment* or wiring providing communications, information or cable television services. The poles exempted by this section shall not create an unsafe condition prohibited by the USBC.

4. Electrical *equipment*, transmission *equipment*, and related wiring used for wireless transmission of radio, broadcast, telecommunications, or information service in accordance with all of the following conditions:

   4.1. Buildings housing exempt *equipment* and wiring and *structures* supporting exempt equipment and wiring shall be subject to the USBC.

   4.2. The equipment and wiring exempted by this section shall not create an unsafe condition prohibited by the USBC.

5. Manufacturing, processing, and product handling machines and equipment that do not produce or process hazardous materials regulated by this code, including those portions of conveyor systems used exclusively for the transport of associated materials or products, and all of the following service equipment:

   5.1. Electrical equipment connected after the last disconnecting means.

   5.2. Plumbing piping and equipment connected after the last shutoff valve or backflow device and before the equipment drain trap.

   5.3. Gas piping and equipment connected after the outlet shutoff valve.

   Manufacturing and processing machines that produce or process hazardous materials regulated by this code are only required to comply with the code provisions regulating the hazardous materials.

6. Parking lots and sidewalks that are not part of an accessible route.

7. Nonmechanized playground or recreational *equipment* such as swing sets, sliding boards, climbing bars, jungle gyms, skateboard ramps, and similar equipment where no admission fee is charged for its use or for admittance to areas where the *equipment* is located. However, play structures installed inside all occupancies covered by this code shall be subject to the play structures section in VCC chapter 4.

8. *Industrialized buildings* subject to the Virginia Industrialized Building Safety Regulations (13VAC5-91) and *manufactured homes* subject to the Virginia Manufactured Home Safety Regulations (13VAC5-95); except as provided for in Section 427 and in the case of demolition of such *industrialized buildings* or *manufactured homes*.

9. Farm *buildings* and *structures*, except for a building or a portion of a building located on a farm that is operated as a restaurant as defined in § 35.1-1 of the Code of Virginia and licensed as such by the Virginia Board of Health pursuant to Chapter 2 (§ 35.1-11 et seq.) of Title 35.1 of the Code of Virginia. However, farm *buildings* and *structures* lying within a flood plain or in a mudslide-prone area shall be subject to flood-proofing regulations or mudslide regulations, as applicable.

10. Federally owned buildings and *structures* unless federal law specifically requires a permit from the *locality*. Underground storage tank installations, modifications and removals shall comply with this code in accordance with federal law.

11. Off-site manufactured intermodal freight containers, moving containers, and storage containers placed on site temporarily or permanently for use as a storage container.

12. Automotive lifts.

Reason Statement: This exemption is based on exempting play structures from the amusement device provisions associated to these structures and was developed prior to VCC section 424. The provisions of VCC chapter 4 regarding children's play structures regulate the fuel loading limitations and fire protection requirements associated with having these structures inside of buildings. Fire protection provisions related to installation of play structures in buildings should remain applicable.

Cost Impact: The code change proposal will increase the cost of construction
This code change will increase cost in cases where equipment that does not meet the materials flammability and combustibility specifications of VCC 424.2 would be installed if exempted from code.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: B102.3(1)-21

This proposal doesn't have any public comments.

Proposal # 1002

B102.3(2)-21

Proponents: Amusement Device Technical Advisory Committee (ADTAC)

2018 Virginia Construction Code

Revise as follows:

102.3 Exemptions. The following are exempt from this code:

1. *Equipment* and wiring used for providing utility, communications, information, cable television, broadcast or radio service in accordance with all of the following conditions:

   1.1. The *equipment* and wiring are located on either rights-of-way or property for which the service provider has rights of occupancy and entry.

   1.2. Buildings housing exempt *equipment* and wiring shall be subject to the USBC.

   1.3. The *equipment* and wiring exempted by this section shall not create an unsafe condition prohibited by the USBC.

2. Support *structures* owned or controlled by a provider of publicly regulated utility service or its affiliates for the transmission and distribution of electric service in accordance with all of the following conditions:

   2.1. The support *structures* are located on either rights-of-way or property for which the service provider has rights of occupancy and entry.

   2.2. The support *structures* exempted by this section shall not create an unsafe condition prohibited by the USBC.

3. Direct burial poles used to support *equipment* or wiring providing communications, information or cable television services. The poles exempted by this section shall not create an unsafe condition prohibited by the USBC.

4. Electrical *equipment*, transmission *equipment*, and related wiring used for wireless transmission of radio, broadcast, telecommunications, or information service in accordance with all of the following conditions:

   4.1. Buildings housing exempt *equipment* and wiring and *structures* supporting exempt equipment and wiring shall be subject to the USBC.

   4.2. The equipment and wiring exempted by this section shall not create an unsafe condition prohibited by the USBC.

5. Manufacturing, processing, and product handling machines and equipment that do not produce or process hazardous materials regulated by this code, including those portions of conveyor systems used exclusively for the transport of associated materials or products, and all of the following service equipment:

   5.1. Electrical equipment connected after the last disconnecting means.

   5.2. Plumbing piping and equipment connected after the last shutoff valve or backflow device and before the equipment drain trap.

   5.3. Gas piping and equipment connected after the outlet shutoff valve.

   Manufacturing and processing machines that produce or process hazardous materials regulated by this code are only required to comply with the code provisions regulating the hazardous materials.

6. Parking lots and sidewalks that are not part of an accessible route.

7. ~~Nonmechanized playground~~ Playground or recreational *equipment* such as swing sets, sliding boards, climbing bars, jungle gyms, skateboard ramps, and similar equipment ~~where no admission fee is charged for its use or for admittance to areas where the *equipment* is located~~.

8. *Industrialized buildings* subject to the Virginia Industrialized Building Safety Regulations (13VAC5-91) and *manufactured homes* subject to the Virginia Manufactured Home Safety Regulations (13VAC5-95); except as provided for in Section 427 and in the case of demolition of such *industrialized buildings* or *manufactured homes*.

9. Farm *buildings* and *structures*, except for a building or a portion of a building located on a farm that is operated as a restaurant as defined in § 35.1-1 of the Code of Virginia and licensed as such by the Virginia Board of Health pursuant to Chapter 2 (§ 35.1-11 et seq.) of Title 35.1 of the Code of Virginia. However, farm *buildings* and *structures* lying within a flood plain or in a mudslide-prone area shall be subject to flood-proofing regulations or mudslide regulations, as applicable.

10. Federally owned buildings and *structures* unless federal law specifically requires a permit from the *locality*. Underground storage tank installations, modifications and removals shall comply with this code in accordance with federal law.

11. Off-site manufactured intermodal freight containers, moving containers, and storage containers placed on site temporarily or permanently for use as a storage container.

12. Automotive lifts.

Reason Statement: This proposal is a recommendation from the Amusement Device Technical Advisory Committee (ADTAC) to clarify that palyground equipment that you typically see in a backyard, at a school, in a public park, etc, are not USBC regulated structures. If it is mechanized equipment, or it is not typical backyard playground equipment, the Virginia Amusement Device Regulations (VADR) may be applicable if the equipment meets the VADR definition of "amusement device". This proposal is a companion to anopther VADR proposal that has been submitted by the ADTAC to clarify that non-mechanized playground equipment is not an amusement device, regardless of whether it is in an area where admission is requiered to enter or not.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposal is for clarification only and is not anticipated to have a cost impact.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
No resiliency impact.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: B102.3(2)-21

This proposal doesn't have any public comments.

Proposal # 1039

B107.1-21

Proponents: DHCD Staff (sbco@dhcd.virginia.gov)

2018 Virginia Construction Code

Revise as follows:

107.1 Authority for charging fees. In accordance with § 36-105 of the Code of Virginia, fees may be levied by the *local governing body* in order to defray the cost of enforcement of the USBC. With the exception of the levy collected pursuant to Section 107.2, fees levied pursuant to this section shall be used only to support the functions of the local building department.

Note: See subsection D of § 36-105 of the Code of Virginia for rules for permit fees involving property with easements or liens.

107.1.1 Fee schedule.

The *local governing body* shall establish a fee schedule incorporating unit rates, which may be based on square footage, cubic footage, estimated cost of *construction* or other appropriate criteria. A permit or any amendments to an existing permit shall not be issued until the designated fees have been paid, except that the *building official* may authorize the delayed payment of fees.

107.1.2 Refunds.

When requested in writing by a *permit holder*, the *locality* shall provide a fee refund in the case of the revocation of a permit or the abandonment or discontinuance of a *building* project. The refund shall not be required to exceed an amount which correlates to work not completed.

107.1.3 Fees for generators used with amusement devices.

Fees for generators and associated wiring used with amusement devices shall only be charged under the VADR.

Reason Statement: The proposal is intended to update the VCC with the current law. For more information please see attached HB1966, passed during the 2019 General Assembly Session, or visit https://lis.virginia.gov/cgi-bin/legp604.exe?191+ful+CHAP0698+hil.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Although this would be difficult to quantify, it could be argued that by ensuring permit fees are not diverted to other departments, but used solely for the purpose of USBC enforcement, other fees associated with building permits (i.e. re-inspection fees) could potentially be reduced. As such, it could be argued that the proposal could actually reduce the cost of construction.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
The proposal is meant to bring the VCC text in line with current law, which clarifies that fees levied by building departments are to be used only to support the functions of the building department. Ensuring that permit fees are not diverted to other departments could potentially result in additional code enforcement staff and/or resources, which in turn could translate in improved code compliance. As such, an argument could be made that this clarification has the potential of increasing overall resiliency. However, given that the intent has always been for the fees levied to be used towards defraying the cost associated with the enforcement of the USBC, it could also be argued that the proposal would have a neutral impact on resiliency.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: B107.1-21

This proposal doesn't have any public comments.

Proposal # 1129

CHAPTER 698

An Act to amend and reenact § 36-105 of the Code of Virginia, relating to the Uniform Statewide Building Code; issuance of building permits.

[H 1966]

Approved March 21, 2019

Be it enacted by the General Assembly of Virginia:

1. That § 36-105 of the Code of Virginia is amended and reenacted as follows:

§ 36-105. Enforcement of Code; appeals from decisions of local department; inspection of buildings; inspection warrants; inspection of elevators; issuance of permits.

A. Enforcement generally. Enforcement of the provisions of the Building Code for construction and rehabilitation shall be the responsibility of the local building department. There shall be established within each local building department a local board of Building Code appeals whose composition, duties and responsibilities shall be prescribed in the Building Code. Any person aggrieved by the local building department's application of the Building Code or refusal to grant a modification to the provisions of the Building Code may appeal to the local board of Building Code appeals. No appeal to the State Building Code Technical Review Board shall lie prior to a final determination by the local board of Building Code appeals. Whenever a county or a municipality does not have such a building department or board of Building Code appeals, the local governing body shall enter into an agreement with the local governing body of another county or municipality or with some other agency, or a state agency approved by the Department for such enforcement and appeals resulting therefrom.

For the purposes of this section, towns with a population of less than 3,500 may elect to administer and enforce the Building Code; however, where the town does not elect to administer and enforce the Building Code, the county in which the town is situated shall administer and enforce the Building Code for the town. In the event that such town is situated in two or more counties, those counties shall administer and enforce the Building Code for that portion of the town situated within their respective boundaries. Additionally, the local governing body of a county or municipality may enter into an agreement with the governing body of another county or municipality for the provision to such county or municipality's local building department of technical assistance with administration and enforcement of the Building Code.

B. New construction. Any building or structure may be inspected at any time before completion, and shall not be deemed in compliance until approved by the inspecting authority. Where the construction cost is less than $2,500, however, the inspection may, in the discretion of the inspecting authority, be waived. A building official may issue an annual permit for any construction regulated by the Building Code. The building official shall coordinate all reports of inspections for compliance with the Building Code, with inspections of fire and health officials delegated such authority, prior to issuance of an occupancy permit. Fees may be levied by the local governing body in order to defray the cost of such enforcement and appeals. *With the exception of the levy imposed pursuant to § 36-137, any fees levied pursuant to this subsection shall be used only to support the functions of the local building department.*

C. Existing buildings and structures.

1. Inspections and enforcement of the Building Code. The local governing body may also inspect and enforce the provisions of the Building Code for existing buildings and structures, whether occupied or not. Such inspection and enforcement shall be carried out by an agency or department designated by the local governing body.

2. Complaints by tenants. However, upon a finding by the local building department, following a complaint by a tenant of a residential dwelling unit that is the subject of such complaint, that there may be a violation of the unsafe structures provisions of the Building Code, the local building department shall enforce such provisions.

3. Inspection warrants. If the local building department receives a complaint that a violation of the Building Code exists that is an immediate and imminent threat to the health or safety of the owner, tenant, or occupants of any building or structure, or the owner, occupant, or tenant of any nearby building or structure, and the owner, occupant, or tenant of the building or structure that is the subject of the complaint has refused to allow the local building official or his agent to have access to the subject building or structure, the local building official or his agent may make an affidavit under oath before a magistrate or a court of competent jurisdiction and request that the magistrate or court grant the local building official or his agent an inspection warrant to enable the building official or his agent to enter the subject building or structure for the purpose of determining whether violations of the Building Code exist. After issuing a warrant under this section, the magistrate or judge shall file the affidavit in the manner prescribed by § 19.2-54. After executing the warrant, the local building official or his agents

shall return the warrant to the clerk of the circuit court of the city or county wherein the inspection was made. The local building official or his agent shall make a reasonable effort to obtain consent from the owner, occupant, or tenant of the subject building or structure prior to seeking the issuance of an inspection warrant under this section.

4. Transfer of ownership. If the local building department has initiated an enforcement action against the owner of a building or structure and such owner subsequently transfers the ownership of the building or structure to an entity in which the owner holds an ownership interest greater than 50 percent, the pending enforcement action shall continue to be enforced against the owner.

5. Elevator, escalator, or related conveyance inspections. The local governing body shall, however, inspect and enforce the Building Code for elevators, escalators, or related conveyances, except for elevators in single- and two-family homes and townhouses. Such inspection shall be carried out by an agency or department designated by the local governing body.

6. A locality may require by ordinance that any landmark, building or structure that contributes to a district delineated pursuant to § 15.2-2306 shall not be razed, demolished or moved until the razing, demolition or moving thereof is approved by the review board, or, on appeal, by the governing body after consultation with the review board unless the local maintenance code official consistent with the Uniform Statewide Building Code, Part III Maintenance, determines that it constitutes such a hazard that it shall be razed, demolished or moved.

For the purpose of this subdivision, a contributing landmark, building or structure is one that adds to or is consistent with the historic or architectural qualities, historic associations, or values for which the district was established pursuant to § 15.2-2306, because it (i) was present during the period of significance, (ii) relates to the documented significance of the district, and (iii) possesses historic integrity or is capable of yielding important information about the period.

7. Fees may be levied by the local governing body in order to defray the cost of such enforcement and appeals. For purposes of this section, "defray the cost" may include the fair and reasonable costs incurred for such enforcement during normal business hours, but shall not include overtime costs unless conducted outside of the normal working hours established by the locality. A schedule of such costs shall be adopted by the local governing body in a local ordinance. A locality shall not charge an overtime rate for inspections conducted during the normal business hours established by the locality. *With the exception of the levy imposed pursuant to § 36-137, any fees levied pursuant to this subdivision shall be used only to support the functions of the local building department.* Nothing herein shall be construed to prohibit a private entity from conducting such inspections, provided the private entity has been approved to perform such inspections in accordance with the written policy of the maintenance code official for the locality.

D. *Issuance of permits.*

1. Fees may be levied by the local governing body to be paid by the applicant for the issuance of a building permit as otherwise provided under this chapter~~,~~*;* however, notwithstanding any provision of law, general or special, if the applicant for a building permit is a tenant or the owner of an easement on the owner's property, such applicant shall not be denied a permit under the Building Code solely upon the basis that the property owner has financial obligations to the locality that constitute a lien on such property in favor of the locality. If such applicant is the property owner, in addition to payment of the fees for issuance of a building permit, the locality may require full payment of any and all financial obligations of the property owner to the locality to satisfy such lien prior to issuance of such permit. For purposes of this ~~subsection~~ *subdivision*, "property owner" means the owner of such property as reflected in the land records of the circuit court clerk where the property is located, the owner's agent, or any entity in which the owner holds an ownership interest greater than 50 percent.

2. In the event that a local building department denies an application for the issuance of a building permit, the local building department shall provide to the applicant a written explanation detailing the reasons for which the application was denied. The applicant may submit a revised application addressing the reasons for which the application was previously denied, and if the applicant does so, the local building department shall be encouraged, but not required, to limit its review of the revised application to only those portions of the application that were previously deemed inadequate and that the applicant has revised.

B108.2-21

Proponents: David Sharp (David.Sharp@fairfaxcounty.gov)

2018 Virginia Construction Code

Revise as follows:

108.2 Exemptions from application for permit. Notwithstanding the requirements of Section 108.1, application for a permit and any related inspections shall not be required for the following; however, this section shall not be construed to exempt such activities from other applicable requirements of this code. In addition, when an *owner* or an *owner's* agent requests that a permit be issued for any of the following, then a permit shall be issued and any related inspections shall be required.

1. Installation of wiring and *equipment* that (i) operates at less than 50 volts, (ii) is for broadband communications systems, (iii) is exempt under Section 102.3(1) or 102.3(4), or (iv) is for monitoring or automation systems in *dwelling units*, except when any such installations are located in a plenum, penetrate firerated or smoke-protected *construction* or are a component of any of the following:

    1.1. Fire alarm system.

    1.2. Fire detection system.

    1.3. Fire suppression system.

    1.4. Smoke control system.

    1.5. Fire protection supervisory system.

    1.6. Elevator fire safety control system.

    1.7. Access or egress control system or delayed egress locking or latching system.

    1.8. *Fire damper.*

    1.9. Door control system.

2. One-story detached *structures* used as tool and storage sheds, playhouses or similar uses, provided the *building area* does not exceed 256 square feet (23.78 m^2) and the *structures* are not classified as a Group F-1 or H occupancy.
3. Detached prefabricated buildings housing the *equipment* of a publicly regulated utility service, provided the floor area does not exceed 150 square feet (14 m^2).
4. Tents or air-supported *structures*, or both, that cover an area of 900 square feet (84 m^2) or less, including within that area all connecting areas or spaces with a common means of egress or entrance, provided such tents or *structures* have an *occupant load* of 50 or less persons.
5. Fences of any height unless required for pedestrian safety as provided for by Section 3306, or used for the barrier for a *swimming pool*.
6. Concrete or masonry walls, provided such walls do not exceed 6 feet (1829 mm) in height above the finished grade. Ornamental column caps shall not be considered to contribute to the height of the wall and shall be permitted to extend above the 6-foot (1829 mm) height measurement.
7. Retaining walls supporting less than 3 feet (914 mm) of unbalanced fill that are not constructed for the purpose of impounding Class I, II or III-A liquids or supporting a surcharge other than ordinary unbalanced fill.
8. *Swimming pools* that have a surface area not greater than 150 square feet (13.95 m^2)~~, do not exceed 5,000 gallons (19 000 L)~~ and are less than 24 inches (610 mm) deep.
9. Signs under the conditions in Section H101.2 of Appendix H.
10. Replacement of above-ground existing LP-gas containers of the same capacity in the same location and associated regulators when installed by the serving gas supplier.
11. Flagpoles 30 feet (9144 mm) or less in height.
12. Temporary ramps serving *dwelling units* in Groups R-3 and R-5 occupancies where the height of the entrance served by the ramp is no more than 30 inches (762 mm) above grade.
13. *Construction* work deemed by the *building official* to be minor and ordinary and which does not adversely affect public health or general safety.

14. Ordinary repairs that include the following:

    14.1. Replacement of windows and doors with windows and doors of similar operation and opening dimensions that do not require changes to the existing framed opening and that are not required to be fire rated in Group R-2 where serving a single *dwelling unit* and in Groups R-3, R-4 and R-5.

    14.2. Replacement of plumbing fixtures and well pumps in all groups without alteration of the water supply and distribution systems, sanitary drainage systems or vent systems.

    14.3. Replacement of general use snap switches, dimmer and control switches, 125 volt-15 or 20 ampere receptacles, luminaires (lighting fixtures) and ceiling (paddle) fans in Group R-2 where serving a single *dwelling unit* and in Groups R-3, R-4 and R-5.

    14.4. Replacement of mechanical appliances provided such *equipment* is not fueled by gas or oil in Group R-2 where serving a single-family dwelling and in Groups R-3, R-4 and R-5.

    14.5. Replacement of an unlimited amount of *roof covering* or siding in Group R-3, R-4 or R-5 provided the *building* or *structure* is not in an area where the nominal design wind speed is greater than 100 miles per hour (44.7 meters per second) and replacement of 100 square feet (9.29 m^2) or less of *roof covering* in all groups and all wind zones.

    14.6. Replacement of 256 square feet (23.78 m^2) or less of roof decking in Group R-3, R-4 or R-5 unless the decking to be replaced was required at the time of original *construction* to be fire-retardant-treated or protected in some other way to form a fire-rated wall termination.

    14.7. Installation or replacement of floor finishes in all occupancies.

    14.8. Replacement of Class C interior wall or ceiling finishes installed in Groups A, E and I and replacement of all classes of interior wall or ceiling finishes in other groups.

    14.9. Installation or replacement of cabinetry or trim.

    14.10. Application of paint or wallpaper.

    14.11. Other repair work deemed by the *building official* to be minor and ordinary which does not adversely affect public health or general safety.

15. Crypts, mausoleums, and columbaria *structures* not exceeding 1,500 square feet (139.35 m^2) in area if the *building* or *structure* is not for occupancy and used solely for the interment of human or animal remains and is not subject to *special inspections*.

16. Billboard safety upgrades to add or replace steel catwalks, steel ladders, or steel safety cable.

Exceptions:

1. Application for a permit may be required by the *building official* for the installation of replacement siding, roofing and windows in buildings within a historic district designated by a *locality* pursuant to § 15.2-2306 of the Code of Virginia.
2. Application for a permit may be required by the *building official* for any items exempted in this section that are located in a special *flood hazard area*.

Reason Statement: There is no combination of square footage less than 150 square feet and less than 24" that can result in a capacity greater than 5000 gallons. Thus the condition for the capacity to be less than 5000 gallons is already met when each of the other conditions for permit exemption is met.
300 cubic feet - a 150 sq ft pool at 24 inches deep - would hold 2, 244 gallons. So if the pool is less than the required dimension, it will already be below the capacity limit, making that condition unnecessary and confusing.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
There is no cost associated with this change.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: B108.2-21

This proposal doesn't have any public comments.

Proposal # 1182

B108.3-21

Proponents: Allison Cook (acook1@arlingtonva.us)

2018 Virginia Construction Code

Revise as follows:

108.3 Applicant information, processing by mail. Application for a permit shall be made by the *owner* or lessee of the relevant property or the agent of either or by the RDP, contractor or subcontractor associated with the work or any of their agents. The full name and address of the *owner*, lessee and applicant shall be provided in the application. If the *owner* or lessee is a corporate body, when and to the extent determined necessary by the *building official*, the full name and address of the *responsible* officers shall also be provided.
A permit application may be submitted by mail and such permit applications shall be processed by mail, unless the jurisdiction offers an online permit option for permit application and processing or the applicant voluntarily chooses otherwise. In no case shall an applicant be required to appear in person.

The *building official* may accept applications for a permit through electronic submissions provided the information required by this section is obtained.

Reason Statement: With COVID, many jurisdictions offered online submission options and were not opened to the public for the applicant to come in person to submit an application and process a permit. Jurisdictions should not be required to accept applications by mail if an online option is available. If customers are mailing an application, then they already have the ability to go online to download the application to mail it in. This does not prevent in-person services, it only allows for greater flexibility for jurisdictions that have moved towards online systems since COVID.

Cost Impact: The code change proposal will decrease the cost of construction
Allowing for an online option instead of a mail-in (paper) option reduces the cost to local jurisdictions that want to move to all digital permitting services. It also reduces costs for architects and builders to submit digitally, rather than via mail/paper. Ultimately, reducing the cost of construction.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: B108.3-21

This proposal doesn't have any public comments.

B110.9-21

Proponents: Ronald Clements (clementsro@chesterfield.gov)

2018 Virginia Construction Code

Revise as follows:

107.1 Authority for charging fees. In accordance with § 36-105 of the Code of Virginia, fees may be levied by the *local governing body* in order to defray the cost of enforcement of the USBC.

Note: See subsection D of § 36-105 of the Code of Virginia for rules for permit fees involving property with easements or liens.

107.1.1 Fee schedule.

The *local governing body* shall establish a fee schedule incorporating unit rates, which may be based on square footage, cubic footage, estimated cost of *construction* or other appropriate criteria. A permit or any amendments to an existing permit shall not be issued until the designated fees have been paid, except that the *building official* may authorize the delayed payment of fees.

107.1.2 Refunds.

When requested in writing by a *permit holder*, the *locality* shall provide a fee refund in the case of the revocation of a permit or the abandonment or ~~discontinuance~~ cancellation of a *building* project. The refund shall not be required to exceed an amount which correlates to work not completed.

107.1.3 Fees for generators used with amusement devices.

Fees for generators and associated wiring used with amusement devices shall only be charged under the VADR.

Add new text as follows:

110.9 Cancellation of permit. The building official shall cancel a permit at the request of the *permit holder* or the *owner* . An incomplete building or structure shall not be left as an *unsafe building or structure.*

Reason Statement: There is no provision in section 110 addressing proactive cancellation or discontinuance of building projects and permits by the permit holder or the owner. Abandonment of work and revocation provisions are provided, but neither of those code provisions address a simple request to cancel a permit. Section 107.1.2 lists "discontinuance" of a building project as separate and distinct from abandonment or revocation, but the concept is not addressed in Section 110. Either the permit holder or the owner should have authority to cancel a permit.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This code change will not impact cost of construction.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: B110.9-21

This proposal doesn't have any public comments.

Proposal # 1001

B118-21

VCC: SECTION 202, SECTION 118, 118.1, 118.2, 118.3, 118.4, 118.7, 118.8

Proponents: Ronald Clements (clementsro@chesterfield.gov)

2018 Virginia Construction Code

Delete without substitution:

~~UNSAFE BUILDING OR STRUCTURE.~~ ~~Any *building* or *structure* that is under *construction* and has not received a permanent certificate of occupancy, final inspection, or for which a permit was never issued or has expired and has been determined by the *building official* to be of faulty *construction* that is so damaged, decayed, dilapidated, structurally unsafe, or of such faulty *construction* or unstable foundation that partial or complete collapse is likely, or any unfinished *construction* that does not have a valid permit, or the permit has been revoked, and the condition of the unfinished *construction* presents an immediate serious and imminent threat to the life and safety of the occupants or the public.~~

Revise as follows:

SECTION 118
~~UNSAFE~~ BUILDINGS OR STRUCTURES THAT BECOME A THREAT TO PUBLIC SAFETY DURING CONSTRUCTION

118.1 ~~Applicability~~ General. ~~This section applies to unsafe *buildings* or *structures.*~~
Any building or structure that is under construction and has not received a permanent certificate of occupancy, or final inspection if a CO will not be issued, that has been determined by the building official to be an immediate threat to public safety due to faulty construction, deterioration, damage, or structural instability, shall be made safe through compliance with this code or shall be demolished and removed if determined necessary by the building official.

> **~~Note:~~** ~~Existing buildings and *structures* other than those under *construction* or subject to this section are subject to the VMC, which also has requirements for unsafe conditions.~~

Delete without substitution:

~~118.2 Repair or removal of unsafe buildings or structures.~~ ~~Any *unsafe building* or *structure* shall be made safe through compliance with this code or shall be taken down and removed if determined necessary by the *building official.*~~

Revise as follows:

~~118.3~~ 118.2 ~~Inspection report~~ Correction notice. ~~The building~~ The building official shall ~~inspect any reported *unsafe building* or *structure* and shall prepare a report to be filed in the records of the *local building department.* In addition to a description of any unsafe conditions found, the report shall include the occupancy classification of the *building* or *structure* and the nature and extent of any damages caused by collapse or failure of any *building* components.~~ issue a correction notice that describes the condition of the structure that is the basis for the determination that a violation of section 118 exists. The correction notice shall state what is required to correct the violation and provide a reasonable time to make the corrections; or, if the structure is required to be demolished, the notice shall specify the time period with which the demolition must occur.

~~118.4~~ 118.3 Notice of ~~unsafe building or structure~~ violation. When ~~a *building* or *structure* is determined by the *building official* to be an *unsafe building* or *structure*, a written notice of *unsafe building* or *structure* shall be issued by personal service to the *owner*, the *owner's* agent, or the person in control of such *building* or *structure.* The notice shall specify the corrections necessary to comply with this code and specify the time period within which the repairs must occur, or if the notice specifies that the *unsafe building* or *structure* is required to be demolished, the notice shall specify the time period within which demolition must occur.~~ the violation has not been corrected in accordance with the correction notice issued per Section 118.2, the building official is authorized to issue a notice of violation in accordance with section 115 of this code.

> **~~Note:~~** ~~Whenever possible, the notice should also be given to any tenants or occupants of the *unsafe building* or *structure.*~~

~~118.7~~ 118.4 Emergency repairs and demolition. To the extent permitted by the *locality*, the *building official* may authorize emergency repairs ~~to *unsafe buildings* or *structures* when~~ or securing the site when it is determined that there is an ~~immediate danger of any portion of the *unsafe building* or *structure* collapsing or falling and when life is endangered. Emergency repairs may also be authorized when there is a code violation resulting in a serious and~~ imminent threat to the life and safety of the ~~occupants or~~ public. The *building official* shall be permitted to authorize the necessary work to make the ~~*unsafe building* or *structure*~~ temporarily safe whether or not legal action to compel compliance has been instituted. In addition, ~~whenever an *owner* of an *unsafe building* or *structure* fails to comply with a notice to demolish issued under Section 118.4 in the~~ if the notice of violation included an order to demolish the structure and the demolition has not occurred in the time period stipulated, the *building official* shall be permitted to cause the ~~*unsafe building or structure*~~ to be demolished. In accordance with §§ 15.2-906 and 15.2-1115 of the Code of Virginia, the legal counsel of the *locality* may be requested to institute appropriate action against the property *owner* to recover the costs associated with any such emergency repairs or demolition and every such charge that remains unpaid shall constitute a lien against the property on which the emergency repairs or demolition were made and shall be enforceable in the same manner as provided in Articles 3 (§ 58.1-3940 et seq.) and 4 (§ 58.1-3965 et seq.) of

Chapter 39 of Title 58.1 of the Code of Virginia.

Note: *Building officials* and local governing bodies should be aware that other statutes and court decisions may impact on matters relating to demolition, in particular whether newspaper publication is required if the *owner* cannot be located and whether the demolition order must be delayed until the *owner* has been given the opportunity for a hearing.

~~**118.8**~~ **118.5 Closing of streets.** When necessary for public safety, the *building official* shall be permitted to order the temporary closing of sidewalks, streets, *public ways*, or premises adjacent to ~~*unsafe buildings* or *structures* and prohibit the use of such spaces.~~ a structure that has become a threat to public safety during construction.

Reason Statement: This section creates a second, VCC, version of "unsafe building or structure", which causes confusion with regards to unsafe building or structure in the VMC. This code change is an attempt to get rid of the third flavor of unsafe structures that is redundant and confusing so the VCC definition is proposed to be deleted since it is not necessary with the proposed format. Section 118.1 establishes that a structure, which becomes a threat to public safety during construction, is a violation of the VCC. Proposed 118.1 sets the condition as a violation and does away with the need for another unsafe structure definition. Section 118.2 addresses issuance of a correction notice for the violation. Section 118.3 addresses issuing an NOV if the correction notice is not complied with and uses existing VCC Section 115 for that purpose. Section 118.4, 118.5 and 118.6 provide a group of provisions for vacating a VCC unsafe structure, though these structures have not received a certificate of occupancy. Any building that is occupied without a CO is in violation of VCC 116.1 and such unlawful occupancy can be addressed through issuing and NOV for the 116.1 violation; therefore, these sections are proposed to be deleted. Renumbered sections 118.4 and 118.5 have been edited to be consistent with the change in termonology.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
This is editorial.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This is editorial.

B202-21

Proponents: Resiliency Sub-Workgroup

2021 International Building Code

Revise as follows:

[BS] BASE FLOOD ELEVATION. The elevation of the *base flood*, including wave height, relative to the National Geodetic Vertical Datum (NGVD), North American Vertical Datum (NAVD) or other datum specified on the *Flood Insurance Rate Map* (FIRM)~~.~~ , and as shown in the *Flood Insurance Study*.

[BS] COASTAL HIGH-HAZARD AREA. Area within the *special flood hazard area* extending from offshore to the inland limit of a ~~primary dune~~ Coastal Primary Sand Dune, as defined by state code (Code of Virginia Title 28.2), along an open coast and any other area that is subject to high-velocity wave action from storms or seismic sources~~,~~ and shown in either the *Flood Insurance Study*, or on ~~a~~ the *Flood Insurance Rate Map* (FIRM) or other flood hazard map as velocity Zone V, VO, VE or V1-30 (areas subject to wave heights of 3 feet (914.4 mm) or more).

[BS] FLOOD HAZARD AREA. The greater of the following two areas:

1. The area within a flood plain subject to a 1-percent or greater chance of *flooding* in any year (also known as the 100-year floodplain).
2. The area designated as a flood hazard area on a community's flood hazard map, or otherwise legally designated~~.~~ , including areas in either the Flood Insurance Study or on the Flood Insurance Rate Map (FIRM) and including areas added to account for future flooding conditions based on the locally adopted sea level rise projected to occur by 2070.

[BS] FLOOD or FLOODING. ~~A general and temporary condition of partial or complete inundation of normally dry land from:~~

1. ~~The overflow of inland or tidal waves~~ A general and temporary condition of partial or complete inundation of normally dry land from either of the following:
   1.1 The overflow of inland or tidal waves
   1.2 The unusual and rapid accumulation or runoff of surface waters from any source.
2. ~~The unusual and rapid accumulation or runoff of surface waters from any source.~~ The collapse or subsidence of land along the shore of a lake or other body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature such as flash flood or an abnormal tidal surge, or by some similarly unusual and unforeseeable event which results in flooding as defined in subsection (1.1) of this definition.
3. Mudflows which are proximately caused by flooding as defined in subsection (1.2) of this definition and are akin to a river of liquid and flowing mud on the surface of normally dry land areas, as when earth is carried by a current of water and disposed along the path of the current.

[BS] SPECIAL FLOOD HAZARD AREA. The land area subject to flood hazards and shown on a *Flood Insurance Rate Map* or ~~other flood hazard map~~ the *Flood Insurance Study* as Zone A, AE, A1-30, A99, AR, AO, AH, V, VO, VE or V1-30.

Reason Statement: These code change proposals are being made on behalf of the Resiliency Sub-workgroup. The proposed changes to the definitions are being made to better correlate with the National Flood Insurance Program.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposal will neither increase nor decrease the cost of construction.

Resiliency Impact Statement: This proposal will increase Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: B202-21

This proposal doesn't have any public comments.

Proposal # 1155

B310.6-21

Proponents: Ronald Clements (clementsro@chesterfield.gov)

2018 Virginia Construction Code

Revise as follows:

103.4 Use of certain provisions of referenced codes. The following provisions of the IBC and of other indicated codes or standards are to be considered valid provisions of this code. Where any such provisions have been modified by the state amendments to the IBC, then the modified provisions apply.

1. *Special inspection* requirements in Chapters 2–35.
2. Testing requirements and requirements for the submittal of *construction documents* in any of the ICC codes referenced in Chapter 35 and in the IRC.
3. Section R301.2 of the IRC authorizing localities to determine climatic and geographic design criteria.
4. Flood load or flood-resistant *construction* requirements in the IBC or the IRC, including any such provisions pertaining to flood elevation certificates that are located in Chapter 1 of those codes. Any required flood elevation certificate pursuant to such provisions shall be prepared by a land surveyor licensed in Virginia or a registered design professional (RDP).
5. ~~Section R101.2 of the IRC.~~
6. Section N1102.1 of the IRC and Sections C402.1.1 and R402.1 of the IECC.

310.6 Residential Group R-5. Residential group R-5 occupancies shall include residential occupancies within the scope of ~~the VRC, other occupancies specifically permitted in this code to be classified as Group R-5,~~ Section 310.6.1, and *manufactured homes* in accordance with the Virginia Manufactured Home Safety Regulations (23VAC5-91).
~~The provisions of the IRC for one- and two-family dwellings shall apply to the *construction*, *alteration*, movement, enlargement, replacement, repair, *equipment*, use and occupancy, location, removal and demolition of the following when classified as Group R-5:~~

310.6.1 Virginia Residential Code. The provisions of the IRC for detached one- and two-family dwellings and townhouses as amended by VCC section 310.8, also referred to as the Virginia Residential Code (VRC) printed by the ICC, shall apply to construction, rehabilitation, and demolition of the types of buildings and structures listed below, and the equipment therein, provided the building or structure is not more than three stories above grade plane in height with a separate means of egress:

1. Detached single-family and two-family dwellings
2. Townhouses
3. Care facilities for five or fewer people
4. Owner- or proprietor-occupied lodging houses with no more than five guest rooms and 10 or fewer total occupants.
5. Accessory structures of Group R-5 occupancies.
6. Other occupancies specifically permitted in this code to be classified as Group R-5 .

~~The amendments to the IRC set out in Section 310.8 shall be made to the IRC for its use as part of this code. In addition, all~~ All references to the IRC ~~and~~ in the *International Building Code* (IBC) shall be considered to be references to this section.

~~**310.6.1**~~ **310.6.1.1 Additional requirements.** Methods of *construction*, materials, systems, *equipment* or components for Group R-5 structures not addressed by prescriptive or performance provisions of the ~~IRC~~ VRC shall comply with applicable ~~IBC~~ VCC requirements.

Reason Statement: The scope of the VRC (the IRC provisions adopted in Virginia) is not provided in VCC Section 310 where it belongs. The IRC scope is critical because it is based on a 3-story limit with a separate means of egress. The only reference to the scope of the IRC is in VCC Section 103.4 #5. This is an awkward code reference with Section 103.4 #5 referencing IRC R101.2 for scoping the IRC. To get to the IRC the code user starts in VCC Section 310, which begins with a reference to the VRC, then later in the section refers to provisions of the IRC. Furthermore, the scope in IRC R101.2 is not exactly consistent with the scope provided in 310.6 for use of the VRC/IRC in the USBC framework. Since VCC 310.6 is essentially the scoping section for use of the IRC based VRC in the USBC, it is simpler and clear to provide the full scope of the VRC in VCC Section 310, rather than rely on a somewhat disjointed assembly of VCC 103.4, ICC R101.2, and VCC 310.
The code changes proposed are all to consolidate IRC/VRC scoping in VCC 310. There is no intended change in scope nor are there any technical changes proposed. The scope provided in IRC section R101.2, the 3-story limit with a separate means of egress, is proposed to be moved to VCC Section 310.6.1. The section has been reformatted to remove the three separate disjointed paragraphs that made up 310.6.

This code change is **supported by the Virginia Building and Code Officials Association (VBCOA)** after review by the VBCOA Residential Code Committee.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This is a formatting/editorial code change that does not technically change the code; therefore, there is no impact on cost.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
This is a formatting/editorial code change that does not technically change the code; therefore, there is no impact on resiliency.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: B310.6-21

This proposal doesn't have any public comments.

Proposal # 954

B313.3-21

Proponents: DHCD Staff (sbco@dhcd.virginia.gov)

2018 Virginia Construction Code

Revise as follows:

313.3 Family day homes. Family day homes registered or licensed by the ~~Virginia Department of Social Services~~ Virginia Department of Education shall be classified as Group R-2, R-3 or R-5.

Reason Statement: Effective July 1, 2021, pursuant to SB578 and HB1012, the oversight for Family Day Homes has been transferred from the Department of Social Services to the Department of Education. The proposal intends to update the code provisions with the appropriate licensing authority for these facilities.

SB578: https://lis.virginia.gov/cgi-bin/legp604.exe?ses=201&typ=bil&val=sb578&ses=201&typ=bil&val=sb578

HB1012: https://lis.virginia.gov/cgi-bin/legp604.exe?ses=201&typ=bil&val=Hb1012&ses=201&typ=bil&val=Hb1012

For more information, please see the attached document "A Joint Communication of Virginia Departments of Social Services and Education".
This is a companion proposal to FP107.12-21.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This is an editorial change with no impact on cost.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
This is an editorial change with no effect on resiliency.

Attached Files

- **A Joint Communication of Virginia Departments of Social Services and Education.pdf**
  https://va.cdpaccess.com/proposal/1057/1359/files/download/573/

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: B313.3-21

This proposal doesn't have any public comments.

From: **Williams, Edwina** <edwina.williams@dss.virginia.gov>
Date: Fri, Jun 11, 2021 at 1:21 PM
Subject: Transition of Child Care Programs from DSS to DOE on July 1, 2021
To: <DSS_LICENSING@listserv.cov.virginia.gov>

The attached file is being sent to child day centers, short-term child care centers, certified preschools, voluntarily registered family day homes, family day homes, family day systems, religiously exempt child day centers, unlicensed child day programs receiving child care subsidy assistance and providers that filed an exemption from the Virginia Department of Social Services Email Distribution Service.

Please do not reply to this email.

We are resending this memo as some of the links did not work previously.

SCROLL DOWN TO VIEW ATTACHMENT

DATE: June 11, 2021

TO: All child care providers

FROM: Tara Ragland, Director, Division of Licensing Programs, Department of Social Services
Jeff Williams, Director of Child Care Licensing, Department of Education

RE: Transition of Child Care Programs from the Department of Social Services to the Department of Education on July 1, 2021

This memo is intended to remind child care providers of the upcoming transition of child care programs from the Virginia Department of Social Services (VDSS) to the Department of Education (VDOE), effective July 1, 2021 and respond to frequently asked questions about the transition. This is a follow-up to a previous joint memo issued by VDSS and VDOE on May 8, 2021 about the transition for licensed child day centers and all other providers.

Other questions regarding the transition may be directed to earlychildhood@doe.virginia.gov. More information about VDOE's efforts to build a unified early childhood system is available here.

Additionally, VDOE and VDSS are hosting a joint virtual information session regarding the transition on Monday, June 14 from 1:00--2:15 pm. **Registration is required**. Participation is limited to the first 500 attendees; however the session will be recorded and shared via the licensing listserv.

FREQUENTLY ASKED QUESTIONS

Why is oversight of child care licensing and the Child Care Subsidy Program moving to the VDOE?
In 2020, the Virginia General Assembly passed legislation directing the Board of Education to establish a unified public-private system for early care and education, administered by the VDOE. This legislation establishes the VDOE as the single point of accountability for school readiness in the Commonwealth.

Will I have to meet new standards to keep my license, certificate, or registration as of July 1, 2021?
No. All the rules, regulations, and processes associated with licensing and monitoring are transferring to the VDOE exactly as they are.

Will I get to keep my licensing inspector?
Child care licensing staff will become VDOE employees on July 1, 2021 and will continue to operate on a regional model. You'll remain in your current licensing region, however your inspector may change.

I am getting ready to submit my renewal application. Where do I send it? Is there a new form I should use?
If you are in the Valley region, you will send their licensing paperwork to a NEW address after June 25, 2021. If you are in the Central, Eastern, Fairfax, Northern, Peninsula, Piedmont, or Western regions, send your paperwork to the same address you normally do, but address it to the Office of Child Care Licensing, Virginia Department of Education. Updated mailing addresses for VDOE child care licensing regions are available in Attachment A (page 3).

VDOE will be posting new application forms at www.childcareva.com before July 1. However, VDOE will continue to accept VDSS application forms until August 1, 2021.

What does the transition mean for the Child Care Subsidy Program?
VDOE will become "Lead Agency" for the federal Child Care and Development Block Grant (CCDBG), the primary source of funding for the Child Care Subsidy Program (CCSP) and quality improvement initiatives. The Board of Education will set policy for CCSP; the VDOE will oversee CCSP; and the VDSS will continue to administer the CCSP via its network of 120 local departments of social services.

This means families may still go to their local social services department or CommonHelp to apply for assistance and providers may still apply to become a subsidy vendor through VDSS.

All CCSP regulations are transferring to VDOE as-is. However, the VDOE and VDSS will continue to work together to respond to the COVID-19 pandemic and offer program flexibility as needed and allowable under state and federal law.

HAVE QUESTIONS THAT WEREN'T ANSWERED HERE? Register for the virtual information session on Monday, June 14 at 1 PM.

Attachment A: Mailing addresses for child care licensing paperwork after June 25, 2021

Region	Counties and cities included	Mailing address after June 25, 2021
Home office		Office of Child Care Licensing Virginia Department of Education PO Box 2120 Richmond, VA 23218
Central	**Counties**: Amelia, Brunswick, Caroline, Chesterfield, Cumberland, Dinwiddie, Essex, Goochland, Hanover, Henrico, King & Queen, King George, King William, Lancaster, Lunenburg, Mecklenburg, Northumberland, Nottoway, Powhatan, Richmond, Westmoreland **Cities**: Blackstone, Colonial Heights, Farmville, Hopewell, Lawrenceville, Petersburg, Richmond, West Point	Office of Child Care Licensing (Central) Virginia Department of Education 1604 Santa Rosa Rd., Suite 130 Richmond, VA 23229
Eastern	**Counties**: Accomack, Northampton, Greensville, **Cities**: Chesapeake, Emporia, Norfolk, Portsmouth, Virginia Beach	Office of Child Care Licensing (Eastern) Virginia Department of Education 420 N. Center Drive, Suite 100 The Shenandoah Building, #11 Norfolk, VA 23502
Fairfax	**Counties**: Arlington, Loudoun, Fairfax **Cities**: Alexandria, Annandale, Fairfax, Falls Church, Leesburg, Herndon, Vienna	Office of Child Care Licensing (Fairfax) Virginia Department of Education 3701 Pender Drive, Suite 450 Fairfax, VA 22030
Northern	Counties: Fauquier, Prince William, Rappahannock, Spotsylvania, Stafford. **Cities**: Fredericksburg, Manassas, Manassas Park, Woodbridge, Dale City	Office of Child Care Licensing (Northern) Virginia Department of Education 410 Rosedale Court, Suite 270 A Warrenton, VA 20186
Peninsula	**Counties**: Charles City, Gloucester, James City, Mathews, Isle of Wight, Middlesex, New Kent, Prince George, Southampton, Surry, Sussex, York **Cities**: Hampton, Newport News, Poquoson, Williamsburg, Suffolk, Franklin	Office of Child Care Licensing (Peninsula) Virginia Department of Education 11751 Rock Landing Drive, Suite H6 Newport News, VA 23606

Region	Counties and cities included	Mailing address after June 25, 2021
Piedmont	**Counties:** Botetourt, Buckingham, Campbell, Charlotte, Craig, Franklin, Halifax, Henry, Nelson, Patrick, Pittsylvania, Prince Edward, Roanoke, Rockbridge, South Boston **Cities**: Bedford, Buena Vista, Clifton Forge, Covington, Danville, Farmville, Lexington, Lynchburg, Martinsville, Roanoke, Salem	Office of Child Care Licensing (Piedmont) Virginia Department of Education 210 First Street SW, Suite 200 Roanoke, VA 24011
Valley	**Counties**: Albemarle, Augusta, Clarke, Fluvanna Frederick, Greene, Highland, Louisa, Madison, Orange, Page, Rockingham, Shenandoah, Warren **Cities**: Charlottesville, Culpeper, Harrisonburg, Staunton, Waynesboro, Winchester	Office of Child Care Licensing Virginia Department of Education PO Box 2120 Richmond, VA 23218
Western	**Counties**: Bland, Buchanan, Carroll, Dickenson, Floyd, Giles, Grayson, Lee, Montgomery, Pulaski, Russell, Scott, Smyth, Tazewell, Washington, Wise, Wythe **Cities**: Blacksburg, Christiansburg, Bristol, Galax, Norton, Radford	Office of Child Care Licensing (Western) Virginia Department of Education 190 Patton Street, Suite 100 Abingdon, VA 24210

FECHA: junio 11, 2021

PARA: Todos los proveedores de cuidado infantil

DE: Tara Ragland, directora, División de Programas de Otorgamiento de Licencias, Departamento de Servicios Sociales
Jeff Williams, director de Otorgamiento de Licencias para el Cuidado Infantil, Departamento de Educación

ASUNTO: Transición de los Programas para el Cuidado Infantil del Departamento de Servicios Sociales al Departamento de Educación el 1 de julio de 2021

Este memorando tiene el objetivo de recordar a los proveedores de cuidado infantil sobre la próxima transición de los programas para el cuidado infantil del Departamento de Servicios Sociales de Virginia (VDSS) al Departamento de Educación de Virginia (VDOE), con vigencia a partir del 1 de julio de 2021, y de responder las preguntas frecuentes sobre dicha transición. Esta es la continuación de un memorando conjunto expedido por el VDSS y VDOE el 8 de mayo de 2021 sobre la transición para los centros de día infantiles con licencia y el resto de los proveedores.

Otras preguntas sobre la transición pueden dirigirse a earlychildhood@doe.virginia.gov. Encontrará más información sobre los esfuerzos del VDOE para crear un sistema unificado de infancia temprana disponible aquí.

Además, el VDOE y VDSS presentarán una sesión informativa virtual en conjunto sobre la transición el lunes 14 de junio, de 1:00 a 2:15 p. m. **Se requiere inscripción**. La participación se limita a los primeros 500 asistentes; sin embargo, la sesión quedará grabada y se compartirá a través del servidor automático de listas de correo del programa de otorgamiento de licencias.

PREGUNTAS FRECUENTES

¿Por qué se traslada la supervisión del otorgamiento de licencias para el cuidado infantil y el Programa de Subsidios para el Cuidado Infantil al VDOE?
En 2020, la Asamblea General de Virginia aprobó la legislación que ordena que la Junta de Educación establezca un sistema unificado público-privado para la atención y educación tempranas, administrado por el VDOE. La legislación habilita al VDOE como el único punto de responsabilidad para la preparación escolar en la Mancomunidad.

¿Tendré que cumplir con normas nuevas para conservar mi licencia, certificado o registro a partir del 1 de julio de 2021?

No. Todas las reglas, las regulaciones y los procesos relacionados con el otorgamiento de las licencias y el monitoreo se transfieren al VDOE tal como están.

¿Podré conservar a mi inspector de licencias?
Los miembros del personal del programa de otorgamiento de licencias para el cuidado infantil pasarán a ser empleados del VDOE a partir del 1 de julio de 2021 y seguirán funcionando conforme a un modelo regional. Si bien usted seguirá en su región de otorgamiento de licencias actual, es posible que cambie su inspector.

Estoy preparándome para enviar mi solicitud de renovación. ¿Adónde la envío? ¿Debo utilizar un formulario nuevo?
Si se encuentra en la región del valle, deberá enviar la documentación de su licencia a una dirección NUEVA después del 25 de junio de 2021. Si se encuentra en las regiones del centro, este, Fairfax, norte, península, Piedmont u oeste, envíe su documentación a la dirección habitual, pero deberá estar dirigida a la Oficina de Otorgamiento de Licencias para el Cuidado Infantil, Departamento de Educación de Virginia. Encontrará las direcciones de correo actualizadas de las regiones de otorgamiento de licencias para el cuidado infantil del VDOE en el Anexo A (página 3).

El VDOE publicará los formularios de solicitud nuevos en www.childcareva.com antes del 1 de julio. Sin embargo, el VDOE seguirá admitiendo los formularios de solicitud del VDSS hasta el 1 de agosto de 2021.

¿Qué significa la transición para el Programa de Subsidios para el Cuidado Infantil?
El VDOE pasará a ser el "Organismo principal" de los Subsidios en Bloque para Desarrollo y Cuidado Infantil (CCDBG), la fuente principal de financiamiento del Programa de Subsidios para el Cuidado Infantil (CCSP) y las iniciativas de mejora de la calidad. La Junta de Educación establecerá la política para el CCSP, el VDOE supervisará el CCSP y el VDSS seguirá administrando el CCSP a través de su red de 120 departamentos locales de servicios sociales.

De esta manera, las familias pueden seguir dirigiéndose al departamento de servicios sociales o a CommonHelp para solicitar ayuda, y los proveedores pueden seguir presentando sus solicitudes para convertirse en proveedores de subsidios mediante el VDSS.

Todas las regulaciones del CCSP se transfieren al VDOE tal como están. Sin embargo, el VDOE y VDSS seguirán trabajando juntos para dar respuesta a la pandemia por COVID-19 y ofrecer flexibilidad en los programas según sea necesario y permisible en virtud de la ley estatal y federal.

¿TIENE PREGUNTAS QUE NO SE CONTESTARON AQUÍ? Regístrese para la sesión informativa virtual el lunes 14 de junio a la 1 p. m.

Anexo A: Direcciones de correo para el envío de la documentación sobre el otorgamiento de las licencias para el cuidado infantil después del 25 de junio de 2021

Región	**Condados y ciudades incluidos**	**Dirección de correo para el envío después del 25 de junio de 2021**
Sede central		Office of Child Care Licensing Virginia Department of Education PO Box 2120 Richmond, VA 23218
Región del centro	**Condados**: Amelia, Brunswick, Caroline, Chesterfield, Cumberland, Dinwiddie, Essex, Goochland, Hanover, Henrico, King & Queen, King George, King William, Lancaster, Lunenburg, Mecklenburg, Northumberland, Nottoway, Powhatan, Richmond, Westmoreland **Ciudades**: Blackstone, Colonial Heights, Farmville, Hopewell, Lawrenceville, Petersburg, Richmond, West Point	Office of Child Care Licensing (Central) Virginia Department of Education 1604 Santa Rosa Rd., Suite 130 Richmond, VA 23229
Región del este	**Condados**: Accomack, Northampton, Greensville, **Ciudades**: Chesapeake, Emporia, Norfolk, Portsmouth, Virginia Beach	Office of Child Care Licensing (Eastern) Virginia Department of Education 420 N. Center Drive, Suite 100 The Shenandoah Building, #11 Norfolk, VA 23502
Fairfax	**Condados**: Arlington, Loudoun, Fairfax **Ciudades**: Alexandria, Annandale, Fairfax, Falls Church, Leesburg, Herndon, Vienna	Office of Child Care Licensing (Fairfax) Virginia Department of Education 3701 Pender Drive, Suite 450 Fairfax, VA 22030
Región del norte	Condados: Fauquier, Prince William, Rappahannock, Spotsylvania, Stafford. **Ciudades**: Fredericksburg, Manassas, Manassas Park, Woodbridge, Dale City	Office of Child Care Licensing (Northern) Virginia Department of Education 410 Rosedale Court, Suite 270 A Warrenton, VA 20186
Península	**Condados**: Charles City, Gloucester, James City, Mathews, Isle of Wight, Middlesex, New Kent, Prince George, Southampton, Surry, Sussex, York	Office of Child Care Licensing (Peninsula) Virginia Department of Education

Región	Condados y ciudades incluidos	Dirección de correo para el envío después del 25 de junio de 2021
	Ciudades: Hampton, Newport News, Poquoson, Williamsburg, Suffolk, Franklin	11751 Rock Landing Drive, Suite H6 Newport News, VA 23606
Piedmont	**Condados:** Botetourt, Buckingham, Campbell, Charlotte, Craig, Franklin, Halifax, Henry, Nelson, Patrick, Pittsylvania, Prince Edward, Roanoke, Rockbridge, South Boston **Ciudades**: Bedford, Buena Vista, Clifton Forge, Covington, Danville, Farmville, Lexington, Lynchburg, Martinsville, Roanoke, Salem	Office of Child Care Licensing (Piedmont) Virginia Department of Education 210 First Street SW, Suite 200 Roanoke, VA 24011
Región del valle	**Condados**: Albemarle, Augusta, Clarke, Fluvanna Frederick, Greene, Highland, Louisa, Madison, Orange, Page, Rockingham, Shenandoah, Warren **Ciudades**: Charlottesville, Culpeper, Harrisonburg, Staunton, Waynesboro, Winchester	Office of Child Care Licensing Virginia Department of Education PO Box 2120 Richmond, VA 23218
Región del oeste	**Condados**: Bland, Buchanan, Carroll, Dickenson, Floyd, Giles, Grayson, Lee, Montgomery, Pulaski, Russell, Scott, Smyth, Tazewell, Washington, Wise, Wythe **Ciudades**: Blacksburg, Christiansburg, Bristol, Galax, Norton, Radford	Office of Child Care Licensing (Western) Virginia Department of Education 190 Patton Street, Suite 100 Abingdon, VA 24210

B407.4-21

Proponents: Daniel Willham (daniel.willham@fairfaxcounty.gov)

2018 Virginia Construction Code

Revise as follows:

407.4 Means of egress. Group I-2 occupancies shall be provided with means of egress complying with Chapter 10 and Sections 407.4.1 through 407.4.4. ~~The fire safety and evacuation plans provided in accordance with Section 1002.2 shall identify the building components necessary to support a *defend-in-place* emergency response in accordance with Sections 403 and 404 of the *International Fire Code*.~~

Reason Statement: Section 1002.2 of the IBC for evacuation plans is deleted in the VCC, so the requirement for these specifically in I-2 occupancies is broken. This change clarifies the reference to a code section that actually exists.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This is a clarification that corrects broken code language and is not a technical change.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
This change is a clarification and is unrelated to resiliency.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: B407.4-21

Discussion by Florin Moldovan
Jun 13, 2022 16:34 UTC

See attached floor modification discussed at the GSWG meeting on 06/07/2022.
Attachments: https://va.cdpaccess.com/proposal/918/discuss/171/file/download/778/407.4%20Floor%20Modification.pdf

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Proposal # 918

OPTION 1

407.4 Means of egress.

Group I-2 occupancies shall be provided with *means of egress* complying with Chapter 10 and Sections 407.4.1 through 407.4.4. The fire safety and evacuation plans provided in accordance with the Virginia Statewide Fire Protection Code ~~provided in accordance with Section 1002.2~~ shall identify the building components necessary to support a *defend-in-place* emergency response in accordance with Sections 403 and 404 of the Virginia Statewide Fire Protection Code ~~International Fire Code~~.

OPTION 2

407.4 Means of egress.

Group I-2 occupancies shall be provided with *means of egress* complying with Chapter 10 and Sections 407.4.1 through 407.4.4. ~~The fire safety and evacuation plans provided in accordance with provided in accordance with Section 1002.2 shall identify the building components necessary to support a *defend-in-place* emergency response in accordance with Sections 403 and 404 of the International Fire Code.~~

B432-21

Proponents: Andrew Milliken (amilliken@staffordcountyva.gov)

2018 Virginia Construction Code

Add new text as follows:

432

Plant Processing or Extraction Facilities

432.1 General. The design, construction and installation of plant processing or extraction facilities in any occupancy group shall comply with Chapter 39 of the International Fire Code.

Reason Statement: During recent code development cycles, construction requirements have been added to the International Fire Code without a direct link from the International Building Code. This proposal provides the connection between the Virginia Construction Code and the International Fire Code for Plant Processing or Extraction Facilities (IFC Chapter 39).

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposal simply provides a pointer to the appropriate referenced code sections within the IFC.

Resiliency Impact Statement: This proposal will increase Resiliency
This proposal will increase resiliency by shoring up life safety and fire protection requirements between the Virginia Construction Code and the International Fire Code.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: B432-21

This proposal doesn't have any public comments.

Proposal # 930

B706.1-21

Proponents: Ronald Clements (clementsro@chesterfield.gov)

2021 International Building Code

Revise as follows:

706.1 General. Each portion of a building separated by one or more *fire walls* shall be considered a separate building. *Fire walls* shall be constructed in accordance with Sections 706.2 through 706.11. The extent and location of such *fire walls* shall provide a complete separation. Where a *fire wall* separates occupancies that are required to be separated by a *fire barrier* wall, the most restrictive requirements of each separation shall ~~apply.~~ apply. *Equipment* and systems are permitted to serve multiple, attached buildings on the same lot where separated by one or more fire walls.

Reason Statement: G130-15 (provided below) removed the code text from 706.1 that states fire walls create separate buildings. The result of G130-15 is that fire walls no longer create separate buildings per 706.1. Application of fire walls is now code section specific regarding what a fire wall does regarding application of that specific code provision. Section 503.1 was revised to address how fire walls impact application of allowable height and area provisions; but, as an example, no such provision was added to chapter 9 to address how fire walls impact application of chapter 9 provisions applicable to buildings. To my knowledge no other code sections throughout the I-codes were reviewed for this impact. The code change reason does not state the intent was to remove the ability to use fire walls to create separate buildings. The intent per the reason statement was to clarify that features and systems shared by buildings separated by fire walls need not be separated from each other other like building features in adjacent buildings. This code change makes it clear that fire walls create separate buildings for application of chapter 9 and other provisions beyond allowable height and area as was always intended. To address the issue of shared systems, the last line was added.
I intent to submit this as an ICC change but, if approved, it will go into the 2027 IBC, which will not be adopted in Virginia until 2029 at the earliest.

G130-15 *The purpose of this proposal is to clarify the intent of these sections of the Code that the requirement for a fire wall in Sections 503.1 and 706.1 is predicated on the determination of the maximum allowable height and area calculations under Chapter 5. Using these sections of Code to control other building features or elements such as means of egress, building systems or building utilities is not intended or implied by these sections of the Code. However, by inclusion of the first sentence in Section 706.1 some code officials have incorrectly interpreted that language to mean that the portions of the various elements and systems on each side of a fire wall must be completely self-contained. There are no requirements in the I Codes that mandate that the placement of fire walls to create a separate building such that its building features need to be separated from other like building features in adjacent buildings. The scope of Section 706 is to provide the technical requirements for the construction of a fire wall. The added language in Section 503.1 along with the strikeout and added language in Section 706.1 will clarify application of these two sections.*

Cost Impact: The code change proposal will decrease the cost of construction
This code change proposal will reduce the cost of construction though I don't know how to give a number. As an example: in prior code editions you could building a 30,000 sf warehouse without installing a sprinkler system by use of a fire barrier at 10,000 sf and a fire wall at 20,000 sf. With the 2015 amendment that same building would require a sprinkler system, even if fire walls were used at both 10,000 and 20,000 square foot area limits.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved

☐ None

Public Comments for: B706.1-21

This proposal doesn't have any public comments.

Proposal # 1000

B706.1.1-21

Proponents: Shahriar Amiri (samiri@arlingtonva.us)

2021 International Building Code

CHAPTER 7
FIRE AND SMOKE PROTECTION FEATURES

SECTION 706
FIRE WALLS

706.1 General. *Fire walls* shall be constructed in accordance with Sections 706.2 through 706.11. The extent and location of such *fire walls* shall provide a complete separation. Where a *fire wall* separates occupancies that are required to be separated by a *fire barrier* wall, the most restrictive requirements of each separation shall apply.

Revise as follows:

706.1.1 Party walls. Any wall located on a *lot line* between adjacent buildings, which is used or adapted for *joint* service between the two buildings, shall be constructed as a *fire wall* in accordance with Section 706. Party walls shall be constructed without openings and shall create separate buildings.

Exceptions:

1. Openings in a party wall separating an *anchor building* and a *mall* shall be in accordance with Section 402.4.2.2.1.
2. ~~Party walls and *fire walls* are not required on *lot lines* dividing a building for ownership purposes where the aggregate height and area of the portions of the building located on both sides of the *lot line* do not exceed the maximum height and area requirements of this code. For the *building official's* review and approval, the official shall be provided with copies of dedicated access easements and contractual agreements that permit the *owners* of portions of the building located on either side of the *lot line* access to the other side for purposes of maintaining fire and *life safety systems* necessary for the operation of the building.~~

706.2 Structural stability. *Fire walls* shall be designed and constructed to allow collapse of the structure on either side without collapse of the wall under fire conditions. *Fire walls* designed and constructed in accordance with NFPA 221 shall be deemed to comply with this section.

Exception: In *Seismic Design Categories* D through F, where double *fire walls* are used in accordance with NFPA 221, floor and roof sheathing not exceeding $^{3}/_{4}$ inch (19.05 mm) thickness shall be permitted to be continuous through the wall assemblies of *light frame construction*.

706.3 Materials. *Fire walls* shall be of any *approved* noncombustible materials.

Exception: Buildings of Type V construction.

706.4 Fire-resistance rating. *Fire walls* shall have a *fire-resistance rating* of not less than that required by Table 706.4.

TABLE 706.4 FIRE WALL FIRE-RESISTANCE RATINGS

a. In Type II or V construction, walls shall be permitted to have a 2-hour fire-resistance rating.

b. For Group H-1, H-2 or H-3 buildings, also see Sections 415.7 and 415.8.

706.5 Horizontal continuity. *Fire walls* shall be continuous from *exterior wall* to *exterior wall* and shall extend not less than 18 inches (457 mm) beyond the exterior surface of *exterior walls*.

Exceptions:

1. *Fire walls* shall be permitted to terminate at the interior surface of combustible exterior sheathing or siding provided that the *exterior wall* has a *fire-resistance rating* of not less than 1 hour for a horizontal distance of not less than 4 feet (1220 mm) on both sides of the *fire wall*. Openings within such *exterior walls* shall be protected by opening protectives having a *fire protection rating* of not less than $^3/_4$ hour.
2. *Fire walls* shall be permitted to terminate at the interior surface of noncombustible exterior sheathing, exterior siding or other noncombustible exterior finishes provided that the sheathing, siding or other exterior noncombustible finish extends a horizontal distance of not less than 4 feet (1220 mm) on both sides of the *fire wall*.
3. *Fire walls* shall be permitted to terminate at the interior surface of noncombustible exterior sheathing where the building on each side of the *fire wall* is protected by an *automatic sprinkler system* installed in accordance with Section 903.3.1.1 or 903.3.1.2.

706.5.1 Exterior walls. Where the *fire wall* intersects *exterior walls*, the *fire-resistance rating* and opening protection of the *exterior walls* shall comply with one of the following:

1. The *exterior walls* on both sides of the *fire wall* shall have a 1-hour *fire-resistance rating* with $^3/_4$-hour protection where opening protection is required by Section 705.8. The *fire-resistance rating* of the *exterior wall* shall extend not less than 4 feet (1220 mm) on each side of the intersection of the *fire wall* to *exterior wall*. *Exterior wall* intersections at *fire walls* that form an angle equal to or greater than 180 degrees (3.14 rad) do not need *exterior wall* protection.
2. Buildings or spaces on both sides of the intersecting *fire wall* shall assume to have an imaginary *lot line* at the *fire wall* and extending beyond the exterior of the *fire wall*. The location of the assumed line in relation to the *exterior walls* and the *fire wall* shall be such that the *exterior wall* and opening protection meet the requirements set forth in Sections 705.5 and 705.8. Such protection is not required for *exterior walls* terminating at *fire walls* that form an angle equal to or greater than 180 degrees (3.14 rad).

706.5.2 Horizontal projecting elements. *Fire walls* shall extend to the outer edge of horizontal projecting elements such as balconies, roof overhangs, canopies, *marquees* and similar projections that are within 4 feet (1220 mm) of the *fire wall*.

Exceptions:

1. Horizontal projecting elements without concealed spaces, provided that the *exterior wall* behind and below the projecting element has not less than 1-hour fire-resistance-rated construction for a distance not less than the depth of the projecting element on both sides of the *fire wall*. Openings within such *exterior walls* shall be protected by opening protectives having a *fire protection rating* of not less than $^3/_4$ hour.
2. Noncombustible horizontal projecting elements with concealed spaces, provided that a minimum 1-hour fire-resistance-rated wall extends through the concealed space. The projecting element shall be separated from the building by not less than 1-hour fire-resistance-rated construction for a distance on each side of the *fire wall* equal to the depth of the projecting element. The wall is not required to extend under the projecting element where the building *exterior wall* is not less than 1-hour *fire-resistance rated* for a distance on each side of the *fire wall* equal to the depth of the projecting element. Openings within such *exterior walls* shall be protected by opening protectives having a *fire protection rating* of not less than $^3/_4$ hour.
3. For combustible horizontal projecting elements with concealed spaces, the *fire wall* need only extend through the concealed space to the outer edges of the projecting elements. The *exterior wall* behind and below the projecting element shall be of not less than 1-hour fire-resistance-rated construction for a distance not less than the depth of the projecting elements on both sides of the *fire wall*. Openings within such *exterior walls* shall be protected by opening protectives having a *fire protection rating* of not less than $^3/_4$ hour.

706.6 Vertical continuity. *Fire walls* shall extend from the foundation to a termination point not less than 30 inches (762 mm) above both adjacent roofs.

Exceptions:

1. Stepped buildings in accordance with Section 706.6.1.

2. Two-hour fire-resistance-rated walls shall be permitted to terminate at the underside of the roof sheathing, deck or slab, provided that:

    2.1. The lower *roof assembly* within 4 feet (1220 mm) of the wall has not less than a 1-hour *fire-resistance rating* and the entire length and span of supporting elements for the rated *roof assembly* has a *fire-resistance rating* of not less than 1 hour.

    2.2. Openings in the roof shall not be located within 4 feet (1220 mm) of the *fire wall*.

    2.3. Each building shall be provided with not less than a Class B *roof covering*.

3. Walls shall be permitted to terminate at the underside of noncombustible roof sheathing, deck or slabs where both buildings are provided with not less than a Class B *roof covering*. Openings in the roof shall not be located within 4 feet (1220 mm) of the *fire wall*.
4. In buildings of Types III, IV and V construction, walls shall be permitted to terminate at the underside of combustible roof sheathing or decks, provided that all of the following requirements are met:

    4.1. Roof openings are not less than 4 feet (1220 mm) from the *fire wall*.

    4.2. The roof is covered with a minimum Class B *roof covering*.

    4.3. The roof sheathing or deck is constructed of *fire-retardant-treated wood* for a distance of 4 feet (1220 mm) on both sides of the wall or the roof is protected with $^{5}/_{8}$-inch (15.9 mm) Type X *gypsum board* directly beneath the underside of the roof sheathing or deck, supported by not less than 2-inch (51 mm) nominal ledgers attached to the sides of the roof framing members for a distance of not less than 4 feet (1220 mm) on both sides of the *fire wall*.

5. In buildings designed in accordance with Section 510.2, *fire walls* located above the 3-hour *horizontal assembly* required by Section 510.2, Item 1 shall be permitted to extend from the top of this *horizontal assembly*.
6. Buildings with sloped roofs in accordance with Section 706.6.2.

706.6.1 Stepped buildings. Where a *fire wall* also serves as an *exterior wall* for a building and separates buildings having different roof levels, such wall shall terminate at a point not less than 30 inches (762 mm) above the lower roof level. *Exterior walls* above the *fire wall* extending more than 30 inches (762 mm) above the lower roof shall be of not less than 1-hour fire-resistance-rated construction from both sides with openings protected by fire assemblies having a *fire protection rating* of not less than $^{3}/_{4}$ hour. Portions of the *exterior walls* greater than 15 feet (4572 mm) above the lower roof shall be of nonfire-resistance-rated construction unless otherwise rated construction is required by other provisions of this code.

Exception: A *fire wall* serving as part of an *exterior wall* that separates buildings having different roof levels shall be permitted to terminate at the underside of the roof sheathing, deck or slab of the lower roof, provided that Items 1, 2 and 3 are met. The *exterior wall* above the *fire wall* is not required to be of fire-resistance-rated construction unless required by other provisions of this code.

1. The lower *roof assembly* within 10 feet (3048 mm) of the *fire wall* has not less than a 1-hour *fire-resistance rating*.
2. The entire length and span of supporting elements for the rated *roof assembly* shall have a *fire -resistance rating* of not less than 1 hour.
3. Openings in the lower roof shall not be located within 10 feet (3048 mm) of the *fire wall*.

706.6.2 Buildings with sloped roofs. Where a *fire wall* serves as an interior wall for a building, and the roof on one side or both sides of the *fire wall* slopes toward the *fire wall* at a slope greater than 2 units vertical in 12 units horizontal (2:12), the *fire wall* shall extend to a height equal to the height of the roof located 4 feet (1219 mm) from the *fire wall* plus 30 inches (762 mm). The extension of the *fire wall* shall be not less than 30 inches (762 mm).

706.7 Combustible framing in fire walls. Adjacent combustible members entering into a concrete or masonry *fire wall* from opposite sides shall not have less than a 4-inch (102 mm) distance between embedded ends. Where combustible members frame into hollow walls or walls of hollow units, hollow spaces shall be solidly filled for the full thickness of the wall and for a distance not less than 4 inches (102 mm) above, below and between the structural members, with noncombustible materials *approved* for *fireblocking*.

706.8 Openings. Each opening through a *fire wall* shall be protected in accordance with Section 716 and shall not exceed 156 square feet (15 m^2). The aggregate width of openings at any floor level shall not exceed 25 percent of the length of the wall.

Exceptions:

1. Openings are not permitted in party walls constructed in accordance with Section 706.1.1.
2. Openings shall not be limited to 156 square feet (15 m^2) where both buildings are equipped throughout with an *automatic sprinkler system* installed in accordance with Section 903.3.1.1.

706.9 Penetrations. Penetrations of *fire walls* shall comply with Section 714.

706.10 Joints. *Joints* made in or between *fire walls* shall comply with Section 715.

706.11 Ducts and air transfer openings. Ducts and air transfer openings shall not penetrate *fire walls*.

Exception: Penetrations by ducts and air transfer openings of *fire walls* that are not on a *lot line* shall be allowed provided that the penetrations comply with Section 717. The size and aggregate width of all openings shall not exceed the limitations of Section 706.8.

Reason Statement: The introduction of this section in 2018 has created much confusion. While the original intent was narrowly defined, this section has effectively created a situation where property lines, fire separation distances and the basics of the building codes are compromised. Many argue that property lines no longer created any restrictions across a city block as long as they are constructed with construction types that allow for unlimited height and area. The agreement described in this section does not a provide for occupant protection envisioned by the code. It is just a maintenance access agreement.

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

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: B706.1.1-21

This proposal doesn't have any public comments.

Proposal # 1193

B907.5.2.3.2-21

Proponents: DHCD Staff (sbco@dhcd.virginia.gov)

2021 International Building Code

Revise as follows:

TABLE 907.5.2.3.2 VISIBLE ALARMS

NUMBER OF SLEEPING UNITS OR DWELLING UNITS	SLEEPING ACCOMMODATIONS WITH VISIBLE ALARMS
6 to 25	2
26 to 50	4
51 to 75	7
76 to 100	9
101 to 150	12
151 to 200	14
201 to 300	17
301 to 400	20
401 to 500	22
501 to 1,000	5% of total
1,001 and over	50 plus 3 for each 100 over 1,000

Reason Statement: Section 907.5.2.3.2 requires visible alarm notification for habitable spaces in dwelling units and sleeping units (in Group I-1 and R-1 occupancies) in accordance with Table 907.5.2.3.2. The table, however, only mentions "sleeping units" and it does not mention "dwelling units". This editorial change adds the words "or dwelling units" to the table so that it can be properly utilized as charged by the section.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This is an editorial change with no impact on the construction cost.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
This is an editorial change with no impact on resiliency.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: B907.5.2.3.2-21

This proposal doesn't have any public comments.

B918.1.1-21

Proponents: DHCD Staff on behalf of the following stakeholders represented at the In-Building Emergency Communications Study Group: The Apartment & Office Building Association/Virginia Apartment Management Association, Virginia Department of Fire Programs, Virginia Restaurant, Lodging & Travel Association, Virginia Fire Prevention Association, Virginia Fire Chiefs Association, and the Virginia Building and Code Officials Association.

2018 Virginia Construction Code

Revise as follows:

918.1.1 Installation. The *building owner* shall install ~~radiating cable, such as coaxial cable or equivalent~~ cabling. The ~~radiating~~ cable shall be installed in dedicated conduits, raceways, plenums, attics, or roofs, compatible for these specific installations as well as other applicable provisions of this code. The *locality* shall be responsible for the installation of any additional communication *equipment* required for the operation of the system.

Reason Statement: This proposal was developed during the in-building emergency communications (IBEC) study group and seeks to remove the antiquated language of "radiating cable" by replacing it with the simple terminology, "cabling." The language change removes design restrictions and opens the door for new technologies that can be used for IBEC systems.

Cost Impact: The code change proposal will decrease the cost of construction
This change can decrease the cost of construction by allowing alternative technologies beyond radiating cable.

Resiliency Impact Statement: This proposal will increase Resiliency
This proposal will increase resiliency by not binding IBEC systems to antiquated technology. Providing the opportunity for newer, more efficient communication systems technology enhances the IBEC system and the resiliency of buildings.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: B918.1.1-21

This proposal doesn't have any public comments.

Proposal # 1004

B1020.1-21

Proponents: Amy Feltner (alight@fcva.us)

2018 Virginia Construction Code

Revise as follows:

TABLE 1020.1 CORRIDOR FIRE-RESISTANCE RATING

OCCUPANCY	OCCUPANT LOAD SERVED BY CORRIDOR	REQUIRED FIRE-RESISTANCE RATING (hours)	
		Without sprinkler system	With sprinkler system[b]
H-1, H-2, H-3	All	Not Permitted	1
H-4, H-5	Greater than 30	Not Permitted	1
A, B, E, F, M, S, U	Greater than 30	1	0
R	Greater than 10	1	0.5
I-2[a]	All	Not Permitted	0
I-1, ~~I-3~~	All	Not Permitted	~~0~~ 1
I-3	All	Not Permitted	0
1-4	All	1	0

Reason Statement: The adoption of the International Codes in lieu of the BOCA Building Codes grouped I-1 and I-3 together in the corridor rating table. The International Code required a one hour rating for Use Groups I-1 and I-3. However, the Department of Corrections (DOC) disapproved of this requirement as the BOCA Building Codes permitted the I-3 corridors to be reduced to smoke partitions. With DOC having "had no adverse impact for 10 years" and fire officials held no opposition, the corridor rating was changed to zero. The initial proposal, however, may have absorbed the I-1 unintentional. With the recent introduction of the I-1 c*ondition 1* and I-1 *condition 2* terminology and the allowance of *condition 2* permitting "residents that may require physical assistance from staff to respond to an emergency situation to complete building evacuation", a rated corridor should be reinstated for the I-1 Use Group.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
zero

Resiliency Impact Statement: This proposal will increase Resiliency

Attached Files

- **BOCA T1011.4.pdf**
  https://va.cdpaccess.com/proposal/1135/1539/files/download/653/

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: B1020.1-21

This proposal doesn't have any public comments.

to the day space and is not separated in elevation by more than one story.

1011.1.3 Turnstiles and gates: Access through turnstiles, gates, rails or similar devices shall not be permitted unless such a device is equipped to swing readily in the direction of *exit* travel under a total force of not more than 15 pounds (73.23 N).

1011.1.4 Restrictions: The required width of passageways, *aisle accessways*, aisles and *corridors* shall be maintained free of projections and restrictions; except that the minimum clear width resulting from doors opening into such spaces shall be one-half of the required width. When fully open, the door shall not project more than 7 inches (178 mm) into the required width. Handrail projections are permitted in accordance with Section 1022.2.1.

1011.2 Dead ends: *Exit access* passageways and *corridors* in all stories which serve more than one *exit* shall provide direct connection to such *exits* in opposite directions from any point in the passageway or *corridor*, insofar as practicable. The length of a dead-end passageway or *corridor* shall not be more than 20 feet (6096 mm).

Exceptions

1. In occupancies in Use Group I-3 of Occupancy Conditions II, III or IV (see Section 308.4), the dead end in a *corridor*, hallway or aisle shall not exceed 50 feet (15240 mm).
2. In occupancies in Use Group B where passageways are bounded by furniture, counters, partitions or similar dividers not more than 6 feet (1829 mm) in height, the length of a dead-end passageway shall not be more than 50 feet (15240 mm).
3. In occupancies in Use Group B where the building is equipped throughout with an *automatic sprinkler system* in accordance with Section 906.2.1, the length of dead-end *corridors* or passageways shall not exceed 50 feet (15240 mm).
4. Passageways or *corridors* within spaces with one *means of egress*.
5. A dead-end passageway or *corridor* shall not be limited in length where the length of the dead-end passageway or *corridor* is less than 2.5 times the least width of the dead-end passageway or *corridor*.

1011.2.1 Common path of travel: In occupancies in Use Group B, the length of a *common path of travel* shall not exceed 75 feet (22860 mm).

Exceptions

1. The length of a *common path of travel* in an occupancy in Use Group B shall not be more than 100 feet (30480 mm), provided that the building is equipped throughout with an *automatic sprinkler system* installed in accordance with Section 906.2.1.
2. Where a tenant space in an occupancy in Use Group B has an occupant load of not more than 30, the length of a *common path of travel* shall not be more than 100 feet (30480 mm).

1011.3 Width: The minimum required width of passageways, *aisle accessways*, aisles and *corridors* shall be determined by the most restrictive of the following criteria:

1. 44 inches (1118 mm) where serving an occupant load of greater than 50.
2. 36 inches (914 mm) where serving an occupant load of 50 or less.
3. 96 inches (2438 mm) in an occupancy in Use Group I-2 utilized for the movement of beds.
4. 72 inches (1829 mm) in an occupancy in Use Group E with more than 100 occupants.
5. The width required for capacity as determined by Section 1009.0.
6. 24 inches (610 mm) for access to and utilization of electrical, mechanical, or plumbing systems or equipment.

Aisles and *aisle accessways* shall conform to the requirements of this section or Section 1012.0.

1011.3.1 Capacity: The required capacity of a *corridor* shall be determined by dividing the occupant load that utilizes the *corridor* for *exit access* by the number of *exits* to which the *corridor* connects, and shall be not less than the required capacity of the *exit* element to which the *corridor* leads.

1011.4 Enclosure: All *corridors* shall be fireresistance rated in accordance with Table 1011.4 based on the use group of the space and the total required capacity of all of the *exits* from the *corridor*. The *corridor* walls shall comply with Section 711.0.

Exceptions

1. A fireresistance rating is not required for *corridors* in an occupancy in Use Group E where each room that is occupied for instruction or assembly purposes has at least one-half of the required *means of egress* doors opening directly to the exterior of the building at ground level.
2. A fireresistance rating is not required for *corridors* contained within a *dwelling unit* or a guestroom in an occupancy in Use Group R.

Table 1011.4
CORRIDOR FIRERESISTANCE RATING

Use Group	Total required capacity of all exits from corridor	Required fireresistance rating (hours)	
		Without sprinkler system	With sprinkler system[d]
H-1, H-2, H-3	All	1	1
H-4	Greater than 30	1	1
A, B, E, F, M, S, U	Greater than 30	1	0
I-1, R[a]	Greater than 10	1	½
I-2	All	1	0[b]
I-3	All	Not permitted	0[c]

Note a. For a reduction in the fireresistance rating for occupancies in Use Group R, see Section 1011.4, Exception 2.
Note b. For requirements for occupancies in Use Group I-2, see Section 409.3.
Note c. For a reduction in the fireresistance rating for occupancies in Use Group I-3, see Section 410.7.
Note d. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 906.2.1 or 906.2.2.

1011.4.1 Corridor walls as separation walls: Tenant, *dwelling unit* and guestroom separation walls which are also *cor-*

B1026.2-21

Proponents: Jane Kim (jane.kim2@fairfaxcounty.gov)

2018 Virginia Construction Code

Revise as follows:

1026.2 Separation. The separation between *buildings* or refuge areas connected by a *horizontal exit* shall be provided by a fire wall complying with Section 706, by a *fire barrier* complying with Section 707 or a horizontal assembly complying with Section 711, or by both. The minimum *fire-resistance rating* of the separation shall be two hours. Opening protectives in *horizontal exits* shall also comply with Section 716. Duct and air transfer openings in a *fire wall* or *fire barrier* that serves as a *horizontal exit* shall also comply with Section 717. The *horizontal exit* separation shall extend vertically through all levels of the building unless floor assemblies have a *fire-resistance rating* of not less than 2 hours. Openings in horizontal assemblies on the story served by *horizontal exits* shall be protected in accordance with Sections 712.1.1, 712.1.3,~~712.1.13,~~ and 712.1.13 .~~ or Item 4 of Section 1019.3.~~

Exception: A *fire-resistance rating* is not required at *horizontal exits* between a *building area* and an above-grade pedestrian walkway constructed in accordance with Section 3104, provided that the distance between connected buildings is more than 20 feet (6096 mm).

Horizontal exits constructed as fire barriers shall be continuous from exterior wall to exterior wall as to divide completely the floor served by the horizontal exit.

Reason Statement: Proposed change is to correct the change made at last code development cycle to this section. Protection requirement is for opening in refuge area acting as an exit enclosure. Draft stop do not provide equivalent protection required for fire resistance rated exit enclosure. The correction further clarifies requirements for opening protective provided is equivalent to fire rated floor assembly of the refuge area. Following is the reasons statement provided in the previous code development cycle. "The change will clarify and ensure protection is provided for increased number of occupants in refuge compartment at each story served by horizontal exit. Current text of Section 1026.2 is unclear in addressing unprotected floor opening or unclosed exit access stairways and ramps communicating not more than two stories as permitted in Section 712.1.9 item1 and 1019.3 item 1. Unprotected opening will not contain fire or smoke within the horizontal exit compartment where fire originated from and will reduce the protection of the occupants taking refuge in the protected compartment. Proposed change will ensure safety of occupants taking refuge in protected compartment as intended. "

Cost Impact: The code change proposal will not increase or decrease the cost of construction -

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: B1026.2-21

This proposal doesn't have any public comments.

Proposal # 989

B1103.2.15-21

Proponents: Daniel Willham (daniel.willham@fairfaxcounty.gov)

2018 Virginia Construction Code

Revise as follows:

1103.2.15 Emergency supplemental hardware. In Group E occupancies, except Group E day care facilities, and Group B educational occupancies, ~~when~~ *emergency supplemental hardware* is not required to comply with this chapter when deployed during an active shooter or hostile threat event and provided in accordance with ~~Section 1010.1.4.4.~~ Section 1010.2.8.~~1010.1.4.4.~~

Reason Statement: This proposal is just a language clean-up with revised wording to make it a complete sentence (instead of a series of dependent clauses), similar to the other sub-sections in this section. The change in section number only reflects the new section location in the 2021 code. There is no technical change.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposal is a language clean-up for grammar and does not affect construction cost.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
This proposal is not related to resiliency.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: B1103.2.15-21

This proposal doesn't have any public comments.

Proposal # 1133

B1112.1-21

Proponents: Amy Feltner (alight@fcva.us)

2021 International Building Code

Revise as follows:

1112.1 Signs. Required accessible elements shall be identified by the International Symbol of Accessibility at the following locations.

1. Accessible parking spaces required by Section 1106.2.

   ~~**Exception:** Where the total number of parking spaces provided is four or less, identification of accessible parking spaces is not required.~~

2. *Accessible* parking spaces required by Section 1106.3.

   Exception: In Group I-1, R-2, R-3 and R-4 facilities, where parking spaces are assigned to specific *dwelling units* or *sleeping units*, identification of *accessible* parking spaces is not required.

3. *Accessible* passenger loading zones.
4. *Accessible* toilet or bathing rooms where not all toilet or bathing rooms are *accessible*.
5. *Accessible* entrances where not all entrances are *accessible*.
6. *Accessible* check-out aisles where not all aisles are *accessible*. The sign, where provided, shall be above the check-out aisle in the same location as the checkout aisle number or type of check-out identification.
7. *Accessible* dressing, fitting and locker rooms where not all such rooms are *accessible*.
8. *Accessible areas of refuge* in accordance with Section 1009.9.
9. Exterior areas for assisted rescue in accordance with Section 1009.9.
10. In recreational facilities, lockers that are required to be *accessible* in accordance with Section 1110.10.

Reason Statement: Reason Statement:
The exception is proposed to be removed. This is in violation of The Code of Virginia § 36-99.11. (Also Virginia Construction Code 1106.8) Identification of disabled parking spaces by above grade signage.

A. All parking spaces reserved for the use of persons with disabilities shall be identified by above grade signs, regardless of whether identification of such spaces by above grade signs was required when any particular space was reserved for the use of persons with disabilities. A sign or symbol painted or otherwise displayed on the pavement of a parking space shall not constitute an above grade sign. Any parking space not identified by an above grade sign shall not be a parking space reserved for the disabled within the meaning of this section.

B. All above grade disabled parking space signs shall have the bottom edge of the sign no lower than four feet nor higher than seven feet above the parking surface. Such signs shall be designed and constructed in accordance with the provisions of the Uniform Statewide Building Code.

C. Building owners shall install above grade signs identifying all parking spaces reserved for the use of persons with disabilities in accordance with this section and the applicable provisions of the Uniform Statewide Building Code by January 1, 1993.

D. Effective July 1, 1998, all disabled parking signs shall include the following language: PENALTY, $100-500 Fine, TOW-AWAY ZONE. Such language may be placed on a separate sign and attached below existing above grade disabled parking signs, provided that the bottom edge of the attached sign is no lower than four feet above the parking surface.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
none

Resiliency Impact Statement: This proposal will increase Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: B1112.1-21

This proposal doesn't have any public comments.

Proposal # 1151

B1602-21

Proponents: Resiliency Sub-Workgroup

2021 International Building Code

CHAPTER 2
DEFINITIONS

SECTION 202
DEFINITIONS

Revise as follows:

[BS] ESSENTIAL FACILITIES. Buildings and other structures that are intended to remain operational in the event of extreme environmental loading from *flood*, wind, tornadoes, snow or earthquakes.

[BS] NOMINAL LOADS. The magnitudes of the *loads* specified in Chapter 16 (dead, live, soil, wind, tornado, snow, rain, *flood* and earthquake).

[BS] RISK CATEGORY. A categorization of buildings and *other structures* for determination of *flood*, wind, tornado, snow, ice and earthquake *loads* based on the risk associated with unacceptable performance.

CHAPTER 16
STRUCTURAL DESIGN

SECTION 1602
NOTATIONS

Revise as follows:

1602.1 Notations. The following notations are used in this chapter:

D	=	Dead load.
D_i	=	Weight of ice in accordance with Chapter 10 of ASCE 7.
E	=	Combined effect of horizontal and vertical earthquake induced forces as defined in Section 12.4 of ASCE 7.
F	=	Load due to fluids with well-defined pressures and maximum heights.
F_a	=	Flood load in accordance with Chapter 5 of ASCE 7.
H	=	Load due to lateral earth pressures, ground water pressure or pressure of bulk materials.
L	=	Live load.
L_r	=	Roof live load.
R	=	Rain load.
S	=	Snow load.
T	=	Cumulative effects of self-straining load forces and effects.
V_{asd}	=	Allowable stress design wind speed, miles per hour (mph) (km/hr) where applicable.
V	=	Basic design wind speeds, miles per hour (mph) (km/hr) determined from Figures 1609.3(1) through 1609.3(12) or ASCE 7.
V_T	=	Tornado speed, miles per hour (mph) (m/s) determined from Chapter 32 of ASCE 7.
W	=	Load due to wind pressure.
W_i	=	Wind-on-ice in accordance with Chapter 10 of ASCE 7.

SECTION 1603
CONSTRUCTION DOCUMENTS

Revise as follows:

1603.1.4 Wind and tornado design data. The following information related to wind *loads*, and where required by Section 1609.5 *tornado loads*, shall be shown, regardless of whether wind *loads* govern the design of the lateral force-resisting system of the structure:

1. Basic ~~design~~ *wind speed*, *V* (mph), tornado speed, V_T, ~~miles per hour~~ and *allowable stress design wind speed*, V_{asd}, as determined in accordance with Section 1609.3.1.

2. *Risk category*.

3. Effective plan area, A_e for tornado design in accordance with Chapter 32 of ASCE 7.

~~3.~~ 4. Wind exposure. Applicable wind direction if more than one wind exposure is utilized.

~~4.~~ 5. Applicable internal pressure ~~coefficient~~ coefficients, and applicable tornado internal pressure coefficients.

~~5.~~ 6. Design wind pressures and their applicable zones with dimensions to be used for exterior component and cladding materials not specifically designed by the *registered design professional* responsible for the design of the structure, pounds per square foot (kN/m^2). Where design for tornado loads is required, the design pressures shown shall be the maximum of wind or tornado pressures.

1605.1 General. Buildings and *other structures* and portions thereof shall be designed to resist the strength load combinations specified in ASCE 7, Section 2.3, the a*llowable stress design* load combinations specified in ASCE 7, Section 2.4, or the alternative a*llowable stress design* load combinations of Section 1605.2.

Exceptions:

1. The modifications to load combinations of ASCE 7 Section 2.3, ASCE 7 Section 2.4, and Section 1605.2 specified in ASCE 7 Chapters 18 and 19 shall apply.
2. Where the allowable stress design load combinations of ASCE 7 Section 2.4 are used, flat roof snow *loads* of 30 pounds per square foot (1.44 kN/m^2) and *roof live loads* of 30 pounds per square foot (1.44 kN/m^2) or less need not be combined with seismic load. Where flat roof snow *loads* exceed 30 pounds per square foot (1.44 kN/m^2), 20 percent shall be combined with seismic loads.
3. Where the allowable stress design load combinations of ASCE 7 Section 2.4 are used, crane hook loads need not be combined with *roof live loads* or with more than three-fourths of the snow load or one-half of the wind loads.
4. Where design for tornado loads is required, the alternative allowable stress design load combinations of Section 1605.2 shall not apply when tornado loads govern the design.

1607.14 Roof loads. The structural supports of roofs and *marquees* shall be designed to resist wind and, where applicable, tornado, snow and earthquake *loads*, in addition to the *dead load* of construction and the appropriate *live loads* as prescribed in this section, or as set forth in Table 1607.1. The *live loads* acting on a sloping surface shall be assumed to act vertically on the horizontal projection of that surface.

1607.14.3 Awnings and canopies. *Awnings* and canopies shall be designed for uniform *live loads* as required in Table 1607.1 as well as for snow *loads* and wind and tornado *loads* as specified in Sections 1608 and 1609.

Add new text as follows:

1609.5 Tornado loads.. The design and construction of Risk Category III and IV buildings and other structures located in the tornado-prone region as shown in Figure 1609.5 shall be in accordance with Chapter 32 of ASCE 7, except as modified by this code.

FIGURE 1609.5 TORNADO-PRONE REGION

Revise as follows:

~~1609.5~~ 1609.6 Roof systems. Roof systems shall be designed and constructed in accordance with Sections ~~1609.5.1~~ 1609.6.1 through ~~1609.5.3~~ 1609.6.3, as applicable.

~~1609.5.1~~ 1609.6.1 Roof deck. The *roof deck* shall be designed to withstand the greater of wind pressures or tornado pressures determined in accordance with ASCE 7.

~~1609.5.2~~ 1609.6.2 Roof coverings. *Roof coverings* shall comply with Section ~~1609.5.1~~ 1609.6.1.

Exception: Rigid tile *roof coverings* that are air permeable and installed over a *roof deck* complying with Section ~~1609.5.1~~ 1609.6.1 are permitted to be designed in accordance with Section ~~1609.5.3~~ 1609.6.3.

Asphalt shingles installed over a *roof deck* complying with Section ~~1609.5.1~~ 1609.6.1 shall comply with the wind-resistance requirements of Section 1504.2 .

Add new text as follows:

1609.6.3 Rigid Tile. Wind and tornado loads on rigid tiles shall comply with Sections 1609.6.3.1 or 1609.6.3.2, as applicable.

Revise as follows:

~~1609.5.3~~ 1609.6.3.1 ~~Rigid tile~~ Wind loads.. Wind *loads* on rigid tile *roof coverings* shall be determined in accordance with the following equation:

$$M_a = q_h C_L b L L_a [1.0 - GC_p] \quad \textbf{(Equation 16-18}$$

For SI:

$$M_a = \frac{q_h C_L b L L_a [1.0 - GC_p]}{1{,}000}$$

where:

b = Exposed width, feet (mm) of the roof tile.

C_L = Lift coefficient. The lift coefficient for concrete and clay tile shall be 0.2 or shall be determined by test in accordance with Section 1504.3.1.

GC_p = Roof pressure coefficient for each applicable roof zone determined from Chapter 30 of ASCE 7. Roof coefficients shall not be adjusted for internal pressure.

L = Length, feet (mm) of the roof tile.

L_a = Moment arm, feet (mm) from the axis of rotation to the point of uplift on the roof tile. The point of uplift shall be taken at 0.76L from the head of the tile and the middle of the exposed width. For roof tiles with nails or screws (with or without a tail clip), the axis of rotation shall be taken as the head of the tile for direct deck application or as the top edge of the batten for battened applications. For roof tiles fastened only by a nail or screw along the side of the tile, the axis of rotation shall be determined by testing. For roof tiles installed with battens and fastened only by a clip near the tail of the tile, the moment arm shall be determined about the top edge of the batten with consideration given for the point of rotation of the tiles based on straight bond or broken bond and the tile profile.

M_a = Aerodynamic uplift moment, feet-pounds (N-mm) acting to raise the tail of the tile.

q_h = Wind velocity pressure, psf (kN/m^2) determined from Section 26.10.2 of ASCE 7.

Concrete and clay roof tiles complying with the following limitations shall be designed to withstand the aerodynamic uplift moment as determined by this section.

1. The roof tiles shall be either loose laid on battens, mechanically fastened, *mortar* set or adhesive set.
2. The roof tiles shall be installed on solid sheathing that has been designed as components and cladding.
3. An *underlayment* shall be installed in accordance with Chapter 15.
4. The tile shall be single lapped interlocking with a minimum head lap of not less than 2 inches (51 mm).
5. The length of the tile shall be between 1.0 and 1.75 feet (305 mm and 533 mm).
6. The exposed width of the tile shall be between 0.67 and 1.25 feet (204 mm and 381 mm).
7. The maximum thickness of the tail of the tile shall not exceed 1.3 inches (33 mm).
8. Roof tiles using *mortar* set or adhesive set systems shall have not less than two-thirds of the tile's area free of *mortar* or adhesive contact.

Add new text as follows:

1609.6.3.2 Tornado loads.. Tornado loads on rigid tile roof coverings shall be determined in accordance with Section 1609.6.3.1, replacing q_h with q_{hT} and (GC_p) with K_{vT} (GC_p) in Equation 16-18, where:

q_{hT} = tornado velocity pressure, psf (kN/m^2) determined in accordance with Section 32.10 of ASCE 7.
K_{vT} = tornado pressure coefficient adjustment factor for vertical winds, determined in accordance with Section 32.14 of ASCE 7.

Revise as follows:

2308.2.3 Allowable loads. *Loads* shall be in accordance with Chapter 16 and shall not exceed the following:

1. Average *dead loads* shall not exceed 15 psf (718 N/m^2) for combined roof and ceiling, *exterior walls*, floors and partitions.

   Exceptions:

   1. Subject to the limitations of Section 2308.6.10, stone or masonry *veneer* up to the less of 5 inches (127 mm) thick or 50 pounds per square foot (2395 N/m^2) and installed in accordance with Chapter 14 is permitted to a height of 30 feet (9144 mm) above a noncombustible foundation, with an additional 8 feet (2439) permitted for *gable* ends.
   2. Concrete or masonry fireplaces, heaters and chimneys shall be permitted in accordance with the provisions of this code.

2. *Live loads* shall not exceed 40 psf (1916 N/m^2) for floors.

   Exception: *Live loads* for concrete slab-on-ground floors in *Risk Categories* I and II shall be not more than 125 psf.

3. Ground snow *loads* shall not exceed 50 psf (2395 N/m^2).
4. Where design for tornado loads is required, tornado loads on the main wind force resisting system and all components and cladding shall not exceed the corresponding wind loads on these same elements.

ASCE/SEI

American Society of Civil Engineers Structural Engineering Institute
1801 Alexander Bell Drive
Reston, VA 20191

7-22 Minimum Design Loads and Associated Criteria for Buildings and Other Structures

Reason Statement: This proposal is coming from the Resiliency Sub-workgroup.
This proposal is a coordination proposal to bring the 2024 IBC up to date with the provisions of the 2022 edition of ASCE/SEI 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE/SEI 7-22). ASCE 7 will be updated to the 2022 edition from the 2016 edition as an Administrative update in the 2024 I-Codes.

This proposal includes technical updates as well as editorial coordination. The specific changes to each section included in this proposal is outlined below, and a detailed summary of the technical updates are explained below that:

Section 202 Definitions:

Updates to Nominal Loads, Essential Facilities, and Risk Category to include tornadoes.
Section 1602.1 Notations: Add new term V for tornado speeds.
Section 1603.1.4 Wind design data: Modifies section to include tornado speed and applicable internal pressures to be included on the construction drawings.
Section 1605.1 General: Adds new Exception 4 to exclude the use of the Alternative allowable stress design load combinations in Section 1605.2 when tornado loads govern the design.
Section 1607.14 Roof loads; Section 1607.14.3 Awnings and canopies: Modifies section to include tornado.
Section 1609.5 Tornado Loads: Added new section for charging language for tornado loads as well as a new Figure 1609.5 Tornado Prone Region to determine where tornado loads must be considered, per ASCE 7-22 Chapter 32.
Section 1609.5 Roof systems: This is to update the section number to 1609.6 after adding the new section 1609.5 for Tornado loads.
Section 1609.5.1 Roof deck: This updates to the new section number of 1609.6.1 and clarifies the requirement to be the greater of wind or tornado pressures for roof deck design.
Section 1609.5.2 Roof coverings: This updates the new section number 1609.6.2 as well as updates the pointers to the new section numbers.
Section 1609.5.3 Rigid Tile: This updates to the new section number of 1609.6.3 as well as adds new section 1609.6.3.1 Wind loads and 1609.6.3.2 Tornado loads to differentiate the requirements for wind and tornado. Also the new section 1609.6.3.2 for tornado loads clarifies the terms to be used in Equation 16-18 as well as adds pointers to ASCE 7 Chapter 32.
Section 2308.2.3 Allowable loads: This adds a requirement that allowable loads for conventional light-frame construction shall not be used on any portion of the design where tornado loads govern. This is written to specifically address only the portions of the design - specific to each element - where the loads are governed by tornado loads and does not intend to exclude the rest of the project that is not governed by tornado loads.

TECHNCIAL REASON STATEMENT:

Overview

Tornado hazards have not previously been considered in the design of conventional buildings, despite the fact that tornadoes and tornadic storms cause more fatalities than hurricanes and earthquakes combined (NIST 2014) and more catastrophe insured losses than hurricanes and tropical storms combined (Insurance Information Institute 2021). This gap is addressed for the first time in ASCE 7-22, which now includes requirements for tornado loads. The tornado hazard maps and load methodology are based on a decade of research and development led by the National Institute of Standards and Technology (NIST), in collaboration with ASCE, following the record 2011 tornado season (1,691 tornadoes causing 553 fatalities). ASCE 7-22 requirements for tornado loads apply to Risk Category III and IV buildings and other structures sited in the tornado-prone region, which is approximately equal to the area of the U.S. east of the Continental Divide.

The tornado loads specified in the new Chapter 32 provide reasonable consistency with the reliability delivered by the existing criteria in ASCE 7 Chapters 26 and 27 for the Main Wind Force Resisting System (MWFRS), using the same return periods as the basic wind speed maps in Chapter 26 for Risk Category III and IV facilities (1,700 and 3,000 years, respectively). At return periods of 300 and 700 years (used for wind speeds with Risk Category I and II structures), tornado speeds are generally so low that tornado loads will not control over Chapter 26 wind loads. Therefore, design for tornadoes is not required for Risk Category I and II buildings and other structures.

ASCE 7-22 tornado design speeds for Risk Category III and IV structures range from 60 to 138 mph, depending on geographic location, Risk Category, and effective plan area (which is a function of the building footprint size and shape). This approximately corresponds to the speeds for Enhanced Fujita Scale EF0- EF2 tornadoes, which are not the most intense tornadoes but they are the most common. During the period from 1995 to 2016, over 89% of all reported tornadoes were EF0-EF1, and 97% were in the range of EF0-EF2. Furthermore, most of the area impacted by a tornado does not experience the maximum winds speeds on which the tornado is rated. For example, in the 2011 EF-5 tornado that damaged or destroyed approximately 8,000 buildings in Joplin, Missouri, an estimated 72% of the area swept by the tornado experienced EF0-EF2 winds, while just 28% experienced EF3 and greater winds (NIST 2014). It should also be noted that while property losses per individual tornado increase dramatically with increasing EF number, the aggregate losses caused by all EF1 tornadoes are very similar in magnitude to aggregate losses for all EF2s, for all EF3s, for all EF4s, and for all EF5s (NIST 2014). This is due to the fact that there are so many more lower-intensity tornadoes; e.g., only 59 of the nearly 66,000 recorded tornadoes since 1950 have been rated as EF-5.

To make it very clear that the ASCE 7 tornado provisions are not intended to provide protection from the most violent tornadoes, a large User Note on the first page of the Tornado Load chapter advises readers as follows:

Options for protection of life and property from more intense tornadoes include construction of a storm shelter and/or design for longer-return-period tornado speeds as provided in Appendix G, including performance-based design. A building or other structure designed for tornado loads determined exclusively in accordance with Chapter 32 cannot be designated as a storm shelter without meeting additional critical requirements provided in the applicable building code and ICC 500, the ICC/NSSA Standard for the Design and Construction of Storm Shelters. See Commentary Section C32.1.1 for an in-depth discussion on storm shelters. (ASCE 7-22 Section 32.1.1)

The referenced commentary section explains that life safety protection against the most violent tornadoes requires a tornado shelter that meets the ICC 500 Standard for Design and Construction of Storm Shelters (ICC 2020), or a tornado safe room meeting FEMA P-361 guidelines (FEMA 2021; note that Safe Rooms must meet all ICC 500 requirements plus additional FEMA Funding Criteria). Tornado hazard criteria for ICC 500 and FEMA P-361 are much more stringent than ASCE 7, reflecting the purpose to provide 'near-absolute life safety protection' as described by FEMA (2021). For example, the tornado shelter design speed in the central US is 250 mph. This compares to ASCE 7 speeds of 78-124 mph for Risk Category III and 95-138 mph for Risk Category IV, where the lower and upper values in the ranges correspond to 1 ft^2 and 4 million ft^2 effective plan areas, respectively.

Tornado Hazards

Among the many reasons that building codes and standards have not previously required design for tornado hazards is the misperception that tornadoes are too rare. As seen in Figure 1, in recent decades there have been an average of 1,251 reported tornadoes per year. The apparent smaller numbers of tornadoes from the 1950s through the early 1990s is primarily due to reporting issues, before there were doppler radar networks, cell phones, and trained spotter networks. Even today, many tornadoes in areas of low population density go unreported, in a well-known effect called population bias. There are less tornadoes per square mile per year recorded in very rural areas compared to suburban and urban areas in the same region of the country. The average annual frequency of tornadoes per state is shown in Figure 2, with the majority of tornadoes occurring in the Central and Southeast states.

Although the peak months for tornado activity in the US are in the spring, tornadoes can and do occur year-round. The end of 2021 yielded a record-setting December. The "Quad-State Tornado Outbreak" on December 10-11 spawned 68 tornadoes across 10 states, including two that tracked for more than 100 miles. This outbreak caused 90 confirmed fatalities. "The total damages and economic losses resulting from the historic tornado outbreak that impacted multiple states from the South to the Midwest could amount to $18 billion, which would make it the costliest tornado outbreak in U.S. history," (AccuWeather 2021). The day after AccuWeather published that loss estimate, a derecho over the upper Midwest on December 15-16 caused another outbreak of 94 tornadoes. December yielded a total of 193 tornadoes across the Midwest and Southeast, including 42 EF-0, 96 EF-1, 42 EF-2, 6 EF-3, and 2 EF-4 tornadoes, with 5 more rated as unknown intensity (Figure 3).

While tornadoes have been recorded in all 50 states, the overwhelming majority occur east of the Continental Divide as seen in Figure 4. Even from this raw data, it is apparent why the tornado prone-region is east of the Rocky Mountains. The most intense tornadoes, shown in the darker colors, generally occur in the Central US, except near the Gulf Coast. Similarly, there are fewer intense tornadoes along the Atlantic Coast states. The coastal states have a large number of lower intensity tornadoes, many of them generated by hurricanes. In comparison, the Mountain and Western States experience relatively few tornadoes, and almost no strong (EF2-EF3) or violent (EF4-EF5) tornadoes.

Tornadoes can vary significantly in size. Path lengths range from as short as tens of yards to over a hundred miles. December's Quad-State Tornado tracked 166 miles across Arkansas, Missouri, Tennessee and Kentucky over the span of 4 hours. It was the 9 longest tornado on record (the longest being 219 miles). Path widths vary from around 10 yards to over a mile. The widest tornado on record occurred in El Reno, Oklahoma in 2013, with a maximum path width of 2.6 miles. The average path length for the December 2021 tornadoes was 8.8 miles, while the average maximum path width was 184 yards (Figure 3).

It is clear from the climatology that tornadoes are not rare events. For example, Oklahoma City has been struck by at least 141 tornadoes since 1940, for an average of nearly 2 per year (NWS 2022a). Another way to understand how frequent tornadoes actually are is to consider them from a building impacts perspective. Mining of event and episode narratives from NOAA's National Centers for Environmental Information (NCEI) Storm Events Database from 1993-2020 indicated at least 647 reports of schools being struck by tornadoes. Figure 5 shows the number of preK-12 schools per state that were struck by tornadoes. This average of more than 23 schools per year is a lower bound. The purpose of the Storm Events Database narratives is not to document school impacts per se, but rather summarize key features of storm and its overall impacts. Schools are often mentioned, but this is by no means a complete data source for school strikes. Review of other databases, post-storm reports, news searches, and other sources of information revealed many additional schools that were struck by tornadoes during this time period.

One recent example school impact: in a terrible way to ring in the new year, Veterans Memorial Middle School in Covington, Georgia was struck by an EF-1 tornado on December 31, 2021 (Figure 6). According to the National Weather Service, which conducted its assessment on New Year's Day, structural damage was observed at the school (NWS 2022b). "The tornado reached peak intensity of 90 mph as it hit Veterans Middle School removing significant amounts of siding and roofing from the gymnasium and sections of roof."

Tornado Load Provisions

The commentary chapter C32 of ASCE 7-22 provides descriptions and references supporting the development and application of the tornado load provisions. A brief summary is provided below.

Introduction.

The tornado hazard maps and load methodology were developed over the course of a decade of R&D by the National Institute of Standards and Technology, working closely with Applied Research Associates, Inc. and ASCE. The ASCE 7 tornado load provisions were developed by the ASCE 7 Tornado Task Committee in cooperation with the ASCE 7 Wind Load and Load Combinations Subcommittees. Three workshops were held (two at ASCE headquarters, in September 2015 and May 2019) in support of the tornado hazard map development. A broad range of stakeholders were informed about the detailed plans for map development at the first two workshops and advised on the details of the final methodology and draft maps at the last workshop. Stakeholder feedback from all workshops was incorporated into the final tornado hazard maps and load methodology.

Incorporation of Tornado Loads in ASCE 7. Tornado load are treated completely separately from wind loads, hence their inclusion in a new chapter. While tornadoes are a type of windstorm, there are significantly different characteristics between tornadoes and other windstorms. For instance, tornadic winds have significant updrafts near the core; rapid atmospheric pressure changes can induce loads; and load combinations including tornado loads are not always the same as those including other wind loads (e.g., tornadoes are warm weather phenomena, so snow loads would not be included in combination with tornado loads). As a result of these considerations, tornado loads are treated separately from wind loads, not as a subset of wind loads. This is analogous to the separate treatment of flood loads and tsunami loads; both are hydrodynamic loads on buildings, but the nature of the hazard and the hazard-structure interaction is different enough that they are considered as completely separate loads.

Tornado Load Procedures. The tornado load procedures are based on the overall framework of the ASCE 7 wind load procedures. Tornado velocity pressure and design pressure/design load equations are similar to those found in Chapters 26-31 (exclusive of Chapter 28 Envelope Procedure, where the underlying methodology is incompatible with the tornado load approach). However, most of the terms used in the tornado load equations have some differences compared to their wind load counterparts, reflecting the unique characteristics of tornadic winds and windstructure interaction in contrast to straight-line winds. Several wind load parameters are not used in the tornado load chapter, while Chapter 32 also introduces a few new and significantly revised parameters.

Tornado Hazard Maps. Critical to development of the entire tornado load methodology was creation of a new generation of tornado hazard maps. The R&D needed to create these maps broke new ground in a number of areas. For example, novel approaches to quantify the well-known problems of population bias (where more tornadoes are reported in areas having greater population) and to capture regional variation in tornado climate were developed and applied. Tornado wind speeds associated with the Enhanced Fujita (EF) Scale intensity ratings were derived through engineering analysis instead of relying on the original EF Scale methodology, which was based on expert elicitation. The tornado hazard maps take spatial effects into account (since larger buildings are more likely to be struck by a tornado, tornado wind speeds increase with increasing plan (i.e., footprint) area of the building). These efforts resulted in a set of state-of-the-art probabilistic tornado hazard maps prescribing tornado design wind speeds for a wide range of return periods and target building plan area sizes, enabling tornado-resistant design of conventional buildings and infrastructure, including essential facilities.

The mapped tornado speeds represent the maximum 3-s gust produced by the translating tornado at a height of 33 ft anywhere within the plan area of the target building. The design tornado speeds for Risk Category III and IV buildings (for 1,700- and 3,000-year return periods, respectively) typically range from EF0-EF2 intensity, depending on geographic location, Risk Category, and plan size and shape. For protection from more violent tornadoes, performance-based design is explicitly allowed, and commentary on additional design requirements for storm shelters is provided. An appendix is included with tornado speeds for longer return periods. At return periods of 300 and 700 years, tornado speeds are generally so low that tornado loads will not control over Ch. 26 wind loads, hence design for tornadoes is not required for Risk Category I and II buildings and other structures.

Tornado Velocity Pressure. While the effects of terrain and topography on tornado wind speed profiles are not yet well understood, a review of near-surface tornadic wind measurements from mobile research radar platforms plus numerical and experimental simulations consistently showed wind speed profiles with greater horizontal wind speeds closer to the ground than aloft. The tornado velocity pressure profile (K_{zTor}) used has a uniform value of 1.0 from the ground up to a height of 200 ft, with a slightly smaller value at greater heights. In comparison, wind loads are based on an assumed boundary layer profile, where wind speeds are slower near the ground due to the effects of surface roughness.

Tornado Design Pressures. Atmospheric pressure change (APC) was found to have significant contributions to the tornado loads, particularly for large buildings with low permeability. The internal pressure coefficient was modified to also include the effects of APC. Since APC-related loads are not directionally dependent, the directionality factor was removed from the velocity pressure equation and added to the external pressure term (only) in the design pressure/load equations. The directionality factor K_d was modified through analysis of tornado load simulations on building MWFRS and components and cladding (C&C) systems. The resulting tornado directionality factor K_{dT} has values slightly less than the corresponding wind K_d values, with the exception of roof zone 1' (in the field of the roof), which increased. External pressure and force coefficients for both the MWFRS and C&C remain unchanged, but a modifier (K_{vT}) was added to account for experimentally determinized increases to uplift loads on roofs caused by updrafts in the core of the tornado.

Reliability.

A reliability analysis was conducted to evaluate the tornado load provisions for the purpose of identifying appropriate return periods for the tornado hazard maps. This effort was conducted by a working group composed of members from both the ASCE 7-22 Load Combinations and Wind Load Subcommittees. Monte Carlo analyses (adapted from the ASCE 7-16 wind speed map return period analysis) were used, in which significant uncertainties for system demands and capacity were identified and quantified in the form of random variables with defined probability distributions. The results of this series of risk-informed analyses showed that the tornadic load criteria of Chapter 32 provided reasonable consistency with the reliability delivered by the existing criteria in Chapters 26 and 27 for MWFRS; therefore confirming that the 1,700- and 3,000- year return periods used for Risk Category III and IV wind hazard maps (respectively) in Chapter 26 were also suitable return periods to use for the tornado hazard maps.

Load Combinations.

In both the Strength and Allowable Stress Design (ASD) load combinations that maximize wind load effects, the wind load term W is replaced by the term (W or W_T), where W_T is the tornado load. Tornado loads do not appear in combinations that maximize other loads where wind is an arbitrary point-in-time load.

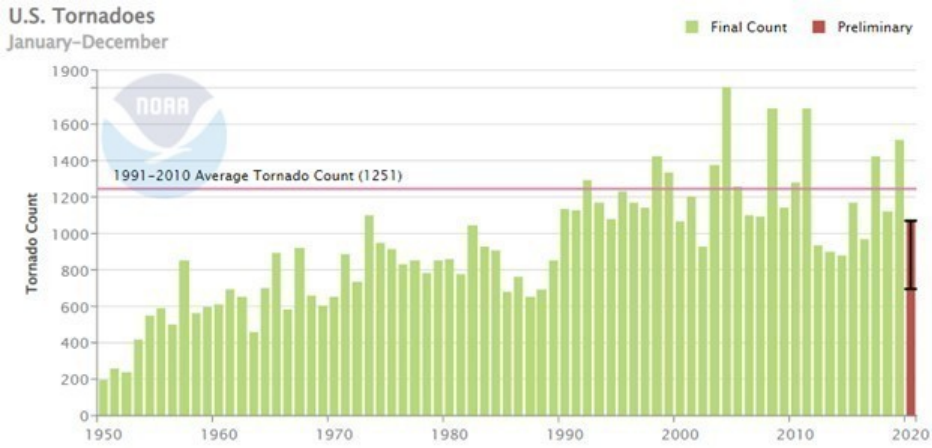

Figure 1. Number of reported tornadoes per year from 1950-2020 (NCEI 2022).

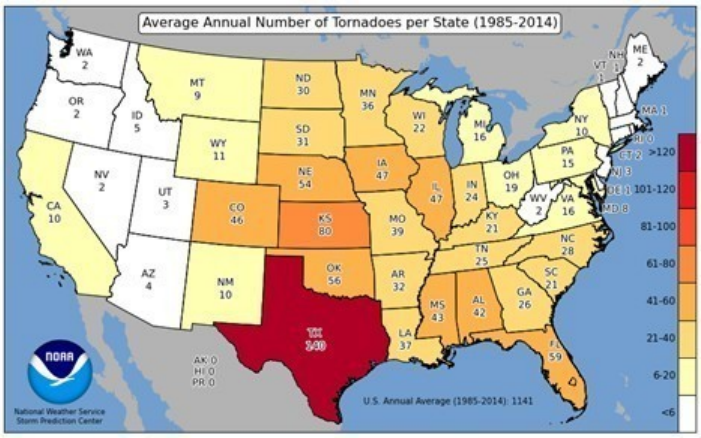

Figure 2. Average annual number of tornadoes per state (SPC 2022)

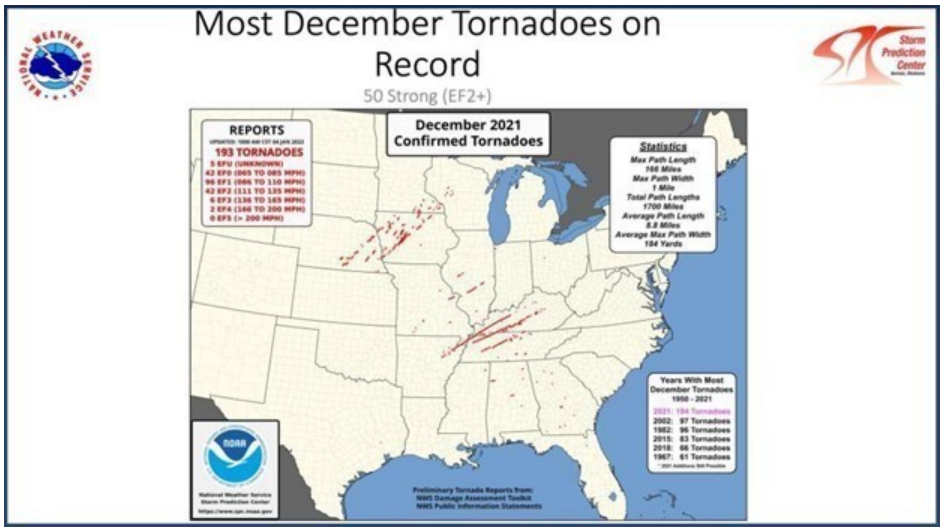

Figure 3. December 2021 produced a record 193 tornadoes across 17 states. (source: NOAA/NWS/Storm Prediction Center)

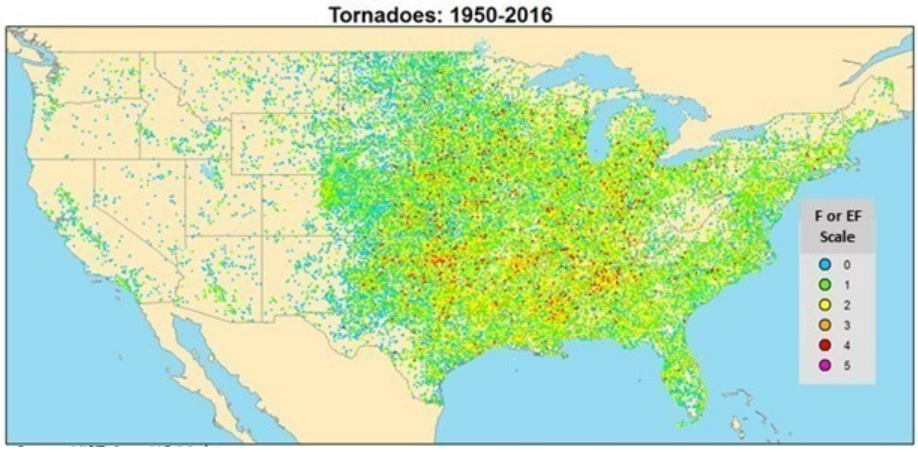

Figure 4. Map of tornado locations from 1950-2016 (source: NIST, using NOAA data).

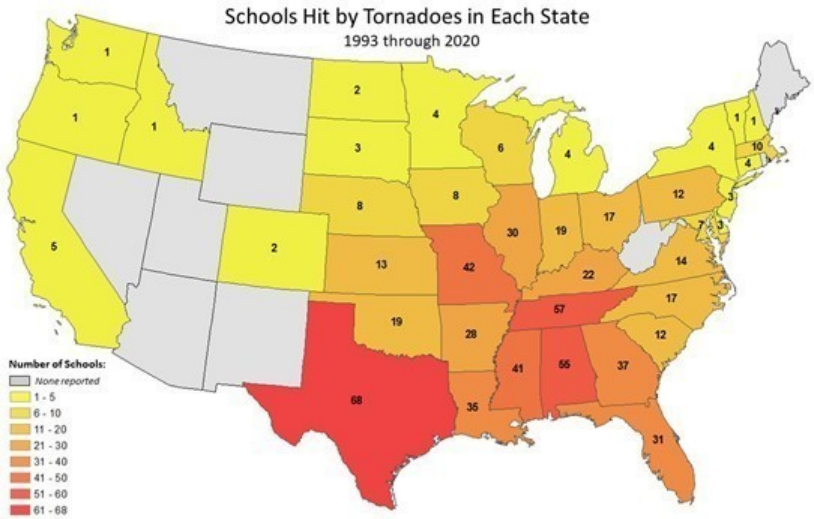

Figure 5. Lower bound for the number of schools struck by tornadoes, per state, for the 28-year period of 1993-2020 (source: NIST, using NOAA data).

Figure 6. EF-1 tornado in Covington, Georgia on New Year's Eve, 2021 (left); resulting damage to Veterans Memorial Middle School (right). (source: NWS)
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Cost Impact: The code change proposal will increase the cost of construction
This proposal may increase the cost of construction for Risk Category III and IV buildings and other structures located in the tornado-prone region where tornado loads govern the design.

The ASCE 7-22 tornado load provisions in Section 32.5.2 include provisions to help identify many of the situations where tornado loads will not control any aspects of the wind load design. If the tornado speed V < 60 mph, tornado loads will not control over wind loads, so design for tornado loads is not required. Additionally, if the tornado speed is less than a certain percentage of the basic (non-tornado) wind speed, V, tornado loads will not control. For structures located in wind Exposure Category B or C, design for tornado loads is not required where V < 0.5V or V < 0.6V, respectively (in this context, Exposure B means that the structure is surrounded on all sides by urban, suburban or wooded terrain, otherwise it would be considered Exposure C). The exposure category does not change the tornado loads, while wind loads in Exposure B are less than in Exposure C. Therefore, a building located in Exposure B is more likely to have tornado loads control over wind loads compared to the same building in Exposure C.

Whether or not tornado loads will ultimately control any aspects of the wind load design for a particular structure is dependent on a large number of factors, including but not limited to:

1. Tornado speed, which is a function of

    - Geographic location
    - Risk Category
    - Effective plan area, which depends on footprint size and shape
2. Basic wind speed, which is a function of
    - Geographic location
    - Risk Category
3. Wind exposure category
4. Building shape
5. Roof geometry
6. Roof height
7. Enclosure classification
8. Designation as an essential facility or not

Maps were created to show where design for tornado loads is not required, based on the tornado speed criteria in the previous paragraph.

Examples for a medium size Risk Category III facility and a very large Risk Category IV facility are shown in Figures 7 and 8, for both Exposures B and C. At locations where the tornado speed is greater than the specified percentage of the basic wind speed, design for tornado loads is required but may still not control. This is because the net pressure loading patterns on a building are different for tornadic versus non-tornadic winds, due to the differences in wind and wind-structure interaction characteristics which are reflected by factors 4 through 8 above.

For a medium-sized Risk Category III building, the tornado speeds are less than 60 mph across much of the tornado prone region (Figure 7).

Tornado loads are required only in the areas shaded with the warm colors, which spans roughly between north Texas, central Minnesota, and the central Carolinas. In contrast, tornado loads are required across most of the tornado-prone region for very large Risk Category IV facilities, except New England and small areas of south Florida and south Louisiana for Exposure C (Figure 8). In both figures, the darker reds indicate areas that tornado loads are more likely to exceed wind loads. In general, tornado loads are more likely to control at least some element(s) of the wind load design for buildings and other structures that have one or more of the following characteristics:

- are located in the central or southeast US, except near the coast (where hurricanes can dominate the extreme wind climate),
- are Risk Category IV,
- have large effective plan areas,
- are designated as Essential Facilities,
- are located in Exposure B,
- have low mean roof heights, and
- are classified as enclosed buildings for purposes of determining internal pressures.

A case study was conducted to compare MWFRS and C&C pressures between ASCE 7-16 (non-tornado) and ASCE 7-22 tornado provisions in the Dallas / Fort Worth area of Texas, and also consider the cost impacts. The case study considered four building types, an elementary school, a high school, a fire station, and a large hospital facility. The schools were Risk Category III, while the fire station and hospital were Risk Category IV essential facilities. All were new construction (no additions or renovations).

The elementary school was assumed to have an effective plan area of 100,000 ft while the high school was 500,000 ft . For the two-story schools, the basic wind speed V = 112 mph, while the tornado speeds for the elementary and high school were V = 90 and 102 mph, respectively. Even though the tornado speeds were less than the basic wind speeds, tornado loads exceeded wind loads for many elements of the design. The high school experienced greater increases in design pressures compared to the elementary school, given its greater tornado speed. The tornado loads were generally larger than the corresponding wind loads, with the most significant impacts occurring where the magnitude of MWFRS and C&C pressure coefficients are relatively small. Tornado suction pressures on the leeward wall and uplift pressures in the field of the roof were more than double the corresponding wind loads in some instances. This was primarily due to the increased tornado internal pressure coefficient and the new pressure coefficient adjustment factor for vertical winds, which increases the uplift on the roof. These surfaces have the smallest magnitude pressures to begin with, so increases of internal pressure and other coefficients have more relative effect. MWFRS loads on the windward walls of all schools also increased (again, due to internal pressures), but less than on the leeward walls. The net lateral loads on the buildings were not significantly impacted (internal pressure cancels out). MWFRS and C&C tornado pressures on roof edges and corners generally increased for the Exposure B cases, but were similar to or smaller than the corresponding wind design pressures when the schools were in Exposure C.

Although specific percentage changes to design pressures are dependent on many factors as discussed previously, the trend for the greatest

relative impacts to occur on parts of the building or structure that have the smallest absolute values of wind loads holds true, as was the case for the fire station and hospital examples. The fire station and hospital were designed with effective plan areas of 15,000 ft and 4 million ft and heights of 20 ft and 80 ft (5-stories), respectively. The basic wind speed for Risk Category IV facilities in the DFW area is V = 115 mph. Tornado speeds for the

fire station and hospital were V = 97 and 123 mph, respectively. The relative impacts on the fire station were generally somewhere between those for the elementary and high schools. The hospital, with its much greater tornado speed due to the large effective plan area, experienced greater relative pressure differences. For example, C&C tornado pressures (for effective wind area of 200 ft) exceeded corresponding wind pressures across the four different flat roof pressure zones by 81 to 126% for Exposure B, and 39 to 73% for Exposure C. The tornado design pressures for the hospital were similar in magnitude to wind pressures for a comparable facility located in the hurricane-prone region along the Texas coast.

A study of the cost impacts for the schools showed that the structural cost increases were very modest. On the elementary school with a building cost of $20M, the estimated cost increases were 0.24% and 0.14% for wind Exposure B and C, respectively. For the $200M high school, the cost increases were 0.13% and 0.08% for Exposures B and C. The study did not include cladding and appurtenance costs. It should be noted that Dallas-Ft. Worth location of this case study is part of the most highly impacted area of the country (as seen in Figures 7 and 8 below), having a combination of comparatively high tornado speeds and low basic wind speeds. The increases in design pressures and costs diminish rapidly outside of the parts of the central and southeast US that experience the most frequent and intense tornadoes and have the greatest tornado speeds, roughly approximated as the area between north Texas, west Iowa, and north Alabama.

Therefore, while tornado load design could increase loads and pressures for Risk Category III and IV structures in the tornado prone area, the

impacts on cost of construction resulting in increases will most likely be small when compared to the overall project costs.

Resiliency Impact Statement: This proposal will increase Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: B1602-21

This proposal doesn't have any public comments.

Proposal # 1158

B3005.4-21

Proponents: Brian Byrne (bbyrne@pwcgov.org)

2018 Virginia Construction Code

Revise as follows:

3005.4 Machine and control rooms, control spaces, and machinery spaces. Elevator machine rooms, rooms and spaces housing elevator controllers, and machinery spaces outside of but attached to a hoistway that have openings into the hoistway shall be enclosed with *fire barriers* constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. The fire-resistance rating shall not be less than the required rating of the hoistway enclosure. Openings in the *fire barriers* shall be protected with assemblies having a fire protection rating not less than that required for the hoistway enclosure doors.

Exceptions:

1. ~~Where~~ For other than fire service access elevators and occupant evacuation elevators, where elevator machine rooms, rooms and spaces housing elevator controllers, and machinery spaces do not abut and do not have openings to the hoist-way enclosure they serve, the *fire barrier* constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both, shall be permitted to be reduced to a 1-hour fire-resistance rating.
2. ~~In~~ For other than fire service access elevators and occupant evacuation elevators, in buildings four stories or less above grade plane when elevator machine rooms, rooms and spaces housing elevator controllers, and machinery spaces do not abut and have no openings to the hoistway enclosure they serve, the elevator machine rooms, rooms and spaces housing elevator controllers, and machinery spaces are not required to be *fire-resistance rated*.

Reason Statement: This change correlates the VA exceptions with the IBC requirements for fire service access elevators and occupant evacuation elevators.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This change correlates code sections and is not a technical change.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
This change correlates code sections and is unrelated to resiliency.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: B3005.4-21

This proposal doesn't have any public comments.

Proposal # 1165

B3006.1-21

Proponents: Daniel Willham (daniel.willham@fairfaxcounty.gov)

2018 Virginia Construction Code

Revise as follows:

SECTION 3006 ELEVATOR LOBBIES AND HOISTWAY OPENING PROTECTION. ~~Deleted~~

2021 International Building Code

SECTION 3006
ELEVATOR LOBBIES AND HOISTWAY OPENING PROTECTION

Revise as follows:

3006.1 General. Where provided to comply with applicable requirements set forth elsewhere in this code, elevator ~~Elevator~~ hoistway openings and enclosed elevator lobbies shall be provided in accordance with the following:

1. Where hoistway opening protection is required by Section 3006.2, such protection shall be in accordance with Section 3006.3.
2. Where enclosed elevator lobbies are required for underground buildings, such lobbies shall comply with Section 405.4.3.
3. Where an *area of refuge* is required and an enclosed elevator lobby is provided to serve as an *area of refuge*, the enclosed elevator lobby shall comply with Section 1009.6.
4. Where fire service access elevators are provided, enclosed elevator lobbies shall comply with Section 3007.6.
5. Where occupant evacuation elevators are provided, enclosed elevator lobbies shall comply with Section 3008.6.

Reason Statement: The intent of this proposal is to fix several broken links to the requirements in this section from other sections in this code that resulted from this entire section being deleted by state amendment. Instead of repeating these requirements in each of the other individual sections that reference requirements in 3006, this proposal adds 3006 back but with revised charging language that does not explicitly require elevator lobbies to be provided in buildings but does provide criteria for when that option is chosen as a way to comply with other sections of this code. This does not require elevator lobbies to comply with this section if only provided voluntarily and not provided to meet an exception or other requirement elsewhere in the code.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposal is to correct broken code language and will not affect construction cost.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
This proposal is not related to resiliency.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

☐ Approved
☐ Approved with Modifications
☐ Carryover

☐ Disapproved
☐ None

Public Comments for: B3006.1-21

This proposal doesn't have any public comments.

Proposal # 1098

B3008.1-21

Proponents: Brian Byrne (bbyrne@pwcgov.org)

2018 Virginia Construction Code

Revise as follows:

3008.1 General. Where elevators in *buildings* greater than 420 feet (128 m) in *building height* are to be used for occupant self-evacuation during fires, ~~all~~ passenger elevators for general public use shall comply with this section.

Reason Statement: The existing VA amendment does not correlate with Section 3008.1.1 of the IBC. This change maintains the VA amendment limiting the applicability of occupant evacuation elevator (OEE) requirements to buildings over 420 feet in building height while correlating with Section 3008.1.1 of the IBC for determining the number of available OEEs based on an egress analysis.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This change correlates code sections and is not a technical change.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
This change correlates code sections and is unrelated to resiliency.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: B3008.1-21

This proposal doesn't have any public comments.

Proposal # 1164

B3302.4-21

Proponents: VFSB Codes and Standards Committee (amilliken@staffordcountyva.gov)

2021 International Building Code

Add new text as follows:

3302.4 Separations between construction areas. Separations used in Type I and Type II construction to separate construction areas from occupied portions of the building shall be constructed of materials that comply with one of the following:

1.Noncombustible materials.

2.Materials that exhibit a flame spread index not exceeding 25 when tested in accordance with ASTM E84 or UL 723.

3.Materials exhibiting a peak heat release rate not exceeding 300 kW/m2when tested in accordance with ASTM E1354 at an incident heat flux of 50 kW/m2in the horizontal orientation on specimens at the thickness intended for use

3302.5 Fire safety requirements for buildings of Types IV-A, IV-B, and IV-C construction. Buildings of Types IV-A, IV-B and IV-C construction designed to be greater than six stories above grade plane shall comply with the following requirements during construction unless otherwise approved by the building code official:

1.Standpipes shall be provided in accordance with Section 3311.

2.A water supply for fire department operations, as approved by the fire code official and the fire chief.

3.Where building construction exceeds six stories above grade plane and noncombustible protection is required by Section 602.4 at least one layer of noncombustible protection shall be installed on all building elements on floor levels, including mezzanines, more than four levels below active mass timber construction before additional floor levels can be erected.

Exception:Shafts and vertical exit enclosures shall not be considered part of the active mass timber construction.

4.Where building construction exceeds six stories above grade plane, required exterior wall coverings shall be installed on floor levels, including mezzanines, more than four levels below active mass timber construction before additional floor levels can be erected.

Exception:Shafts and vertical exit enclosures shall not be considered part of the active mass timber construction.

Revise as follows:

[F] 3312.1 Completion before occupancy. In buildings where an *automatic sprinkler system* is required by this code, it shall be unlawful to occupy any portion of a building or structure until the *automatic sprinkler system* installation has been tested and *approved*, except as provided in Section ~~111.3.~~ 116.1.1.

[F] 3313.1 Where required. An *approved* water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible building materials arrive on the site, on commencement of vertical combustible construction, and on installation of a standpipe system in buildings under construction, in accordance with ~~Sections 3313.2 through 3313.5.~~ the Virginia Statewide Fire Prevention Code.

~~**Exception:** The *fire code official* is authorized to reduce the fire-flow requirements for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire-flow requirements is impractical.~~

Delete without substitution:

~~**[F] 3313.2 Combustible building materials.** When combustible building materials of the building under construction are delivered to a site, a minimum fire flow of 500 gallons per minute (1893 L/m) shall be provided. The fire hydrant used to provide this fire flow supply shall be within 500 feet (152 m) of the combustible building materials, as measured along an approved fire apparatus access lane. Where the site configuration is such that one fire hydrant cannot be located within 500 feet (152 m) of all combustible building materials, additional fire hydrants shall be required to provide coverage in accordance with this section.~~

~~**[F] 3313.3 Vertical construction of Types III, IV and V construction.** Prior to commencement of vertical construction of Type III, IV or V buildings that utilize any combustible building materials, the fire flow required by Sections 3313.3.1 through 3313.3.3 shall be provided, accompanied by fire hydrants in sufficient quantity to deliver the required fire flow and proper coverage.~~

~~**[F] 3313.3.1 Fire separation up to 30 feet.** Where a building of Type III, IV or V construction has a *fire separation distance* of less than 30 feet (9144 mm) from property lot lines, and an adjacent property has an *existing structure* or otherwise can be built on, the water supply shall provide either a minimum of 500 gallons per minute (1893 L/m), or the entire fire flow required for the building when constructed, whichever is greater.~~

~~**[F] 3313.3.2 Fire separation of 30 feet up to 60 feet.** Where a building of Type III, IV or V construction has a *fire separation distance* of 30 feet (9144 mm) up to 60 feet (18 288 mm) from property lot lines, and an adjacent property has an *existing structure* or otherwise can be built on, the water supply shall provide a minimum of 500 gallons per minute (1893 L/m), or 50 percent of the fire flow required for the building when constructed, whichever is greater.~~

~~**[F] 3313.3.3 Fire separation of 60 feet or greater.** Where a building of Type III, IV or V construction has a fire separation of 60 feet (18 288 mm) or greater from a property lot line, a water supply of 500 gallons per minute (1893 L/m) shall be provided.~~

~~**[F] 3313.4 Vertical construction, Types I and II construction.** If combustible building materials are delivered to the construction site, water supply in accordance with Section 3313.2 shall be provided. Additional water supply for fire flow is not required prior to commencing vertical construction of Type I and II buildings.~~

~~**[F] 3313.5 Standpipe supply.** Regardless of the presence of combustible building materials, the construction type or the *fire separation distance*, where a standpipe is required in accordance with Section 3313, a water supply providing a minimum flow of 500 gallons per minute (1893 L/m) shall be provided. The fire hydrant used for this water supply shall be located within 100 feet (30 480 mm) of the fire department connection supplying the standpipe.~~

Reason Statement: Clean up of Chapter 33 Fire Safety Durning Construction to relocate construction provisions from the SFPC and correlate better with the SFPC and VEBC. Sections 3309.3 and 3309.4 are relocating the deleted construction sections from the SFPC. Section 3312.1 corrects the reference to 116.1.1 for temporary occupancy. Section 3313.1 is revised with 2021 language and references the SFPC for fire flow requirements. It also includes deleting sections 3313.2 through 3313.5 which are to be in the SFPC.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
No cost impact.

Resiliency Impact Statement: This proposal will increase Resiliency
By improving Chapter 33 of the VCC, the resiliency of communities is increased by protecting them from the hazards associated with poor fire safety practices during construction.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: B3302.4-21

This proposal doesn't have any public comments.

Proposal # 972

EC-C402.4-21

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

2018 Virginia Construction Code

Revise as follows:

1301.1.1.1 Changes to the International Energy Conservation Code (IECC). The following changes shall be made to the IECC:

2. ~~Change the SHGC for Climate Zone 4 (Except Marine) of Table C402.4 to read:~~

3. ~~Delete Section C402.4.1.2, change Sections C402.4.2, C402.4.2.1, C402.4.2.2 and C402.4.3.~~

~~**C402.4.2 Skylight area with daylight response controls.** The skylight area shall be permitted to be not more than 5 percent of the roof area provided daylight responsive controls complying with Section C405.2.3.1 are installed in daylight zones under skylights.~~

~~**C402.4.2.1 Daylight Zone Controls under skylights.** Daylight responsive controls complying with Section C405.2.3.1 shall be provided to control all electric lights within daylight zones under skylights.~~
~~**C402.4.2.2 Haze factor.** Skylights that are installed in office, storage, automotive service, manufacturing, nonrefrigerated warehouse, retail store and distribution/sorting area spaces shall have a glazing material or diffuser with a haze factor greater than 90 percent when tested in accordance with ASTM D1003.~~

~~**Exception:** Skylights designed and installed to exclude direct sunlight entering the occupied space by the use of fixed or automated baffles or the geometry of skylight and light well.~~

~~**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 farthest continuous extremity of any overhand, 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 0.20, 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.~~

4. ~~Add Table C402.4.3 to read:~~

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

CLIMATE ZONE	4 EXCEPT MARINE
SHGC	0.36

~~**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 Statement: This proposal improves and simplifies the Virginia Construction Code by eliminating state-specific amendments that are either already incorporated in the 2021 IECC or are no longer necessary. While some of these modifications may have been necessary or reasonable at the time, we see no reason for Virginia to continue to diverge from the model code in these areas. The intent of this proposal is not to increase or decrease stringency by a meaningful amount, but rather to simplify and streamline the code adoption process going forward. This proposal deletes Section 1301.1.1 subsections 2, 3, and 4.
Subsections 2 and 4 were originally proposed by RECA in a previous code update to maintain Virginia's commercial fenestration SHGC provisions, which were more stringent than the model code at the time. The 2021 IECC is now essentially at the same level of stringency as Virginia (requiring 0.36 for fixed fenestration with no overhangs), but the 2021 IECC has simplified the process by eliminating the orientation-specific SHGC requirements in the prescriptive table. The IECC has incorporated a single SHGC for fixed fenestration (0.36); a lower SHGC for operable fenestration (0.33), and higher SHGC when the fenestration is accompanied by overhangs. These SHGC requirements are consistent with the values in ASHRAE Standard 90.1-2019, so that design professionals will not have two different sets of SHGC requirements to follow depending on which compliance option they select. Design professionals can still claim efficiency credit for favorable orientation, but would need to do so in the performance path where a full simulated performance analysis could be completed.

Subsection 3, which deals with increased skylight area with daylight responsive controls, has been revised and updated since this amendment was adopted into Virginia's code. The 2021 IECC now allows up to 6% skylight area where paired with daylight responsive controls (as compared to 5% in Virginia's UCC), and the sections related to skylights are more detailed. We see no reason for Virginia to continue to carry forward this amendment to the model code.

It is our intention that these portions of Virginia's code would be consistent with the IECC language in both the VCC and the VA Energy Conservation Code.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposal should not increase or decrease the costs of construction in a material way, but it should simplify the design process by bringing additional consistency between Virginia's commercial energy code requirements and the two model energy codes for commercial buildings.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
We do not expect this proposal to have any impact on resiliency.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: EC-C402.4-21

This proposal doesn't have any public comments.

Proposal # 952

EC-C403.7.7-21

Proponents: Richard Grace (rgrace@culpepercounty.gov), VPMIA

2018 Virginia Energy Conservation Code

Revise as follows:

C403.7.7 Shutoff dampers (Mandatory). Outdoor air intake and exhaust openings and stairway and shaft vents shall be provided with Class I motorized dampers. The dampers shall have an air leakage rate not greater than 4 cfm/ft^2 (20.3 L/s • m^2) of damper surface area at 1.0 inch water gauge (249 Pa) and shall be labeled by an approved agency when tested in accordance with AMCA 500D for such purpose.

Exception: ~~Any~~ Where a grease duct serving a Type I hood is installed in accordance with IMC Section 506.3 ~~shall not be required to have a~~ motorized or gravity ~~damper.~~ dampers shall not be installed.

Outdoor air intake and exhaust dampers shall be installed with automatic controls configured to close when the systems or spaces served are not in use or during unoccupied period warm-up and setback operation, unless the systems served require outdoor or exhaust air in accordance with the *International Mechanical Code* or the dampers are opened to provide intentional economizer cooling.

Stairway and shaft vent dampers shall be installed with automatic controls configured to open upon the activation of any fire alarm initiating device of the building's fire alarm system or the interruption of power to the damper.

Exception: Nonmotorized gravity dampers shall be an alternative to motorized dampers for exhaust and relief openings as follows:

1. In buildings less than three stories in height above grade plane.
2. In buildings of any height located in *Climate Zones* 1, 2 or 3.
3. Where the design exhaust capacity is not greater than 300 cfm (142 L/s).

Nonmotorized gravity dampers shall have an air leakage rate not greater than 20 cfm/ft^2 (101.6 L/s • m^2) where not less than 24 inches (610 mm) in either dimension and 40 cfm/ft^2 (203.2 L/s • m^2) where less than 24 inches (610 mm) in either dimension. The rate of air leakage shall be determined at 1.0 inch water gauge (249 Pa) when tested in accordance with AMCA 500D for such purpose. The dampers shall be labeled by an approved agency.

Reason Statement: The current language does not prohibit motorized or gravity dampers from being installed in a grease duct. The language is more of a recommendation than a prohibition. "Shall not be required" is equivalent to "shall not be prohibited." VMC 506.3.7 states "duct systems serving a Type I hood shall be constructed and installed so that grease cannot collect in any portion thereof." Following that logic, VMC 506.3.11 states "fire dampers and smoke dampers shall not be installed in grease ducts." The ICC Commentary for IMC Section 503.11 states "Fire and smoke dampers are not compatible with grease ducts, and the duct enclosure requirements clearly account for the lack of such dampers where the ducts penetrate walls, floors and ceilings. Fire and smoke dampers would be made useless by the severe environment within grease ducts (e.g., high temperatures, grease, cleaning chemicals and water)." Motorized dampers, gravity dampers, backdraft dampers, barometric dampers, and any other type of damper that serves a purpose in a duct system would also be made useless by the severe environment within a grease duct.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
I believe the original intent was to prohibit motorized and gravity dampers from being installed in a grease duct, there fore this is a clarification change rather than a technical change that would have an effect on cost.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
I believe the original intent was to prohibit motorized and gravity dampers from being installed in a grease duct, therefore this is a clarification change rather than a technical change that has no effect on resiliency.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: EC-C403.7.7-21

This proposal doesn't have any public comments.

Proposal # 1083

EC-C503.3.2-21

Proponents: Ben Rabe (ben@newbuildings.org); Kimberly Newcomer (kim@newbuildings.org)

2018 Virginia Existing Building Code

Add new text as follows:

601.4.8 System sizing.
New heating and cooling equipment that is part of an alteration shall be sized in accordance with Section C403.1.1 of the VECC based on the existing building features as modified by the alteration.

> **Exception:** Where it has been demonstrated to the code official that compliance with this section would result in heating or cooling equipment that is incompatible with the rest of the heating or cooling system.

Reason Statement: Historically, HVAC equipment has been routinely oversized. Studies have found very high rates of equipment oversizing; for example, 60% of RTU units in CA were found to be oversized. Oversized equipment results in increased energy use, decreased occupant comfort and increased wear-and-tear on equipment. Oversized equipment is also less effective at dehumidification. Like-for-like equipment replacement are particularly vulnerable to oversizing. The original equipment may have been installed when code requirements for "right-sizing" equipment did not exist or was not enforced. The materials markups that are common practice among contractors disincentivize them to install smaller, right-sized equipment. Changes to building use could have occurred since the original equipment was installed, creating a mismatch between current design loads and the original equipment. The building may have modified, particularly by energy efficiency programs, altering the design loads of the building. Lighting especially stands out here. Fluorescent and LED lighting is ubiquitous, but many HVAC systems were designed to account for incandescent lamps that convert over 75% of the energy they consume into heat.
With all of these considerations, it is reasonable to assume that the existing equipment sizing is more likely to be wrong than right, yet many equipment replacements use existing system sizing to size new equipment. This proposal explicitly requires that new equipment installed as part of an alteration be sized based on current building characteristics and loads, using current sizing standards. The resulting installations will be more efficient and more effective and many will be less costly to install as owners stop paying for more equipment than they need.

Savings will vary based on the amount that existing equipment is oversized. "Right-sizing" has been found to result in about 0.2% energy savings for every 1% reduction in oversizing.3

Cost Impact: The code change proposal will decrease the cost of construction
As "wrong-sized" equipment is generally oversized, this proposal will generally decrease the cost of installation. Smaller, right-sized equipment will generally be less costly to install. Savings will vary based on the amount that existing equipment is oversized. "Right-sizing" has been found to result in about 0.2% energy savings for every 1% reduction in oversizing.

Resiliency Impact Statement: This proposal will increase Resiliency
Resiliency is an essential component of adapting to the effects of climate change. As noted in the reason statement, right sizing equipment typically results in small systems, reducing building energy use. This reduces the buildings overall reliance on energy, reducing carbon emissions directly and indirectly, lessening the impact on climate change and climate related events. For the building's own resilience, the proposed efficiency credits focus on more efficient systems overall – even in an event like a black out, these more efficient systems require less energy to run, making any back up generation energy source last longer – providing extended comfort and safety to building users. Systems that are correctly sized will operate more optimally, avoiding system "short-cycling". This will provide for overall longevity of the systems as well – creating a different type of resilience and reliability for everyday operations and the building owner. For energy infrastructure resilience, the electric grid's ability to deliver capacity to an increasing number of buildings will become increasingly important. By reducing overall energy use, this measure may contribute to a reduction in peak demand increasing the resiliency of the grid during high usage events, of critical importance for air conditioning loads during summer months (the most common to be oversized in this climate zone).

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: EC-C503.3.2-21

Discussion by Florin Moldovan
Jun 13, 2022 19:32 UTC

See attached floor modification discussed at the GSWG meeting on 06/09/2022.
Attachments: https://va.cdpaccess.com/proposal/1070/discuss/177/file/download/784/EC-C503.3.2+Floor+Modification.pdf

Proposal # 1070

EC-C503.3.2
Revised for VEBC

601.4.8 System sizing.
New heating and cooling equipment that is part of an alteration shall be sized in accordance with Section C403.1.1 of the VECC based on the existing building features as modified by the alteration.
Exception: Where is has been demonstrated to the code official that compliance with this section would result in heating or cooling equipment that is incompatible with the rest of the heating or cooling system.

M410.2-21

Proponents: Jonathan Sargeant (jonathan.sargeant@omegaflex.com)

2021 International Fuel Gas Code

Revise as follows:

410.2 MP regulators. MP pressure regulators shall comply with the following:

1. The MP regulator shall be *approved* and shall be suitable for the inlet and outlet gas pressures for the application.
2. The MP regulator shall maintain a reduced outlet pressure under lock-up (no-flow) conditions.
3. The capacity of the MP regulator, determined by published ratings of its manufacturer, shall be adequate to supply the *appliances* served.
4. The MP pressure regulator shall be provided with *access*. Where located indoors, the regulator shall be vented to the outdoors or shall be equipped with a leak-limiting device, in either case complying with Section 410.3.
5. A tee fitting with one opening capped or plugged shall be installed between the MP regulator and its upstream shutoff valve. Such tee fitting shall be positioned to allow connection of a pressure-measuring instrument and to serve as a sediment trap.
6. ~~A tee fitting with one opening capped or plugged shall be installed not less than 10 pipe diameters downstream of the MP regulator outlet. Such tee fitting shall be positioned to allow connection of a pressure-measuring instrument. The tee fitting is not required where the MP regulator serves an appliance that has a pressure test port on the gas control inlet side and the appliance is located in the same room as the MP regulator.~~ Means shall be provided downstream of the MP regulator for the connection of a pressure measuring instrument and shall be positioned to allow connection of a pressure measuring instrument. Such means shall be permitted to be a dedicated test port on a regulator, gas control, or manifold, or a plugged tee fitting or plugged manifold port.
7. Where connected to rigid *piping*, a union shall be installed within 1 foot (304 mm) of either side of the MP regulator.

Reason Statement: This proposal expands the list of acceptable pressure test ports beyond a simple tee fitting by recognizing that regulator, appliance gas control, and pre-fabricated manifold manufacturers provide integral test ports in their devices that meet the intent of the code. The proposal eliminates the requirement that the test port be 10 pipe diameters downstream of the MP regulator because this requirement is overly restrictive and provides no real world advantage. Bench testing reveals that, at maximum flow, the pressure differential between the regulator test port and a test port located 10 pipe diameters downstream of the regulator is within 1/4 inch water column. This proposal eliminates unnecessary fittings, joints, and potential leak paths in the gas piping system.

Cost Impact: The code change proposal will decrease the cost of construction
This proposal would decrease the cost of construction by eliminating unnecessary fittings and joints in the gas piping system.

Resiliency Impact Statement: This proposal will increase Resiliency
This proposal would increase resiliency by eliminating unnecessary fittings, joints and potential leak paths in the gas piping system.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover

☐ Disapproved
☐ None

Public Comments for: M410.2-21

This proposal doesn't have any public comments.

Proposal # 919

M403.3.1.1-21

Proponents: Richard Grace (rgrace@culpepercounty.gov), VPMIA

2018 Virginia Mechanical Code

Revise as follows:

TABLE 403.3.1.1 MINIMUM VENTILATION RATES

OCCUPANCY CLASSIFICATION	OCCUPANT DENSITY#/1000 FT^2 [a]	PEOPLE OUTDOORAIRFLOW RATE IN BREATHING ZONE, R_p CFM/PERSON	AREA OUTDOORAIRFLOW RATE IN BREATHING ZONE, R_a CFM/FT^2 [a]	EXHAUST AIRFLOW RATE CFM/FT^2 [a]
Correctional facilities				
Booking/waiting	50	7.5	0.06	—
Cells				
without plumbing fixtures	25	5	0.12	—
with plumbing fixtures[g]	25	5	0.12	1.0
Day room	30	5	0.06	—
Dining halls (see “Food and beverage service”)	—	—	—	—
Guard stations	15	5	0.06	—
Dry cleaners, laundries				
Coin-operated dry cleaner	20	15	—	—
Coin-operated laundries	20	7.5	0.12	—
Commercial dry cleaner	30	30	—	—
Commercial laundry	10	25	—	—
Storage, pick up	30	7.5	0.12	—
Education				
Art classroom[8]	20	10	0.18	0.7
Auditoriums	150	5	0.06	—
Classrooms (ages 5-8)	25	10	0.12	—
Classrooms (age 9 plus)	35	10	0.12	—
Computer lab	25	10	0.12	—
Corridors (see “Public spaces”)	—	—	—	—
Day care (through age 4)	25	10	0.18	—
Lecture classroom	65	7.5	0.06	—
Lecture hall (fixed seats)	150	7.5	0.06	—
Locker/dressing rooms[g]	—	—	—	0.25
Media center	25	10	0.12	—
Multiuse assembly	100	7.5	0.06	—
Music/theater/dance	35	10	0.06	—
Science laboratories[g]	25	10	0.18	1.0
Smoking lounges[b]	70	60	—	—
Sports locker rooms[g]	—	—	—	0.5
Wood/metal shops[g]	20	10	0.18	0.5
Food and beverage service				
Bars, cocktail lounges	100	7.5	0.18	—
Bars or cocktail lounges designated as an area where smoking is permitted[b]	100	30	—	—
Cafeteria, fast food	100	7.5	0.18	—
Cafeteria or fast food designated as an area where smoking is permitted[b]	100	20	—	—
Dining rooms	70	7.5	0.18	—

Dining rooms designated as an area where smoking is permitted[b]	70	20	—	—
Kitchens (cooking)[b]	20	7.5	0.12	0.7
Hotels, motels, resorts and dormitories				
Bathrooms/toilet—private[8]	—	—	—	25/50[f]
Bedroom/living room	10	5	0.06	—
Conference/meeting	50	5	0.06	—
Dormitory sleeping areas	20	5	0.06	—
Gambling casinos	120	7.5	0.18	—
Lobbies/prefunction	30	7.5	0.06	—
Multipurpose assembly	120	5	0.06	—
Medical facilities				
Medical procedure rooms[i]	20	15	—	—
Patient rooms[i]	10	25	—	—
Physical therapy rooms[i]	20	15	—	—
Offices				
Conference rooms	50	5	0.06	—
Main entry lobbies	10	5	0.06	—
Office spaces	5	5	0.06	—
Reception areas	30	5	0.06	—
Telephone/data entry	60	5	0.06	—
Private dwellings, single and multiple				
Garages, common for multiple units[b]	—	—	—	0.75
Kitchens[b]	—	—	—	25/100[f]
Living areas[c]	Based on number of bedrooms. First bedroom, 2; each additional bedroom, 1	0.35 ACH but not less than 15 cfm/person	—	—
Toilet rooms and bathrooms[g]	—	—	—	20/50[f]
Public spaces				
Corridors	—	—	0.06	—
Courtrooms	70	5	0.06	—
Elevator car	—	—	—	1.0
Legislative chambers	50	5	0.06	—
Libraries	10	5	0.12	—
Lounges designated as an area where smoking is permitted[b]	100	30	—	—
Museums (children's)	40	7.5	0.12	—
Museums/galleries	40	7.5	0.06	—
Places of religious worship	120	5	0.06	—
Shower room (per shower head)[g]	—	—	—	50/20[f]
Smoking lounges[b]	70	60	—	—
Toilet rooms — public[g]	—	—	—	50/70[e]
Retail stores, sales floors and showroom floors				
Dressing rooms	—	—	—	0.25
Mall common areas	40	7.5	0.06	—

Sales	15	7.5	0.12	—
Shipping and receiving	2	10	0.12	—
Smoking lounges[b]	70	60	—	—
Storage rooms	—	—	0.12	—
Warehouses (see “Storage”)	—	10	0.06	—
Specialty shops				
Automotive motor-fuel dispensing stations[b]	—	—	—	1.5
Barber	25	7.5	0.06	0.5
Beauty salons[b]	25	20	0.12	0.6
Nail salons [b, h]	25	20	0.12	0.6
Embalming room[b]	—	—	—	2.0
Pet shops (animal areas)[b]	10	7.5	0.18	0.9
Supermarkets	8	7.5	0.06	—
Sports and amusement				
Bowling alleys (seating areas)	40	10	0.12	—
Disco/dance floors	100	20	0.06	—
Game arcades	20	7.5	0.18	—
Gym, stadium, arena (play area)	7	20	0.18	—
Health club/aerobics room	40	20	0.06	—
Health club/weight room	10	20	0.06	—
Ice arenas without combustion engines	—	—	0.30	0.5
Spectator areas	150	7.5	0.06	—
Swimming pools (pool and deck area)	—	—	0.48	—
Storage				
Repair garages, enclosed parking garages[b,d]	—	—	—	0.75
Refrigerated warehouses/freezers	—	10	—	—
Warehouses	—	10	0.06	—
Theaters				
Auditoriums (see “Education”)	—	—	—	—
Lobbies	150	5	0.06	—
Stages, studios	70	10	0.06	—
Ticket booths	60	5	0.06	—
Transportation				
Platforms	100	7.5	0.06	—
Transportation waiting	100	7.5	0.06	—
Workrooms				
Bank vaults/safe deposit	5	5	0.06	—
Computer (without printing)	4	5	0.06	—
Copy, printing rooms	4	5	0.06	0.5
Darkrooms	—	—	—	1.0
Meat processing[c]	10	15	—	—
Pharmacy (prep. area)	10	5	0.18	—
Photo studios	10	5	0.12	—

For SI: 1 cubic foot per minute = 0.0004719 m^3/s, 1 ton = 908 kg, 1 cubic foot per minute per square foot = 0.00508 $m^3/(s \cdot m^2)$, °C = [(°F) - 32]/1.8, 1 square foot = 0.0929 m^2.

a. Based on net occupiable floor area.

b. Mechanical exhaust required and the recirculation of air from such spaces is prohibited. Recirculation of air that is contained completely within such spaces shall not be prohibited (see Section 403.2.1, Item 3).

c. Spaces unheated or maintained below 50°F are not covered by these requirements unless the occupancy is continuous.

d. Ventilation systems in enclosed parking garages shall comply with Section 404.

e. Rates are per water closet or urinal. The higher rate shall be provided where the exhaust system is designed to operate intermittently. The lower rate shall be permitted only where the exhaust system is designed to operate continuously while occupied.

f. Rates are per room unless otherwise indicated. The higher rate shall be provided where the exhaust system is designed to operate intermittently. The lower rate shall be permitted only where the exhaust system is designed to operate continuously while occupied.

g. Mechanical exhaust is required and recirculation from such spaces is prohibited except that recirculation shall be permitted where the resulting supply airstream consists of not more than 10 percent air recirculated from these spaces. Recirculation of air that is contained completely within such spaces shall not be prohibited (see Section 403.2.1, Items 2 and 4).

h. For nail salons, each manicure and pedicure station shall be provided with a source capture system capable of exhausting not less than 50 cfm per station. Exhaust inlets shall be located in accordance with Section 502.20. Where one or more required source capture systems operate continuously during occupancy, the exhaust rate from such systems shall be permitted to be applied to the exhaust flow rate required by Table 403.3.1.1 for the nail salon.

i. For spaces that are ~~not~~ located in ~~an ambulatory care facility or~~ clinic, outpatient facilities as defined in Chapter 2 of the VCC.

Reason Statement: This proposed change is to footnote "i". The current language assumes the VCC definitions of "ambulatory care facility" and "clinic, outpatient" are similar, and they are not. This error in the current footnote makes the three occupancy classifications associated with this footnote unusable. The intent of this change during the 2018 code development cycle was to provide ventilation rates for general doctor or dentist offices without having to go to ASHRAE 170 as directed by VMC Section 407, Ambulatory Care Facilities and Group I-2 Occupancies. This proposed change corrects the 2018 error and brings forward the original intent.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This is a clarity proposal to allow the previously proposed intent to actually work.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: M403.3.1.1-21

This proposal doesn't have any public comments.

Proposal # 1082

M1101.2-21

Proponents: Mary Koban (mkoban@ahrinet.org)

2021 International Mechanical Code

1101.2 Factory-built equipment and appliances. *Listed* and *labeled* self-contained, factory-built *equipment* and *appliances* shall be tested in accordance with the applicable standards specified in Table 1101.2. Such *equipment* and *appliances* are deemed to meet the design, manufacture and factory test requirements of this code if installed in accordance with their listing and the manufacturer's instructions.

Revise as follows:

TABLE 1101.2 FACTORY-BUILT EQUIPMENT AND APPLIANCES

EQUIPMENT	STANDARDS
~~Refrigeration fittings, including press-connect, flared and threaded~~	~~UL 109 and UL 207~~
Air-conditioning equipment	UL 1995 or UL/CSA 60335-2-40
Packaged terminal air conditioners and heat pumps	UL 484 or UL/CSA 60335-2-40
Split-system air conditioners and heat pumps	UL 1995 or UL/CSA 60335-2-40
Dehumidifiers	UL 474 or UL/CSA 60335-2-40
Unit coolers	UL 412 or UL/CSA 60335-2-89
Commercial refrigerators, freezers, beverage coolers and walk-in coolers	UL 471 or UL/CSA 60335-2-89
Refrigerating units and walk-in coolers	UL 427 or UL 60335-2-89
Refrigerant-containing components and accessories	UL 207

Reason Statement: This table was added during the last cycle when the refrigerant piping rewrite was completed. This resulted in the refrigerant fitting requirements appearing in two locations. The appropriate location for referencing fitting requirements is in Section 1107. It should be noted that UL 207 is included in 1107.5. By deleting this row, it avoids confusion regarding which section applies. This code proposal was accepted and approved for the 2024 IMC code cycle.

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

This change is editorial in nature. As such, it has no impact on the cost of construction.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
This proposal is to provide clarity and will not have any change on resiliency.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: M1101.2-21

Discussion by Richard Potts
Jun 13, 2022 14:12 UTC

Supporting information provided by proponent.

Attachments: https://va.cdpaccess.com/proposal/1088/discuss/159/file/download/755/A2L%20Refrigerants%20Best%20Practices_Jan2022.pdf, https://va.cdpaccess.com/proposal/1088/discuss/159/file/download/754/UL1995to60355_timeline2019_vDIGITAL1-1.pdf

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A2L Equipment Best Practices

Before Installing or Servicing Equipment

- SAFETY FIRST
- Read SDS and OEM Equipment Manual
- Follow lockout/tagout procedures when needed.
- Verify no voltage present before working.
- Ensure area is well ventilated.
- Evaluate jobsite for a) ignition sources b) flammable vapors c) controlling area, d) confined spaces and e) clear exit points.

A2L Installation

- Follow OEM guidelines for minimum room area/refrigerant charge limits.
- Ensure mitigation components are installed and operating per OEM instructions.
- Use locking refrigerant caps to prevent unauthorized access to the system
- Ensure a filter drier is installed

A2L Evacuation and Pressure Test

- Consult the OEM instructions to determine proper evacuation targets/procedures
- Pressure test field erected components
- Evacuate the system before charging using an A2L rated vacuum pump
- Record a) *date*, b) *test pressure* c) *vacuum level on the label* (UL 60335-2-40).

A2L Charging (if required)

- Do NOT exceed the maximum allowable refrigerant charge per OEM instructions (charge amounts may vary due to line-sets.)
- Follow OEMs procedure for proper charging techniques. (Superheat/Subcooling)
- If refrigerant is a 400-series, the refrigerant must leave the cylinder in 'liquid form'.
- Record a) *date* b) *total refrigerant charge weight on the unit label* (UL 60335-2-40).

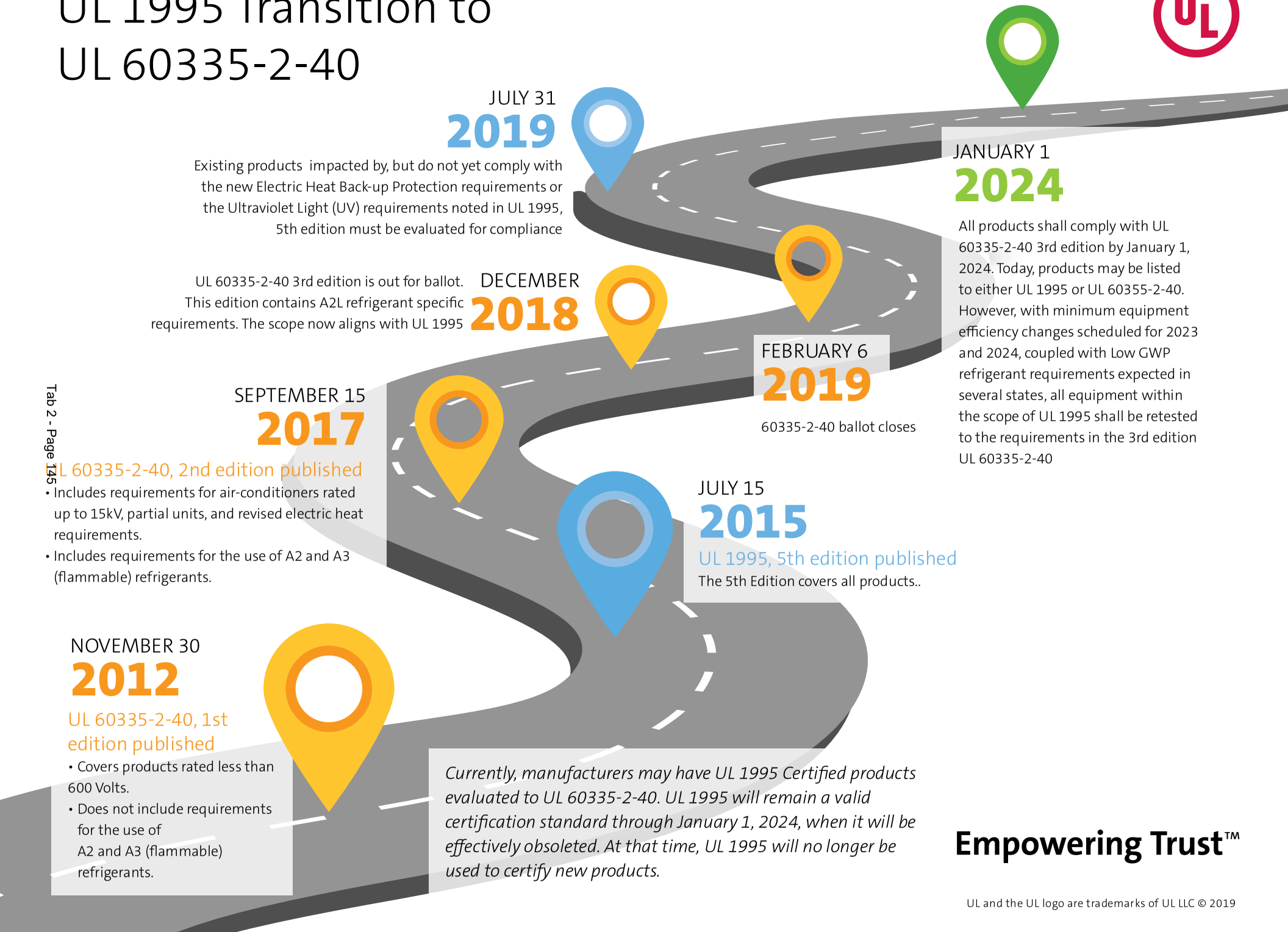
A2L System Repairs

- Leak check to verify no refrigerant is present.
- Ensure equipment is grounded before working.
- Use Proper capacitor discharge methods.
- Use only OEM approved replacement parts.
- Use nitrogen before and during all brazing.

A2L Recovery

- Do NOT vent
- Do NOT mix refrigerants
- Use recovery tools rated for use with A2L refrigerants
- Recover all refrigerant before opening system
- Recover into DOT approved recovery cylinder.
- Do not exceed cylinder fill weights.
- Label recovery cylinder contents

UL 1995 Transition to UL 60335-2-40



JULY 31
2019

Existing products impacted by, but do not yet comply with the new Electric Heat Back-up Protection requirements or the Ultraviolet Light (UV) requirements noted in UL 1995, 5th edition must be evaluated for compliance

JANUARY 1
2024

All products shall comply with UL 60335-2-40 3rd edition by January 1, 2024. Today, products may be listed to either UL 1995 or UL 60355-2-40. However, with minimum equipment efficiency changes scheduled for 2023 and 2024, coupled with Low GWP refrigerant requirements expected in several states, all equipment within the scope of UL 1995 shall be retested to the requirements in the 3rd edition UL 60335-2-40

UL 60335-2-40 3rd edition is out for ballot. This edition contains A2L refrigerant specific requirements. The scope now aligns with UL 1995

DECEMBER
2018

FEBRUARY 6
2019

60335-2-40 ballot closes

SEPTEMBER 15
2017

UL 60335-2-40, 2nd edition published

- Includes requirements for air-conditioners rated up to 15kV, partial units, and revised electric heat requirements.
- Includes requirements for the use of A2 and A3 (flammable) refrigerants.

JULY 15
2015

UL 1995, 5th edition published

The 5th Edition covers all products..

NOVEMBER 30
2012

UL 60335-2-40, 1st edition published

- Covers products rated less than 600 Volts.
- Does not include requirements for the use of A2 and A3 (flammable) refrigerants.

Currently, manufacturers may have UL 1995 Certified products evaluated to UL 60335-2-40. UL 1995 will remain a valid certification standard through January 1, 2024, when it will be effectively obsoleted. At that time, UL 1995 will no longer be used to certify new products.

Empowering Trust™

M1101.2(2)-21

Proponents: Helen Walter-Terrinoni (psuphy1988@gmail.com); Mary Koban (mkoban@ahrinet.org)

2021 International Mechanical Code

Revise as follows:

TABLE 1101.2 FACTORY-BUILT EQUIPMENT AND APPLIANCES

EQUIPMENT	STANDARDS
~~Refrigeration fittings, including press-connect, flared and threaded~~	~~UL 109 and UL 207~~
Air-conditioning equipment and heat pump equipment	UL 1995 or UL/CSA 60335-2-40
Packaged terminal air conditioners and heat pumps	UL 484 or UL/CSA 60335-2-40
Split-system air conditioners and heat pumps	UL 1995 or UL/CSA 60335-2-40
Dehumidifiers	UL 474 or UL/CSA 60335-2-40
Air/water cooled condensers	UL 1995 or UL/CSA 60335-2-40 or UL/CSA 60335-2-89
Refrigeration equipment	UL 1995 or UL/CSA 60335-2-89
Unit coolers	UL 412 or UL/CSA 60335-2-89
Commercial refrigerators, freezers, beverage coolers and walk-in coolers	UL 471 or UL/CSA 60335-2-89
Refrigerating units and walk-in coolers	UL 427 or UL 60335-2-89
Refrigeration condensing units	UL 1995 or UL/CSA 60335-2-89
Automatic commercial ice machines	UL 563 or UL/CSA 60335-2-89
Refrigerant-containing components and accessories	UL 207

Reason Statement: This table was added during the last cycle. By adding additional equipment types and corresponding standards, the table provides further clarity on factory-built equipment and appliances.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This change is editorial in nature. As such, it has no impact on the cost of construction.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
The table is being updated to provide more clarity. It will neither increase nor decrease resiliency.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: M1101.2(2)-21

Discussion by Richard Potts
Jun 13, 2022 14:34 UTC

Supporting information provided by proponent.
Attachments: https://va.cdpaccess.com/proposal/1177/discuss/166/file/download/769/A2L%20Refrigerants%20Best%20Practices_Jan2022.pdf, https://va.cdpaccess.com/proposal/1177/discuss/166/file/download/768/UL1995to60355_timeline2019_vDIGITAL1-1.pdf

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A2L Equipment Best Practices

Before Installing or Servicing Equipment

- SAFETY FIRST
- Read SDS and OEM Equipment Manual
- Follow lockout/tagout procedures when needed.
- Verify no voltage present before working.
- Ensure area is well ventilated.
- Evaluate jobsite for a) ignition sources b) flammable vapors c) controlling area, d) confined spaces and e) clear exit points.

A2L Installation

- Follow OEM guidelines for minimum room area/refrigerant charge limits.
- Ensure mitigation components are installed and operating per OEM instructions.
- Use locking refrigerant caps to prevent unauthorized access to the system
- Ensure a filter drier is installed

A2L Evacuation and Pressure Test

- Consult the OEM instructions to determine proper evacuation targets/procedures
- Pressure test field erected components
- Evacuate the system before charging using an A2L rated vacuum pump
- Record a) *date*, b) *test pressure* c) *vacuum level on the label* (UL 60335-2-40).

A2L Charging (if required)

- Do NOT exceed the maximum allowable refrigerant charge per OEM instructions (charge amounts may vary due to line-sets.)
- Follow OEMs procedure for proper charging techniques. (Superheat/Subcooling)
- If refrigerant is a 400-series, the refrigerant must leave the cylinder in 'liquid form'.
- Record a) *date* b) *total refrigerant charge weight on the unit label* (UL 60335-2-40).

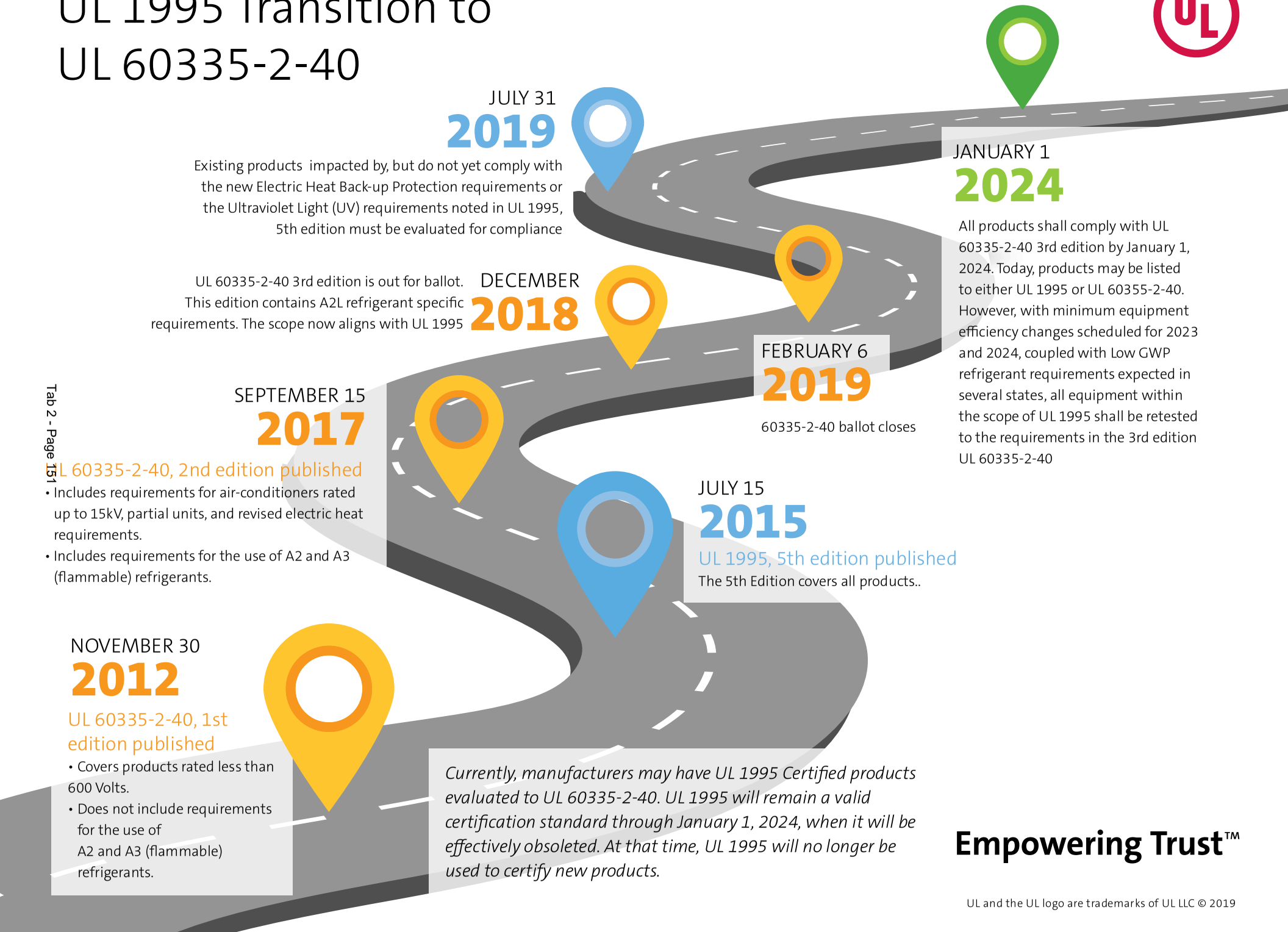
A2L System Repairs

- Leak check to verify no refrigerant is present.
- Ensure equipment is grounded before working.
- Use Proper capacitor discharge methods.
- Use only OEM approved replacement parts.
- Use nitrogen before and during all brazing.

A2L Recovery

- Do NOT vent
- Do NOT mix refrigerants
- Use recovery tools rated for use with A2L refrigerants
- Recover all refrigerant before opening system
- Recover into DOT approved recovery cylinder.
- Do not exceed cylinder fill weights.
- Label recovery cylinder contents

UL 1995 Transition to UL 60335-2-40



JULY 31
2019

Existing products impacted by, but do not yet comply with the new Electric Heat Back-up Protection requirements or the Ultraviolet Light (UV) requirements noted in UL 1995, 5th edition must be evaluated for compliance

JANUARY 1
2024

All products shall comply with UL 60335-2-40 3rd edition by January 1, 2024. Today, products may be listed to either UL 1995 or UL 60355-2-40. However, with minimum equipment efficiency changes scheduled for 2023 and 2024, coupled with Low GWP refrigerant requirements expected in several states, all equipment within the scope of UL 1995 shall be retested to the requirements in the 3rd edition UL 60335-2-40

UL 60335-2-40 3rd edition is out for ballot. This edition contains A2L refrigerant specific requirements. The scope now aligns with UL 1995

DECEMBER
2018

FEBRUARY 6
2019

60335-2-40 ballot closes

SEPTEMBER 15
2017

UL 60335-2-40, 2nd edition published

- Includes requirements for air-conditioners rated up to 15kV, partial units, and revised electric heat requirements.
- Includes requirements for the use of A2 and A3 (flammable) refrigerants.

JULY 15
2015

UL 1995, 5th edition published

The 5th Edition covers all products..

NOVEMBER 30
2012

UL 60335-2-40, 1st edition published

- Covers products rated less than 600 Volts.
- Does not include requirements for the use of A2 and A3 (flammable) refrigerants.

Currently, manufacturers may have UL 1995 Certified products evaluated to UL 60335-2-40. UL 1995 will remain a valid certification standard through January 1, 2024, when it will be effectively obsoleted. At that time, UL 1995 will no longer be used to certify new products.

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M1101.2.1-21

Proponents: Mary Koban (mkoban@ahrinet.org)

2021 International Mechanical Code

Add new text as follows:

1101.2.1 Group A2L, A2, A3 and B1 high probability equipment. High probability equipment using Group A2L, A2, A3, or B1 refrigerant shall comply with UL 484, UL/CSA 60335-2-40, or UL/CSA 60335-2-89.

Revise as follows:

UL

UL LLC
333 Pfingsten Road
Northbrook, IL 60062-2096

UL/CSA ~~60335-2-40—17~~ 60335-2-40—~~17~~ 2019	Household and Similar Electrical Appliances—Safety—Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers
UL/CSA ~~60335-2-89—17~~ 60335-2-89—~~17~~ 2021	Household and Similar Electrical Appliances—Safety—Part 2-89: Particular Requirements for Commercial Refrigerating Appliances with an Incorporated or Remote Refrigerant Unit or Compressor

Reason Statement: During the last code cycle, Table 1101.2 was added to reference all of the appropriate standard for factory-built equipment. Included in the list are standards that regulate the use of Group A2L, A2, A3, and B1 refrigerants. However, that is not separated out in the table. To assist the code official, this new section will add the appropriate reference to the standards that regulate equipment using these refrigerant in high probability systems. The application of these refrigerants include the use of Group A2L in equipment providing human comfort. Group A2l, A2, A3, and B1 refrigerants are also used in high probability equipment such as water coolers, refrigeration equipment in supermarkets, and freezers and cooler in restaurants and similar facilities. There are strict limitation on the charge size of these refrigerants specified in the standards referenced. The reference to ASHRAE 15-2019 opened the code to the use of Group A2L refrigerants in high probability systems for human comfort. ASHRAE 15 has since added specific reference to the standards regulating equipment using Group A2L refrigerants. Thus, this proposal is consistent with the requirements in the addendums to ASHRAE 15. The 2019 edition of UL/CSA 60335-2-40 added additional safety requirements for equipment using Group A2L, A2, A3, and B1 refrigerants. The 2021 edition of UL/CSA 60335-2-89 added additional safety requirements for A2L, A2, and A3 refrigerants. The update to the 2019 edition of UL/CSA 60335-2-40 includes additional safety requirements. This edition added electrical and refrigerant safety requirements. There are provisions for refrigerant detection systems, UL-C germicidal lamp systems, CO2 systems, photovoltaic systems and new marking requirements. With the increased use of Group A2L, A2, and A3 refrigerants, it is important to reference the latest edition of the standard.

The update to the 2021 edition of UL/CSA 60335-2-89 includes additional safety requirements based on the lower GWP refrigerants and includes additional testing requirements. Therefore, it should also be updated.

This code proposal (except for the revised date for UL 60335-2-89) was accepted and approved for the 2024 IMC code cycle. UL 60335-2-89:2021 edition was published after the ICC Group A code cycle completed.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The code change proposal will not increase or decrease the cost of construction. This change is a clarification of the requirements for listing factory-built equipment. Therefore, there is no increase or decrease in the cost of
construction. The code user still has the option as to what type of refrigeration equipment to install.

Resiliency Impact Statement: This proposal will increase Resiliency
Updating this section to allow lower GWP refrigerants in high-probability equipment that complies with UL 60335-2-40:2019 or UL 60335-89:2021, will ensure that manufacturers can meet new federal regulations (AIM Act) while ensuring safety.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: M1101.2.1-21

Discussion by Richard Potts
Jun 13, 2022 14:32 UTC

Supporting information provided by proponent.
Attachments: https://va.cdpaccess.com/proposal/1065/discuss/165/file/download/767/A2L%20Refrigerants%20Best%20Practices_Jan2022.pdf, https://va.cdpaccess.com/proposal/1065/discuss/165/file/download/766/UL1995to60355_timeline2019_vDIGITAL1-1.pdf

Proposal # 1065

A2L Equipment Best Practices

Before Installing or Servicing Equipment

- SAFETY FIRST
- Read SDS and OEM Equipment Manual
- Follow lockout/tagout procedures when needed.
- Verify no voltage present before working.
- Ensure area is well ventilated.
- Evaluate jobsite for a) ignition sources b) flammable vapors c) controlling area, d) confined spaces and e) clear exit points.

A2L Installation

- Follow OEM guidelines for minimum room area/refrigerant charge limits.
- Ensure mitigation components are installed and operating per OEM instructions.
- Use locking refrigerant caps to prevent unauthorized access to the system
- Ensure a filter drier is installed

A2L Evacuation and Pressure Test

- Consult the OEM instructions to determine proper evacuation targets/procedures
- Pressure test field erected components
- Evacuate the system before charging using an A2L rated vacuum pump
- Record a) *date*, b) *test pressure* c) *vacuum level on the label* (UL 60335-2-40).

A2L Charging (if required)

- Do NOT exceed the maximum allowable refrigerant charge per OEM instructions (charge amounts may vary due to line-sets.)
- Follow OEMs procedure for proper charging techniques. (Superheat/Subcooling)
- If refrigerant is a 400-series, the refrigerant must leave the cylinder in 'liquid form'.
- Record a) *date* b) *total refrigerant charge weight on the unit label* (UL 60335-2-40).

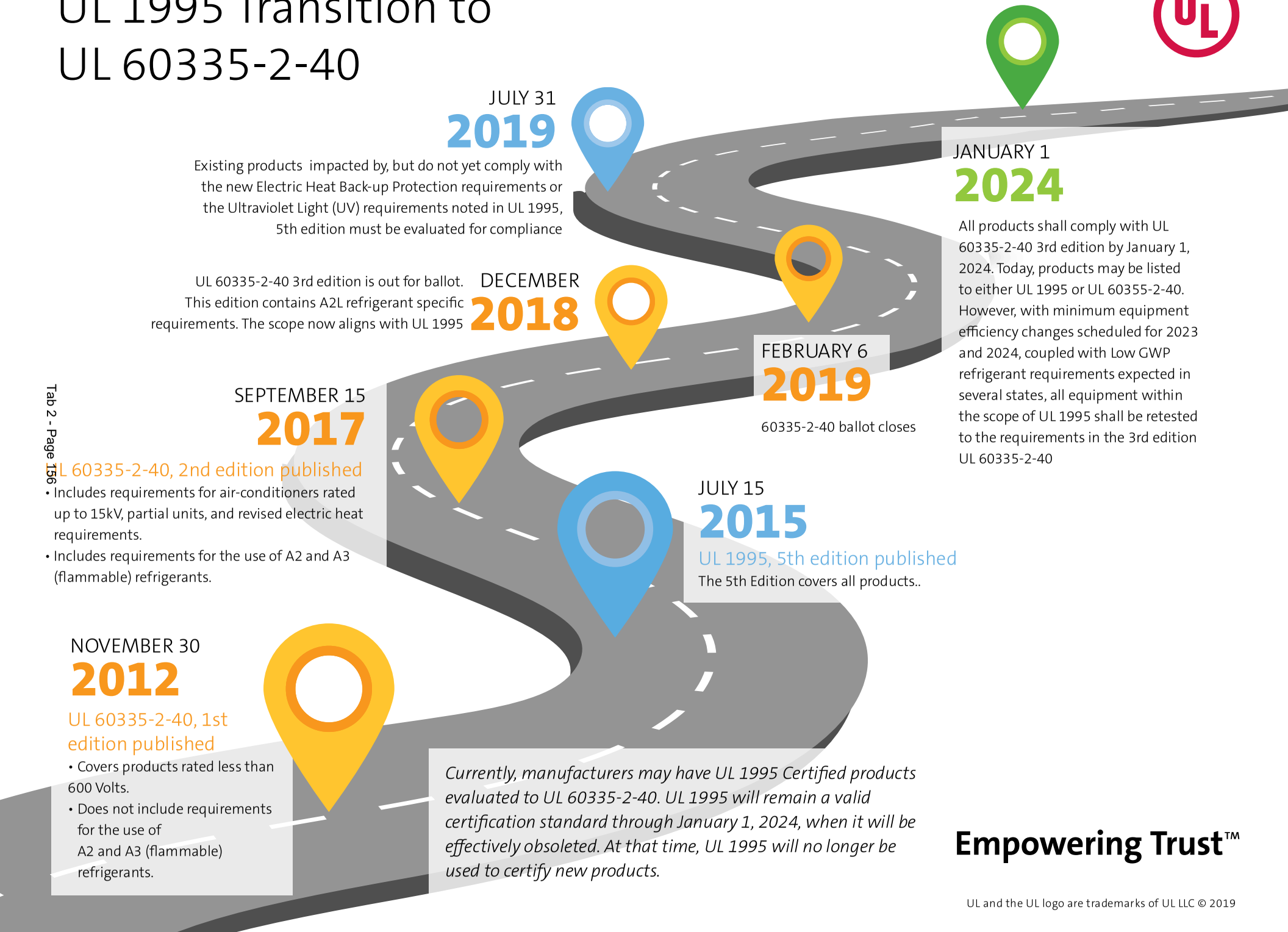
A2L System Repairs

- Leak check to verify no refrigerant is present.
- Ensure equipment is grounded before working.
- Use Proper capacitor discharge methods.
- Use only OEM approved replacement parts.
- Use nitrogen before and during all brazing.

A2L Recovery

- Do NOT vent
- Do NOT mix refrigerants
- Use recovery tools rated for use with A2L refrigerants
- Recover all refrigerant before opening system
- Recover into DOT approved recovery cylinder.
- Do not exceed cylinder fill weights.
- Label recovery cylinder contents

UL 1995 Transition to UL 60335-2-40



JULY 31
2019

Existing products impacted by, but do not yet comply with the new Electric Heat Back-up Protection requirements or the Ultraviolet Light (UV) requirements noted in UL 1995, 5th edition must be evaluated for compliance

JANUARY 1
2024

All products shall comply with UL 60335-2-40 3rd edition by January 1, 2024. Today, products may be listed to either UL 1995 or UL 60355-2-40. However, with minimum equipment efficiency changes scheduled for 2023 and 2024, coupled with Low GWP refrigerant requirements expected in several states, all equipment within the scope of UL 1995 shall be retested to the requirements in the 3rd edition UL 60335-2-40

UL 60335-2-40 3rd edition is out for ballot. This edition contains A2L refrigerant specific requirements. The scope now aligns with UL 1995

DECEMBER
2018

FEBRUARY 6
2019

60335-2-40 ballot closes

SEPTEMBER 15
2017

UL 60335-2-40, 2nd edition published

- Includes requirements for air-conditioners rated up to 15kV, partial units, and revised electric heat requirements.
- Includes requirements for the use of A2 and A3 (flammable) refrigerants.

JULY 15
2015

UL 1995, 5th edition published

The 5th Edition covers all products..

NOVEMBER 30
2012

UL 60335-2-40, 1st edition published

- Covers products rated less than 600 Volts.
- Does not include requirements for the use of A2 and A3 (flammable) refrigerants.

Currently, manufacturers may have UL 1995 Certified products evaluated to UL 60335-2-40. UL 1995 will remain a valid certification standard through January 1, 2024, when it will be effectively obsoleted. At that time, UL 1995 will no longer be used to certify new products.

Empowering Trust™

M1101.7-21

Proponents: Mary Koban (mkoban@ahrinet.org)

2021 International Mechanical Code

Revise as follows:

1101.7 ~~Change in refrigerant type.~~ ~~The type of refrigerant in refrigeration systems having a refrigerant circuit containing more than 220 pounds (99.8 kg) of Group A1 or 30 pounds (13.6 kg) of any other group refrigerant shall not be changed without prior notification to the code official and compliance with the applicable code provisions for the new refrigerant type.~~

1101.7 Changing Refrigerant. Changes of refrigerant in an existing system to a refrigerant with a different refrigerant designation shall only be allowed where in accordance with the following:

1. The owner or the owner's authorized agent shall be notified prior to making a change of refrigerant, and the change of refrigerant shall not be made where the owner objects to the change.

2. The change in refrigerant shall be in accordance with one of the following.

2.1 Written instructions of the original equipment manufacturer.

2.2 An evaluation of the system by a registered design professional or by an approved agency that validates safety and suitability of the replacement refrigerant.

2.3 Approved by the code official.

3. Where the replacement refrigerant is classified into the same safety group, requirements that were applicable to the existing system shall continue to apply.

4. Where the replacement refrigerant is classified into a different safety group, the system shall comply with the requirements of this standard for a new installation, and the change of refrigerant shall require code official approval.

~~**1102.2.1 Mixing.** Refrigerants, including refrigerant blends, with different designations in ASHRAE 34 shall not be mixed in a system.~~

~~**Exception:** Addition of a second refrigerant is allowed where permitted by the *equipment* or *appliance* manufacturer to improve oil return at low temperatures. The refrigerant and amount added shall be in accordance with the manufacturer's instructions.~~

1102.2.1 Mixing. Refrigerants with different refrigerant designations shall only be mixed in a system in accordance with both of the following:

1. The addition of a second refrigerant is allowed by the equipment manufacturer and is in accordance with the manufacturer's written instructions.

2. The resulting mixture does not change the refrigerant safety group.

Add new text as follows:

Refrigerant Designation. The unique identifying alphanumeric value or refrigerant number assigned to an individual refrigerant and published in ASHRAE Standard 34.

Reason Statement: With the onset of flammable refrigerants, the need to address change of refrigerant from one safety class to another was identified. ASHRAE published addendum e to ASHRAE 15-2016 to address this concern (which is now part of the ASHRAE 15-2019 version, Section 5.3).
This code proposal was accepted and approved for the 2024 IMC code cycle.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposal provides a clarification to address the use of new systems but does not introduce any additional requirements that would impact cost.

Resiliency Impact Statement: This proposal will increase Resiliency
This proposal will increase resiliency as it will enable users to be able to use lower GWP refrigerants safely and effectively. If users need to change refrigerant from one class to another, they will have information available to make this change.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: M1101.7-21

Discussion by Richard Potts
Jun 13, 2022 14:13 UTC

Supporting information provided by proponent.
Attachments: https://va.cdpaccess.com/proposal/1089/discuss/160/file/download/757/A2L%20Refrigerants%20Best%20Practices_Jan2022.pdf, https://va.cdpaccess.com/proposal/1089/discuss/160/file/download/756/UL1995to60355_timeline2019_vDIGITAL1-1.pdf

Proposal # 1089

A2L Equipment Best Practices

Before Installing or Servicing Equipment

- SAFETY FIRST
- Read SDS and OEM Equipment Manual
- Follow lockout/tagout procedures when needed.
- Verify no voltage present before working.
- Ensure area is well ventilated.
- Evaluate jobsite for a) ignition sources b) flammable vapors c) controlling area, d) confined spaces and e) clear exit points.

A2L Installation

- Follow OEM guidelines for minimum room area/refrigerant charge limits.
- Ensure mitigation components are installed and operating per OEM instructions.
- Use locking refrigerant caps to prevent unauthorized access to the system
- Ensure a filter drier is installed

A2L Evacuation and Pressure Test

- Consult the OEM instructions to determine proper evacuation targets/procedures
- Pressure test field erected components
- Evacuate the system before charging using an A2L rated vacuum pump
- Record a) *date*, b) *test pressure* c) *vacuum level on the label* (UL 60335-2-40).

A2L Charging (if required)

- Do NOT exceed the maximum allowable refrigerant charge per OEM instructions (charge amounts may vary due to line-sets.)
- Follow OEMs procedure for proper charging techniques. (Superheat/Subcooling)
- If refrigerant is a 400-series, the refrigerant must leave the cylinder in 'liquid form'.
- Record a) *date* b) *total refrigerant charge weight on the unit label* (UL 60335-2-40).

A2L System Repairs

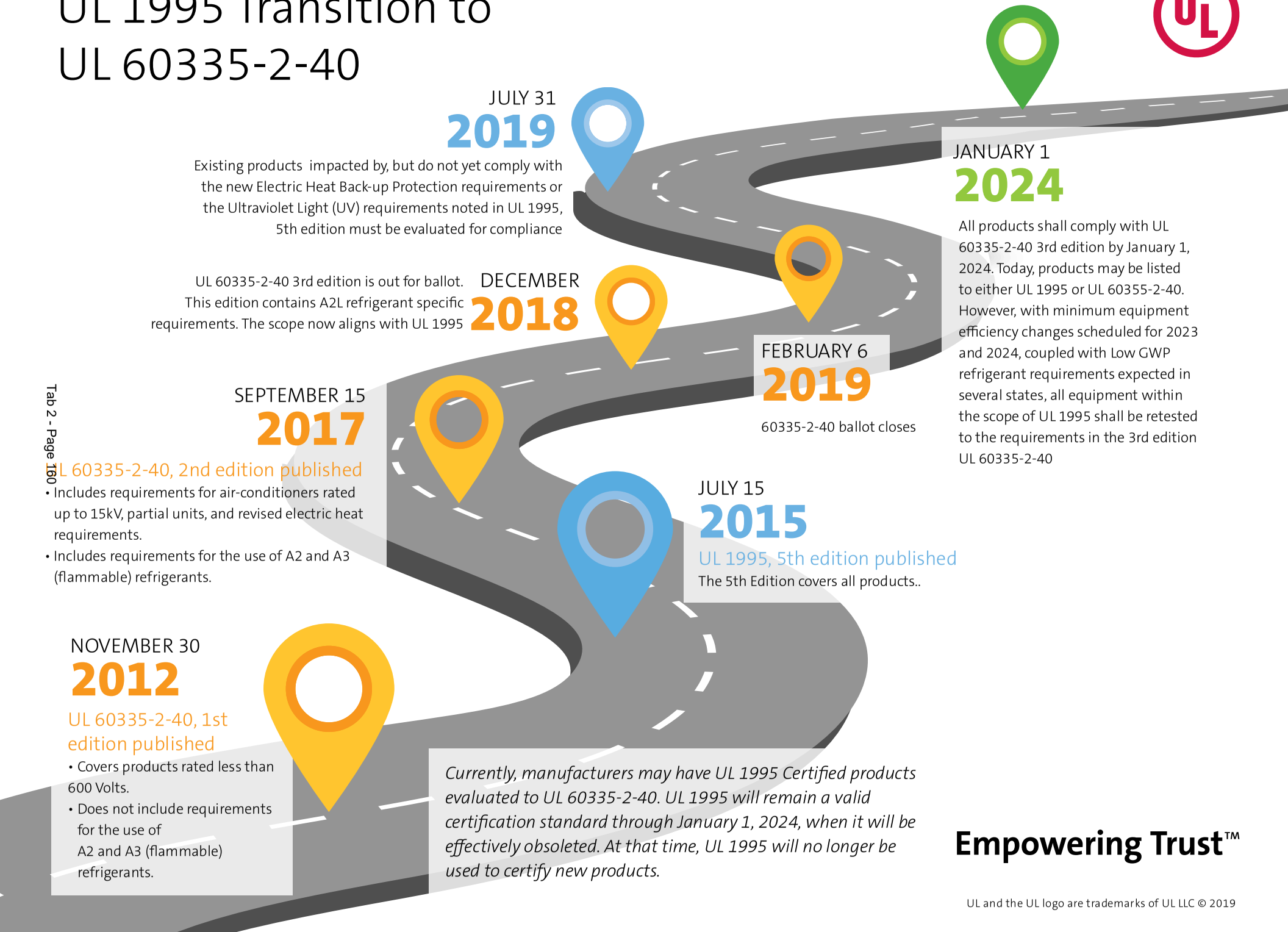
- Leak check to verify no refrigerant is present.
- Ensure equipment is grounded before working.
- Use Proper capacitor discharge methods.
- Use only OEM approved replacement parts.
- Use nitrogen before and during all brazing.

A2L Recovery

- Do NOT vent
- Do NOT mix refrigerants
- Use recovery tools rated for use with A2L refrigerants
- Recover all refrigerant before opening system
- Recover into DOT approved recovery cylinder.
- Do not exceed cylinder fill weights.
- Label recovery cylinder contents

For more information visithttps://www.ahrinet.org/saferefrigerant V1.0_1/2022

UL 1995 Transition to UL 60335-2-40



JULY 31
2019

Existing products impacted by, but do not yet comply with the new Electric Heat Back-up Protection requirements or the Ultraviolet Light (UV) requirements noted in UL 1995, 5th edition must be evaluated for compliance

JANUARY 1
2024

All products shall comply with UL 60335-2-40 3rd edition by January 1, 2024. Today, products may be listed to either UL 1995 or UL 60355-2-40. However, with minimum equipment efficiency changes scheduled for 2023 and 2024, coupled with Low GWP refrigerant requirements expected in several states, all equipment within the scope of UL 1995 shall be retested to the requirements in the 3rd edition UL 60335-2-40

UL 60335-2-40 3rd edition is out for ballot. This edition contains A2L refrigerant specific requirements. The scope now aligns with UL 1995

DECEMBER
2018

FEBRUARY 6
2019

60335-2-40 ballot closes

SEPTEMBER 15
2017

UL 60335-2-40, 2nd edition published

- Includes requirements for air-conditioners rated up to 15kV, partial units, and revised electric heat requirements.
- Includes requirements for the use of A2 and A3 (flammable) refrigerants.

JULY 15
2015

UL 1995, 5th edition published

The 5th Edition covers all products..

NOVEMBER 30
2012

UL 60335-2-40, 1st edition published

- Covers products rated less than 600 Volts.
- Does not include requirements for the use of A2 and A3 (flammable) refrigerants.

Currently, manufacturers may have UL 1995 Certified products evaluated to UL 60335-2-40. UL 1995 will remain a valid certification standard through January 1, 2024, when it will be effectively obsoleted. At that time, UL 1995 will no longer be used to certify new products.

Empowering Trust™

M1103.1-21

Proponents: Mary Koban (mkoban@ahrinet.org)

2021 International Mechanical Code

Revise as follows:

TABLE 1103.1 REFRIGERANT CLASSIFICATION, AMOUNT AND OEL

Portions of table not shown remain unchanged.

CHEMICAL REFRIGERANT	FORMULA	CHEMICAL NAME OF BLEND	REFRIGERANT SAFETY GROUP CLASSIFICATION	AMOUNT OF REFRIGERANT PER OCCUPIED SPACE						
				RCL			LFL			OEL[d]
				~~Pounds per 1,000 cubic feet~~ lb/MCf	ppm	g/m^3	lb/MCf	ppm	g/m^3	~~OEL[e]~~ ppm
R-11[d,c]	CCl_3F	trichlorofluoromethane	A1	0.39	1,100	~~6.2~~ 6.1				~~C~~1,000
R-12[d,c]	CCl_2F_2	dichlorodifluoromethane	A1	5.6	18,000	90				1,000
R-13[d,c]	$CClF_3$	chlorotrifluoromethane	A1	—	—	—				1,000
R-13B1[d,c]	$CBrF_3$	bromotrifluoromethane	A1	—	—	—				1,000
R-13I1	CF_3I	trifluoroiodomethane	A1	1.0	2,000	16				500
R-31	CH_2ClF	chlorofluoromethane	-	-	-	-				-
R-32	CH_2F_2	difluoromethane (methylene fluoride)	A2L[e]	4.8	36,000	77	19.1	144,000	306	1,000
R-41	fluoromethane (methyl fluoride)	-	-	-	-	-				-
R-50	CH_4	methane	A3	—	—	—		50,000		1,000
R-113[d,c]	CCl_2FCClF_2	1,1,2-trichloro-1,2,2-trifluoroethane	A1	1.2	2,600	20				1,000
R-114[d,c]	$CClF_2CClF_2$	1,2-dichloro-1,1,2,2-tetrafluoroethane	A1	8.7	20,000	140				1,000
R-141b	CH_3CCl_2F	1,1-dichloro-1-fluoroethane	—	0.78	2,600	12	17.8	60,000	287	500
R-142b	CH_3CClF_2	1-chloro-1,1-difluoroethane	A2	5.1	20,000	~~83~~ 82	20.4	80,000	329	1,000
R-143a	CH_3CF_3	1,1,1-trifluoroethane	A2L[e]	~~4.5~~ 4.4	21,000	70	17.5	82,000	282	1,000
R-152a	CH_3CHF_2	1,1-difluoroethane	A2	2.0	12,000	32	8.1	48,000	130	1,000
R-170	CH_3CH_3	ethane	A3	0.54	7,000	~~8.7~~ 8.6	2.4	31,000	38	1,000
R-E170	CH_3OCH_3	Methoxymethane (dimethyl ether)	A3	1.0	8,500	16	4.0	34,000	64	1,000
R-290	$CH_3CH_2CH_3$	propane	A3	~~0.56~~ 0.59	5,300	9.5	2.4	21,000	38	1,000
R-C318	$-(CF_2)_4-$	octafluorocyclobutane	A1	41	80,000	~~660~~ 650				1,000
R-400A[d,c]	zeotrope	R-12/114 (50.0/50.0)	A1	10	28,000	160				1,000
R-400B[d,c]	zeotrope	R-12/114 (60.0/40.0)	A1	11	30,000	170				1,000
R-403B	zeotrope	R-290/22/218 (5.0/56.0/39.0)	A1	18	~~70,000~~ 68,000	290				1,000
R-406A	zeotrope	R-22/600a/142b (55.0/4.0/41.0)	A2	4.7	21,000	~~25~~ 75	18.8	82,000	301.9	1,000
R407I	zeotrope	R-32/125/134a(19.5/8.5/72.0)	A1	16	71,100	250				1,000
R-408A	zeotrope	R-125/143a/22 (7.0/46.0/47.0)	A1	21	~~95,000~~ 94,000	~~340~~ 330				1,000

R-411A	zeotrope	R-127/22/152a (1.5/87.5/11.0)	A2	2.9	14,000	46	11.6	55,000	185.6	~~990~~ 970
R-411B	zeotrope	R-1270/22/152a (3.0/94.0/3.0)	A2	2.8	13,000	45	14.8	70,000	238.3	~~980~~ 940
R-412A	zeotrope	R-22/218/142b (70.0/5.0/25.0)	A2	5.1	22,000	82	20.5	87,000	328.6	1,000
R-413A	zeotrope	R-218/134a/600a (9.0/88.0/3.0)	A2	5.8	22,000	~~94~~ 93	23.4	88,000	374.9	1,000
R-414B	zeotrope	R-22/124/600a/142b (50.0/39.0/1.5/9.5)	A1	6.0	23,000	~~95~~ 96				1,000
R-417A	zeotrope	R-125/134a/600 (46.6/50.0/3.4)	A1	3.5	13,000	~~56~~ 55				1,000
R-417B	zeotrope	R-125/134a/600 (79.0/18.3/2.7)	A1	4.3	15,000	~~70~~ 69				1,000
R-418A	zeotrope	R-290/22/152a (1.5/96.0/2.5)	A2	4.8	22,000	77	19.2	89,000	308.4	1,000
R-419A	zeotrope	R-125/134a/E170 (77.0/19.0/4.0)	A2	4.2	15,000	67	16.7	60,000	268.6	1,000
R-419B	zeotrope	R-125/134a/E170 (48.5/48.0/3.5)	A2	4.6	17,000	74	18.5	69,000	297.3	1,000
R-420A	zeotrope	R-134a/142b (88.0/12.0)	A1	12	~~45,000~~ 44,000	~~190~~ 180				1,000
R-423A	zeotrope	R-134a/227ea (52.5/47.5)	A1	19	59,000	~~310~~ 300				1,000
R-424A	zeotrope	R-125/134a/600a/600/601a (50.5/47.0/0.9/1.0/0.6)	A1	6.2	23,000	100				~~970~~ 990
R-428A	zeotrope	R-125/143a/290/600a (77.5/20.0/0.6/1.9)	A1	23	~~83,000~~ 84,000	370				1,000
R-429A	zeotrope	R-E170/152a/600a (60.0/10.0/30.0)	A3	0.81	6,300	13	3.2	25,000	83.8	1,000
R-430A	zeotrope	R-152a/600a (76.0/24.0)	A3	1.3	8,000	21	5.2	32,000	44.0	1,000
R-431A	zeotrope	R-290/152a (71.0/29.0)	A3	~~0.69~~ 0.68	5,500	11	2.7	22,000	38.6	1,000
R-432A	zeotrope	R-1270/E170 (80.0/20.0)	A3	0.13	1,200	2.1	2.4	22,000	39.2	~~700~~ 550
R-433A	zeotrope	R-1270/290 (30.0/70.0)	A3	0.34	3,100	5.5	2.4	20,000	32.4	~~880~~ 760
R-433B	zeotrope	R-1270/290 (5.0-95.0)	A3	~~0.51~~ 0.39	~~4,500~~ 3,500	~~8.1~~ 6.3	2.0	18,000	32.1	950
R-433C	zeotrope	R-1270/290 (25.0-75.0)	A3	0.41	~~3,600~~ 3,700	~~6.6~~ 6.5	2.0	18,000	83.8	790
R-435A	zeotrope	R-E170/152a (80.0/20.0)	A3	1.1	8,500	17	4.3	34,000	68.2	1,000
R-436A	zeotrope	R-290/600a (56.0/44.0)	A3	0.50	4,000	8.1	2.0	16,000	32.2	1,000

R-436B	zeotrope	R-290/600a (52.0/48.0)	A3	0.51	4,000	~~8.1~~ 8.2	2.0	16,000	32.7	1,000
R-437A	zeotrope	R-125/134a/600/601 (19.5/78.5/1.4/0.6)	A1	~~5.0~~ 5.1	19,000	82				990
R-439A	zeotrope	R-32/125/600a (50.0/47.0/3.0)	A2	4.7	26,000	76	18.9	104,000	303.3	~~990~~ 1,000
R-440A	zeotrope	R-290/134a/152a (0.6/1.6/97.8)	A2	1.9	12,000	31	7.8	46,000	124.7	1,000
R-441A	zeotrope	R-170/290/600a/600 (3.1/54.8/6.0/36.1)	A3	0.39	3,200	6.3	2.0	16,000	31.7	1,000
R-443A	zeotrope	R-1270/290/600a (55.0/40.0/5.0)	A3	0.19	1,700	3.1	2.2	20,000	35.6	~~580~~ 640
R-444A	zeotrope	R-32/152a/1234ze(E) (12.0/5.0/83.0)	A2L[e]	5.1	21,000	81	19.9	82,000	324.8	850
R-444B	zeotrope	R-32/152a/1234ze(E) (41.5/10.0/48.5)	A2L[e]	4.3	23,000	69	17.3	93,000	277.3	~~890~~ 930
R-445A	zeotrope	R-744/134a/1234ze(E) (6.0/9.0/85.0)	A2L[e]	4.2	16,000	67	21.7	63,000	347.4	930
R-446A	zeotrope	R-32/1234ze(E)/600 (68.0/29.0/3.0)	A2L[e]	2.5	16,000	39	13.5	62,000	217.4	960
R-447A	zeotrope	R-32/125/1234ze(E) (68.0/3.5/28.5)	A2L[e]	2.6	16,000	42	18.9	65,000	303.5	~~900~~ 960
R-447B	zeotrope	R-32/125/1234ze(E) (68.0/8.0/24.0)	A2L[e]	23	~~30,000~~ 16,000	~~360~~ 42	20.6	121,000	312.7	970
R-448A	zeotrope	R-32/125/1234yf/134a/1234ze(E) (26.0/26.0/20.0/21.0/7.0)	A1	24	110,000	390				~~890~~ 860
R-449A	zeotrope	R-32/125/1234yf/134a (24.3/24.7/25.3/25.7)	A1	23	100,000	370				~~830~~ 840
R-451A	zeotrope	R-1234yf/134a (89.8/10.2)	A2L[e]	5.3	18,000	81	20.3	70,000	326.6	~~520~~ 530
R-451B	zeotrope	R-1234yf/134a (88.8/11.2)	A2L[e]	5.3	18,000	81	20.3	70,000	326.6	530
R-452A	zeotrope	R-32/125/1234yf (11.0/59.0/30.0)	A1	27	~~10,000~~ 100,000	440				~~780~~ 790
R-452B	zeotrope	R-32/125/1234yf (67.0/7.0/26.0)	A2L[e]	~~23~~ 4.8	30,000	~~360~~ 77	19.3	119,000	310.5	870
R-452C	zeotrope	R-32/125/1234yf (12.5/61.0/26.5)	A1	27	100,000	430				~~800~~ 810
R-454A	zeotrope	R-32/1234yf (35.0/65.0)	A2L[e]	~~28~~ 3.2	16,000	~~450~~ 52	18.3	63,000	293.9	690
R-454B	zeotrope	R-32/1234yf (68.9/31.1)	A2L[e]	~~22~~ 3.1	19,000	~~360~~ 49	22.0	77,000	352.6	850
R-454C	zeotrope	R-32/1234yf (21.5/78.5)	A2L[e]	~~29~~ 4.4	19,000	~~460~~ 71	18.0	62,000	289.5	620
R-455A	zeotrope	R-744/32/1234yf (3.0/21.5/75.5)	A2L[e]	~~23~~ 4.9	~~30,000~~ 22,000	~~380~~ 79	26.9	118,000	432.1	650
						~~400~~				

R-457A	zeotrope	R-32/1234yf/152a (18.0/70.0/12.0)	A2L[e]	~~25~~ 3.4	15,000	~~400~~ 54	13.5	60,000	216.3	650
R-457B	zeotrope	R-32/1234yf/152a (35.0/55.0/10.0)	A2L	3.7	19,000	59	14.9	76,000	239	730
R-459A	zeotrope	R-32/1234yf/1234ze(E) (68.0/26.0/6.0)	A2L[e]	~~23~~ 4.3	27,000	~~360~~ 69	17.4	107,000	278.7	870
R-459B	zeotrope	R-32/1234yf/1234ze(E) (21.0/69.0/10.0)	A2L[e]	30	~~16,000~~ 25,000	~~470~~ 92	23.3	99,000	373.5	640
R-460A	zeotrope	R-32/125/134a/1234ze(E) (12.0/52.0/14.0/22.0)	A1	24	92,000	380				~~650~~ 950
R-460C	zeotrope	R-32/125/134a/1234ze(E) (2.5/52.5/46.0/49.0)	A1	20	73,000	310				900
R-462A	zeotrope	R-32/125/143a/134a/600 (9.0/42.0/2.0/44.0/3.0)	A2	3.9	16,000	62	16.6	105,000	265.8	1,000
R-464A	zeotrope	R-32/125/1234ze(E)/227ea (27.0/27.0/40.0/6.0)	A1	27	120,000	430				930
R-465A	zeotrope	R-32/290/1234yf (21.0/7.9/71.1)	A2	2.5	12,000	40	10.0	98,000	160.9	660
R-466A	zeotrope	R-32/125/13I1 (49.0/11.5/39.5)	A1	6.2	30,000	99				860
R-467A	zeotrope	R-32/125/134a/600a (22.0/5.0/72.4/0.6)	A2L	6.7	31,000	110				1,000
R-468A	zeotrope	R-1132a/32/1234yf (3.5/21.5/75.0)	A2L	4.1	16,00	66				610
R-469A	zeotrope	R-744/32/125 (35.0/32.5/32.5)	A1	8	53,000					1,600
R-470A	zeotrope	R-744/32/125/134a/1234ze(E)/227ea (10.0/17.0/19.0/7.0/44.0/3.0)	A1	17	77,00	270				1,100
R-470B	zeotrope	R-744/32/125/134a/1234ze(E)/227ea (10.0/11.5/11.5/3.0/57.0/7.0)	A1	16	72,000	270				1,100
R-471A	zeotrope	R-1234ze(E)/227ea/1336mzz(E) (78.7/4.3/17.0)	A1	9.7	31,000	160				710
R-472A	zeotrope	R-744/32/134a (69.0/12.0/19.0)	A1	4.5	35,000	72				2,700
R-500[ed]	azeotrope	R-12/152a (73.8/26.2)	A1	~~7.6~~ 7.4	~~30,000~~ 29,000	120				1,000
R-501[de]	azeotrope	R-22/12 (75.0/25.0)	A1	13	54,000	210				1,000
R-502[ed]	azeotrope	R-22/115 (48.8/51.2)	A1	21	73,000	330				1,000
R-503[e d]	azeotrope	R-23/13 (40.1/59.9)	—	—	—	—				1,000
R-504[de]	azeotrope	R-32/115 (48.2/51.8)	—	28	140,000	450				1,000
R-507A	azeotrope	R-125/143a (50.0/50.0)	A1	32	130,000	~~520~~ 510				1,000
R-509A	azeotrope	R-22/218 (44.0/56.0)	A1	24	75,000	~~390~~ 380				1,000
R-510A	azeotrope	R-E170/600a (88.0/12.0)	A3	0.87	7,300	14	3.5	29,000	56.1	1,000
R-511A	azeotrope	R-290/E170 (95.0/5.0)	A3	0.59	5,300	9.5	2.4	21,000	38.0	1,000
R-512A	azeotrope	R-134a/152a (5.0/95.0)	A2	1.9	11,000	31	7.7	45,000	123.9	1,000
R-515A	azeotrope	R-1234ze(E)/227ea (88.0/12.0)	A1	19	~~62,000~~ 63,000	300				810
R-515B	azeotrope	R-1234ze(E)/227ea (91.1/8.9)	A1	18	61,000	290				810

R-516A	azeotrope	R-1234yf/134a/152a (77.5/8.5/14.0)	A2	~~7.0~~ 3.2	~~27,000~~ 13,000	~~110~~ 52	13.1	50,000	210.1	590
R-600	$CH_3CH_2CH_2CH_3$	butane	A3	0.15	1,000	2.4	3.0	20,000	48	1,000
R-600a	$CH(CH_3)_2CH_3$	2-methylpropane (isobutane)	A3	0.59	4,000	9.6	2.4	16,000	38	1,000
R-601	$CH_3CH_2CH_2$ CH_2CH_3	pentane	A3	0.18	1,000	2.9	2.2	12,000	35	600
R-601a	$(CH_3)_2CHCH_2CH_3$	2-methylbutane (isopentane)	A3	0.18	1,000	2.9	2.4	13,000	38	600
R-717	NH_3	ammonia	B2L	0.014	320	0.22	7.2	167,000	116	25
R-1130(E)	CHCl=CHCl	trans-1,2-dichloroethene	~~B1~~ 2	0.25	1,000	4	16	65,000	258	200
R-1132a	$CF_2=CH_2$	1,1-difluoroethylene	A2	2.0	13,000	33	8.1	50,000	131	500
R-1150	$CH_2=CH_2$	ethene (ethylene)	A3	—	—	—	2.2	31,000	36	200
R-1224yd(Z)	$CF_3CF=CHCl$	(Z)-1-chloro-2,3,3,3-tetrafluoroethylene	A1	23	60,000	~~360~~ 370				1,000
R-1234yf	$CF_3CF=CH_2$	2,3,3,3-tetrafluoro-1-propene	A2L[e]	4.7	16,000	75	18.0	62,000	289	500
R-1234ze(E)	$CF_3CH=CHF$	trans-1,3,3,3-tetrafluoro-1-propene	A2L[e]	4.7	16,000	~~75~~ 76	18.8	65,000	303	800
R-1270	$CH_3CH=CH_2$	Propene (propylene)	A3	0.1	1,000	1.7				500
R-1336mzz(E)	$CF_3CHCHCF_3$	trans-1,1,1,4,4,4-hexaflouro-2-butene	A1	3.0	7,200	48				400
R-1336mzz(Z)	$CF_3CHCHCF_3$	cis-1,1,1,4,4,4-hexaflouro-2-butene	A1	~~5.4~~ 5.2	13,000	~~87~~ 84				500

For SI: 1 pound = 0.454 kg, 1 cubic foot = 0.0283m^3

a. Degrees of hazard are for health, fire, and reactivity, respectively, in accordance with NFPA 704.

b. Reduction to 1-0-0 is allowed if analysis satisfactory to the code official shows that the maximum concentration for a rupture or full loss of refrigerant charge would not exceed the IDLH, considering both the refrigerant quantity and room volume.

c.

~~The ASHRAE Standard 34 flammability classification for this refrigerant is 2L, which is a subclass of~~
Class

~~2.d. Class~~
I ozone depleting substance; prohibited for new installations.

~~e.~~
d. Occupational Exposure Limit based on the OSHA PEL, ACGIH TLV-TWA, the TERA WEEL or consistent value on a time-weighed average (TWA) basis (unless noted C for ceiling) for an 8 hr/d and 40 hr/wk.

Reason Statement: The Refrigerant Classifications (except Degrees of Hazard) are determined by ASHRAE SSPC 34 and published in ASHRAE Standard 34. This proposal seeks to update the refrigerant table with the new refrigerants added to Standard 34 since the last code cycle. The reasons for the additions of new refrigerants can be found at https://www.ashrae.org/standards-research--technology/standards-addenda. All proposed changes are either incorporated into ASHRAE Standard 34-2019 or the published addenda to ASHRAE Standard 34-2019 located at the link above.
The code proposal was accepted and adopted in the 2024 IMC

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Updating the table of refrigerants that could be used in systems does not add labor or material costs because the choice of refrigerant is up to the owner and designer.

Resiliency Impact Statement: This proposal will increase Resiliency

The code change will provide users more flexibility to use lower GWP refrigerants and also allow greater flexibility with equipment design. Therefore, it will increase resiliency.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: M1103.1-21

Discussion by Richard Potts
Jun 13, 2022 14:27 UTC

Supporting information provided by proponent.
Attachments: https://va.cdpaccess.com/proposal/1090/discuss/161/file/download/759/A2L%20Refrigerants%20Best%20Practices_Jan2022.pdf, https://va.cdpaccess.com/proposal/1090/discuss/161/file/download/758/UL1995to60355_timeline2019_vDIGITAL1-1.pdf

Proposal # 1090

A2L Equipment Best Practices

Before Installing or Servicing Equipment

- SAFETY FIRST
- Read SDS and OEM Equipment Manual
- Follow lockout/tagout procedures when needed.
- Verify no voltage present before working.
- Ensure area is well ventilated.
- Evaluate jobsite for a) ignition sources b) flammable vapors c) controlling area, d) confined spaces and e) clear exit points.

A2L Installation

- Follow OEM guidelines for minimum room area/refrigerant charge limits.
- Ensure mitigation components are installed and operating per OEM instructions.
- Use locking refrigerant caps to prevent unauthorized access to the system
- Ensure a filter drier is installed

A2L Evacuation and Pressure Test

- Consult the OEM instructions to determine proper evacuation targets/procedures
- Pressure test field erected components
- Evacuate the system before charging using an A2L rated vacuum pump
- Record a) *date*, b) *test pressure* c) *vacuum level on the label* (UL 60335-2-40).

A2L Charging (if required)

- Do NOT exceed the maximum allowable refrigerant charge per OEM instructions (charge amounts may vary due to line-sets.)
- Follow OEMs procedure for proper charging techniques. (Superheat/Subcooling)
- If refrigerant is a 400-series, the refrigerant must leave the cylinder in 'liquid form'.
- Record a) *date* b) *total refrigerant charge weight on the unit label* (UL 60335-2-40).

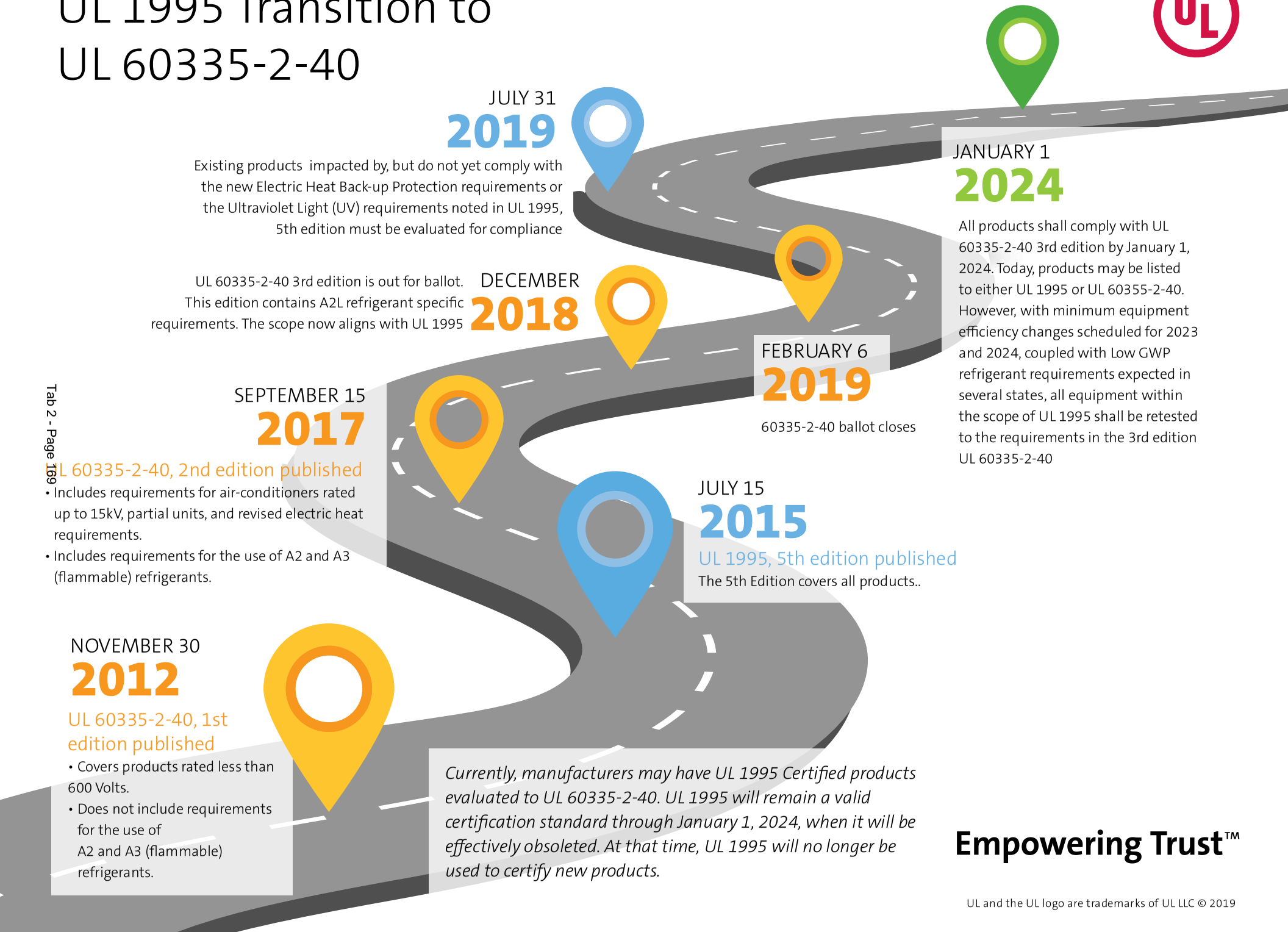
A2L System Repairs

- Leak check to verify no refrigerant is present.
- Ensure equipment is grounded before working.
- Use Proper capacitor discharge methods.
- Use only OEM approved replacement parts.
- Use nitrogen before and during all brazing.

A2L Recovery

- Do NOT vent
- Do NOT mix refrigerants
- Use recovery tools rated for use with A2L refrigerants
- Recover all refrigerant before opening system
- Recover into DOT approved recovery cylinder.
- Do not exceed cylinder fill weights.
- Label recovery cylinder contents

UL 1995 Transition to UL 60335-2-40



JULY 31
2019

Existing products impacted by, but do not yet comply with the new Electric Heat Back-up Protection requirements or the Ultraviolet Light (UV) requirements noted in UL 1995, 5th edition must be evaluated for compliance

JANUARY 1
2024

All products shall comply with UL 60335-2-40 3rd edition by January 1, 2024. Today, products may be listed to either UL 1995 or UL 60355-2-40. However, with minimum equipment efficiency changes scheduled for 2023 and 2024, coupled with Low GWP refrigerant requirements expected in several states, all equipment within the scope of UL 1995 shall be retested to the requirements in the 3rd edition UL 60335-2-40

UL 60335-2-40 3rd edition is out for ballot. This edition contains A2L refrigerant specific requirements. The scope now aligns with UL 1995

DECEMBER
2018

FEBRUARY 6
2019

60335-2-40 ballot closes

SEPTEMBER 15
2017

UL 60335-2-40, 2nd edition published

- Includes requirements for air-conditioners rated up to 15kV, partial units, and revised electric heat requirements.
- Includes requirements for the use of A2 and A3 (flammable) refrigerants.

JULY 15
2015

UL 1995, 5th edition published

The 5th Edition covers all products..

NOVEMBER 30
2012

UL 60335-2-40, 1st edition published

- Covers products rated less than 600 Volts.
- Does not include requirements for the use of A2 and A3 (flammable) refrigerants.

Currently, manufacturers may have UL 1995 Certified products evaluated to UL 60335-2-40. UL 1995 will remain a valid certification standard through January 1, 2024, when it will be effectively obsoleted. At that time, UL 1995 will no longer be used to certify new products.

Empowering Trust™

M1104.3.1-21

Proponents: Mary Koban (mkoban@ahrinet.org)

2021 International Mechanical Code

Revise as follows:

1104.3.1 Air conditioning for human comfort. ~~In other than industrial occupancies where the quantity in a single independent circuit does not exceed the amount in Table 1103.1, Group B1, B2 and B3 refrigerants shall not be used in high-probability systems for air-conditioning for human comfort.~~ High probability systems used for human comfort shall use Group A1 or A2L refrigerant.
Exceptions:

1. Listed equipment for residential occupancies containing a maximum of 6.6 pounds (3 kg) of refrigerant.

2. Listed equipment for commercial occupancies containing a maximum of 22 pounds (10 kg) of refrigerant.

3. Industrial occupancies.

1104.3.2 ~~Nonindustrial occupancies~~ Group A3 and B3 refrigerants. ~~Group A2 and B2 refrigerants shall not be used in high-probability systems where the quantity of refrigerant in any independent refrigerant circuit exceeds the amount shown in Table 1104.3.2.~~ Group A3 and B3 refrigerants shall not be used except where *approved*.

~~Exception~~ Exceptions: This section does not apply to

1. ~~laboratories~~ Laboratories where the floor area per occupant is not less than 100 square feet (9.3 m^2).

2. Listed self contained systems having a maximum of 0.331 pounds (150 g) of Group A3 refrigerant.

3. Industrial occupancies.

Delete without substitution:

~~**TABLE 1104.3.2 MAXIMUM PERMISSIBLE QUANTITIES OF REFRIGERANTS**~~

~~TYPE OF REFRIGERATION SYSTEM~~	~~MAXIMUM POUNDS FOR VARIOUS OCCUPANCIES~~			
	~~Institutional~~	~~Public a ssembly~~	~~Residential~~	~~All other occupancies~~
~~**Sealed absorption system**~~				
~~In exit access~~	~~0~~	~~0~~	~~3.3~~	~~3.3~~
~~In adjacent outdoor locations~~	~~0~~	~~0~~	~~22~~	~~22~~
~~In other than exit access~~	~~0~~	~~6.6~~	~~6.6~~	~~6.6~~
~~**Unit systems**~~				
~~In other than exit access~~	~~0~~	~~0~~	~~6.6~~	~~6.6~~

~~For SI: 1 pound = 0.454 kg.~~

Reason Statement: These requirements are based on previous editions of ASHRAE 15. ASHRAE 15 has been updated numerous

times resulting in the modification to the requirement similar to this proposal. High probability direct systems for human comfort must use either Group A1 or A2L refrigerant. Other refrigerants can be used provided the maximum charge does not exceed 6.6 pound for residential applications and 22 pounds for commercial units. Plus, these unit must be listed for use with these other refrigerants. The revision to Section 1104.3.1 becomes consistent with Section 7.5.2 of ASHRAE 15. Although, ASHRAE lists the refrigerants prohibited for this application, whereas this proposal lists the refrigerants required to be used.
Section 1104.3.2 text being stricken is addressed in the revised text to Section 1104.3.1. The remaining text is consistent with the requirements in Section 7.5.3 of ASHRAE 15.

Addendum i of ASHRAE 15-2019 deleted the table that is equivalent to Table 1104.3.2. This table is no longer necessary with the change to ammonia refrigerant requirements during the last two cycles and with the change adding the exceptions to Section 1104.3.1.

This code change was accepted and adopted in the 2024 IMC.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This change is a clarification of the current requirements that allow Group A1 and A2L for high probability systems used for human comfort. There is no impact to the cost of construction.

Resiliency Impact Statement: This proposal will increase Resiliency
This proposal will increase resiliency by enabling the use of low GWP refrigerants in high probability human comfort systems. It will also allow the use of low GWP refrigerants in self contained applications.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: M1104.3.1-21

Discussion by Richard Potts
Jun 13, 2022 14:38 UTC

Supporting information provided by proponent.
Attachments: https://va.cdpaccess.com/proposal/1093/discuss/167/file/download/771/A2L%20Refrigerants%20Best%20Practices_Jan2022.pdf, https://va.cdpaccess.com/proposal/1093/discuss/167/file/download/770/UL1995to60355_timeline2019_vDIGITAL1-1.pdf

Proposal # 1093

A2L Equipment Best Practices

Before Installing or Servicing Equipment

- SAFETY FIRST
- Read SDS and OEM Equipment Manual
- Follow lockout/tagout procedures when needed.
- Verify no voltage present before working.
- Ensure area is well ventilated.
- Evaluate jobsite for a) ignition sources b) flammable vapors c) controlling area, d) confined spaces and e) clear exit points.

A2L Installation

- Follow OEM guidelines for minimum room area/refrigerant charge limits.
- Ensure mitigation components are installed and operating per OEM instructions.
- Use locking refrigerant caps to prevent unauthorized access to the system
- Ensure a filter drier is installed

A2L Evacuation and Pressure Test

- Consult the OEM instructions to determine proper evacuation targets/procedures
- Pressure test field erected components
- Evacuate the system before charging using an A2L rated vacuum pump
- Record a) *date*, b) *test pressure* c) *vacuum level on the label* (UL 60335-2-40).

A2L Charging (if required)

- Do NOT exceed the maximum allowable refrigerant charge per OEM instructions (charge amounts may vary due to line-sets.)
- Follow OEMs procedure for proper charging techniques. (Superheat/Subcooling)
- If refrigerant is a 400-series, the refrigerant must leave the cylinder in 'liquid form'.
- Record a) *date* b) *total refrigerant charge weight on the unit label* (UL 60335-2-40).

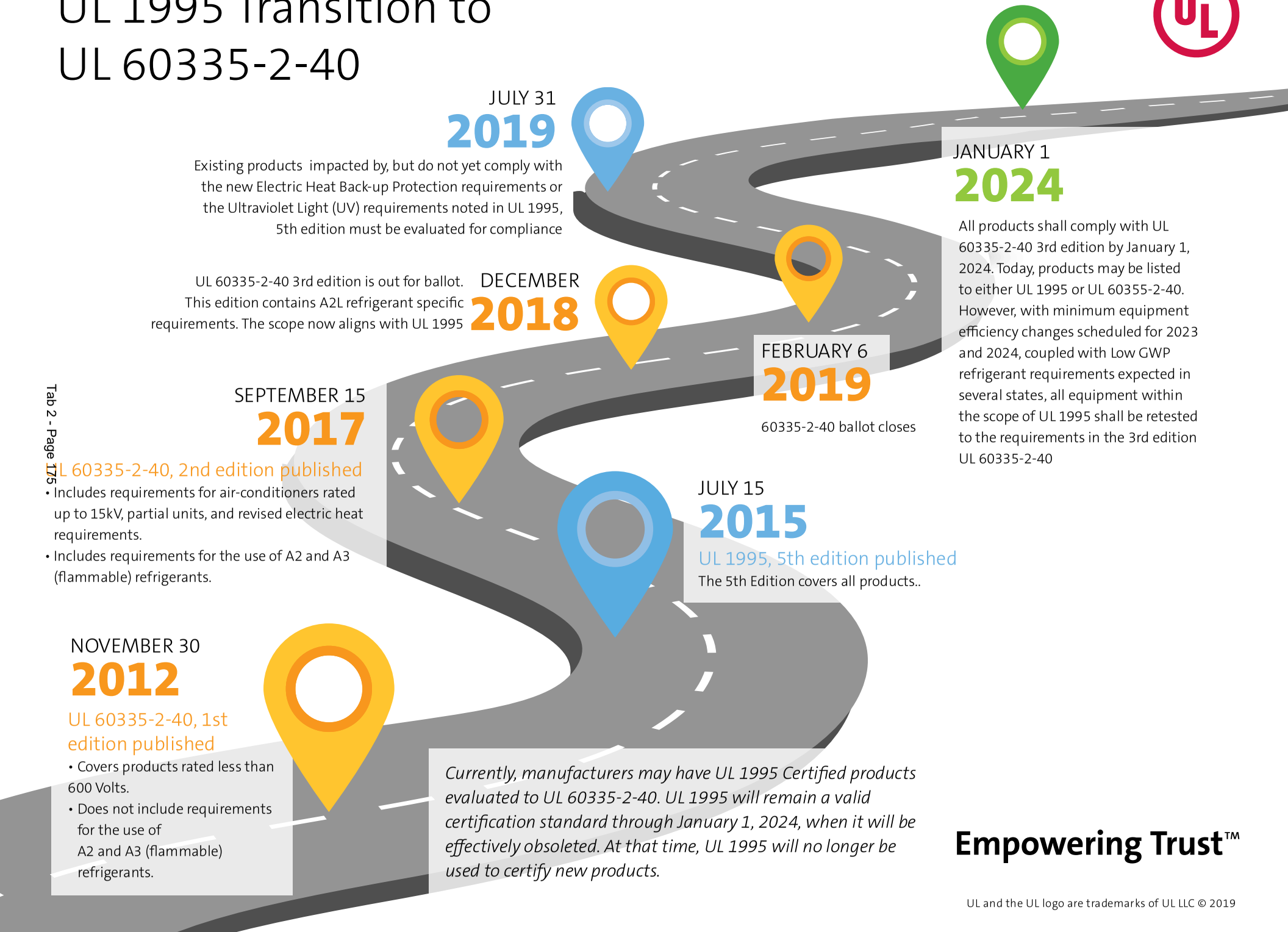
A2L System Repairs

- Leak check to verify no refrigerant is present.
- Ensure equipment is grounded before working.
- Use Proper capacitor discharge methods.
- Use only OEM approved replacement parts.
- Use nitrogen before and during all brazing.

A2L Recovery

- Do NOT vent
- Do NOT mix refrigerants
- Use recovery tools rated for use with A2L refrigerants
- Recover all refrigerant before opening system
- Recover into DOT approved recovery cylinder.
- Do not exceed cylinder fill weights.
- Label recovery cylinder contents

UL 1995 Transition to UL 60335-2-40



JULY 31
2019

Existing products impacted by, but do not yet comply with the new Electric Heat Back-up Protection requirements or the Ultraviolet Light (UV) requirements noted in UL 1995, 5th edition must be evaluated for compliance

JANUARY 1
2024

All products shall comply with UL 60335-2-40 3rd edition by January 1, 2024. Today, products may be listed to either UL 1995 or UL 60355-2-40. However, with minimum equipment efficiency changes scheduled for 2023 and 2024, coupled with Low GWP refrigerant requirements expected in several states, all equipment within the scope of UL 1995 shall be retested to the requirements in the 3rd edition UL 60335-2-40

UL 60335-2-40 3rd edition is out for ballot. This edition contains A2L refrigerant specific requirements. The scope now aligns with UL 1995

DECEMBER
2018

FEBRUARY 6
2019

60335-2-40 ballot closes

SEPTEMBER 15
2017

UL 60335-2-40, 2nd edition published

- Includes requirements for air-conditioners rated up to 15kV, partial units, and revised electric heat requirements.
- Includes requirements for the use of A2 and A3 (flammable) refrigerants.

JULY 15
2015

UL 1995, 5th edition published

The 5th Edition covers all products..

NOVEMBER 30
2012

UL 60335-2-40, 1st edition published

- Covers products rated less than 600 Volts.
- Does not include requirements for the use of A2 and A3 (flammable) refrigerants.

Currently, manufacturers may have UL 1995 Certified products evaluated to UL 60335-2-40. UL 1995 will remain a valid certification standard through January 1, 2024, when it will be effectively obsoleted. At that time, UL 1995 will no longer be used to certify new products.

Empowering Trust™

M1104.3.1(2)-21

Proponents: Helen Walter-Terrinoni (psuphy1988@gmail.com); Mary Koban (mkoban@ahrinet.org)

2021 International Mechanical Code

Revise as follows:

1104.3.1 Air conditioning for human comfort. ~~In other than industrial occupancies where the quantity in a single independent circuit does not exceed the amount in Table 1103.1, Group B1, B2 and B3 refrigerants shall not be used in high-probability systems for air-conditioning for human comfort.~~ High probability systems used for human comfort shall use Group A1 or A2L refrigerant.~~ comfort.~~

Exceptions:

1. Listed equipment for residential occupancies containing a maximum of 6.6 pounds (3 kg) of refrigerant.

2. Listed equipment for commercial occupancies containing a maximum of 22 pounds (10 kg) of refrigerant.

3. Industrial occupancies.

1104.3.2 ~~Nonindustrial occupancies~~ Group A2, A3, B2, and B3 refrigerants. Group A2 and B2 refrigerants shall not be used in ~~high-probability systems~~ high probabilty systems. ~~where the quantity of refrigerant in any independent refrigerant circuit exceeds the amount shown in Table 1104.3.2.~~ Group A3 and B3 refrigerants shall not be used except where *approved*.

~~Exception~~ Exceptions: This section does not apply to ~~laboratories~~ :

1.Laboratories where the floor area per occupant is not less than 100 square feet (9.3 m^2).

2. Listed self-contained systems having a maximum of 0.331 pounds (150 g) of Group A3 refrigerant.

3. Self-contained systems listed per UL 60335-2-89 having a maximum of 1.1 pounds (500g) of Group A3 refrigerant.

4. Industrial occupancies.

5. Equipment listed for and used in residential occupancies containing a maximum of 6.6 pounds (3 kg) of Group A2 or B2 refrigerant.

6. Equipment listed for and used in commercial occupancies containing a maximum of 22 pounds (10 kg) of Group A2 or B2 refrigerant.

Delete without substitution:

~~**TABLE 1104.3.2 MAXIMUM PERMISSIBLE QUANTITIES OF REFRIGERANTS**~~

~~TYPE OF REFRIGERATION SYSTEM~~	~~MAXIMUM POUNDS FOR VARIOUS OCCUPANCIES~~			
	~~Institutional~~	~~Public a ssembly~~	~~Residential~~	~~All other occupancies~~
~~**Sealed absorption system**~~				
~~In exit access~~	~~0~~	~~0~~	~~3.3~~	~~3.3~~
~~In adjacent outdoor locations~~	~~0~~	~~0~~	~~22~~	~~22~~
~~In other than exit access~~	~~0~~	~~6.6~~	~~6.6~~	~~6.6~~
~~**Unit systems**~~				
~~In other than exit access~~	~~0~~	~~0~~	~~6.6~~	~~6.6~~

~~For SI: 1 pound = 0.454 kg.~~

Reason Statement: These requirements being stricken are based on previous editions of ASHRAE 15. ASHRAE 15 has been updated numerous times resulting in the modification to the requirement similar to this proposal. High probability direct systems for human comfort must use either Group A1 or A2L refrigerant. Other refrigerants can be used provided the maximum charge does not exceed 6.6 pound for residential applications and 22 pounds for commercial units. Plus, these unit must be listed for use with these other refrigerants.
This section is being further updated after the 2024 cycle to incorporate new information regarding equipment listed to UL 60335-2-89. The standard was published in October 2021 following the close of the 2024 cycle. Therefore, the updates incorporate the newest information and align with the equipment listing and most recent updates to ASHRAE 15.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This change is a further clarification of the allowed refrigerants for human comfort and the allowed exceptions for A3 and B3 refrigerants . There is no impact to the cost of construction.

Resiliency Impact Statement: This proposal will increase Resiliency
The new text aligns more clearly with changes made to ASHRAE 15 and should provide equipment manufacturers and users more opportunities to use lower GWP refrigerants and meet the current standards.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: M1104.3.1(2)-21

Discussion by Richard Potts
Jun 13, 2022 14:40 UTC

Supporting information provided by proponent.
Attachments: https://va.cdpaccess.com/proposal/1175/discuss/168/file/download/773/A2L%20Refrigerants%20Best%20Practices_Jan2022.pdf, https://va.cdpaccess.com/proposal/1175/discuss/168/file/download/772/UL1995to60355_timeline2019_vDIGITAL1-1.pdf

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A2L Equipment Best Practices

Before Installing or Servicing Equipment

- SAFETY FIRST
- Read SDS and OEM Equipment Manual
- Follow lockout/tagout procedures when needed.
- Verify no voltage present before working.
- Ensure area is well ventilated.
- Evaluate jobsite for a) ignition sources b) flammable vapors c) controlling area, d) confined spaces and e) clear exit points.

A2L Installation

- Follow OEM guidelines for minimum room area/refrigerant charge limits.
- Ensure mitigation components are installed and operating per OEM instructions.
- Use locking refrigerant caps to prevent unauthorized access to the system
- Ensure a filter drier is installed

A2L Evacuation and Pressure Test

- Consult the OEM instructions to determine proper evacuation targets/procedures
- Pressure test field erected components
- Evacuate the system before charging using an A2L rated vacuum pump
- Record a) *date*, b) *test pressure* c) *vacuum level on the label* (UL 60335-2-40).

A2L Charging (if required)

- Do NOT exceed the maximum allowable refrigerant charge per OEM instructions (charge amounts may vary due to line-sets.)
- Follow OEMs procedure for proper charging techniques. (Superheat/Subcooling)
- If refrigerant is a 400-series, the refrigerant must leave the cylinder in 'liquid form'.
- Record a) *date* b) *total refrigerant charge weight on the unit label* (UL 60335-2-40).

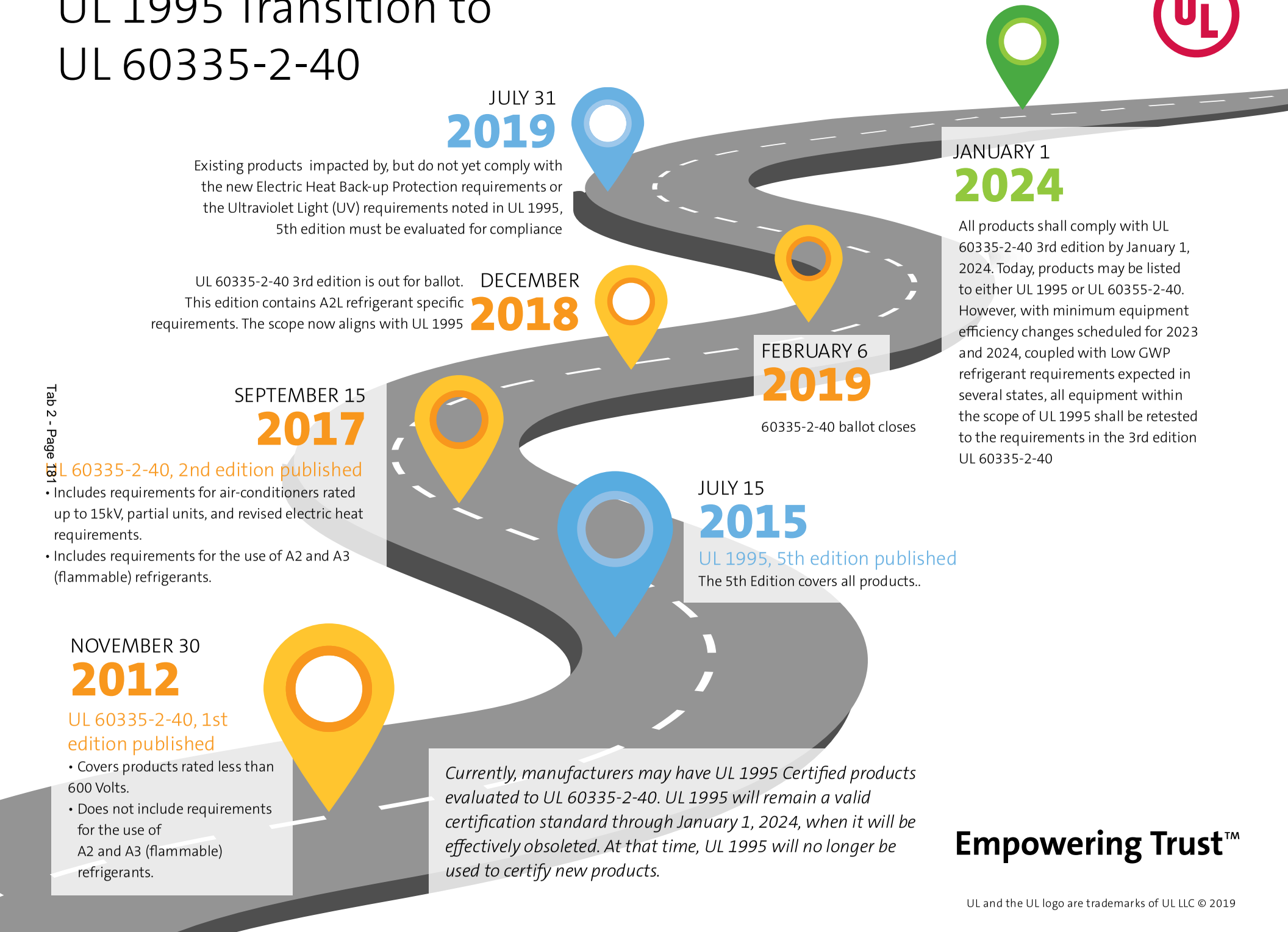
A2L System Repairs

- Leak check to verify no refrigerant is present.
- Ensure equipment is grounded before working.
- Use Proper capacitor discharge methods.
- Use only OEM approved replacement parts.
- Use nitrogen before and during all brazing.

A2L Recovery

- Do NOT vent
- Do NOT mix refrigerants
- Use recovery tools rated for use with A2L refrigerants
- Recover all refrigerant before opening system
- Recover into DOT approved recovery cylinder.
- Do not exceed cylinder fill weights.
- Label recovery cylinder contents

UL 1995 Transition to UL 60335-2-40



JULY 31
2019

Existing products impacted by, but do not yet comply with the new Electric Heat Back-up Protection requirements or the Ultraviolet Light (UV) requirements noted in UL 1995, 5th edition must be evaluated for compliance

JANUARY 1
2024

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UL 60335-2-40 3rd edition is out for ballot. This edition contains A2L refrigerant specific requirements. The scope now aligns with UL 1995

DECEMBER
2018

FEBRUARY 6
2019

60335-2-40 ballot closes

SEPTEMBER 15
2017

UL 60335-2-40, 2nd edition published

- Includes requirements for air-conditioners rated up to 15kV, partial units, and revised electric heat requirements.
- Includes requirements for the use of A2 and A3 (flammable) refrigerants.

JULY 15
2015

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The 5th Edition covers all products..

NOVEMBER 30
2012

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- Covers products rated less than 600 Volts.
- Does not include requirements for the use of A2 and A3 (flammable) refrigerants.

Currently, manufacturers may have UL 1995 Certified products evaluated to UL 60335-2-40. UL 1995 will remain a valid certification standard through January 1, 2024, when it will be effectively obsoleted. At that time, UL 1995 will no longer be used to certify new products.

Empowering Trust™

M1106.3-21

Proponents: Mary Koban (mkoban@ahrinet.org)

2021 International Mechanical Code

Revise as follows:

1106.3 ~~Flammable~~ Class 2 and 3 refrigerants. Where refrigerants of Groups A2, A3, B2 and B3 are used, the *machinery room* shall conform to the Class I, Division 2, *hazardous location* classification requirements of NFPA 70.

~~Exception:~~ ~~*Machinery rooms* for systems containing Group A2L *refrigerants* that are provided with ventilation in accordance with Section 1106.4.~~

Reason Statement: ASHRAE 15 has been modified removing the term "flammable refrigerant" and replacing it with the specific Class of refrigerant. Section 1106.3 has thus been modified to indicate Class 2 and 3 refrigerants.
This code proposal was accepted and adopted in the 2024 IMC code cycle.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This change is editorial in nature. As a result, there is no impact to the cost of construction.

Resiliency Impact Statement: This proposal will increase Resiliency
This code proposal will increase resiliency by further enabling low GWP refrigerants and aligning with ASHRAE 15

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: M1106.3-21

Discussion by Richard Potts
Jun 13, 2022 14:28 UTC

Supporting information provided by proponent.
Attachments: https://va.cdpaccess.com/proposal/1099/discuss/162/file/download/761/A2L%20Refrigerants%20Best%20Practices_Jan2022.pdf, https://va.cdpaccess.com/proposal/1099/discuss/162/file/download/760/UL1995to60355_timeline2019_vDIGITAL1-1.pdf

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- Ensure area is well ventilated.
- Evaluate jobsite for a) ignition sources b) flammable vapors c) controlling area, d) confined spaces and e) clear exit points.

A2L Installation

- Follow OEM guidelines for minimum room area/refrigerant charge limits.
- Ensure mitigation components are installed and operating per OEM instructions.
- Use locking refrigerant caps to prevent unauthorized access to the system
- Ensure a filter drier is installed

A2L Evacuation and Pressure Test

- Consult the OEM instructions to determine proper evacuation targets/procedures
- Pressure test field erected components
- Evacuate the system before charging using an A2L rated vacuum pump
- Record a) *date*, b) *test pressure* c) *vacuum level on the label* (UL 60335-2-40).

A2L Charging (if required)

- Do NOT exceed the maximum allowable refrigerant charge per OEM instructions (charge amounts may vary due to line-sets.)
- Follow OEMs procedure for proper charging techniques. (Superheat/Subcooling)
- If refrigerant is a 400-series, the refrigerant must leave the cylinder in 'liquid form'.
- Record a) *date* b) *total refrigerant charge weight on the unit label* (UL 60335-2-40).

A2L System Repairs

- Leak check to verify no refrigerant is present.
- Ensure equipment is grounded before working.
- Use Proper capacitor discharge methods.
- Use only OEM approved replacement parts.
- Use nitrogen before and during all brazing.

A2L Recovery

- Do NOT vent
- Do NOT mix refrigerants
- Use recovery tools rated for use with A2L refrigerants
- Recover all refrigerant before opening system
- Recover into DOT approved recovery cylinder.
- Do not exceed cylinder fill weights.
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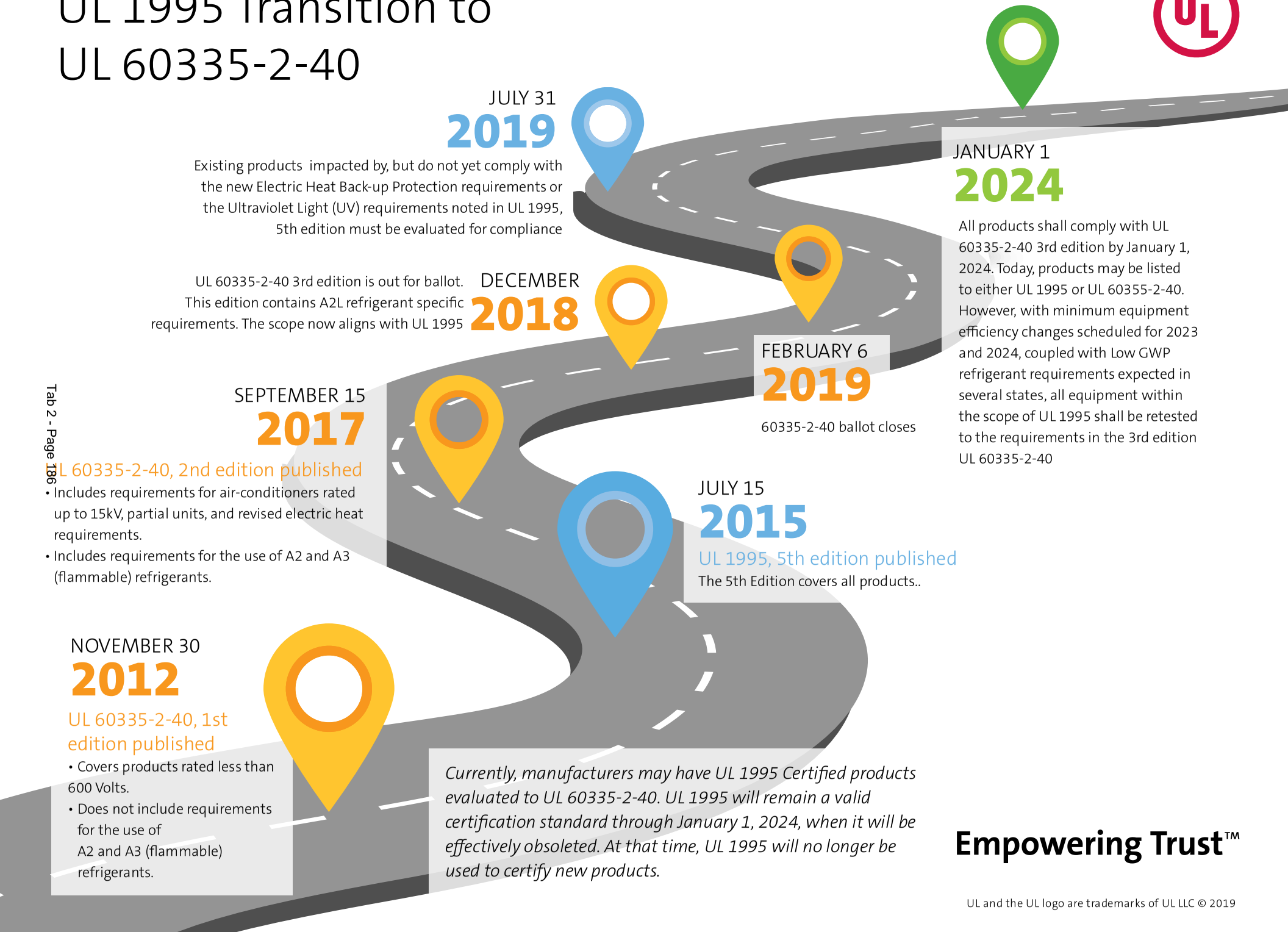
UL 1995 Transition to UL 60335-2-40



JULY 31
2019

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UL 60335-2-40 3rd edition is out for ballot. This edition contains A2L refrigerant specific requirements. The scope now aligns with UL 1995

DECEMBER
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FEBRUARY 6
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60335-2-40 ballot closes

SEPTEMBER 15
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- Includes requirements for the use of A2 and A3 (flammable) refrigerants.

JULY 15
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NOVEMBER 30
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- Covers products rated less than 600 Volts.
- Does not include requirements for the use of A2 and A3 (flammable) refrigerants.

Currently, manufacturers may have UL 1995 Certified products evaluated to UL 60335-2-40. UL 1995 will remain a valid certification standard through January 1, 2024, when it will be effectively obsoleted. At that time, UL 1995 will no longer be used to certify new products.

Empowering Trust™

M1106.4-21 Part I

Proponents: Mary Koban (mkoban@ahrinet.org)

2021 International Mechanical Code

Revise as follows:

1106.4 ~~Special requirements for Group A2L refrigerant machinery rooms~~
Group A2L and B2L Refrigerant
. ~~*Machinery rooms* with systems containing Group A2L *refrigerants* that do not conform to the Class I, Division 2, hazardous location electrical requirements of NFPA 70, as permitted by the exception to Section 1106.3, shall comply with Sections 1106.4.1 through 1106.4.3.~~

~~**Exception:** *Machinery rooms* conforming to the Class I, Division 2, hazardous location classification requirements of NFPA 70 are not required to comply with Sections 1106.4.1 and 1106.4.2.~~

Machinery rooms for Group A2L and B2L refrigerant shall comply with Sections 1106.4.1 through Section 1106.4.3.

Add new text as follows:

1106.4.1 Elevated Temperature. Open flame-producing devices or continuously operating hot surfaces over 1290 °F (700 °C) shall not be permanently installed in the room

Revise as follows:

1106.4.2 ~~Emergency ventilation system~~ system Refrigerant Detector. ~~An emergency ventilation system shall be provided at the minimum exhaust rate specified in ASHRAE 15 or Table 1106.4.2. Shutdown of the emergency ventilation system shall be by manual means.~~
In addition to the requirements of Section 1105.3, refrigerant detectors shall signal an alarm and activate the

ventilation system in accordance with the response time specified in Table 1106.4.2.

Add new text as follows:

Table 1106.4.2 GROUP A2L and B2L DETECTOR ACTIVATION

Activation Level	Maximum Response Time (seconds)	ASHRAE 15 Ventilation Level	Alarm Reset	Alarm Type
Less than or equal to the OEL in Table 1103.1	300	1	Automatic	Trouble
Less than or equal to the refrigerant concentration level in Table 1103.1	15	2	Manual	Emergency

Delete without substitution:

~~**TABLE 1106.4.2 MINIMUM EXHAUST RATES**~~

Revise as follows:

1106.4.3 ~~Emergency ventilation system discharge~~ Mechanical Ventilation. ~~The emergency ventilation system point of discharge to the atmosphere shall be located outside of the structure at not less than 15 feet (4572 mm) above the adjoining grade level and not less than 20 feet (6096 mm) from any window, *ventilation* opening or *exit* .~~ The machinery room shall have a mechanical ventilation system complying with ASHRAE 15.

Reason Statement: The machinery room requirements in the 2019 edition of ASHRAE 15 have been completely revised for Group A2L and B2L refrigerants. The table in the current code was part of the original draft to ASHRAE 15 that was subsequently rejected as being inaccurate. This is proposed for deletion. With Group A2L and B2L refrigerants, research has proven that open flames and hot surfaces can be at a higher temperature than Group A2, A3, B2, and B3 refrigerants.

Section 1106.4.1 adds special provisions for Group A2L and B2L refrigerants regarding hot surfaces.

New ventilation requirements were added to ASHRAE 15: 2019 for machinery rooms using Group A2L and B2L refrigerants. There are two levels of ventilation that are required based on the response of the refrigerant detector. This proposal references ASHRAE 15 for the ventilation requirement (note that the latest standard can be viewed free of charge at https://www.ashrae.org/technical-resources/standards-and-guidelines/read-onlyversions- of-ashrae-standards.) A table is included that identifies the two levels of annunciation in the event of a refrigerant leak in a machinery room.

The first activation is a trouble alarm for a small leak. This requires a minimal amount of ventilation. The second level is an emergency alarm. This signals the activation of the full amount of ventilation for the room.
This code proposal was accepted and adopted in the 2024 IMC code cycle.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This change clarified requirements for machinery room ventilation. The use of low GWP refrigerants is optional.

Resiliency Impact Statement: This proposal will increase Resiliency
This code proposal will further align the IMC with ASHRAE 15 and provide the appropriate safety measures in machinery rooms. It will further enable low GWP refrigerants and therefore increase resiliency.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: M1106.4-21 Part I

Discussion by Richard Potts

Jun 13, 2022 14:29 UTC

Supporting information provided by proponent.
Attachments: https://va.cdpaccess.com/proposal/1101/discuss/163/file/download/763/A2L%20Refrigerants%20Best%20Practices_Jan2022.pdf, https://va.cdpaccess.com/proposal/1101/discuss/163/file/download/762/UL1995to60355_timeline2019_vDIGITAL1-1.pdf

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A2L Equipment Best Practices

Before Installing or Servicing Equipment

- SAFETY FIRST
- Read SDS and OEM Equipment Manual
- Follow lockout/tagout procedures when needed.
- Verify no voltage present before working.
- Ensure area is well ventilated.
- Evaluate jobsite for a) ignition sources b) flammable vapors c) controlling area, d) confined spaces and e) clear exit points.

A2L Installation

- Follow OEM guidelines for minimum room area/refrigerant charge limits.
- Ensure mitigation components are installed and operating per OEM instructions.
- Use locking refrigerant caps to prevent unauthorized access to the system
- Ensure a filter drier is installed

A2L Evacuation and Pressure Test

- Consult the OEM instructions to determine proper evacuation targets/procedures
- Pressure test field erected components
- Evacuate the system before charging using an A2L rated vacuum pump
- Record a) *date*, b) *test pressure* c) *vacuum level on the label* (UL 60335-2-40).

A2L Charging (if required)

- Do NOT exceed the maximum allowable refrigerant charge per OEM instructions (charge amounts may vary due to line-sets.)
- Follow OEMs procedure for proper charging techniques. (Superheat/Subcooling)
- If refrigerant is a 400-series, the refrigerant must leave the cylinder in 'liquid form'.
- Record a) *date* b) *total refrigerant charge weight on the unit label* (UL 60335-2-40).

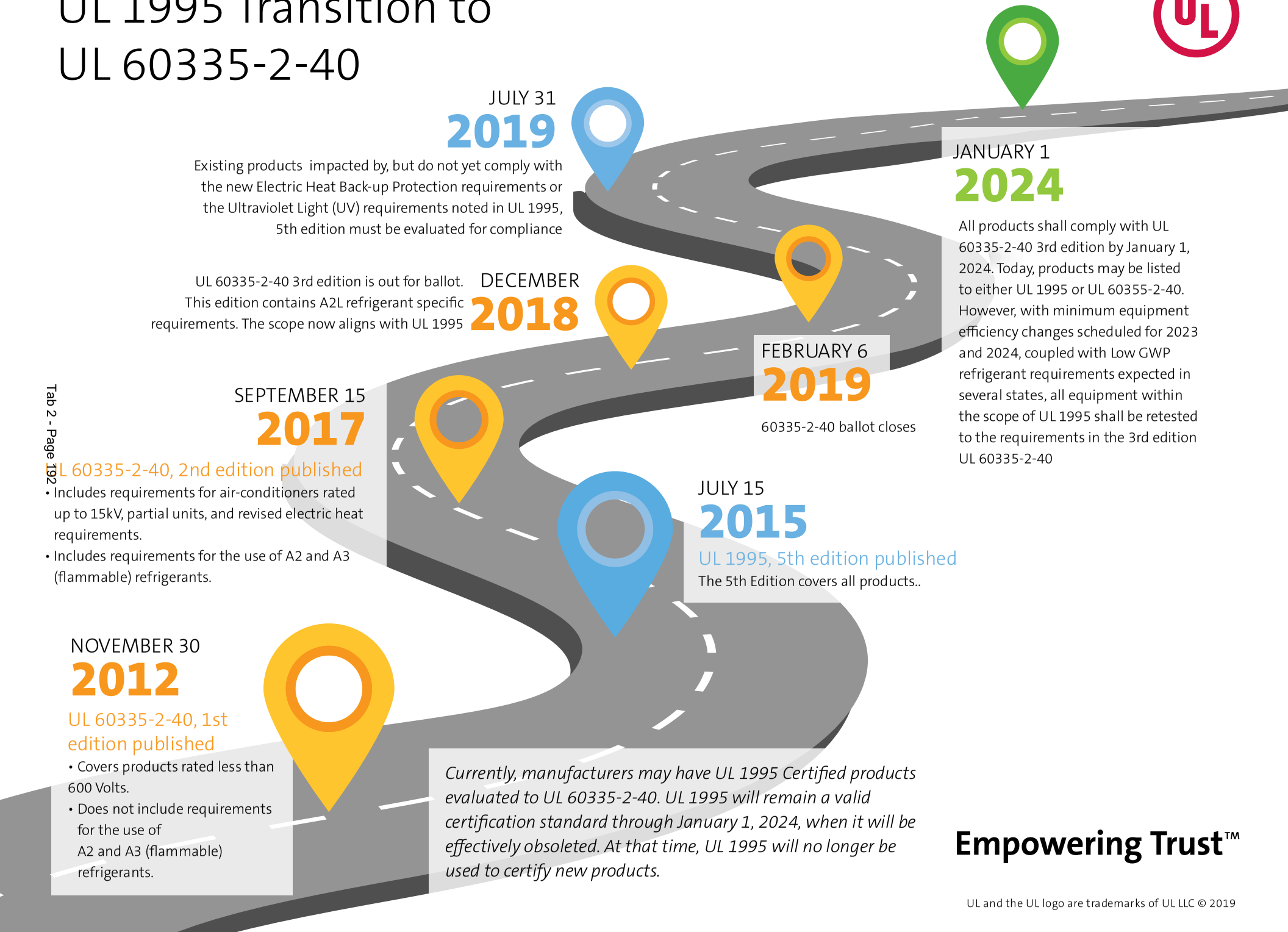
A2L System Repairs

- Leak check to verify no refrigerant is present.
- Ensure equipment is grounded before working.
- Use Proper capacitor discharge methods.
- Use only OEM approved replacement parts.
- Use nitrogen before and during all brazing.

A2L Recovery

- Do NOT vent
- Do NOT mix refrigerants
- Use recovery tools rated for use with A2L refrigerants
- Recover all refrigerant before opening system
- Recover into DOT approved recovery cylinder.
- Do not exceed cylinder fill weights.
- Label recovery cylinder contents

UL 1995 Transition to UL 60335-2-40



JULY 31
2019

Existing products impacted by, but do not yet comply with the new Electric Heat Back-up Protection requirements or the Ultraviolet Light (UV) requirements noted in UL 1995, 5th edition must be evaluated for compliance

JANUARY 1
2024

All products shall comply with UL 60335-2-40 3rd edition by January 1, 2024. Today, products may be listed to either UL 1995 or UL 60355-2-40. However, with minimum equipment efficiency changes scheduled for 2023 and 2024, coupled with Low GWP refrigerant requirements expected in several states, all equipment within the scope of UL 1995 shall be retested to the requirements in the 3rd edition UL 60335-2-40

UL 60335-2-40 3rd edition is out for ballot. This edition contains A2L refrigerant specific requirements. The scope now aligns with UL 1995

DECEMBER
2018

FEBRUARY 6
2019

60335-2-40 ballot closes

SEPTEMBER 15
2017

UL 60335-2-40, 2nd edition published

- Includes requirements for air-conditioners rated up to 15kV, partial units, and revised electric heat requirements.
- Includes requirements for the use of A2 and A3 (flammable) refrigerants.

JULY 15
2015

UL 1995, 5th edition published

The 5th Edition covers all products..

NOVEMBER 30
2012

UL 60335-2-40, 1st edition published

- Covers products rated less than 600 Volts.
- Does not include requirements for the use of A2 and A3 (flammable) refrigerants.

Currently, manufacturers may have UL 1995 Certified products evaluated to UL 60335-2-40. UL 1995 will remain a valid certification standard through January 1, 2024, when it will be effectively obsoleted. At that time, UL 1995 will no longer be used to certify new products.

Empowering Trust™

M1106.4-21 Part II

Proponents: Mary Koban (mkoban@ahrinet.org)

2021 International Mechanical Code

Delete without substitution:

~~**[F] 1106.4.1 Ventilation system activation.** Ventilation shall be activated by the refrigerant detection system in the *machinery room*. Refrigerant detection systems shall be in accordance with Section 605.8 of the International Fire Code and all of the following:~~

1. ~~The detectors shall activate at or below a refrigerant concentration of 25 percent of the LFL.~~
2. ~~Upon activation, the detection system shall activate the emergency ventilation system required by Section 1106.4.2.~~
3. ~~The detection, signaling and control circuits shall be supervised.~~

Reason Statement: The machinery room requirements in the 2019 edition of ASHRAE 15 have been completely revised for Group A2L and B2L refrigerants. The table in the current code was part of the original draft to ASHRAE 15 that was subsequently rejected as being inaccurate. This is proposed for deletion. With Group A2L and B2L refrigerants, research has proven that hot surfaces can be at higher temperatures than Group A2, A3, B2, and B3 refrigerants. Section 1106.4.1 adds special provisions for Group A2L and B2L refrigerants regarding hot surfaces.
New ventilation requirements were added to ASHRAE 15 for machinery rooms using Group A2L and B2L refrigerants. There are two levels of ventilation that are required based on the response of the refrigerant detector. This proposal references ASHRAE 15 for the ventilation requirement(note that the latest standard can be viewed free of charge at https://www.ashrae.org/technical-resources/standards-and-guidelines/read-onlyversions- of-ashrae-standards.) A table is included that identifies the two levels of annunciation in the event of a refrigerant leak in a machinery room.

The first activation is a trouble alarm for a small leak. This requires a minimal amount of ventilation. The second level is an emergency alarm. This signals the activation of the full amount of ventilation for the room.

This code proposal was accepted and adopted in the 2024 IMC

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This code proposal is to align with the most recent changes to ASHRAE 15 and should not impact the cost of construction.

Resiliency Impact Statement: This proposal will increase Resiliency
This code proposal will enable the use of low GWP refrigerants and help manufacturers meet the AIM Act.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: M1106.4-21 Part II

Discussion by Richard Potts
Jun 13, 2022 14:30 UTC

Supporting information provided by proponent.
Attachments: https://va.cdpaccess.com/proposal/1167/discuss/164/file/download/765/A2L%20Refrigerants%20Best%20Practices_Jan2022.pdf, https://va.cdpaccess.com/proposal/1167/discuss/164/file/download/764/UL1995to60355_timeline2019_vDIGITAL1-1.pdf

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Proposal # 1167

A2L Equipment Best Practices

Before Installing or Servicing Equipment

- SAFETY FIRST
- Read SDS and OEM Equipment Manual
- Follow lockout/tagout procedures when needed.
- Verify no voltage present before working.
- Ensure area is well ventilated.
- Evaluate jobsite for a) ignition sources b) flammable vapors c) controlling area, d) confined spaces and e) clear exit points.

A2L Installation

- Follow OEM guidelines for minimum room area/refrigerant charge limits.
- Ensure mitigation components are installed and operating per OEM instructions.
- Use locking refrigerant caps to prevent unauthorized access to the system
- Ensure a filter drier is installed

A2L Evacuation and Pressure Test

- Consult the OEM instructions to determine proper evacuation targets/procedures
- Pressure test field erected components
- Evacuate the system before charging using an A2L rated vacuum pump
- Record a) *date*, b) *test pressure* c) *vacuum level on the label* (UL 60335-2-40).

A2L Charging (if required)

- Do NOT exceed the maximum allowable refrigerant charge per OEM instructions (charge amounts may vary due to line-sets.)
- Follow OEMs procedure for proper charging techniques. (Superheat/Subcooling)
- If refrigerant is a 400-series, the refrigerant must leave the cylinder in 'liquid form'.
- Record a) *date* b) *total refrigerant charge weight on the unit label* (UL 60335-2-40).

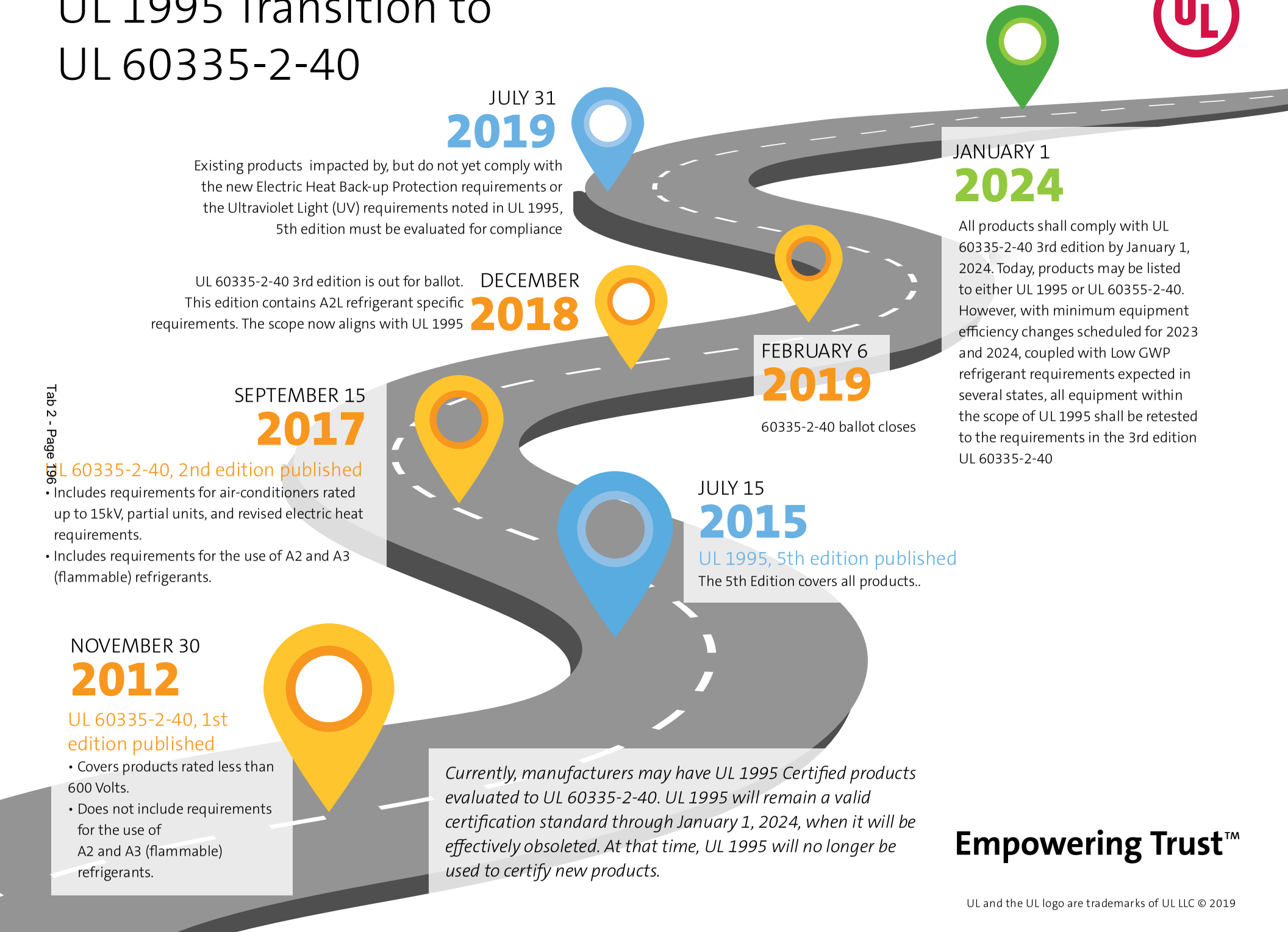
A2L System Repairs

- Leak check to verify no refrigerant is present.
- Ensure equipment is grounded before working.
- Use Proper capacitor discharge methods.
- Use only OEM approved replacement parts.
- Use nitrogen before and during all brazing.

A2L Recovery

- Do NOT vent
- Do NOT mix refrigerants
- Use recovery tools rated for use with A2L refrigerants
- Recover all refrigerant before opening system
- Recover into DOT approved recovery cylinder.
- Do not exceed cylinder fill weights.
- Label recovery cylinder contents

UL 1995 Transition to UL 60335-2-40



JULY 31
2019

Existing products impacted by, but do not yet comply with the new Electric Heat Back-up Protection requirements or the Ultraviolet Light (UV) requirements noted in UL 1995, 5th edition must be evaluated for compliance

JANUARY 1
2024

All products shall comply with UL 60335-2-40 3rd edition by January 1, 2024. Today, products may be listed to either UL 1995 or UL 60355-2-40. However, with minimum equipment efficiency changes scheduled for 2023 and 2024, coupled with Low GWP refrigerant requirements expected in several states, all equipment within the scope of UL 1995 shall be retested to the requirements in the 3rd edition UL 60335-2-40

UL 60335-2-40 3rd edition is out for ballot. This edition contains A2L refrigerant specific requirements. The scope now aligns with UL 1995

DECEMBER
2018

FEBRUARY 6
2019

60335-2-40 ballot closes

SEPTEMBER 15
2017

UL 60335-2-40, 2nd edition published

- Includes requirements for air-conditioners rated up to 15kV, partial units, and revised electric heat requirements.
- Includes requirements for the use of A2 and A3 (flammable) refrigerants.

JULY 15
2015

UL 1995, 5th edition published

The 5th Edition covers all products..

NOVEMBER 30
2012

UL 60335-2-40, 1st edition published

- Covers products rated less than 600 Volts.
- Does not include requirements for the use of A2 and A3 (flammable) refrigerants.

Currently, manufacturers may have UL 1995 Certified products evaluated to UL 60335-2-40. UL 1995 will remain a valid certification standard through January 1, 2024, when it will be effectively obsoleted. At that time, UL 1995 will no longer be used to certify new products.

Empowering Trust™

M-Chapter 15-21

Proponents: Helen Walter-Terrinoni (psuphy1988@gmail.com); Mary Koban (mkoban@ahrinet.org)

2021 International Mechanical Code

Revise as follows:

UL

UL LLC
333 Pfingsten Road
Northbrook, IL 60062-2096

UL/CSA ~~60335-2-89—17~~ 60335-2-89— 2021	Household and Similar Electrical Appliances—Safety—Part 2-89: Particular Requirements for Commercial Refrigerating Appliances and Ice-Makerswith an Incorporated or Remote Refrigerant Unit or Motor-Compressor

Reason Statement: This proposal updates UL 60335-2-89 to the most recent version which published in October of 2021. It is critical that the newest version is used as there are important safety features and testing for A2L, A2, and A3 flammable low GWP refrigerants.
This would have been submitted to the ICC during the last code cycle, but the standard published after the cycle completed. Therefore, this code proposal seeks to align with the most current version of the UL standard.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This is just a clerical update, so there is no cost associated with the code change.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
This is to align the reference with the most recent version of the standard. Therefore, it will not increase or decrease resiliency.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: M-Chapter 15-21

Discussion by Richard Potts
Jun 13, 2022 14:11 UTC

Supporting information provided by proponent.
Attachments: https://va.cdpaccess.com/proposal/1179/discuss/158/file/download/753/A2L%20Refrigerants%20Best%20Practices_Jan2022.pdf, https://va.cdpaccess.com/proposal/1179/discuss/158/file/download/752/UL1995to60355_timeline2019_vDIGITAL1-1.pdf

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- Do NOT exceed the maximum allowable refrigerant charge per OEM instructions (charge amounts may vary due to line-sets.)
- Follow OEMs procedure for proper charging techniques. (Superheat/Subcooling)
- If refrigerant is a 400-series, the refrigerant must leave the cylinder in 'liquid form'.
- Record a) *date* b) *total refrigerant charge weight on the unit label* (UL 60335-2-40).

A2L System Repairs

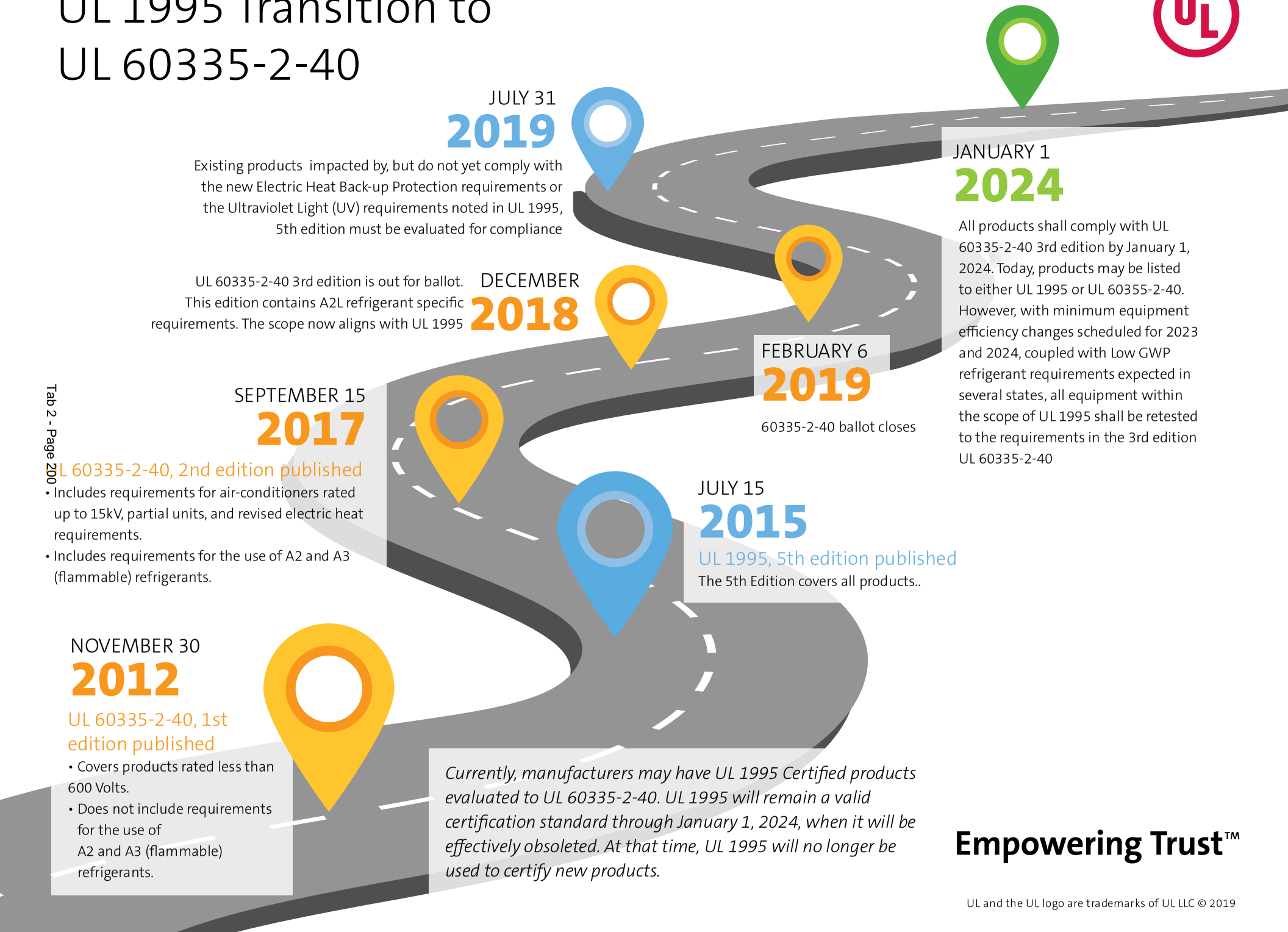
- Leak check to verify no refrigerant is present.
- Ensure equipment is grounded before working.
- Use Proper capacitor discharge methods.
- Use only OEM approved replacement parts.
- Use nitrogen before and during all brazing.

A2L Recovery

- Do NOT vent
- Do NOT mix refrigerants
- Use recovery tools rated for use with A2L refrigerants
- Recover all refrigerant before opening system
- Recover into DOT approved recovery cylinder.
- Do not exceed cylinder fill weights.
- Label recovery cylinder contents

For more information visithttps://www.ahrinet.org/saferefrigerant V1.0_1/2022

UL 1995 Transition to UL 60335-2-40



JULY 31
2019

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JANUARY 1
2024

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UL 60335-2-40 3rd edition is out for ballot. This edition contains A2L refrigerant specific requirements. The scope now aligns with UL 1995

DECEMBER
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FEBRUARY 6
2019

60335-2-40 ballot closes

SEPTEMBER 15
2017

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- Does not include requirements for the use of A2 and A3 (flammable) refrigerants.

Currently, manufacturers may have UL 1995 Certified products evaluated to UL 60335-2-40. UL 1995 will remain a valid certification standard through January 1, 2024, when it will be effectively obsoleted. At that time, UL 1995 will no longer be used to certify new products.

Empowering Trust™

P605.15.2-21

Proponents: Michael Kerbe (mkerbe@oatey.com)

2021 International Plumbing Code

Revise as follows:

605.15.2 Solvent cementing. Joint surfaces shall be clean and free from moisture, and an approved primer shall be applied. Solvent cement, orange in color and conforming to ASTM F493, shall be applied to joint surfaces. The joint shall be made while the cement is wet, and in accordance with ASTM D2846 or ASTM F493. Solvent cement joints shall be permitted above or below ground.
Exception: A primer is not required where all of the following conditions apply:

1. The solvent cement used is third-party certified as conforming to ASTM F493.
2. The solvent cement used is yellow or green in color.
3. The solvent cement is used only for joining $^{1}/_{2}$-inch (12.7 mm) through 2-inch-diameter (51 mm) CPVC/AL/CPVC pipe and CPVC fittings.
4. The CPVC fittings are manufactured in accordance with ASTM D2846.

2021 International Residential Code

Revise as follows:

P2906.9.1.2 CPVC plastic pipe. Joint surfaces shall be clean and free from moisture. Joints shall be made in accordance with the pipe, fitting or solvent cement manufacturer's installation instructions. Where such instructions require a primer to be used, an *approved* primer shall be applied, and a solvent cement, orange in color and conforming to ASTM F493, shall be applied to joint surfaces. Where such instructions allow for a one-step solvent cement, yellow ~~or,~~ red ~~in~~ or green in color and conforming to ASTM F493, to be used, the joint surfaces shall not require application of a primer before the solvent cement is applied. The joint shall be made while the cement is wet, and in accordance with ASTM D2846 or ASTM F493. Solvent cement joints shall be permitted above or below ground.

Reason Statement: Revise P2906.9.1.2 IRC and 605.15.2 IPC to include one-step solvent cement in the color green, which has already been approved in the 2024 IPC code book.
Speaking with plumbers across the country who use FlowGuard Gold CPVC, the most problematic installation mistake is something called a dry-fit, which occurs when the installing contractor simply forgets to apply solvent cement to a connections before moving on.

Oatey FlowGuard™ High Contrast Medium Green All Weather One-Step Cement was developed with input from the Lubrizol Corporation to be used with their FlowGuard Gold® pipe and fittings. The 2021 Edition of the Universal Plumbing Code specifies the use of yellow CPVC cement for one-step assembly of FlowGuard Gold® pipe and fittings. However, the use of yellow cement on the yellow pipe and fittings can make it difficult to identify if every dry fit joint in the system has been cemented together during the installation and inspection process. This leads to failures when the system is pressure tested and on the rare occasion, can lead to failures when the system is brought into service if the interference fit of the pipe and fitting was tight enough during the testing phase.

To make final inspection easier and to reduce the possibility of field failures, Lubrizol has worked with Oatey to come up with a different color of cement, that has a higher contrast in color to FlowGuard Gold® the pipe and fittings. Oatey FlowGuard™ High Contrast cement was developed for this reason. The dark green color stands out from the yellow pipe and fitting, allowing for installers and inspectors to catch any dry fit joints that were not cemented. The key difference between the High Contrast Green formula and Oatey's FlowGuard Gold® cement is the color. Both cements have been tested to ANSI/NSF 14 by NSF and are approved for use with potable water (NSF 61), and both pass ASTM F 493.

Lubrizol has been working to update the Universal Plumbing Code to add the color green as an approved color for cements used in the one step assembly process. Based on initial balloting of the 2024 Plumbing codes, this change is approved and will be incorporated into the 2024 edition of the Universal Plumbing. Until this code becomes official in 2024, Oatey will guarantee the performance of this cement as long as it is used and applied in accordance with ASTM F3328 - Standard Practice for One Step (Solvent Cement Only) method of Joining PVC or CPVC Pipe and Piping Components with Tapered Sockets. The product is listed with NSF for compliance to ANSI/NSF 14 and bears IAPMO Classified Marking Certification Mark.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This code change would not increase cost of construction as the this product would not replace the already approved yellow flowguard gold cpvc cement.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
This proposal should not have a major change as the already approved yellow flowguard gold will still be an option.

Attached Files

- **Lubrizol Letter Re FlowGuard High Contrast Cement (002).docx**
  https://va.cdpaccess.com/proposal/1084/1416/files/download/580/
- **Oatey Letter of Usage FlowGuard High Contrast.docx**
  https://va.cdpaccess.com/proposal/1084/1416/files/download/579/

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

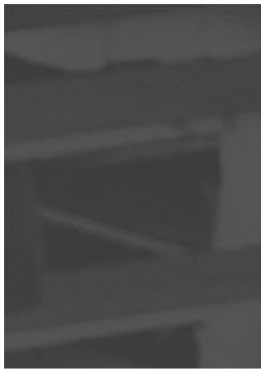
- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: P605.15.2-21

This proposal doesn't have any public comments.

Proposal # 1084

FLOWGUARD GOLD®
PIPE & FITTINGS



XXXXXXX, 2021

To Whom It May Concern,

This letter is to inform you of a new innovation in solvent cements for FlowGuard Gold® CPVC plumbing systems: FlowGuard™ High Contrast Green One-Step Solvent Cement.

We have heard from plumbing contractors and inspectors across the country that the existing yellow color solvent cement, which has traditionally been used with FlowGuard Gold CPVC plumbing systems can be very difficult to visually inspect at a pipe/fitting connection when installed in a building due to the similarity in color between the yellow cement and the tan pipe with a yellow stripe.

To resolve this issue and improve the ability to visually inspect solvent welded FlowGuard Gold plumbing systems, we have collaborated with Oatey to develop a darker cement, green in color, that will provide a higher visual contrast against the pipe and fitting.

As of the date of this letter, the Oatey's FlowGuard High Contrast CPVC cement is listed by NSF to meet ASTM F493 and to comply with NSF 61 at temperatures up to and including Commercial Hot (180° F). The product has also been listed to ASTM F493 by IAPMO R&T (file XXXXXXX) and has been listed for compliance with the IPC, IRC, UPC, ASTM F493, NSF 14, NSF 61 & NSF 372 by ICC-ES (PMG-XXXXX).

While local plumbing codes may specify that one-step CPVC solvent cements be yellow in color, we believe that the green color cement significantly improves the ease of system inspection for both contractor quality control efforts and code officials alike.

I hope that you will agree that this enhanced ability to inspect the system is worthy of an alternative approval in your jurisdiction.

Thank you and best regards,

Jonathan Simon
Segment Manager – FlowGuard Gold Plumbing Systems
Global Product Manager – Joining Systems
Lubrizol Advanced Materials, Inc.

To Whom it may concern,

Oatey FlowGuard™ High Contrast Medium Green All Weather One-Step Cement was developed with input from the Lubrizol Corporation to be used with their FlowGuard Gold® pipe and fittings. The 2021 Edition of the Universal Plumbing Code specifies the use of yellow CPVC cement for one-step assembly of FlowGuard Gold® pipe and fittings. However, the use of yellow cement on the yellow pipe and fittings can make it difficult to identify if every dry fit joint in the system has been cemented together during the installation and inspection process. This leads to failures when the system is pressure tested and on the rare occasion, can lead to failures when the system is brought into service if the interference fit of the pipe and fitting was tight enough during the testing phase.

To make final inspection easier and to reduce the possibility of field failures, Lubrizol has worked with Oatey to come up with a different color of cement, that has a higher contrast in color to FlowGuard Gold® the pipe and fittings. Oatey FlowGuard™ High Contrast cement was developed for this reason. The dark green color stands out from the yellow pipe and fitting, allowing for installers and inspectors to catch any dry fit joints that were not cemented. The key difference between the High Contrast Green formula and Oatey's FlowGuard Gold® cement is the color. Both cements have been tested to ANSI/NSF 14 by NSF and both pass ASTM F 493.

Lubrizol has been working to update the Universal Plumbing Code to add the color green as an approved color for cements used in the one step assembly process. Based on initial balloting of the 2024 Plumbing codes, this change will be incorporated into the 2024 edition of the Universal Plumbing. Until this code becomes official in 2024, Oatey will guarantee the performance of this cement as long as it is used and applied in accordance with ASTM F3328 - Standard Practice for One Step (Solvent Cement Only) method of Joining PVC or CPVC Pipe and Piping Components with Tapered Sockets. The product is listed with NSF for compliance to ANSI/NSF 14 and bears IAPMO Classified Marking Certification Mark.

Sincerely,

Mark Van Meter
Chemical Engineer II, Quality and Engineering Group
Oatey

P1003.3.2-21

Proponents: Brent Werlein (bwerlein@vbgov.com)

2021 International Plumbing Code

CHAPTER 10
TRAPS, INTERCEPTORS AND SEPARATORS

SECTION 1003
INTERCEPTORS AND SEPARATORS

Revise as follows:

1003.3.2 Food waste disposers ~~restriction.~~ ~~A food waste disposer shall not discharge to a grease interceptor.~~ Where food waste disposers connect to grease interceptors, a solids interceptor shall separate the discharge before connecting to the grease interceptor. Solids interceptors and grease interceptors shall be sized and rated for the discharge of the food waste disposers. Emulsifiers, chemicals, enzymes and bacteria shall not discharge into the food waste disposer.

Reason Statement: The use of food waste grinders also become a dumping sink for all food wastes and the grinders break up the food into small particles that heavily contribute to Fats, Oils and Grease production. Grease interceptors are not designed to handle solids loading so a solids interceptor is needed before a grease interceptor. If food waste grinder drains are allowed to bypass a grease interceptor, then the grease is passed through to the sewer collection system.

Cost Impact: The code change proposal will increase the cost of construction
Having to add a solids separator within the series will increase the costs when compared to being able to bypass a grease interceptor.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
This proposal will not have an impact on the resiliency of the system in regards natural disasters, sea level rise and other climate concerns

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: P1003.3.2-21

This proposal doesn't have any public comments.

RB202-21

Proponents: Resiliency Sub-Workgroup

2021 International Residential Code

Revise as follows:

FLOOD HAZARD AREA. The greater of the following two areas:

1. The area within a floodplain subject to a 1-percent or greater chance of flooding in any given year (also known as the 100-year floodplain).
2. The area designated as a flood hazard area on a community's flood hazard map, or otherwise legally designated, including areas shown in either the *Flood Insurance Study* or on the *Flood Insurance Rate Map* (FIRM) and including areas added to account for future flooding conditions based on the locally adopted sea level rise projected to occur by 2070.

R322.1.5 Lowest floor. The lowest floor shall be the lowest floor of the lowest enclosed area, including *basement*, and excluding any unfinished flood-resistant enclosure that is useable solely for vehicle parking, building access or limited (200 square feet or less) storage provided that such enclosure is not built so as to render the building or structure in violation of this section.

R322.1.8 Flood-resistant materials. Building materials and installation methods used for flooring and interior and exterior walls and wall coverings below the elevation required in Section R322.2 or R322.3 shall be flood damage-resistant materials that conform to the provisions of FEMA TB-2 and ASCE 24.

R322.2 Flood hazard areas (including A Zones). Areas that have been determined to be prone to flooding and that are not subject to high-velocity wave action shall be designated as flood hazard areas. Flood hazard areas that have been delineated as subject to wave heights ~~between~~ greater than or equal to $1^1/_2$ feet (457 mm) ~~and 3 feet (914 mm)~~ or otherwise designated by the *jurisdiction* shall be designated as either Coastal A Zones or V, VE or V1-30 Zonez and are subject to the requirements of Section R322.3. Buildings and structures constructed in whole or in part in flood hazard areas shall be designed and constructed in accordance with Sections R322.2.1 through R322.2.4.

R322.3.1 Location and site preparation.

1. New buildings and buildings that are determined to be substantially improved pursuant to Section R105.3.1.1 shall be located landward of the reach of mean high tide.
2. For any alteration of sand dunes and mangrove stands, the *building official* shall require submission of an engineering analysis and a satisfactory Comment Document from FEMA for a Conditional Letter of Map Revision (CLOMR) that demonstrates that the proposed alteration will not increase the potential for flood damage.

R322.3.6 Enclosed areas below required elevation. Enclosed areas below the design flood elevation required in Section R322.3.2 are prohibited in *Coastal A Zones* and *Coastal High Hazard Areas* ~~shall be used solely for parking of vehicles, building access or storage~~.

R322.3.10 Tanks. Underground tanks are prohibited in *Coastal A Zones* or *Coastal High Hazard Areas* ~~shall be anchored to prevent flotation, collapse and lateral movement under conditions of the base flood~~. Above-ground tanks shall be installed at or above the design flood elevation required in Section R322.3.2. Where elevated on platforms, the platforms shall be cantilevered from or knee braced to the building or shall be supported on foundations that conform to the requirements of Section R322.3.

2018 Virgina Residential Code

Revise as follows:

R322.2.1 Elevation requirements.

1. Buildings and structures in flood hazard areas, including flood hazard areas not designated as Coastal A Zones, shall have the lowest floors elevated to or above the base flood elevation plus 1 foot (305 mm), or the design flood elevation, whichever is higher.
2. In areas of shallow flooding (AO Zones), buildings and structures shall have the lowest floor (including *basement*) elevated to a height above the highest adjacent *grade* of not less than the depth number specified in feet (mm) on the FIRM plus 1 foot (305 mm), or not less than 3 feet (915 mm) if a depth number is not specified.
3. Basement floors that are below *grade* on all sides shall be elevated to or above base flood elevation plus 1 foot (305 mm), or the design flood elevation, whichever is higher.
4. Garage and carport floors shall comply with one of the following:
   4.1 They shall be elevated to or above the elevations required in Item 1 or Item 2, as applicable.
   4.2 They shall be at or above *grade* on not less than one side. Where a garage or carport is enclosed by walls, the garage or carport shall be used solely for parking, building access or storage and the walls shall be constructed of flood resistant materials.

Exception: Enclosed areas below the elevation required by this section, including *basements* with floors that are not below *grade* on all sides, shall meet the requirements of Section R322.2.2.

Reason Statement: These proposed code changes were developed by the Resiliency Sub-Workgroup.
The definition for FLOOD HAZARD AREA is being added to the residential code to correlate with the commercial code.

R322.1.5 provides a quantifiable limit to "limited storage"

R322.1.8 incorporates a reference to ASCE 24

R322.2 incorporates coastal V, VE and V1-30 Zones into jurisdictional designation of flood hazard areas

R322.3.1 requires a CLOMR from FEMA for any disturbance or alteration to sand dunes

R322.3.6 prohibits enclosed areas below the design flood elevation in Coastal A and Coastal High Hazard areas

R322.3.10 prohibits underground storage tanks in Coastal A and Coastal High Hazard Areas

R322.2.1 requires walls of garages and carports to be constructed of flood resistant materials when located in Flood Hazard Areas

Cost Impact: The code change proposal will increase the cost of construction
This proposal may have a marginal increase in the cost of construction when garages and carports are constructed in flood hazard areas.

Resiliency Impact Statement: This proposal will increase Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: RB202-21

Discussion by Paul Messplay
Aug 18, 2022 12:01 UTC

Proponents: Paula Eubank, representing Self requests As Submitted

Commenter's Reason: Public Comment:
In support of the code proposal, although the technical language and document titles must be accurate prior to codification.

According to FEMA, the FEMA NFIP Conditional Letter of Map Revision (CLOMR) is the accurate title to the documentation requirement. The Comment Document from FEMA for a Conditional Letter of Map Revision (CLOMR), as referenced in the code proposal, is an inaccurate document title. The CLOMR document itself provides FEMA's comments regarding proposed projects. The Comment Document is a document subtitle that may supplement or substantiate the required CLOMR with additional information.

Referencing the accurate title in the Virginia Uniform Statewide Building Code (VUSBC) will eliminate confusion by the local officials and permit applicants.

FEMA NFIP Substantiating Documentation:

Glossary –

· Conditional Letter of Map Revision (CLOMR) –

FEMA's comment on a proposed project that would, upon construction, affect the hydrologic or hydraulic characteristics of a flooding source and thus result in the modification of the existing regulatory floodway, the effective Base Flood Elevations (BFEs), or the Special Flood Hazard Area (SFHA). The letter does not revise an effective NFIP map, it indicates whether the project, if built as proposed, would be recognized by FEMA. FEMA charges a fee for processing a CLOMR to recover the costs associated with the review. Building permits cannot be issued based on a CLOMR, because a CLOMR does not change the NFIP map.

Once a project has been completed, the community must request a revision to the Flood Insurance Rate Map (FIRM) to reflect the project. "As-built" certification and other data must be submitted to support the revision request.

National Flood Insurance Program Requirements:

65.8 – Review of proposed projects

72 – Procedures and fees for processing map changes

Proposal # 1156

RB324.6.2-21

Proponents: Alan Larsen (alarsen120@aol.com)

2021 International Residential Code

Revise as follows:

R324.6.2 Setback at ridge. ~~For photovoltaic arrays occupying not more than 33 percent of the plan view total roof area, not~~ Not less than an 18-inch (457 mm) clear setback is required on both sides of a horizontal ridge~~. For photovoltaic arrays occupying more than 33 percent of the plan view total roof area, not less than a 36-inch (914 mm) clear setback is required on both sides of a horizontal ridge.~~

Delete without substitution:

~~**R324.6.2.1 Alternative setback at ridge.** Where an automatic sprinkler system is installed within the dwelling in accordance with NFPA 13D or Section P2904, setbacks at ridges shall comply with one of the following:~~

1. ~~For photovoltaic arrays occupying not more than 66 percent of the plan view total roof area, not less than an 18-inch (457 mm) clear setback is required on both sides of a horizontal ridge.~~
2. ~~For photovoltaic arrays occupying more than 66 percent of the plan view total roof area, not less than a 36-inch (914 mm) clear setback is required on both sides of a horizontal ridge.~~

Reason Statement: We submit these written comments for the record in the 2021 Code Development Cycle, pursuant to the Notices of Intended Regulatory Action (NOIRA) approved by the Board of Housing and Community Development (BHCD) on October 25, 2021 and published in the Virginia Register of Regulations on November 22, 2021.
We represent solar installation companies and organizations that provide and install rooftop solar facilities for residential and commercial customers throughout the Commonwealth of Virginia. We are addressing IRC Code provision R324.6.1 that pertains to access (pathways) to rooftops for fire fighting purposes, and requirements that go beyond what is needed for safety to become impediments to solar installations.

Setbacks are meant for safety and accessibility for firemen to do their work. The code is written in terms that refer to the distance from the edge of the roofline to the side of the nearest solar panel. But across-the-board requirements that are are stated merely as inches-of-width, without regard to where such set-backs would be placed and why, do not create safer conditions. Of course it's good practice to have a setback on roofs where firemen could have to operate in case of emergency, but what about the roofs where fire fighters would never walk?

Virginia has adopted a statutory mandate to encourage installation of rooftop solar and eliminate impediments to doing that. On the other hand, it has fire and safety requirements. The Code must balance those two policy goals and legal mandates. A provision that creates greater impediments to solar would undercut the solar imperative for no safety gain.

In 2014, our industry encountered a fire code setback issue in Arlington. We contacted the state, and the Commonwealth's Department of Housing and Community Development addressed the issue as follows:

"Chapter 23 of the IRC [International Residential Code] regulates the installation of residential photo voltaic roof systems and requires them to be installed in accordance with NFPA 70 (NEC) and the manufacturer's installation instructions. Specifically the IRC does nor reference the Fire Code, therefor photo voltaic requirements set forth in the Fire Code are not applicable to one and two family dwellings that fall within the scope of the IRC."

Aside from the issue of applicability of R324.6.1 to residential rooftop installations, this statement from the Commonwealth indicates the balance that the state brings to the issue of impediments to solar installations versus safety measures. And this was before the adoption by the 2020 session of the General Assembly of additional mandates to further solar installations, including the Virginia Clean Economy Act which made promotion and installation of solar facilities a state-wide priority and mandate.

Cost Impact:
None.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: RB324.6.2-21

This proposal doesn't have any public comments.

Proposal # 946

RB330.1-21

Proponents: Jason Laws (lawsj@chesterfield.gov)

2018 Virgina Residential Code

Revise as follows:

R330.1 Sound transmission between dwelling units. Construction assemblies separating *dwelling units* shall provide airborne sound insulation as required in Appendix K.
Exception: *accessory dwelling units*

Reason Statement: Accessory dwelling units are designed to provide an affordable housing alternative. Making ADUs meet the sound transmission requirements can become costly, especially when converting an existing structure, which we feel does not meet the purpose of ADUs.

Cost Impact: The code change proposal will decrease the cost of construction
By providing an exception for ADUs it will decrease the cost of construction.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: RB330.1-21

This proposal doesn't have any public comments.

Proposal # 1146

RE2701.1.1-21

Proponents: Dan Buuck (dbuuck@nahb.org); Andrew Clark (aclark@hbav.com); Mary Koban (mkoban@ahrinet.org)

2018 Virginia Construction Code

Revise as follows:

2701.1 Scope. This chapter governs the electrical components, *equipment* and systems used in buildings and structures covered by this code. Electrical components, *equipment* and systems shall be designed and constructed in accordance with the provisions of this code and NFPA 70.

2701.1.1 Changes to NFPA 70. The following changes shall be made to NFPA 70:

1. Change Sections 334.10(2) and 334.10(3) of NFPA 70 to read:

   (2) Multifamily dwellings not exceeding four floors above grade and multifamily dwellings of any height permitted to be of Types III, IV and V *construction* except in any case as prohibited in Section 334.12.

   (3) Other structures not exceeding four floors above grade and other structures of any height permitted to be of Types III, IV and V *construction* except in any case as prohibited in Section 334.12. In structures exceeding four floors above grade, cables shall be concealed within walls, floors or ceilings that provide a thermal barrier of material that has at least a 15-minute finish rating as identified in listings of fire-rated assemblies.

   For the purpose of Items 2 and 3 above, the first floor of a *building* shall be that floor that has 50 percent or more of the exterior wall surface area level with or above finished grade. One additional level that is the first level and not designed for human habitation and used only for vehicle parking, storage or similar use shall be permitted.

2. Change Section 700.12(F)(2)(6) of NFPA 70 to read:

   (6) Where the normal power branch circuits that supply luminaires providing illumination immediately on the inside and outside of exit doors are supplied by the same service or feeder, the remote heads providing emergency illumination for the exterior of an exit door shall be permitted to be supplied by the unit *equipment* serving the area immediately inside the exit door.

3. Change Article 555 of NFPA 70, 2017 Edition to NFPA 70, 2020 Edition for all code requirements related to *marinas*, boatyards, and commercial and noncommercial docking facilities.

4. Delete Section 210.8(F) in its entirety.

Reason Statement: See the attached documentation.

Cost Impact: The code change proposal will decrease the cost of construction
This change will reduce the cost of construction by not requiring GFCIs for outdoor outlets and by reducing the number of call-backs for HVAC contractors.

Resiliency Impact Statement: This proposal will increase Resiliency
This code change will allow more people to remain in their dwelling during a heat wave.

Attached Files

- **Reason Statement - GFCI-Outdoor Outlets.pdf**
  https://va.cdpaccess.com/proposal/1148/1555/files/download/668/

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: RE2701.1.1-21

This proposal doesn't have any public comments.

Proposal # 1148

Reason Statement:

The following substantiation is taken from the supporting statements of the Task Group formed on the recommendation of the NFPA Standards Council to address the ongoing issues regarding NEC Section 210.8(F). Currently, separate standards for the tripping current of GFCI devices and the allowable leakage current of air conditioner condenser units creates an incompatibility issue.

The potential issue of GFCI protection not being compatible with listed HVAC equipment was known at the time SR 7676-NFPA 70-2018 was approved by Code Making Panel-2 (CMP-2). Three of the four negative ballots specifically mentioned the concern with incompatibility associated with requiring GFCI protection for listed HVAC equipment. UL 943 (*Standard for Ground-Fault Circuit-Interrupters*) requires that Class A ground-fault circuit-interrupters are capable of tripping at a minimum of 6 mA and could be as low as 4 mA. UL 60335-2 (*Standard for Household and Similar Electrical Appliances – Safety – Part 2-40: Particular Requirements for Electrical Heat Pumps, Air Conditioners and Dehumidifiers*) allows a maximum leakage current value of 10 mA for appliances accessible to the general public.

If GFCI protection is required while the incompatibility issue remains, there is a higher risk of people being adversely impacted by exposure to extreme temperatures due to nuisance tripping than the risk of people being exposed to a leakage current that could cause injury or harm. Data was submitted to the Task Group showing that listed HVAC equipment typically can have a leakage current higher than what would trip a Class A GFCI, but the touch current is well below levels that would injure or harm an individual. The number of potential deaths from electrocution involving HVAC equipment may be as high as four per year. However, the number of fatalities (from lack of cooling during a heat wave period) due to nuisance trips associated with GFCI protection of HVAC equipment where no hazard exists may be as high as 750 per year.

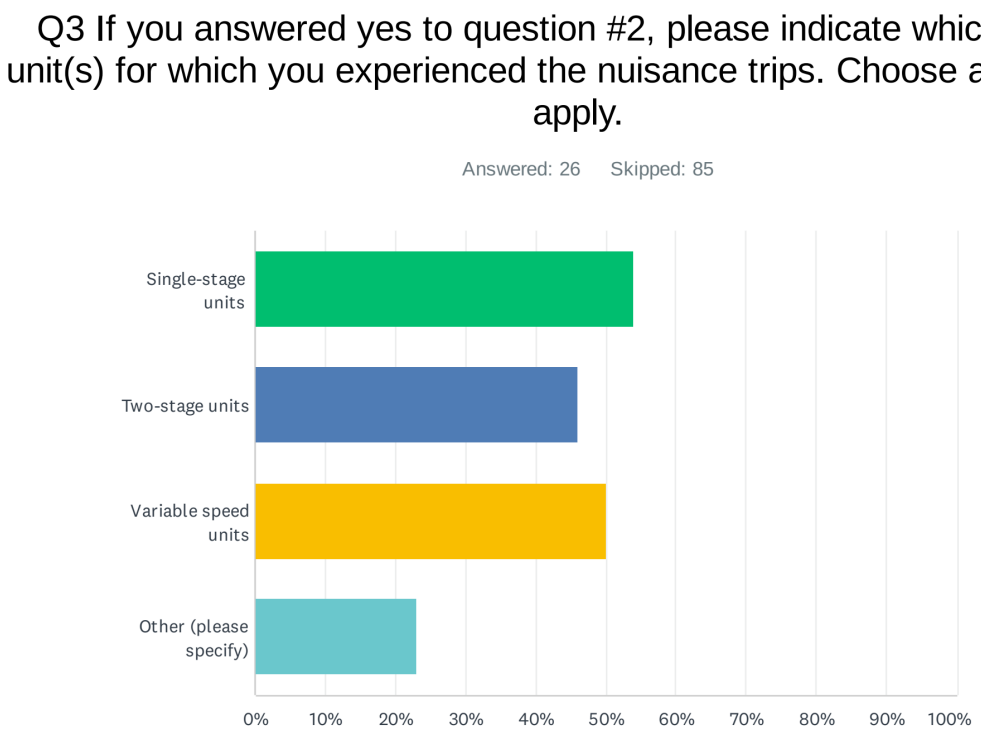
Table 1: Loss of HVAC Operation – Potential Impact (From Reference 3 below)

Estimates of HVAC Units and US At-Risk Populations	**Estimates**		**References**
Number of homes with HVAC systems in the US:	75,000,000	Approx	https://www.energy.gov/articles/history-air-conditioning
% of HVAC Fixed appliances that are Variable Speed:	50	%	https://www.achrnews.com/articles/134406-variable-speeds-impact-on-hvac#:~:text=For%20heat%20pumps%20alone%2C%2065%20percent%20of%20the,the%20mini%20splits%20we%20sold%20were%20variable%20speed.
Total number of variable speed HVAC Units	37,500,000	households	
Number of Households with people 65+	20.00	%	https://www.yardeni.com/pub/hseholdform.pdf
Number of Households with people 65+ with HVAC?	7,500,000		
Temperature at which injury can occur from heat exahustion/Stroke	104	F	
If only 10% of these homes are in climates with high heat:	750,000		
If Only 10% have compatibility issues:	75,000		
If 1% contain high risk occupants:	**750**	**per year**	estimated rate of annual deaths due to nusiance trips where no hazard existed to the end user.
Number of annual deaths from electrocution, without specific details, involving HVAC equipment	**4**	**per year**	

The Task Group understands that there may not be a resolution to the incompatibility associated with listed Class A GFCIs and the leakage current permitted for listed HVAC equipment even as late as the fall of 2026. AHRI has developed a testing program to identify the cause of interoperability issues. The study is scheduled to be completed by November 2023. The causes need to be defined before solutions can be proposed and tested. Product design and testing must follow. Industry standard revisions and related standardized test procedures are needed. Production tooling and supply chain modifications require additional time after the earlier steps are completed.

There is evidence that the incompatibility issue potentially affects all listed HVAC equipment, since industry standards for power conversion equipment allow leakage currents above the trip current of Class A GFCI's. Residential air-conditioning (AC) and heat pump (HP) power conversion equipment for compressors have demonstrated leakage currents above Class A GFCI trip currents in lab measurements. Residential AC and HP electronically commutated outdoor fan motors have demonstrated leakage currents above the trip current of Class A GFCI's in lab measurements. Data was submitted based upon actual nuisance trips and a survey of air-conditioning contractors indicating that nuisance trips also occur with single-stage units. (Also see Source 3 listed below)

Figure 1: Texas Air Conditioning Contractor Association (TACCA) Survey (From Reference 5 below)



There are multiple reports of interoperability issues ('nuisance tripping') from AC and HP units that do not have power conversion equipment for the unit compressor which is the only current TIA exception. The cause(s) of this nuisance tripping remain unknown at this time. Furthermore, the presence of electronically commutated motors (ECM) is not currently documented on AC and HP nameplates or consumer/installer documents readily available to the code official. Therefore, an

exception limited to ECM motors and/or other power conversion is not practical for the code official, builder or electrical contractor.

Conditions that affect interoperability include the following issues which have yet to be fully examined.

1) Residential AC and HP starting conditions distort circuit power supply conditions to such a great extent that other separate circuits in the building, such as lighting, experience power distortion that is well known to be noticed by occupants (through lights dimming). The appliances identified as comparable to AC and HP do not display and create distortion of this magnitude. There is no study to date to document that interoperability issues do not result from this startup power distortion.

2) A Class A GFCI's trip level amperage is based on the effects on humans of 60 hertz current. The higher frequency currents that create interoperability issues may not affect humans at the same current level. Evidence of safe use in Japan with a different means of protection has been documented.

3) AC and HP units include refrigeration devices that cause the direct drive compressor to start under conditions of existing high-pressure differential. This condition does not exist or is much less common in the refrigeration equipment that was cited in the 2020 code deliberations as a similar load.

4) AC and HP units operate under a much wider range of temperature conditions than the refrigeration equipment cited as similar in the 2020 code deliberations. The conductivity of the fluids surrounding the motor windings may increase as a result. The net result has not yet been tested to confirm this is not an interoperability issue.

5) Higher federal minimum energy standards have increased the use of power conversion equipment for compressors and high efficiency ECM fan motors. Standards again increase January 1, 2023, further increasing the portion of equipment that will contain features that have demonstrated measured interoperability problems.

In addition to some of the information sources cited above, the Task Group was presented with a significant amount of technical information that was considered in developing this TIA. The following is a bibliography of that information:

1. 2020 NEC Adoption/210.8(F)
2. AHRI Experts GFCI TG April 4, 2022, PowerPoint Presentation
3. AHRI 2020 NEC GFCI Summary Data Only 02-08-21
4. Assessment of Incompatibility of HVAC Equipment and GFCI Breakers, AHRI Project 8029 PowerPoint Presentation
5. GFCI Survey by TACCA
6. Minnesota April through September 2021 AC/HP Mini Split – Non GFCI Forms

Almost every state that has adopted the 2020 Edition of the NEC has modified or deleted Section 210.8(F). NFPA is aware of at least six states that have deleted Section 210.8(F) in its entirety and two that have delayed enforcement until January 1, 2023.

The equipment incompatibility issues identified above will not be resolved by January 1, 2023. If GFCI protection is required while the incompatibility issue remains, there is a higher risk of people being adversely impacted by exposure to extreme temperatures due to nuisance tripping than the risk of people being exposed to a leakage current that could cause injury or harm. Data was submitted to the task group showing that listed HVAC equipment typically can have a leakage current higher than what would trip a Class A GFCI, but the touch current is well below levels that would injure or harm an individual.

RE3902.17-21

Proponents: Dan Buuck (dbuuck@nahb.org); Andrew Clark (aclark@hbav.com); Mary Koban (mkoban@ahrinet.org)

2021 International Residential Code

Delete without substitution:

~~**E3902.17 Outdoor outlets.** All outdoor outlets, other than those covered in E3902.3, Exception, that are supplied by single-phase branch circuits rated 150 volts to ground or less, 50 amperes or less, shall have ground-fault circuit-interrupter protection for personnel. [210.8(F)]~~

> ~~**Exception:** Ground-fault circuit-interrupter protection shall not be required on lighting outlets other than those covered in E3902.15. [210.8(F) Exception]~~

Reason Statement: See the attached documentation.

Cost Impact: The code change proposal will decrease the cost of construction
This change will reduce the cost of construction by not requiring GFCIs for outdoor outlets and by reducing the number of call-backs for HVAC contractors.

Resiliency Impact Statement: This proposal will increase Resiliency
This code change will allow more people to remain in their dwelling during a heat wave.

Attached Files

- **Reason Statement - GFCI-Outdoor Outlets.pdf**
  https://va.cdpaccess.com/proposal/1145/1553/files/download/669/

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: RE3902.17-21

This proposal doesn't have any public comments.

Proposal # 1145

Reason Statement:

The following substantiation is taken from the supporting statements of the Task Group formed on the recommendation of the NFPA Standards Council to address the ongoing issues regarding NEC Section 210.8(F). Currently, separate standards for the tripping current of GFCI devices and the allowable leakage current of air conditioner condenser units creates an incompatibility issue.

The potential issue of GFCI protection not being compatible with listed HVAC equipment was known at the time SR 7676-NFPA 70-2018 was approved by Code Making Panel-2 (CMP-2). Three of the four negative ballots specifically mentioned the concern with incompatibility associated with requiring GFCI protection for listed HVAC equipment. UL 943 (*Standard for Ground-Fault Circuit-Interrupters*) requires that Class A ground-fault circuit-interrupters are capable of tripping at a minimum of 6 mA and could be as low as 4 mA. UL 60335-2 (*Standard for Household and Similar Electrical Appliances – Safety – Part 2-40: Particular Requirements for Electrical Heat Pumps, Air Conditioners and Dehumidifiers*) allows a maximum leakage current value of 10 mA for appliances accessible to the general public.

If GFCI protection is required while the incompatibility issue remains, there is a higher risk of people being adversely impacted by exposure to extreme temperatures due to nuisance tripping than the risk of people being exposed to a leakage current that could cause injury or harm. Data was submitted to the Task Group showing that listed HVAC equipment typically can have a leakage current higher than what would trip a Class A GFCI, but the touch current is well below levels that would injure or harm an individual. The number of potential deaths from electrocution involving HVAC equipment may be as high as four per year. However, the number of fatalities (from lack of cooling during a heat wave period) due to nuisance trips associated with GFCI protection of HVAC equipment where no hazard exists may be as high as 750 per year.

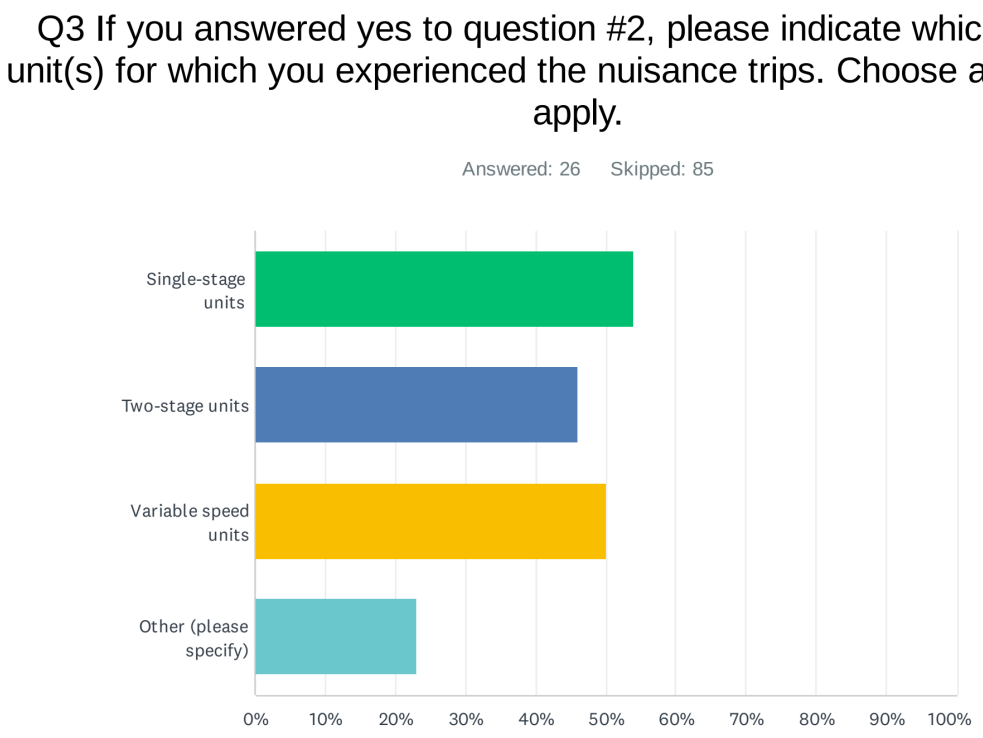
Table 1: Loss of HVAC Operation – Potential Impact (From Reference 3 below)

Estimates of HVAC Units and US At-Risk Populations	**Estimates**		**References**
Number of homes with HVAC systems in the US:	75,000,000	Approx	https://www.energy.gov/articles/history-air-conditioning
% of HVAC Fixed appliances that are Variable Speed:	50	%	https://www.achrnews.com/articles/134406-variable-speeds-impact-on-hvac#:~:text=For%20heat%20pumps%20alone%2C%2065%20percent%20of%20the,the%20mini%20splits%20we%20sold%20were%20variable%20speed.
Total number of variable speed HVAC Units	37,500,000	households	
Number of Households with people 65+	20.00	%	https://www.yardeni.com/pub/hseholdform.pdf
Number of Households with people 65+ with HVAC?	7,500,000		
Temperature at which injury can occur from heat exahustion/Stroke	104	F	
If only 10% of these homes are in climates with high heat:	750,000		
If Only 10% have compatibility issues:	75,000		
If 1% contain high risk occupants:	**750**	**per year**	estimated rate of annual deaths due to nusiance trips where no hazard existed to the end user.
Number of annual deaths from electrocution, without specific details, involving HVAC equipment	**4**	**per year**	

The Task Group understands that there may not be a resolution to the incompatibility associated with listed Class A GFCIs and the leakage current permitted for listed HVAC equipment even as late as the fall of 2026. AHRI has developed a testing program to identify the cause of interoperability issues. The study is scheduled to be completed by November 2023. The causes need to be defined before solutions can be proposed and tested. Product design and testing must follow. Industry standard revisions and related standardized test procedures are needed. Production tooling and supply chain modifications require additional time after the earlier steps are completed.

There is evidence that the incompatibility issue potentially affects all listed HVAC equipment, since industry standards for power conversion equipment allow leakage currents above the trip current of Class A GFCI's. Residential air-conditioning (AC) and heat pump (HP) power conversion equipment for compressors have demonstrated leakage currents above Class A GFCI trip currents in lab measurements. Residential AC and HP electronically commutated outdoor fan motors have demonstrated leakage currents above the trip current of Class A GFCI's in lab measurements. Data was submitted based upon actual nuisance trips and a survey of air-conditioning contractors indicating that nuisance trips also occur with single-stage units. (Also see Source 3 listed below)

Figure 1: Texas Air Conditioning Contractor Association (TACCA) Survey (From Reference 5 below)



There are multiple reports of interoperability issues ('nuisance tripping') from AC and HP units that do not have power conversion equipment for the unit compressor which is the only current TIA exception. The cause(s) of this nuisance tripping remain unknown at this time. Furthermore, the presence of electronically commutated motors (ECM) is not currently documented on AC and HP nameplates or consumer/installer documents readily available to the code official. Therefore, an

exception limited to ECM motors and/or other power conversion is not practical for the code official, builder or electrical contractor.

Conditions that affect interoperability include the following issues which have yet to be fully examined.

1) Residential AC and HP starting conditions distort circuit power supply conditions to such a great extent that other separate circuits in the building, such as lighting, experience power distortion that is well known to be noticed by occupants (through lights dimming). The appliances identified as comparable to AC and HP do not display and create distortion of this magnitude. There is no study to date to document that interoperability issues do not result from this startup power distortion.

2) A Class A GFCI's trip level amperage is based on the effects on humans of 60 hertz current. The higher frequency currents that create interoperability issues may not affect humans at the same current level. Evidence of safe use in Japan with a different means of protection has been documented.

3) AC and HP units include refrigeration devices that cause the direct drive compressor to start under conditions of existing high-pressure differential. This condition does not exist or is much less common in the refrigeration equipment that was cited in the 2020 code deliberations as a similar load.

4) AC and HP units operate under a much wider range of temperature conditions than the refrigeration equipment cited as similar in the 2020 code deliberations. The conductivity of the fluids surrounding the motor windings may increase as a result. The net result has not yet been tested to confirm this is not an interoperability issue.

5) Higher federal minimum energy standards have increased the use of power conversion equipment for compressors and high efficiency ECM fan motors. Standards again increase January 1, 2023, further increasing the portion of equipment that will contain features that have demonstrated measured interoperability problems.

In addition to some of the information sources cited above, the Task Group was presented with a significant amount of technical information that was considered in developing this TIA. The following is a bibliography of that information:

1. 2020 NEC Adoption/210.8(F)
2. AHRI Experts GFCI TG April 4, 2022, PowerPoint Presentation
3. AHRI 2020 NEC GFCI Summary Data Only 02-08-21
4. Assessment of Incompatibility of HVAC Equipment and GFCI Breakers, AHRI Project 8029 PowerPoint Presentation
5. GFCI Survey by TACCA
6. Minnesota April through September 2021 AC/HP Mini Split – Non GFCI Forms

Almost every state that has adopted the 2020 Edition of the NEC has modified or deleted Section 210.8(F). NFPA is aware of at least six states that have deleted Section 210.8(F) in its entirety and two that have delayed enforcement until January 1, 2023.

The equipment incompatibility issues identified above will not be resolved by January 1, 2023. If GFCI protection is required while the incompatibility issue remains, there is a higher risk of people being adversely impacted by exposure to extreme temperatures due to nuisance tripping than the risk of people being exposed to a leakage current that could cause injury or harm. Data was submitted to the task group showing that listed HVAC equipment typically can have a leakage current higher than what would trip a Class A GFCI, but the touch current is well below levels that would injure or harm an individual.

REC-R403.1.2-21

Proponents: William Penniman (wpenniman@aol.com)

2018 Virginia Energy Conservation Code

Add new text as follows:

R403.1.3 Heat Pump as Primary Space Heat Source. Electric resistance heat shall not be used as the primary heat source for electric space heating if a ducted or ductless heat pump can be installed. Electric resistance space heating may be used for defrost, supplemental or emergency heat, A heat pump shall be designed so that, except during defrost or emergency heating modes, supplemental heating does not energize unless the outdoor temperature is below 40ºF (4ºC).

Reason Statement: Electric resistance heat is a highly inefficient form of space heating when compared to electric heat pumps. Heat pumps are roughly 300% more efficient than resistance heat (and more so compared to combustion heat).
https://mygreenmontgomery.org/2021/environmental-and-economic-advantages-of-switching-to-an-electric-heat-pump/ Baseboard electric heating also distributes heat poorly compared to ducted systems or ductless mini-splits. Reliance on electric resistance heat for a primary heat source (as opposed to a supplemental resistance element in a heat pump for especially cold conditions) raises heating costs for residents compared to electric heat pumps. Electric resistance heating also imposes substantial seasonal and peak-period cost burdens on electric utilities, which get passed on to other utility customers.

Compared to resistance heating, heat pumps substantially reduce a customer's heating bills--by 50% compared to resistance heat according to DOE.https://www.energy.gov/energysaver/heat-and-cool/heat-pump-systems The high energy efficiency of heat pumps is part of the reason they are important to achieving greenhouse critical gas reductions needed to mitigate climate change. For these reasons, the proposal would restrict installation of electric resistance heating to supplemental and emergency heat to support heat pumps.
Heat pumps also incorporate air conditioning, which provides customers with the health and comfort benefits of cooling in the summer and avoids the cost of installing air conditioning units during construction. Builders have the option to install whole-house, ducted heat pumps or "mini-split" heat pumps without no ducts. Heat pumps are appropriate for large or small dwellings and for additions. (VEBC 805.2.1.2 incorporates VECC R403 for additions.)

The proposal is modeled on a Georgia building code provision (R403.1.2).

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposal may, but will not necessarily, increase the cost of construction. However, it will substantially reduce total costs occupancy and lifecycle to residents.

Resistance space heating may be cheaper to install than a standard heat pump or mini-split heat pump. However, it does not provide air conditioning which is an inherent part of a heat pump, including a mini-split. Adding a stand-alone air conditioning unit to a resistance heating unit can make the total cost greater. Like baseboard electric heat, mini-splits do not require duct work. Comparable duct work would be required for both electric furnaces and central heat pumps.

The additional upfront cost of a heat pump or mini-split compared to resistance heat will be recovered by the owner or tenant through energy cost savings attributable to a heat pump's much greater energy efficiency. As noted, DOE reports that heat pumps can reduce heating costs by 50% compared to resistance heat. https://www.energy.gov/energysaver/heat-and-cool/heat-pump-systems.

Since a heat pump or mini-split provides air conditioning, it will also provide a form of seasonal comfort, including summer dehumidification, not produced by any form of electric resistance unit. Cooling in periods of intense heat is important for the health of residents, as has been recognized by the BHCD. The hazards of heat illness are growing with climate change and the associated health care costs need to be considered.

By reducing demands on utilities for expensive generation to meet peak demands and by reducing air pollution emissions from power generation, heat pumps will also reduce costs to utility customers generally and pollution costs to the public generally.

Resiliency Impact Statement: This proposal will increase Resiliency
This proposal will increase Resiliency. Heat pumps effectively heat dwellings while reducing the peak demands placed on utilities in winter months. Such demand reductions reduce risks of utility outages. Heat pumps also provide year round comfort since they both heat and cool.

Climate change poses an ever-greater resiliency threat the longer we fail to reduce greenhouse gas (GHG) emissions. It poses an ever-growing risk of heat-illness, floods, storms, sea level rise, air and ocean heating, and other disasters that threaten residents and the economy. The need to swiftly reduce carbon emissions has been recognized by multiple agencies of the U.S. government (e.g., EPA, DOE, NAS, Global Change Research Program), by international agencies (e.g., U.N., IPCC, IEA), as well as by Virginia (e.g., in Governor Northam's Executive Order 43 (2019) and in 2020 legislation by the General Assembly). Improving the efficient use of energy is recognized as a critical measure to reduce GHG emissions and harmful climate impacts, as well as to reduce land and water pollution and overall utility costs to consumers. This proposal will replace less efficient resistance heating with much more efficient heat pumps, which are widely available on a ducted or ductless basis.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: REC-R403.1.2-21

This proposal doesn't have any public comments.

Proposal # 934

REC-R403.3.3-21

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

2018 Virgina Residential Code

Revise as follows:

N1103.3.3 (R40333) Duct testing (Mandatory). Ducts shall be pressure tested in accordance with ANSI/RESNET/ICC 380 or ASTM E1554 to determine air leakage by one 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.*~~ for ducts serving heating, cooling or ventilation systems that are not integrated with ducts serving heating or cooling systems.

A written report of the results of the test shall be signed by the party conducting the test and provided to the code official. The licensed mechanical contractor installing the mechanical system shall be permitted to perform the duct testing. The contractor shall have been trained on the *equipment* used to perform the test.

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~~ 4.0 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~~ 3.0 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~~ 4.0 cubic feet per minute (113.3 L/ min) per 100 square feet (9.29 m^2) of conditioned floor area.
3. Test for ducts within thermal envelope: Where all ducts and air handlers are located entirely within the building thermal envelope, total leakage shall be less than or equal to 8.0 cubic feet per minute (226.6 L/min) per 100 square feet (9.29 m^2) of conditioned floor area.

N1103.3.5 (R40335) Building cavities (Mandatory). ~~(Section deleted.)~~ *Building* framing cavities used as ducts or plenums shall comply with VRC Section M1601.1.1.

Reason Statement: This proposal updates the code provisions related to duct testing to be consistent with the 2021 IECC. A few of the changes proposed (such as the requirement that building cavities not be used as ducts or plenums) have been in the IECC for several editions; others (such as the addition of a duct test for ducts inside conditioned space) were added in the 2021 IECC update. It incorporates the changes brought about by proposals RE112-19, RE114-19, and RE118-19.
This proposal establishes a maximum level of allowable duct leakage -- regardless of the location of the ducts. From the proponent's original reason statement in proposal RE115:

"The purpose of this code change proposal is to help ensure long-term energy savings, occupant comfort and promote good building quality by establishing a maximum level of duct leakage permitted as a trade-off backstop for duct tightness. We propose a backstop that would still permit substantial flexibility – double the allowable leakage rate as the prescriptive requirement -- but that would establish a “worst case scenario” for all tested homes in all compliance paths.There is currently no upper limit on duct leakage in the IECC. In the 2012 IECC, all ducts (except those in conditioned space) were required on a mandatory basis to meet the prescriptive levels. The mandatory nature of the requirement was removed in 2015, allowing duct tightness to be fully traded off for other efficiency measures. We believe some trade-off is acceptable, but that a minimum level of duct tightness is necessary to ensure some reasonable level of duct performance occurs in the home. When ducts are excessively leaky, there is no assurance that conditioned air is provided where it is needed for adequate comfort. The failure to properly distribute conditioned air is likely to result in excess energy usage when the occupants adjust the thermostat to counter an inadequate distribution of conditioned air. Many of the intended benefits of high-performance homes are negated if occupants are uncomfortable and adjust the thermostat in response."

We note that this proposal (RE115) was recommended for approval by the IECC-Residential Committee and no public comments were filed, meaning that no stakeholders opposed its incorporation into the 2021 IECC.This proposal also removes the exception from duct leakage testing for systems located entirely within the building envelope. This proposal (RE112) was recommended for approval by the IECC-Residential Committee, and then was approved by over 87% of the Governmental Member Voting Representatives at ICC for inclusion in the 2021 IECC. From the proponent's original reason statement in proposal RE112: The purpose of this code change proposal is to help ensure occupant comfort, proper heating and cooling system performance, and resulting long-term energy savings by requiring a duct leakage test for all new homes, including

homes with all ducts inside conditioned space. This action will also help reduce the likelihood of builder callbacks for poorly-functioning, uncomfortable HVAC systems. The IECC currently exempts homes from duct testing requirements where the air handler and all ducts are located inside conditioned space. Although moving all ducts inside conditioned space may have a positive impact on energy efficiency overall, this practice alone cannot guarantee that the ducts will be tight enough to deliver conditioned air to all occupied areas of the home. Uncomfortable occupants commonly adjust thermostat settings to counteract the effect of poor delivery of conditioned air, leading to huge losses in energy efficiency. And these homes are at far greater risk for builder callback. This proposal will improve building quality and keep occupants more comfortable by requiring a duct test for all new homes, although the allowable leakage rate will be set at twice the prescriptive rate when all ducts are located inside conditioned space.Duct leakage rates can be extremely high when ducts are not tested. We do not believe that builders intentionally cut corners in duct sealing when they know that the system will not be tested. However, without an objective test as a means of quality assurance, even careful builders may not be aware of missed connections or poor sealing. In a recent DOE field study of residential homes in Kentucky, homes received duct leakage tests even where all supply and return ducts were located inside conditioned space. The results were striking – **of the 24 homes tested (that would have qualified for the test exemption under the IECC), all 24 homes had higher leakage rates than the 2018 IECC requirement. Tested duct leakage for these homes averaged 18.5 cfm/sq.ft., with individual homes ranging from 6.26 cfm/sq.ft. to as high as 40.36 cfm/sq.ft.** *See* https://www.energycodes.gov/compliance/energy-code-field-studies. We note that 40 other homes in the same study were required to be tested (because at least some ducts were located outside conditioned space), and these homes achieved leakage rates of 9.7 cfm/sq.ft., on average – roughly half the leakage rate of homes that qualified for the exemption. Obviously, this is a small sample size, but the Field Studies found similar results in Pennsylvania, where “exempt” homes (with all ducts inside conditioned space) averaged almost 31 cfm/sq.ft. leakage, while homes required to be tested averaged almost 18 cfm/sq.ft. leakage. Although the results vary across the states sampled, these results point to a shortcoming in the IECC’s “complete exemption” approach to homes with all ducts inside conditioned space.

The concept of requiring a test for all new homes is not new. DOE’s Building America Program recommends that “[e]ven in conditioned space, ducts should be insulated to reduce the risk of condensation and mold. They should be tightly sealed and tested for leakage.” *See* https://www.energy.gov/sites/prod/files/2014/01/f6/1_1g_ba_innov_ductsconditionedspace_011713.pdf. Likewise, the International Association of Certified Home Inspectors recommends that ducts be located entirely within conditioned space and tested to ensure air tightness. Air leakage rates at air handlers, even when all ducts are located in conditioned space, can lead to significant reduction in comfort, leading homeowners to adjust the thermostat and significantly increase energy use. *See* https://www.nachi.org/inspecting-hvac-cabinet-seams-air-leakage-sealing.htm.

Cost Impact: The code change proposal will increase the cost of construction
For homes that would not have been required to test ducts (because they are located inside conditioned space), this proposal will result in a construction cost increase of about $200 for a duct test. However, the proposal substantially reduces homeowner risk, because the test will objectively verify that the heating and cooling systems are operating as intended, and will provide an opportunity for the builder to correct any mistakes. The test will also reduce the likelihood of a builder callback.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: REC-R403.3.3-21

This proposal doesn't have any public comments.

Proposal # 1049

REC-R503.1.2-21

Proponents: Ben Rabe (ben@newbuildings.org)

2018 Virginia Existing Building Code

Add new text as follows:

601.4.8 Heating and cooling systems. New heating and cooling and duct systems that are part of the alteration shall comply with SectionR403 of the VECC and this section.

Exception: Where ducts from an existing heating and cooling system are extended to an addition.

601.4.8.1 System Sizing. New heating and cooling equipment that is part of an alteration shall be sized in accordance with Section R403.7 of the VECC based on the existing building features as modified by the alteration.

Reason Statement: Historically, HVAC equipment has been routinely oversized. Studies have found very high rates of equipment oversizing; for example, 60% of RTU units in CA were found to be oversized. Oversized equipment results in increased energy use, decreased occupant comfort and increased wear-and-tear on equipment. Oversized equipment is also less effective at dehumidification. Like-for-like equipment replacement are particularly vulnerable to oversizing. The original equipment may have been installed when code requirements for “right-sizing” equipment did not exist or was not enforced. The materials markups that are common practice among contractors disincentivize them to install smaller, right-sized equipment. Changes to building use could have occurred since the original equipment was installed, creating a mismatch between current design loads and the original equipment. The building may have modified, particularly by energy efficiency programs, altering the design loads of the building. Lighting especially stands out here. Fluorescent and LED lighting is ubiquitous, but many HVAC systems were designed to account for incandescent lamps that convert over 75% of the energy they consume into heat.
With all of these considerations, it is reasonable to assume that the existing equipment sizing is more likely to be wrong than right, yet many equipment replacements use existing system sizing to size new equipment. This proposal explicitly requires that new equipment installed as part of an alteration be sized based on current building characteristics and loads, using current sizing standards. The resulting installations will be more efficient and more effective and many will be less costly to install as owners stop paying for more equipment than they need

Savings will vary based on the amount that existing equipment is oversized. “Right-sizing” has been found to result in about 0.2% energy savings for every 1% reduction in oversizing.

Cost Impact: The code change proposal will decrease the cost of construction
As “wrong-sized” equipment is generally oversized, this proposal will generally decrease the cost of installation. Smaller, right-sized equipment will generally be less costly to install. Savings will vary based on the amount that existing equipment is oversized. “Right-sizing” has been found to result in about 0.2% energy savings for every 1% reduction in oversizing.

Resiliency Impact Statement: This proposal will increase Resiliency
Resiliency is an essential component of adapting to the effects of climate change. As noted in the reason statement, right sizing equipment typically results in small systems, reducing home energy use. This reduces the buildings overall reliance on energy, reducing carbon emissions directly and indirectly, lessening the impact on climate change and climate related events. For the home’s resilience, the proposed measure will provide more efficient systems overall – even in an event like a black out, these more efficient systems require less energy to run, making any back up generation energy source last longer – providing extended comfort and safety to homeowners. Systems that are correctly sized will operate more optimally, avoiding system “short-cycling”. This will provide for overall longevity of the systems as well – creating a different type of resilience and reliability for everyday operation and the homeowner. For energy infrastructure resilience, the electric grid’s ability to deliver capacity to an increasing number of buildings will become increasingly important. By reducing overall energy use, this measure may contribute to a reduction in peak demand increasing the resiliency of the grid during high usage events, of critical importance for air conditioning loads during summer months (the most common to be oversized in this climate zone).

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: REC-R503.1.2-21

Discussion by Florin Moldovan
Jun 13, 2022 19:26 UTC

See attached floor modification discussed at the GSWG meeting on 06/09/2022.
Attachments: https://va.cdpaccess.com/proposal/1073/discuss/176/file/download/783/REC-R503.1.2+Floor+Modification.pdf

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Proposal # 1073

REC-R503.1.2-21

Revised for VEBC

601.4.8 Heating and cooling systems.
~~VAC ducts newly installed as~~ New heating and cooling and duct systems that are part of ~~an~~ the alteration ~~shall~~ shall comply with Section ~~R403.~~R403 of the VECC and this section.

Exception: Where ducts from an existing heating and cooling system are extended to an *addition*.

601.4.8.1 System Sizing. New heating and cooling equipment that is part of an *alteration* shall be sized in accordance with Section R403.7 of the VECC based on the existing *building* features as modified by the *alteration.*

RM1404.1-21

Proponents: Mary Koban (mkoban@ahrinet.org)

2021 International Residential Code

Revise as follows:

M1404.1 Compliance. Refrigeration cooling *equipment* shall comply with ~~Section M1411.~~ Section M1411. UL 474, UL 484, UL 1995, or UL/CSA 60335-2-40.

UL

UL LLC
333 Pfingsten Road
Northbrook, IL 60062

UL 474-2015:	Standard for Safety Dehumidifiers
UL 484-2019	Standard for Room Air Conditioners
UL/CSA/~~ANCE 60335-2-40—2012~~ 60335-2-40—~~2012~~ 2019	Standard for Household and Similar Electrical Appliances, Safety Part 2 -40: Particular Requirements ~~for Motor-compressors for~~ Electrical Heat Pumps, Air-Conditioners and Dehumidifiers

Reason Statement: This code change removes the reference to Section 1411 and adds the appropriate standards that regulate refrigeration cooling equipment. UL 484, UL 1995, and UL/CSA 60335-2-40 are the three standards that regulate all residential air conditioning and refrigerant cooling equipment. UL 474 and UL 484 is a new standard being introduced to the code. UL 474 regulates dehumidifiers. UL 484 regulates room air conditioners such as window units and package terminal air conditioners (PTACs). UL 474, UL 484, and UL 1995 will eventually sunset with UL/CSA 60335-2-40 as the replacement standard. However, these three standards are still being used for listing of equipment.
Currently, Section M1403.1 references UL 1995 and UL/CSA/ANCE 60335-2-40 for heat pumps. Similarly, Section M1412.1 references these two standards for absorption cooling equipment. The modification will compliment these two sections and their corresponding references to the standards. In addition, a revision to the IMC added these standards to Table 1101.2. This will keep the IRC consistent with the IMC regarding appropriate standards referenced for refrigeration equipment.

UL/CSA 60335-2-40 has been updated to the current edition since a significant number of new safety requirements were added to the standard.While Section 1411 is removed from a reference, the section still applies. It is not necessary to reference the section.

The code change was accepted and adopted in the 2024 IRC.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This change only adds the appropriate standards that are used for testing and listing refrigeration cooling equipment. The code already requires such equipment to be listed.

Resiliency Impact Statement: This proposal will increase Resiliency
This code change proposal will increase resiliency as users will have more options to use equipment with lower GWP which meet the most current equipment safety standards.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: RM1404.1-21

Discussion by Richard Potts
Jun 13, 2022 14:43 UTC

Supporting information provided by proponent.
Attachments: https://va.cdpaccess.com/proposal/1121/discuss/170/file/download/777/A2L%20Refrigerants%20Best%20Practices_Jan2022.pdf, https://va.cdpaccess.com/proposal/1121/discuss/170/file/download/776/UL1995to60355_timeline2019_vDIGITAL1-1.pdf

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Proposal # 1121

A2L Equipment Best Practices

Before Installing or Servicing Equipment

- SAFETY FIRST
- Read SDS and OEM Equipment Manual
- Follow lockout/tagout procedures when needed.
- Verify no voltage present before working.
- Ensure area is well ventilated.
- Evaluate jobsite for a) ignition sources b) flammable vapors c) controlling area, d) confined spaces and e) clear exit points.

A2L Installation

- Follow OEM guidelines for minimum room area/refrigerant charge limits.
- Ensure mitigation components are installed and operating per OEM instructions.
- Use locking refrigerant caps to prevent unauthorized access to the system
- Ensure a filter drier is installed

A2L Evacuation and Pressure Test

- Consult the OEM instructions to determine proper evacuation targets/procedures
- Pressure test field erected components
- Evacuate the system before charging using an A2L rated vacuum pump
- Record a) *date*, b) *test pressure* c) *vacuum level on the label* (UL 60335-2-40).

A2L Charging (if required)

- Do NOT exceed the maximum allowable refrigerant charge per OEM instructions (charge amounts may vary due to line-sets.)
- Follow OEMs procedure for proper charging techniques. (Superheat/Subcooling)
- If refrigerant is a 400-series, the refrigerant must leave the cylinder in 'liquid form'.
- Record a) *date* b) *total refrigerant charge weight on the unit label* (UL 60335-2-40).

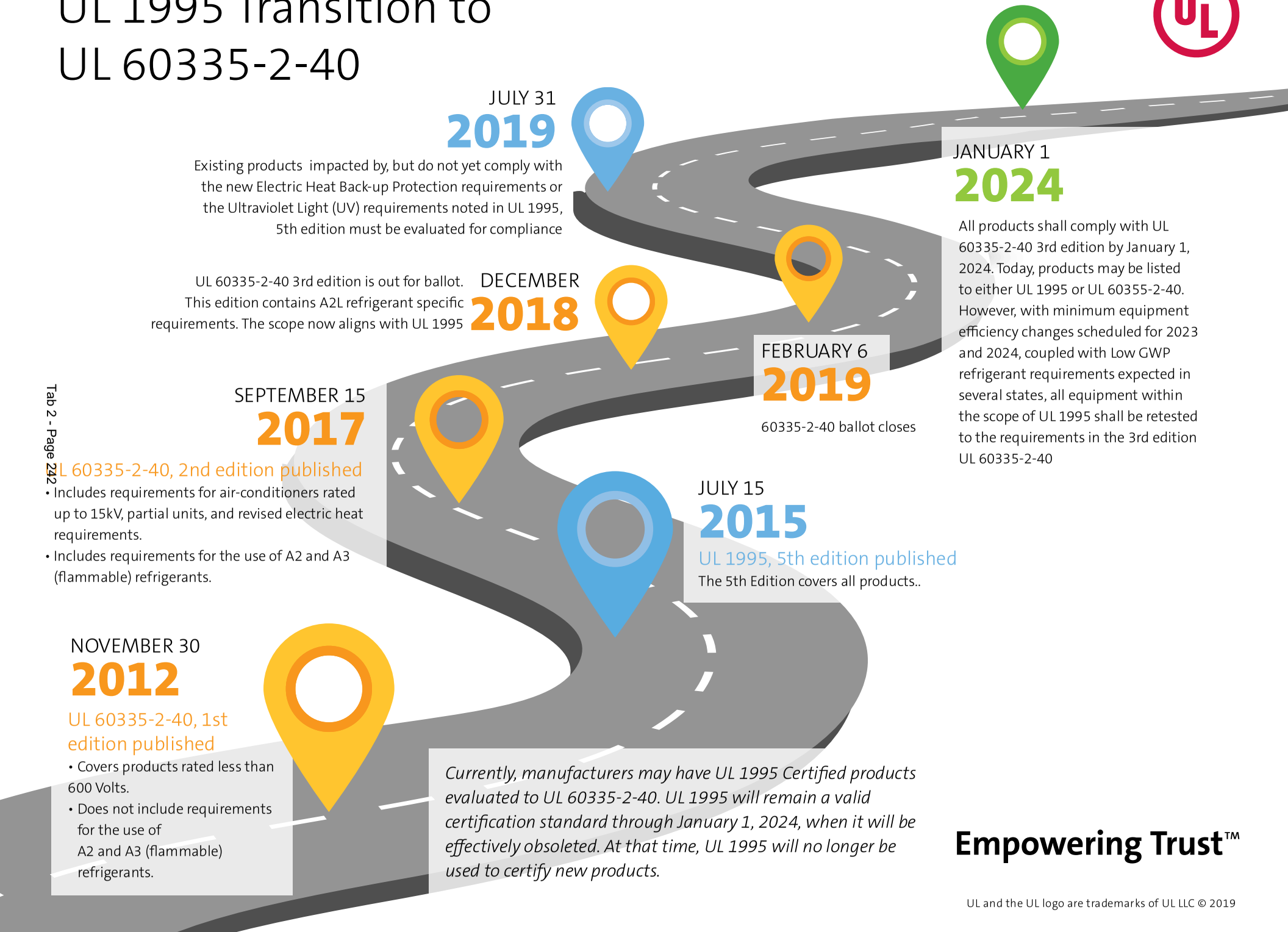
A2L System Repairs

- Leak check to verify no refrigerant is present.
- Ensure equipment is grounded before working.
- Use Proper capacitor discharge methods.
- Use only OEM approved replacement parts.
- Use nitrogen before and during all brazing.

A2L Recovery

- Do NOT vent
- Do NOT mix refrigerants
- Use recovery tools rated for use with A2L refrigerants
- Recover all refrigerant before opening system
- Recover into DOT approved recovery cylinder.
- Do not exceed cylinder fill weights.
- Label recovery cylinder contents

UL 1995 Transition to UL 60335-2-40



JULY 31
2019

Existing products impacted by, but do not yet comply with the new Electric Heat Back-up Protection requirements or the Ultraviolet Light (UV) requirements noted in UL 1995, 5th edition must be evaluated for compliance

JANUARY 1
2024

All products shall comply with UL 60335-2-40 3rd edition by January 1, 2024. Today, products may be listed to either UL 1995 or UL 60355-2-40. However, with minimum equipment efficiency changes scheduled for 2023 and 2024, coupled with Low GWP refrigerant requirements expected in several states, all equipment within the scope of UL 1995 shall be retested to the requirements in the 3rd edition UL 60335-2-40

UL 60335-2-40 3rd edition is out for ballot. This edition contains A2L refrigerant specific requirements. The scope now aligns with UL 1995

DECEMBER
2018

FEBRUARY 6
2019

60335-2-40 ballot closes

SEPTEMBER 15
2017

UL 60335-2-40, 2nd edition published

- Includes requirements for air-conditioners rated up to 15kV, partial units, and revised electric heat requirements.
- Includes requirements for the use of A2 and A3 (flammable) refrigerants.

JULY 15
2015

UL 1995, 5th edition published

The 5th Edition covers all products..

NOVEMBER 30
2012

UL 60335-2-40, 1st edition published

- Covers products rated less than 600 Volts.
- Does not include requirements for the use of A2 and A3 (flammable) refrigerants.

Currently, manufacturers may have UL 1995 Certified products evaluated to UL 60335-2-40. UL 1995 will remain a valid certification standard through January 1, 2024, when it will be effectively obsoleted. At that time, UL 1995 will no longer be used to certify new products.

Empowering Trust™

RM1411-21

Proponents: Mary Koban (mkoban@ahrinet.org)

2021 International Residential Code

M1411.1 Approved refrigerants. Refrigerants used in direct refrigerating systems shall conform to the applicable provisions of ANSI/ASHRAE 34.

Add new text as follows:

M1411.2 Refrigeration system listing.. Refrigeration systems using Group A2L refrigerants shall be listed and labeled to UL 60335-2-40/CAN/CSA C22.2 No. 60335-2-40. Refrigeration systems using Group A1 refrigerants shall be listed to UL 60335-2-40/CAN/CSA C22.2 No. 6-335-2-40 or UL 1995/CSA C22.2 No. 236. The equipment shall be installed in accordance with the listing.

M1411.3 Refrigeration system installation. Refrigeration systems shall be installed in accordance with the manufacturer's installation instructions. After installation, the manufacturer's installation instructions, owner's manuals, service manuals, and any other product literature provided with the equipment shall be attached to the indoor unit or left with the homeowner.

M1411.4 Field installed accessories. All Field installed accessories shall be installed in accordance with the accessory and equipment manufacturer's installation instructions. Accessories installed in the ductwork of Group A2L refrigeration systems shall not contain electric heating elements, open flames, or devices switching electrical loads greater than 2.5 kVA.

M1411.5 Signs and identification. Each refrigeration system using Group A2L refrigerant shall have the following information legibly and permanently indicated on a markable label provided by the equipment manufacturer.

1. Contact information of the responsible company that installed the refrigeration system, and

2. The system refrigerant charge and the refrigerant number.

M1411.6 Refrigerant charge. All refrigeration systems shall have refrigerant charge in compliance with the equipment manufacturer's installation instructions and the requirements of the listing. Group A2L refrigerant charge for an individual refrigeration system shall not exceed 34.5 lbs (15.7 kg).

M1411.7 Group A2L refrigerant piping testing. The piping system containing Group A2L refrigerant shall be tested in accordance with the manufacturer's installation instructions and the requirements of the listing.

Delete without substitution:

ANCE

Association of Standardization and Certification
Av. Lázaro Cárdenas No. 869 Fraccion 3
Col. Nva. Industrial Vallejo Deleg. Gustavo A. Madero, México, D.F.

~~NMX-J-521/2-40-ANCE—2014/CAN/CSA-22.2 No. 60335-2-40—12/UL 60335-2-40~~ ~~Safety of Household and Similar Electric Appliances, Part 2-40: Particular Requirements for Heat Pumps, Air-Conditioners and Dehumidifiers~~

Revise as follows:

CSA

CSA Group
8501 East Pleasant Valley Road
Cleveland, OH 44131-5516

UL 60335-2-40-2019/CAN/CSA/C22.2 No. ~~60335-2-40—2012~~ 60335-2-40—20~~12~~ 19 Standard for ~~Safety of~~ Household and Similar Electrical Appliances -Safety, Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers

UL

UL LLC
333 Pfingsten Road
Northbrook, IL 60062

UL/~~CSA/ANCE 60335-2-40—2012~~ Standard for Household and Similar Electrical Appliances~~-~~ Safety, Part 2 -40: Particular Requirements for 60335-2-40—~~2012~~ 2019/CAN/CSA Electrical Heat Pumps, Air Conditioners and Dehumidifiers ~~Motor-compressors~~ C22.2 No. 60335-2-40-19

Reason Statement: The general requirements list the specific standards that regulate refrigeration equipment. The change will mandate a listing to UL 60335-2- 40-2019/CAN/CSA C22.2 No. 60335-2-40-19 for any equipment using A2L refrigerant. The same standard will apply for systems using A1 refrigerants. Additionally UL 1995 is included for equipment using A1 refrigerants. UL 60335-2-40/CAN/CSA C22.2 No. 60335-2-40 has been updated to the 2019 edition which is the latest edition. In the latest edition, ANCE (from Mexico) withdrew their sponsorship. Hence, the ANCE listing is shown deleted. The standard is only bi-national between the United States and Canada.
The field marking of new equipment is required by the product standard. This requirement has been added to the code to keep the code consistent with the listing requirements.

The manufacturer specifies the charge limitation in the installation instructions for equipment using Group A2L refrigerant. This is also required by the product standard and assures the safe amount of charge based on room volume. The manufacturers also specify the testing requirements for refrigerant piping for residential equipment. Testing of the refrigerant piping is important to identify to allow the code official to observe that the piping can me the pressure requirements of the equipment.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The installation of air conditioning equipment is optional. Therefore there is no increase or decrease in cost. This change emphasizes the requirements currently in the code regarding general listing and installation of mechanical equipment.
RM6

Resiliency Impact Statement: This proposal will increase Resiliency
The addition of the updated standards will provide manufacturers and users greater flexibility to meet the upcoming changes in refrigerants required by the implementation of the AIM Act.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: RM1411-21

Discussion by Richard Potts
Jun 13, 2022 14:42 UTC

Supporting information provided by proponent.
Attachments: https://va.cdpaccess.com/proposal/1122/discuss/169/file/download/775/A2L%20Refrigerants%20Best%20Practices_Jan2022.pdf, https://va.cdpaccess.com/proposal/1122/discuss/169/file/download/774/UL1995to60355_timeline2019_vDIGITAL1-1.pdf

A2L Equipment Best Practices

Before Installing or Servicing Equipment

- SAFETY FIRST
- Read SDS and OEM Equipment Manual
- Follow lockout/tagout procedures when needed.
- Verify no voltage present before working.
- Ensure area is well ventilated.
- Evaluate jobsite for a) ignition sources b) flammable vapors c) controlling area, d) confined spaces and e) clear exit points.

A2L Installation

- Follow OEM guidelines for minimum room area/refrigerant charge limits.
- Ensure mitigation components are installed and operating per OEM instructions.
- Use locking refrigerant caps to prevent unauthorized access to the system
- Ensure a filter drier is installed

A2L Evacuation and Pressure Test

- Consult the OEM instructions to determine proper evacuation targets/procedures
- Pressure test field erected components
- Evacuate the system before charging using an A2L rated vacuum pump
- Record a) *date*, b) *test pressure* c) *vacuum level on the label* (UL 60335-2-40).

A2L Charging (if required)

- Do NOT exceed the maximum allowable refrigerant charge per OEM instructions (charge amounts may vary due to line-sets.)
- Follow OEMs procedure for proper charging techniques. (Superheat/Subcooling)
- If refrigerant is a 400-series, the refrigerant must leave the cylinder in 'liquid form'.
- Record a) *date* b) *total refrigerant charge weight on the unit label* (UL 60335-2-40).

A2L System Repairs

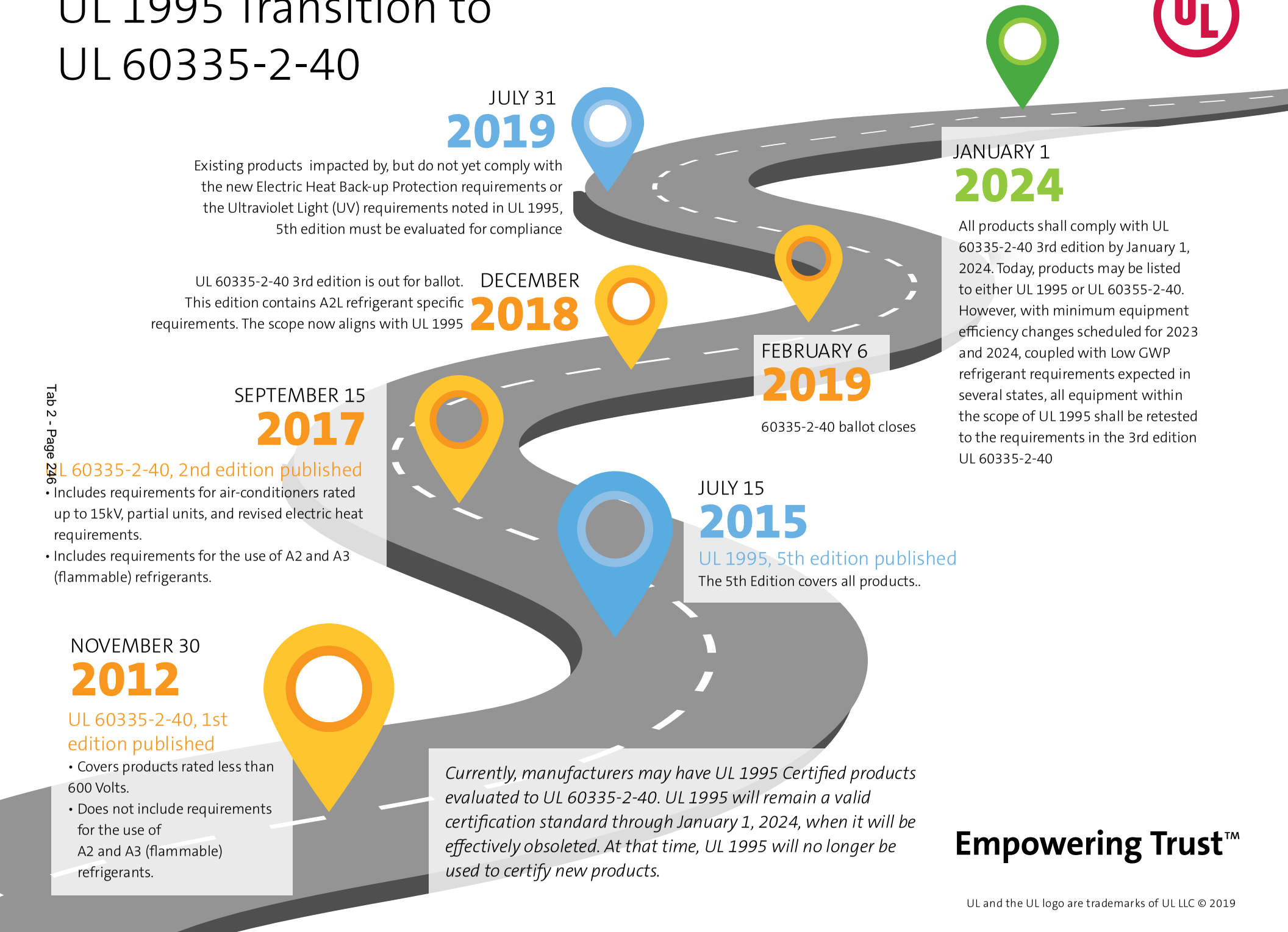
- Leak check to verify no refrigerant is present.
- Ensure equipment is grounded before working.
- Use Proper capacitor discharge methods.
- Use only OEM approved replacement parts.
- Use nitrogen before and during all brazing.

A2L Recovery

- Do NOT vent
- Do NOT mix refrigerants
- Use recovery tools rated for use with A2L refrigerants
- Recover all refrigerant before opening system
- Recover into DOT approved recovery cylinder.
- Do not exceed cylinder fill weights.
- Label recovery cylinder contents

For more information visithttps://www.ahrinet.org/saferefrigerant V1.0_1/2022

UL 1995 Transition to UL 60335-2-40



JULY 31
2019

Existing products impacted by, but do not yet comply with the new Electric Heat Back-up Protection requirements or the Ultraviolet Light (UV) requirements noted in UL 1995, 5th edition must be evaluated for compliance

JANUARY 1
2024

All products shall comply with UL 60335-2-40 3rd edition by January 1, 2024. Today, products may be listed to either UL 1995 or UL 60355-2-40. However, with minimum equipment efficiency changes scheduled for 2023 and 2024, coupled with Low GWP refrigerant requirements expected in several states, all equipment within the scope of UL 1995 shall be retested to the requirements in the 3rd edition UL 60335-2-40

UL 60335-2-40 3rd edition is out for ballot. This edition contains A2L refrigerant specific requirements. The scope now aligns with UL 1995

DECEMBER
2018

FEBRUARY 6
2019

60335-2-40 ballot closes

SEPTEMBER 15
2017

UL 60335-2-40, 2nd edition published

- Includes requirements for air-conditioners rated up to 15kV, partial units, and revised electric heat requirements.
- Includes requirements for the use of A2 and A3 (flammable) refrigerants.

JULY 15
2015

UL 1995, 5th edition published

The 5th Edition covers all products..

NOVEMBER 30
2012

UL 60335-2-40, 1st edition published

- Covers products rated less than 600 Volts.
- Does not include requirements for the use of A2 and A3 (flammable) refrigerants.

Currently, manufacturers may have UL 1995 Certified products evaluated to UL 60335-2-40. UL 1995 will remain a valid certification standard through January 1, 2024, when it will be effectively obsoleted. At that time, UL 1995 will no longer be used to certify new products.

Empowering Trust™

EB102.2.1-21

Proponents: Ronald Clements (clementsro@chesterfield.gov)

2018 Virginia Existing Building Code

Revise as follows:

102.2.1 ~~Change of occupancy to~~ Group I-2 or I-3 applicability. A *change of occupancy* to Group I-2 or I-3 from another occupancy classification shall comply with the provisions of the ~~VCC.~~ VCC as required for new construction, not chapter 7 of this code. All other provisions of the VEBC, including change of occupancy within an existing Group I-2 or I-3 classification, are applicable to 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 *change of occupancy*. When impractical to achieve compliance with the VCC for the new occupancy classification, the building official shall consider modifications upon application and as provided for in Section 106.3 of the VCC.~~

103.2 Change of occupancy. A Building or structure undergoing a *change of occupancy* shall comply with the provisions of this code for *change of occupancy* except as provided for in Section 102.2.1 for Group I-2 or I-3. Permitting, inspections and certificate of occupancy issuance shall be in accordance with the administrative provisions of the VCC. ~~Prior to a *change of occupancy* of the *building* or *structure,* the owner or the owner's agent shall make written application to the local building department for a new certificate of occupancy and shall obtain the new certificate of occupancy.~~ When impractical to achieve compliance with this code for the new occupancy, the building official shall consider modifications upon application and as provided for in Section 106.3 of the VCC.

Reason Statement: The provisions of 102.2.1 regarding when to use the VCC verses when to use the VEBC are incomplete. The proposed code change clarifies when to bypass the VEBC and when to use the VEBC when an I-2 or I-3 is involved. The intent is to use the VEBC for I-2 or I-3 except in the case of a change of occupancy to one of the uses, but that is not clear in Section 102.2.1. As an example, if you have a change of occupancy where a group B building, or portion of a building, changes to I-2, 102.2.1 should clearly send you directly to the VCC bypassing VEBC chapter 7. If you have a change of occupancy within and existing I-2, without a change of classification to I-2, such as an existing I-2 occupant load increase to require additional plumbing fixtures, the VEBC should apply.
The second sentence of 102.2.1 is proposed for deletion since this is addressed in VCC Chapter 1. Section 103.2 states prior to a change of occupancy written application for a new CO is required but does not mention compliance with the change of occupancy provisions of the VEBC are required. This corrects the error and references the administrative provisions of the VCC for permits, inspections, and CO issuance.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This code change is editorial so there is no cost impact.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: EB102.2.1-21

This proposal doesn't have any public comments.

Proposal # 1003

EB102.2.2-21

Proponents: Ronald Clements (clementsro@chesterfield.gov)

2018 Virginia Existing Building Code

Revise as follows:

102.2.2 Reconstruction, alteration, or repair in Group R-5 occupancies. Compliance with this section shall be an acceptable alternative to compliance with this code at the discretion of the owner or owner's agent. The VCC may be used for the reconstruction, *alteration,* or *repair* of Group R-5 *buildings* or *structures* subject to the following criteria:

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 the VCC 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 the VCC 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.
5. In accordance with § 36-99.2 of the Code of Virginia, installation or replacement of glass shall comply with Section R308 or Chapter 24 of the VCC.

Exceptions:

1. This section shall not be construed to permit non-compliance with any applicable flood load or flood-resistant construction requirements of the VCC.
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.
3. Repair or replacement of smoke alarms shall be with devices listed in accordance with UL217 and that are no more than 10 years from the date of manufacture. Battery-only powered devices shall be powered by a 10-year sealed battery.

Reason Statement: VEBC section 302.3 has this requirement that replacement smoke alarms must meet UL 217 and requires 10 year sealed batteries for battery only replacements. If the R-5 exception is taken to use the VRC instead of the VEBC this requirement to have current technology replacement smoke alarms is lost. This code change brings application of the VRC to R-5 consistent with use of the VEBC for R-5.

Cost Impact: The code change proposal will increase the cost of construction
The cheapest smoke alarm I could find on Amazon was an $8.27 9V only alarm that would not meet this code provision. The cheapest smoke alarm I could find on Amazon that meets the requirement is $15.99.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
This code change has no impact on resiliency.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: EB102.2.2-21

This proposal doesn't have any public comments.

Proposal # 976

EB103.9-21

Proponents: Resiliency Sub-Workgroup

2018 Virginia Existing Building Code

Revise as follows:

103.9 Construction documents. Construction documents shall be submitted with the application for a permit. The work proposed to be performed on an *existing building* or *structure* shall be classified on the construction documents as repairs, *alterations, change of occupancy, addition, historic building,* or moved *building. Alterations* shall further be classified as Level 1 or Level 2. Any required elevation certificate shall be prepared by a certified land surveyor or registered professional civil engineer licensed in Virginia.

> **Exception:** Construction documents or classification of the work does not need to be submitted when the building official determines the proposed work does not require such documents, classification, or identification.

Reason Statement: This proposal is being submitted on behalf of the Resiliency Sub-workgroup and it seeks to provide clarification on which professionals are permitted to complete and furnish any required flood elevation certificate.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This code change will have no impact on the cost of construction.

Resiliency Impact Statement: This proposal will increase Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: EB103.9-21

Discussion by Paul Messplay
Aug 18, 2022 11:58 UTC

Proponents: Paula Eubank, representing Self requests As Submitted

Commenter's Reason: Public Comment:
Relative to floodplain management requirements and associated elevation certifications or documentation, the technical language must be accurate and defined terminology must be consistent prior to codification.

The proposed requirement as stated prohibits other registered design professionals (RDPs) not specifically identified from preparation and certification of the required elevation certificate or documentation relative to construction and/or alteration conducted pursuant only to the Virginia Existing Building Code (VEBC). The floodplain management requirements must be consistent throughout all Virginia Uniform Statewide Building Codes, including the VCC, VRC, and VEBC. “Registered Design Professional” is a defined term in the VCC and VRC Sections 202 and the RDP definitions must also be consistent throughout all Virginia Uniform Statewide Building Codes, including the VCC, VRC, and VEBC.

The Virginia Uniform Statewide Building Codes, whether VCC, VRC or VEBC, should not designate, determine, permit, or prohibit RDP specific disciplines, and/or exclusions thereof, that may be in conflict with the Virginia Department of Professional and Occupational Regulation (VA DPOR) regulations which regulate those professions and legally authorize such work conducted under those registrations/licenses.

This proposed requirement also directly conflicts with the FEMA Elevation Certificate and its Instructions which specifically stipulate that Surveyors, Engineers, or Architects may prepare and certify, sign and seal, the FEMA Elevation Certificate as legally authorized by law or statute.

Further references to floodplain management requirements and the associated elevation certification or documentation are stipulated in VCC Sections 113.3.2, 113.3.3, 1612.4, and 1612.5, and VRC Sections 113.3.2 and 113.3.3 relative to the mandated elevation certification or documentation requirements and the preparation and certification thereof.

FEMA NFIP Substantiating Documentation:

FEMA Elevation Certificate –

· As stated on the FEMA Elevation Certificate Form –

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information. I certify that the information on this Certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

Were latitude and longitude in Section A provided by a licensed land surveyor? Yes No

Check here if attachments.

· As stated on the FEMA Elevation Certificate Instructions –

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

Complete as indicated. This section of the Elevation Certificate may be signed by only a land surveyor, engineer, or architect who is authorized by law to certify elevation information. Place your license number, your seal (as allowed by the State licensing board), your signature, and the date in the box in Section D. You are certifying that the information on this certificate represents your best efforts to interpret the data available and that you understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001. Use the Comments area of Section D to provide datum, elevation, openings, or other relevant information not specified elsewhere on the certificate.

EB202-21

Proponents: Ronald Clements (clementsro@chesterfield.gov)

2018 Virginia Existing Building Code

Revise as follows:

[A] CHANGE OF OCCUPANCY. Either of the following shall be considered a *change of occupancy* where the current VCC requires a greater degree of ~~accessibility~~ , structural strength, fire protection, means of egress, ventilation or sanitation than is existing in the current *building* or *structure:*

1. Any change in the occupancy classification of a *building* or *structure.*
2. Any change in the purpose of, or a change in the level of activity within, a *building* or *structure.*

Note: The use and occupancy classification of a *building* or *structure,* shall be determined in accordance with Chapter 3 of the VCC.

Reason Statement: In the 2018 VEBC and IEBC, change of occupancy driven accessibility requirements were removed from the code. This was done because the ADA does not require accessibility upgrades based on what the code defines as change of occupancy. Since there is no change of occupancy driven accessibility requirements, it makes no sense to use accessibility as a trigger to determine change of occupancy.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Since there are no current change of occupancy driven accessibility requirements this change will have no affect on cost.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
Since there are no current change of occupancy driven accessibility requirements this change will have no affect on cost.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: EB202-21

This proposal doesn't have any public comments.

Proposal # 1091

EB304.3.1-21

Proponents: Allison Cook (acook1@arlingtonva.us); Ronald Clements (clementsro@chesterfield.gov)

2018 Virginia Existing Building Code

Revise as follows:

304.3.1 Operational constraints. Where bars, grilles, grates, or similar devices are installed over emergency escape and rescue openings as permitted by Section 1030.5 of the VCC, smoke alarms shall also be provided in accordance with Section 907.2.10 of the VCC. In R-5 occupancies, bars, grilles, grates, or similar devices are permitted to be installed over emergency escape and rescue openings in accordance with section R310.4.4 of the VRC.

Reason Statement: There should be the correct pointer for R-5 to the VRC

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This is a clarification with a pointer to the correct VRC section. So, there is no change in cost of construction.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: EB304.3.1-21

This proposal doesn't have any public comments.

Proposal # 1095

EB404.3-21

Proponents: Ronald Clements (clementsro@chesterfield.gov)

2018 Virginia Existing Building Code

Revise as follows:

404.3 Alterations affecting an area containing a primary function. Where an *alteration* affects or could affect the usability of or access to an area containing a *primary function,* the route to the *primary function* area shall be accessible. ~~The accessible route to the *primary function* area shall include toilet~~ Toilet facilities and drinking fountains ~~that shall also be accessible to and usable by individuals with disabilities,~~ serving the area of primary ~~function.~~ function, including the route from the area of primary function to these facilities, shall be accessible.

Exceptions:

1. The cumulative costs of providing the accessible route, toilet facilities and drinking fountains are not required to exceed 20 percent of the costs of the *alterations* affecting the area of *primary function.*
2. This provision does not apply to *alterations* limited solely to windows, hardware, operating controls, electrical outlets and signs.
3. This provision does not apply to *alterations* limited solely to mechanical systems, electrical systems, installation or *alteration* of fire protection systems and abatement of hazardous materials.
4. This provision does not apply to *alterations* undertaken for the primary purpose of increasing the accessibility of a facility.
5. This provision does not apply to altered areas limited to Type B dwelling and sleeping units.

Reason Statement: The aspect of this provision that addresses toilet facilities and drinking fountains has been a source of confusion that predates the VEBC. It is also a source of confusion nationally. This code change is identical to code change EB25-22 that was approved by the ICC IEBC committee at the 2022 spring committee action hearings. This clarifies how to apply the code provision to existing toilet facilities and drinking fountains by addressing the requirement to upgrade toilet facilities and drinking fountains separately from the requirement to upgrade the accessible route to the primary function area. This code change is not changing the technical requirement of the code, it is simply an editorial change to clarify how to apply the current requirement.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This is editorial and therefore has no affect on the cost of construction.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
This is editorial and therefore has no affect on the cost of construction.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: EB404.3-21

This proposal doesn't have any public comments.

Proposal # 1086

EB502.1.1-21

Proponents: Kerry Sutton (kerry.sutton@concrete.org); Scott Campbell (scampbell@nrmca.org); Bill Horne (bhorne@ndtcorporation.com); Keith Kesner (kkesner3006@gmail.com); Matt Miltenberger (mattm@vcservices.com); David Whitmore (davidw@vector-corrosion.com); Jonathan Williams (jonathan.williams@easterassociates.com); Eric Edelson (eedelson@edelsonconsultinggroup.com); Jeff Jezzard (jeffj@vector-construction.com); John Catlett (catlettcodeconsulting@gmail.com)

2018 Virginia Existing Building Code

502.1 General. Structural repairs shall be in compliance with this section and Section 501.2. Regardless of the scope of *repair,* new structural members and connections used for *repair* or *rehabilitation* shall comply with the detailing provisions of the VCC for new *buildings* of similar *structure,* purpose and location.

Revise as follows:

502.1.1 Structural concrete. Assessment, design, and repairs to structural concrete shall be in accordance with ACI CODE 562. Assessment and design of repairs of seismic force-resisting concrete elements that result in changes of strength, stiffness, or ductility from pre-damage conditions shall be in accordance with Section 305.

Add new text as follows:

New Referenced Standard:
Chapter 13
ACI
American Concrete Institute
38800 Country Club Drive
Farmington Hill, MI 48331
. ACI CODE 562-21: Assessment, Repair, and Rehabilitation of Existing Concrete Structures - Code Requirements 502.1

Reason Statement: Concept - This proposal amendment adds ACI CODE 562-21: *Assessment, Repair and Rehabilitation of Existing Concrete Structures*, to establish minimum requirements for the evaluation, design, construction, repair, and rehabilitation of concrete structural elements in buildings for various levels of desired performance as deemed appropriate for the project. This proposal is intended as a modification to the 2018 Virginia Existing Building Code (VEBC). In addition to improved life safety, the requirements clearly define objectives and anticipated performance for the code official, owners, designers, contractors, and installers. The proposed language is not exclusive as *Section 103.1 General.* of the 2018 VEBC allows for alternate design and methods of construction when approved by the local building department. Citing this reference provides the building official a baseline for considering approval of design requirements and methods of construction. Further, the baseline is beneficial for product suppliers, owners, designers, contractors and most importantly the expectation of a reasonable level of safety for those residing and working in the Commonwealth of Virginia. It also assists with meeting the requirements of *Section 102.1 Purpose.*, as it provides for cost effective and timely repair options.
Scope - ACI 318 provides specific requirements for structural concrete in the International Building Code, similarly, ACI CODE 562 complements the IEBC by providing specific direction on how to evaluate, design and conduct concrete repairs and how to handle the unique construction problems associated with repairs to concrete elements. This standard provides more in-depth requirements needed by most entities addressing the repair of concrete structural elements than is provided in the IEBC. Further, the standard provides the requirements that bridge the inconsistencies and gaps in acceptable criteria that occur from the two following situations that a designer must solve: 1) repairing a structure according to the original building code used at the time it was built using today's construction methods and materials; or 2) repairing a structure built according to an older building code but repaired according to a more recent building code. ACI CODE 562 includes specifications and requirements for products commonly used for repairs, but not addressed elsewhere in the building codes, including but not limited to fiber-reinforced polymers and polymer concrete.

ACI CODE 562 permits flexibility in evaluation, design, construction and repair materials to provide economies while establishing expected performance for the service-life of the rehabilitation or repairs. Note that ACI CODE 562 does not address the evaluation of lateral-force resisting systems in high seismic areas. Thus, the proposed modification directs the user to the appropriate section of the VEBC, as *ASCE 41 Seismic Evaluation and Retrofit of Existing Buildings* is the appropriate standards as stated in ACI CODE 562.

Benefits - There are many benefits that ACI CODE 562 provides for the designer, owner, contractor, material provides, building officials and the citizens residing and working in the Commonwealth of Virginia. A few of these benefits are:

- Provides a level of expectation of life safety to the public in buildings where repairs or rehabilitation is performed on concrete structural elements.
- Provides clearly defined, uniform requirements aimed at extending the service life of existing structures.
- Provides minimum requirements for efficiency, safety, and quality of concrete repair.
- Establishes clear responsibilities between owners, designers, and contractors.
- Provides building code officials with a means to evaluate rehabilitation designs.
- Provides specific repair requirements that often result in less costly repairs compared to repairs required to meet only new construction requirements.

- References standards specifications for materials used in concrete repairs that are not addresses in the code requirements for new construction such as fiber reinforced polymer (FRP) reinforcement and polymer concrete.

Technical justification - It is noteworthy that ACI has been publishing and making available guidance documents on evaluation and repair of concrete for more than five decades and still it is reported that more than 50% of all structural concrete repairs are found to fail in 20 years or less and 20% of repairs to structural concrete fail within 5 years. Recognizing this as putting the public at risk, ACI Committee 562 saw the need for and developed the Code Requirements for Assessment, Repair, and Rehabilitation of Existing Concrete Structures as an ACI standard intended for adoption in building codes. ACI continues to maintain and develop additional resources to support assessment, repairs, and rehabilitation of structural concrete in accordance with ACI CODE 562. Among these are:

- ACI 563-18, *Specifications for Repair of Structural Concrete in Buildings [LINK 1]*
- MNL-3(20) *Guide to the Code for Assessment, Repair, and Rehabilitation of Existing Concrete Structures [LINK 2]*

These resources are readily available to provide greater understanding of assessment, repair and rehabilitation of concrete structural elements. ACI MNL-3 provides case studies demonstrating the ease of use of ACI CODE 562. Numerous technical notes, reports, guides, and specifications that provide background information and technical support are available through other organizations such as American Society of Civil Engineers, British Research Establishment, Concrete Society, International Concrete Repair Institute, National Association of Corrosion Engineers, Post Tensioning Institute, Society of Protective Coatings, and US Army Corps of Engineers. Many of these organizations' publications related to concrete repair can be found in the Concrete Repair Manual.

Sustainability - Reference to ACI CODE 562 in the VEBC will help improve confidence of owners, builders, and developers regarding effective repairs, upgrades, and reuse of existing buildings in lieu of demolition and replacement. Typically extending the life of existing buildings is substantially more sustainable than demolition and new construction. Adoption of ACI CODE 562 by reference is needed to help facilitate efforts that conserve energy and resources while maintaining a minimum level of requirements to ensure reasonable levels of life safety, and welfare are afforded to the public.

State and Local References - ACI CODE 562 is already being used in several jurisdictions:

- *2020 Florida Building Code, Existing Buildings, 7th Edition Section 301.3.4. [LINK 3]*
- *2018 Hawaii State Building Code, Code Item (53) Section 3401.6.[LINK 4]*
- *2017 Ohio Building Code with Aug 2018 Updates & Errata 02-08-19 Section 3401.6. [LINK 5]*
- *2018 North Carolina Existing Building Code, Section 606.1.1.*
- City of Los Angeles *California Design Guide Volume 1 City of Los Angeles Mandatory Earthquake Hazard Reduction in Non-Ductile Concrete Buildings (NDC)*, including Section 4.1 Retrofit Design Process.
- New York City Department of Buildings cites ACI 562 in *BUILDINGS BULLETIN 2017-015.* [LINK 6]
- *City of Austin, Texas,* Design and construction specifications Section 410S. [LINK 7]

Cost Impact: The code change proposal will decrease the cost of construction
The use of this referenced standard should in many cases reduce the cost of repair. Too often in the process of repair, there is insufficient information to determine acceptance criteria that is amicable to both the owner and the building official. The result is the determination that the repair must meet the latest building code requirements for new construction. This standard increases the options available for repair and provides acceptance criteria necessary to permit these options. A case study that illustrates this point: " ACI 562 has been referenced in expert reports for litigation cases, resulting in significantly reduced financial settlements. Denver-based J. R. Harris & Company recently used the code as a standard in several litigation reports assessing damages in existing concrete structures. As an approved consensus standard, according to American National Standards Institute (ANSI) procedures, ACI 562-13 has been accepted as the source standard to use for damage assessment and repair on individual projects by Greenwood Village and Pikes Peak Regional Building Departments in Colorado. Based on this acceptance, the consulting engineer was able to cite the code in their recommendation for structural remediation and determination of damages. In one case involving rehabilitation work on four buildings with faulty construction, J. R. Harris was able to reduce the repair costs from $12 million to $3 million, with a repair plan based on a lesser of the demand-capacity ratio based on either the original or current building code per ACI 562."

Resiliency Impact Statement: This proposal will increase Resiliency
Use of ACI CODE 562 standard helps ensure that repairs are properly performed and will satisfy an acceptable service life. Without minimum standards, repairs may not satisfy the intent of the code or the expectations of the owners or public. Proper evaluation and repairs will improve resiliency of the building. News coverage demonstrates the potential risk to life safety due to deteriorating concrete and inappropriate repairs. A news investigation [LINK 8] of parking structures in the City of Pittsburg, PA is an example of such coverage.

Attached Files

- **ICRI-562-Code-VA-National-Support-2022.pdf**
  https://va.cdpaccess.com/proposal/936/1681/files/download/545/

- **ICRI-562-Code-VA-ChapterSupport-2022.pdf**
  https://va.cdpaccess.com/proposal/936/1681/files/download/544/

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: EB502.1.1-21

This proposal doesn't have any public comments.

Proposal # 936

CONCRETE REPAIR
Restore | Repurpose | Renew

January 6, 2022

Board of Housing and Community Development
600 East Main Street, Suite 300
Richmond, VA 23219

RE: Support for Adoption by Reference of ACI 562
in the Virginia Existing Building Code
Proposal #936, EB 502.1.1-2021

Dear Board Member:

I am writing this letter as President of the International Concrete Repair Institute (ICRI) in support of approval of adoption by reference of ACI 562-21 *Code Requirements for Assessment, Repair, and Rehabilitation of Existing Concrete Structures* into the *Virginia Existing Building Code* as presented in the code change proposal submitted by the American Concrete Institute (ACI).

ICRI is the only non-profit organization that is dedicated solely to the repair of concrete structures. ICRI has over 2500 members and 39 local chapters across the United States and Canada, with a local chapter in the state of Virginia.

For the past 33 years, ICRI has developed and promoted best practices for concrete repair and has developed consensus document guidelines for the repair of deteriorated concrete structures. These guidelines have been published and used to result in more durable concrete repairs. It has been proven that poor performance of concrete repairs is a serious issue in the industry, and improvements are needed in concrete repair practices. Several studies indicate that **less than 50%** of concrete repairs perform satisfactorily, posing a significant danger to the health, safety and welfare of the public. This is a tremendous burden on owners, municipalities and the economy.

As a repair industry professional and the President of an organization that represents contractors, design professionals and material manufacturers that are involved in the repair of existing concrete buildings, both I and ICRI as an organization recognize the need for standards that will help design professionals and contractors improve the design, implementation and performance of concrete repairs.

The ACI 562-21 code provides minimal requirements for assessment, design and construction, and implementation of repairs and rehabilitation, including quality assurance requirements, for structural concrete **in service.** ACI 562 encourages evaluation of the structure, and a better evaluated structure is potentially less risky to repair. ACI 562 also requires consideration of durability in design, likely leading to better repair performance and less premature repair failure.

The concrete repair industry utilizes many unique repair strategies. The Code provides latitude and flexibility to the licensed design professional to prepare a design to address the specific issues encountered on an existing building while still meeting the requirements of ACI 562. The ACI 562 code will serve to unify and strengthen concrete evaluation, repair, and rehabilitation projects while accommodating the diverse and unique repair strategies and materials used in the repair industry, making existing structures safer. All of these goals are consistent with the mission of ICRI.

In examining the cost of concrete repairs, the greatest cost to the owner is having to remove and replace previous repairs to a structure due to premature repair failure. I believe the adoption of the ACI 562-19 code has the potential to significantly reduce the long-term life cycle cost of maintaining a structure. I also believe it will provide safer structures with minimal impact on initial cost of repairs.

Any standard that improves the quality of the completed repair work will be a welcome addition to the building code and the concrete repair industry. Use of ACI 562 also contributes to increased sustainability, increasing the probability that a concrete structure will be restored rather than demolished and replaced.

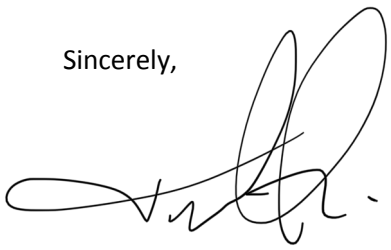
Many leaders in the repair industry support the ACI 562 code and other states, including Hawaii, Ohio , Florida, and North Carolina and jurisdictions have already adopted it. This code complements the *Virginia Existing Building Code* by providing specific direction on how to evaluate and design concrete repairs and how to address the unique construction methods and issues associated with repair. In addition, ACI 562 provides building code officials with a means to evaluate rehabilitation designs.

On behalf of the Board of Directors and members of ICRI, I recommend and hope that the State of Virginia will also realize the benefit of this code and adopt code change proposal into the Virginia Existing Building Code.

If you have any questions regarding my comments or would like to discuss my viewpoints in more detail, please feel free to contact me at your convenience.

Thank you in advance for your time and consideration of this recommendation for support of the proposed building code change.

Sincerely,



John McDougall, CCSRT
2022 ICRI President
919-500-2232
johnmcdougall27540@gmail.com

CONCRETE REPAIR
Restore | Repurpose | Renew

January 16, 2022

Board of Housing and Community Development
600 East Main Street, Suite 300
Richmond, VA 23219

RE: Support for Adoption by Reference of ACI 562
in the Virginia Existing Building Code
Proposal #936, EB 502.1.1-2021

Dear Board Member:

Please accept this letter of recommendation from the International Concrete Repair Institute (ICRI) Virginia Chapter Board of Directors in support of approval of adoption by reference of ACI 562-19 *Code Requirements for Assessment, Repair, and Rehabilitation of Existing Concrete Structures* into the *Virginia Existing Building Code* as presented in the code change proposal submitted by the American Concrete Institute (ACI).

The ACI 562 Code provides important information and direction to design professionals, contractors, materials manufacturers, and testing agencies. ACI 562, which was written and maintained by industry experts, will help the design professionals and contractors improve the design and execution of concrete repairs. This should ultimately deliver safer structures and could also reduce the life cycle cost of concrete structures.

ICRI is the only non-profit organization that is dedicated solely to the repair of concrete structures. ICRI has over 2,500 members and 39 local chapters across the United States and Canada, with a local chapter in the Commonwealth of Virginia. The ICRI Virginia chapter members include Virginia registered Professional Engineers, contractors, technicians, materials manufacturers, and material distributors. We are dedicated to improving the quality of concrete restoration, repair and protection, through education and communication among the members and those who use their services.

Other states and jurisdictions have supported the ACI 562 code and adopted it. The ICRI Virginia Chapter recommends that the Commonwealth of Virginia also realize the benefit of this code and adopt the proposed code change to the Virginia Existing Building Code.

Thank you in advance for your time and consideration of this recommendation for support of the proposed building code change.

Respectfully Submitted,

Kevin Higgins
ICRI's Virginia Chapter President
on behalf of the Board of Directors

EB603.6-21

Proponents: Ronald Clements (clementsro@chesterfield.gov)

2018 Virginia Existing Building Code

Delete without substitution:

~~**603.6 Plumbing.** Where the occupant load of the story is increased by more than 20 percent, plumbing *fixtures* for the story shall be provided in quantities specified in the *International Plumbing Code* based on the increased occupant load.~~

Reason Statement: Any occupant load change that increases the number of required plumbing fixtures is a change of occupancy by definition and section 710.1 is applicable. This provision is not consistent with the exception to 710.1 creating a confusing conflict.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This section is already overridden by section 710.1 so this is effectively editorial.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: EB603.6-21

This proposal doesn't have any public comments.

Proposal # 1005

EB701.1-21

Proponents: Ronald Clements (clementsro@chesterfield.gov)

2018 Virginia Existing Building Code

Revise as follows:

701.1 Scope. The provisions of this chapter shall apply where a *change of occupancy* occurs, except as modified by Section 906 for *historic buildings.* Compliance with the current VCC for the *change of occupancy* shall only be required as prescribed in this chapter. Compliance shall be only as necessary to meet the specific provisions of the applicable International Codes and is not intended to require the entire *building* be brought into compliance.

Exception: ~~Compliance with the provisions of~~ Chapter 14 shall be permitted ~~in~~ as a compliance alternative to ~~lieu of complying with~~ this chapter for a *change of ~~occupancy.~~ occupancy* to buildings that will not continue to be or are not proposed to be Institutional Group I occupancies, High-Hazard Group H occupancies, or Residential Group R-5

.

1401.1 Scope. The provisions of this chapter ~~are~~ are applicable when the exception to Section 701.1 is applied ~~intended to maintain or increase the current degree of public safety, health, and general welfare in *existing buildings* or *structures,* while permitting changes of occupancy without requiring full compliance with Chapter 7, except where compliance with other provisions of this code is specifically required in this chapter.~~

~~**Exception:** The provisions of this chapter shall not apply to *buildings* with occupancies in Group H or I.~~

1401.2 ~~Complete change~~ Change of occupancy. The *change of occupancy* shall be evaluated in accordance with the evaluation process specified in Sections 1402 through 1404. ~~Where an entire *existing building* undergoes a *change of occupancy*, the applicable provisions of this chapter for the new occupancy shall be used to determine compliance with this code.~~

~~**Exception:** Plumbing, mechanical and electrical systems in *buildings* undergoing a *change of occupancy* shall be subject to any applicable requirements of Chapter 7.~~

Add new text as follows:

1401.2.1 Plumbing, mechanical, and electrical systems.. Plumbing, mechanical, and electrical systems shall conform to the applicable requirements of Sections 708, 709, and 710.

Revise as follows:

1401.3 ~~Partial~~ Work undertaken in connection with a change of occupancy. Any repairs, alterations, or additions undertaken in connection with a change of occupancy shall conform to the applicable requirements of this code for the work as classified in this code and as modified by this chapter.

~~Where a portion of the *building* undergoes a *change of occupancy* and that portion is separated from the remainder of the *building* with fire barrier or horizontal assemblies having a fire-resistance rating as required by Table 508.4 of the VCC or Section R302 of the *International Residential Code* for the separate occupancies, or with approved compliance alternatives, the portion changed shall be made to conform to the provisions of this chapter.~~

~~Where a portion of the *building* undergoes a *change of occupancy* and that portion is not separated from the remainder of the *building* with fire barriers or horizontal assemblies having a fire-resistance rating as required by Table 508.4 of the VCC or Section R302 of the *International Residential Code* for the separate occupancies, or with approved compliance alternatives, the provisions of this chapter which apply to each occupancy shall apply to the entire *building.* Where there are conflicting provisions, those requirements that are the most restrictive shall apply to the entire *building* or *structure.*~~

Delete without substitution:

~~**1401.4 Accessibility requirements.** All portions of the *building* proposed for a *change of occupancy* shall conform to the applicable accessibility provisions of Chapter 4.~~

~~**1401.5 Compliance with flood hazard provisions.** In flood hazard areas, *buildings* or *structures* that are evaluated in accordance with this chapter shall comply with Section 1612 of the VCC or Section R322 of the VRC, as applicable, if the work covered by this chapter constitutes *substantial improvement.*~~

Revise as follows:

1402.1 Evaluation process. The evaluation process specified herein shall be followed in its entirety to evaluate *existing buildings* for work covered by this chapter. The *existing building* shall be evaluated in accordance with the provisions of this section and Sections 1403 and ~~1401.4.~~ 1404. The evaluation shall be comprised of three categories as described in Sections 1402.1.1 through 1402.1.3.

1402.1.1 Fire safety. Included within the fire safety category are the structural fire resistance, automatic fire detection, fire alarm, automatic

sprinkler system and fire suppression system features of the facility.

1402.1.2 Means of egress. Included within the means of egress category are the configuration, characteristics and support features for means of egress in the facility.

1402.1.3 General safety. Included within the general safety category are the fire safety parameters and the means-of-egress parameters.

Add new text as follows:

1402.2 Occupancy basis. The evaluation of the building per this chapter shall be based on the new occupancy. A partial building change of occupancy shall be evaluated accordance with Section 1402.2.1 or 1402.2.2 as applicable.

1402.2.1 Separated change of occupancy. Where a portion of the building undergoes a change of occupancy and that portion is separated from the remainder of the building in accordance with Section 508.4 of the VCC , only the portion of building undergoing the change of occupancy shall conform to the provisions of this chapter based on the new occupancy classification.

1402.2.2 Nonseparated change of occupancy. Where a portion of the building undergoes a change of occupancy and that portion is not separated from the remainder of the building in accordance with Section 508.4 of the VCC, the provisions of this chapter shall apply to the entire building based on all the occupancy classifications in the building .

Revise as follows:

~~**1402.2**~~ **1402.3 Structural evaluation.** The *existing building* shall be evaluated to determine adequacy of the existing structural systems for the proposed *change of occupancy.* The evaluation shall demonstrate that the *existing building* with the work completed is capable of resisting the loads specified in Chapter 16 of the VCC.

~~**1402.3**~~ **1402.4 Submittal.** The results of the evaluation as required in Section 1402.1 shall be submitted to the *code official.* Table 1404.1 shall be utilized for tabulating the results of the evaluation. References to other sections of this code indicate that compliance with those sections is required in order to gain credit in the evaluation herein outlined.

Reason Statement: This code change is a continuation of the clean-up editorial work that has been done each code cycle to incrementally make this section less confusing and easier to use.
707.1- The prohibition on using Chapter 14 for group I and H has been incorporated into the scoping of the exception in Chapter 7 that allows use of Chapter 14 as an alternative. Group R-5 has been included with groups H and I in being outside the scope of Chapter 14 since this chapter was not set up for structures designed per the IRC.

1401.1- The revision to this section removes commentary style language, simplifies the scoping provision, and ties back to the applicability, which comes from the exception to Section 701.1.

1401.2 through 1401.4- The distinction between full and partial building change of occupancy is proposed to be addressed in section 1402.2. 1401.1 is proposed to be a more accurate scoping section stating the evaluation shall be done per 1402 through 1404; stating, rather than using an exception, that plumbing/mechanical and electrical work must be addressed with chapter 7 provisions; providing for work undertaken in connection with a change of occupancy, which is currently not addressed in Chapter 14; deleting the flood provisions since those are not driven by a change of occupancy and are addressed through the work undertaken in connection with a change of occupancy section; and deleting the provisions in 1401.4 for accessibility since there are no longer change of occupancy based accessibility provisions in chapter 4.

1402.1 through 1402.4- This section starts out establishing that the evaluation is based on the new occupancy and then addresses how to handle partial change of occupancy with the sub-sections. This maintains the method used in 2018 based on separation provisions of VCC 508.4.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This is an editorial change that will not affect construction cost.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: EB701.1-21

This proposal doesn't have any public comments.

Proposal # 1007

EB707.2-21

Proponents: Ronald Clements (clementsro@chesterfield.gov)

2018 Virginia Existing Building Code

Revise as follows:

707.2 Exterior wall rating for change of occupancy classification to a higher hazard category. When a *change of occupancy* classification is made to a higher hazard category as shown in Table 707.1, exterior walls shall have fire resistance and exterior opening protectives as required by the VCC.

~~**Exception:** A two-hour fire-resistance rating shall be allowed where the *building* does not exceed three stories in height and is classified as one of the following groups: A-2 and A-3 with an occupant load of less than 300, B, F, M or S.~~

Reason Statement: The exception is never applicable because the listed occupancies are never required to have a rating greater than 2 hours. This error is even noted in the ICC commentary for this section (1011.6.1 in the IEBC).

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposal removes and moot exception so it will not affect cost.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: EB707.2-21

This proposal doesn't have any public comments.

Proposal # 1006

EB1201.7-21

Proponents: DHCD Staff (sbco@dhcd.virginia.gov)

2018 Virginia Existing Building Code

Delete without substitution:

~~**1201.7 Facilities required.** Sanitary facilities shall be provided during construction or demolition activities in accordance with the *International Plumbing Code.*~~

Reason Statement: As per the IEBC Commentary related to these provisions (Section 1501.7 of the 2018 IEBC), the intent of the section is to provide toilet facilities for construction workers. The Commentary reads, in part, "Construction employees must have plumbing facilities available during the construction or demolition process of a building". The IPC provisions related to toilet facilities for workers (Section 311 of the 2018 IPC/VPC) have been long deleted in Virginia. Thus, the VEBC Section 1201.7 has no bearing. Given this and to be in line with the Virginia's long standing on this subject, the section is proposed to be deleted.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This is a cleanup proposal with no technical changes. Thus, the construction costs will not be affected by the proposed change.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
This is a cleanup proposal with no technical changes. The proposal has no impact on resiliency.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: EB1201.7-21

This proposal doesn't have any public comments.

Proposal # 1138

EB1209.1-21

Proponents: VFSB Codes and Standards Committee (amilliken@staffordcountyva.gov)

2018 Virginia Existing Building Code

Add new text as follows:

1201.8 Separations between construction areas. Separations used in Type I and Type II construction to separate construction areas from occupied portions of the building shall be constructed of materials that comply with one of the following:

1.Noncombustible materials.

2.Materials that exhibit a flame spread index not exceeding 25 when tested in accordance with ASTM E84 or UL 723.

3.Materials exhibiting a peak heat release rate not exceeding 300 kW/m2when tested in accordance with ASTM E1354 at an incident heat flux of 50 kW/m2in the horizontal orientation on specimens at the thickness intended for use

Revise as follows:

1209.1 When required. An approved water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible material arrives on the ~~site.~~ site, on commencement of vertical combustible construction, and on installation of a standpipe system during alterations, repairs, or additions to any building or structure in accordance with the Virginia Statewide Fire Prevention Code.

Reason Statement: Clean up of Section 1209.1 to provide 2021 language and reference the SFPC for fire flow and associated details. It also correlates better with the VCC and SFPC.
Section 1201.8 has been added due to comments during the SFPC Sub-workgroup where it was recommended to add this section to the VEBC rather than just the VCC since it could involve an already occupied area. This language is identical to the language removed from the SFPC and belongs in the VEBC.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
No cost impact.

Resiliency Impact Statement: This proposal will increase Resiliency
By improving the fire safety provisions of the VEBC, the resiliency of communities is increased by protecting them from the hazards associated with poor fire safety practices during construction.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: EB1209.1-21

This proposal doesn't have any public comments.

Proposal # 973

PM101.1-21

Proponents: Paula Eubank (paula.neal.eubank@gmail.com)

2018 Virginia Maintenance Code

Revise as follows:

101.1 Short title. The *Virginia Uniform Statewide Building Code,* Part III, the Virginia Maintenance Code, may be cited as the *"Virginia Property Maintenance Code", or ~~as the "VMC"~~ the short title of "VPMC".*

Reason Statement: Revise the short title of the Virginia Property Maintenance Code or VMC to VPMC to resolve the historical and practical issue of confusion with the Virginia Mechanical Code (VMC). Editorial revision only.
This reference requires revision of all short title references of the VMC to VPMC throughout all Codes.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Editorial revision only.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
Editorial revision only.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: PM101.1-21

This proposal doesn't have any public comments.

Proposal # 1172

PM103.2.3-21

Proponents: Christina Jackson (jacksoncd@nnva.gov)

2018 Virginia Maintenance Code

Revise as follows:

103.2.3 Responsibility. The *owner* of a *structure* shall provide and maintain all buildings, *structures,* systems, facilities and associated equipment in compliance with this code unless it is specifically expressed or implied that it is the responsibility of the *tenant* or *occupant.*

> **Note:** Where an *owner* states that a *tenant* is responsible for performing any of the owner's duties under this code, the *code official* may request information needed to verify the owner's statement, as allowed by § 55-11209 A 5 of the Code of Virginia. A tenant's responsibility is limited and protected under the Virginia Residential Landlord and Tenant Act.

Reason Statement: This code change has become problematic for code officials throughout Virginia. In the Hampton Roads area, it has become very troublesome with these Rent to Own Buyers. Many of these owners are taking properties that have multiple code violations and requiring a large down payment to move into these very properties. Once the occupant/tenant moves into the property, they find mechanical, plumbing, electrical issues, and in some cases find unfit conditions for human occupancy. The tenant will then report their concerns to the local code official and the conditions warrant notice of violation. The owner then in turn cites this NOTE of 103.2.3 that the tenant is responsible for making major repairs to the property. When the tenant cannot make the repairs or the conditions worsen, the "owners" are foreclosing on their "rent to own" agreement and evicting people in the process. The owners of the property are not making the repairs before starting this cycle all over again. At issue is that the tenants do not have the financial means nor will they get any financial gains at fixing some of these major issues that are wrong with these properties. The tenants cannot pull permits on the owner's behalf to make the repairs to these properties. The current owner who is abusing the intent of this code has a YouTube page (link below) that lists over 400 properties in the Hampton Roads area. His push back in multiple emails and conversations once he receives the code violations " well my agreement says you all have to make them responsible for fixing the issue" The problem is so bad that advocates, state representatives, and local news stations are looking at other remedies that can be taken against this type of predatory renting. Adding the language that the repairs cannot be anything that is not a provision protected under the Virginia Landlord Tenant Act will help code officials and the local city attorney's cases in court when holding the owner responsible for these repairs. I would like to change the code to help spell out the intent of the code.
72019 LLC's YouTube Page https://youtube.com/user/69joeychianese

I have additional supporting documentation

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This code change proposal will not increase or decrease the cost of construction

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
This proposal will neither increase nor decrease Resiliency

Attached Files

- **Supporting Code Change Doc-3.pdf**
  https://va.cdpaccess.com/proposal/1168/1591/files/download/678/
- **Supporting Code Change Doc-2.pdf**
  https://va.cdpaccess.com/proposal/1168/1591/files/download/677/
- **Supporting Code Change Doc.pdf**
  https://va.cdpaccess.com/proposal/1168/1591/files/download/676/
- **Code Change Proof.pdf**
  https://va.cdpaccess.com/proposal/1168/1591/files/download/675/

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: PM103.2.3-21

This proposal doesn't have any public comments.

Proposal # 1168

From: [redacted]
To: Jackson, Christina D.
Subject: Re: 1222 24th. The outside violations are not true. Call me asap. 484 636 8917 ann Huber
Date: Thursday, June 10, 2021 2:53:55 PM

As far as my husband and I know, we are the owners of this house. We are paying 875.00 a month to a man name joey Chinese. How do we find out if this is true? I mean we are tired of being used.

[redacted]

On Thu, Jun 10, 2021 at 1:23 PM, Jackson, Christina D. <Jacksoncd@nnva.gov> wrote:

> Good afternoon Ms. Huber
>
> I called you and left you a message regarding the outstanding violations with the property. The notices for the property were issued back on April 27, 2021 to the owner of record. There was no response regarding that notice and upon re-inspection yesterday the violations (except the windows) still exist. That is why I left a door hanger for you to contact me. Per the original photos and your comments in this email stating the extent of your repairs, a permit was required. According to our permit system there are no permits on file. I have attached the photos from the original inspection and my follow up inspection yesterday. I have also included the notice that was issued. Please review and let me know if you have any questions or concerns.

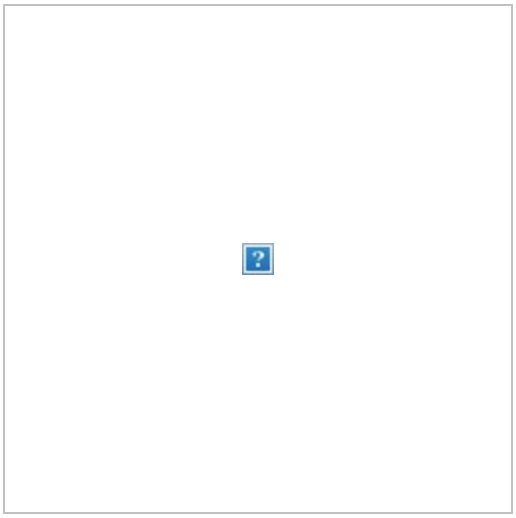

ATTENTION
PROPERTY OWNER/OCCUPANT
Address 1552 24th St
Date 6/9/2021 Time 11:03 AM PM
-SORRY WE MISSED YOU-
Please Contact Our Office On or Before
Date 6/9/21 Phone 926-8870
In Reference To Item Checked Below
BUILDING INSPECTION
PLUMBING INSPECTION
MECHANICAL INSPECTION
ELECTRICAL INSPECTION
PROPERTY MAINTENANCE INSPECTION
ZONING/SIGN INSPECTION
SEE REVERSE SIDE
CITY OF NEWPORT NEWS
DEPARTMENT OF CODES COMPLIANCE
2400 Washington Avenue 23607
757-933-2331


LOWE'S
LOWE'S

Respectfully,

Christina Jackson
Department of Codes Compliance
City of Newport News

2400 Washington Avenue, Newport News, VA 23607
(757) 926-8870 (Office); (757) 926-8311 (Fax)
Email: jacksoncd@nnva.gov



Get Outlook for iOS

From: Ann Hensley <annh3@sbcglobal.net>
Sent: Thursday, June 10, 2021 12:39 PM
To: Jackson, Christina D.
Subject: Re: 1222 24th. The outside violations are not true. Call me asap. 484 636 8917 ann Huber

This house had no plumbing or electrical wire, no kitchen, no bathrooms, no windows. We did all this work from march 2021 to June 10th 2021. It's not fair that you just assume the worst. And you never bothered to talk to us nor look at all the work that was done in the short time we have been here. I would appreciate a call back for a visit from you. All of the neighbors were suprised to come inside my home to see how it looks now after being abandoned for 30 years. I want all these complaints deleted on this house. Ann Huber

Sent from AT&T Yahoo Mail on Android

On Thu, Jun 10, 2021 at 12:20 PM, Ann Hensley <annh3@sbcglobal.net> wrote:

> Sent from AT&T Yahoo Mail on Android

YOUR NAME: WILMEI PINOT

PHONE NUMBER: 757-740-2729

EMAIL ADDRESS: _____

PROPERTY ADDRESS: 822 28TH STREET

REGARDING: REGARDING REPAIRS

*I TOLD HIM PLANS, STRUCTURAL ENG LETTER REQUIRED

SET APPT W/ ANGEL

GIVEN TO C. JACKSON BY K. JOYCE

POLICY DECLARATIONS

American Modern Property and Casualty Insurance Company
Dwelling Basic
New Business

American MODERN™

Premium Summary

Dwelling #1:	$1,125.00
822 28TH ST NEWPORT NEWS VA 23607-4139	
Policy Coverages	$0.00
Additional Costs	$0.00
Total Policy Premium	$1,125.00

Note: a minimum earned premium of $0.00 applies to this policy.

Policy Discounts

Claims Free Discount
Association Discount

Policy Summary

Policy Number: [redacted]

Policy Period:
11/19/2021 to 11/19/2022 12:01 A.M. Standard Time

Named Insured(s):
WILMER PINOT
[redacted]

Contracted Agency:
[redacted]

Your Agent:
[redacted]

Dwelling #1: 822 28TH ST, NEWPORT NEWS VA 23607-4139

Occupancy:	Residence Type:	Construction Type:	Year Built:	Protection Class Code:	Territory:
Vacant	1 Family Residence	Frame	1920	1	2

Coverage Detail

Coverage	Limit / Description	Premium
Dwelling (Fire & Extended Coverage)		$878.00
Limit	132,000	
Loss Settlement	Actual Cash Value	
All Other Peril Deductible	500	
Wind and Hail Deductible Percentage	2%, $1,500 Min	
Wind and Hail Deductible	2,640	
Other Structures	13,200	Included
Loss Settlement	Actual Cash Value	
Water Backup and Sump Overflow	5,000	$50.00
Deductible	250	
Premises Liability	25,000	$35.00
Medical Payments	500 Per person/25,000 Per occurrence	Included
Property Manager Premises Liability Extension		Included
Ordinance or Law	132,000	$88.00
Service Line	10,000	$30.00
Deductible	500	

Advocate helping the renters in the rent to own scam

Reyna Agency Solutions Inc.

Brindando soluciones a la comunidad Hispana

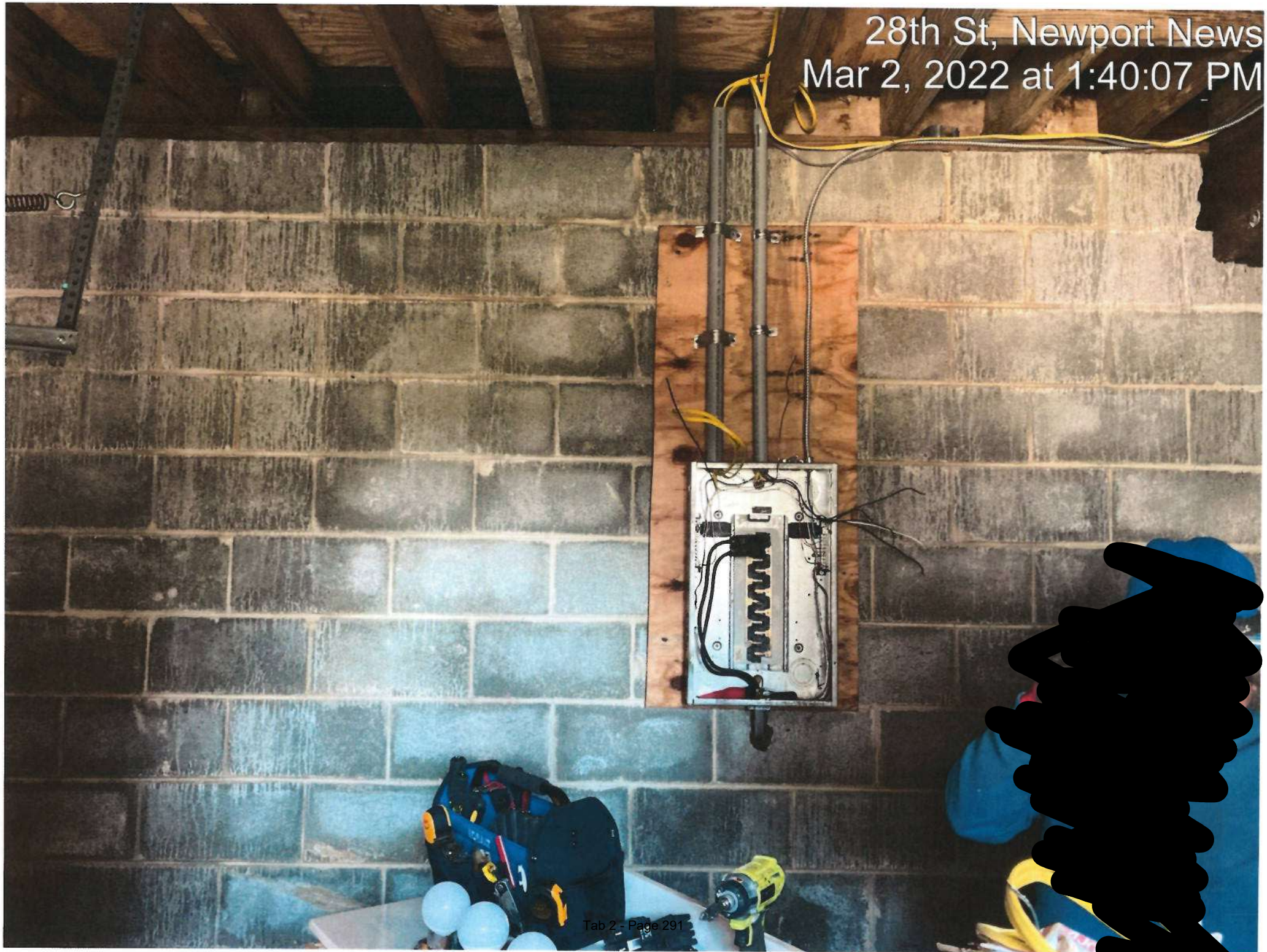
14346 Warwick Blvd. Suite 368
Newport News, VA 23602

Tel. 757-805-7011

7649 Granby St.
Norfolk, VA 23505

e-mail: info@reynasol.com
www.reynasol.com


28th St, Newport News
Mar 2, 2022 at 1:40:53 PM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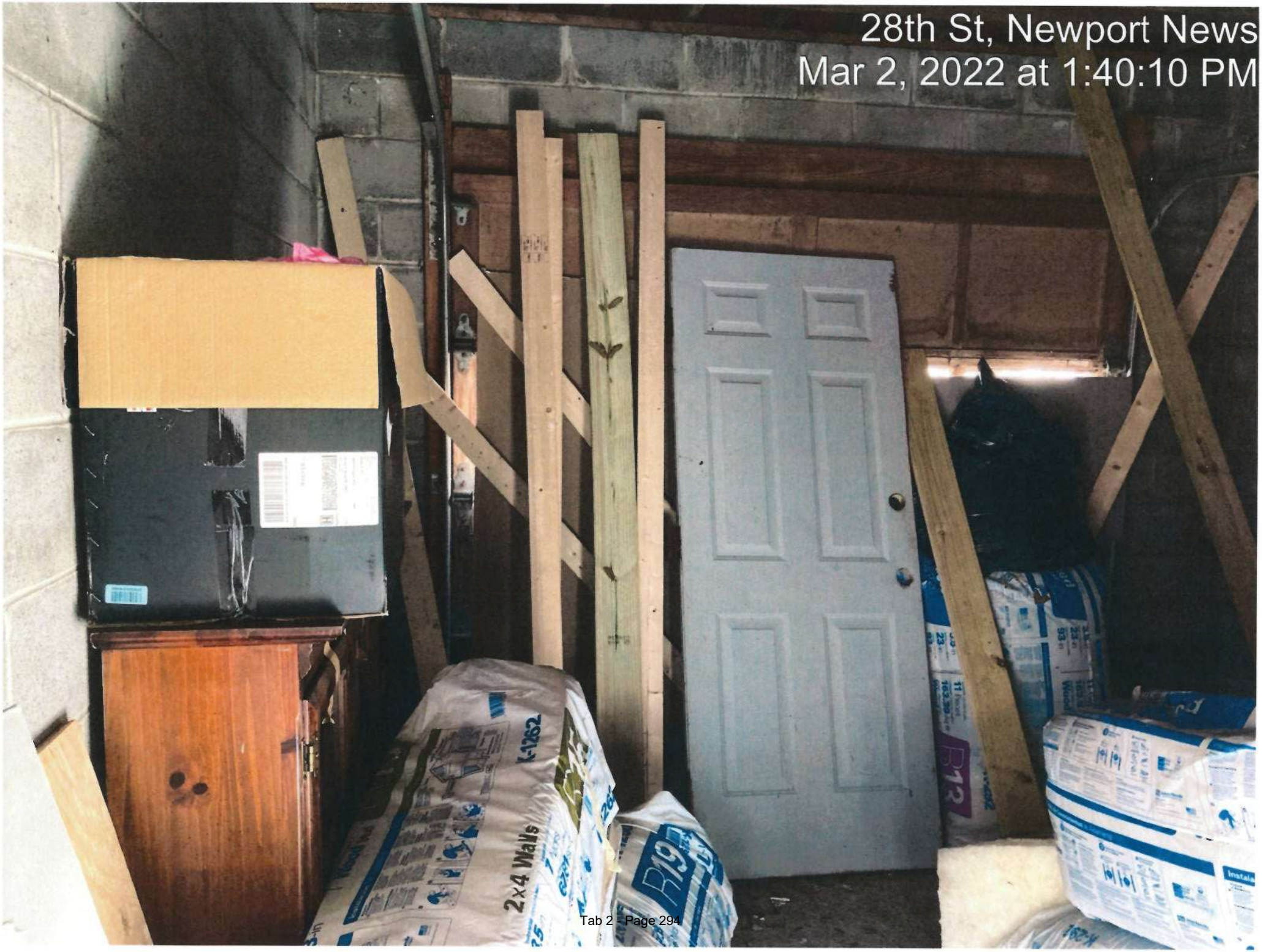
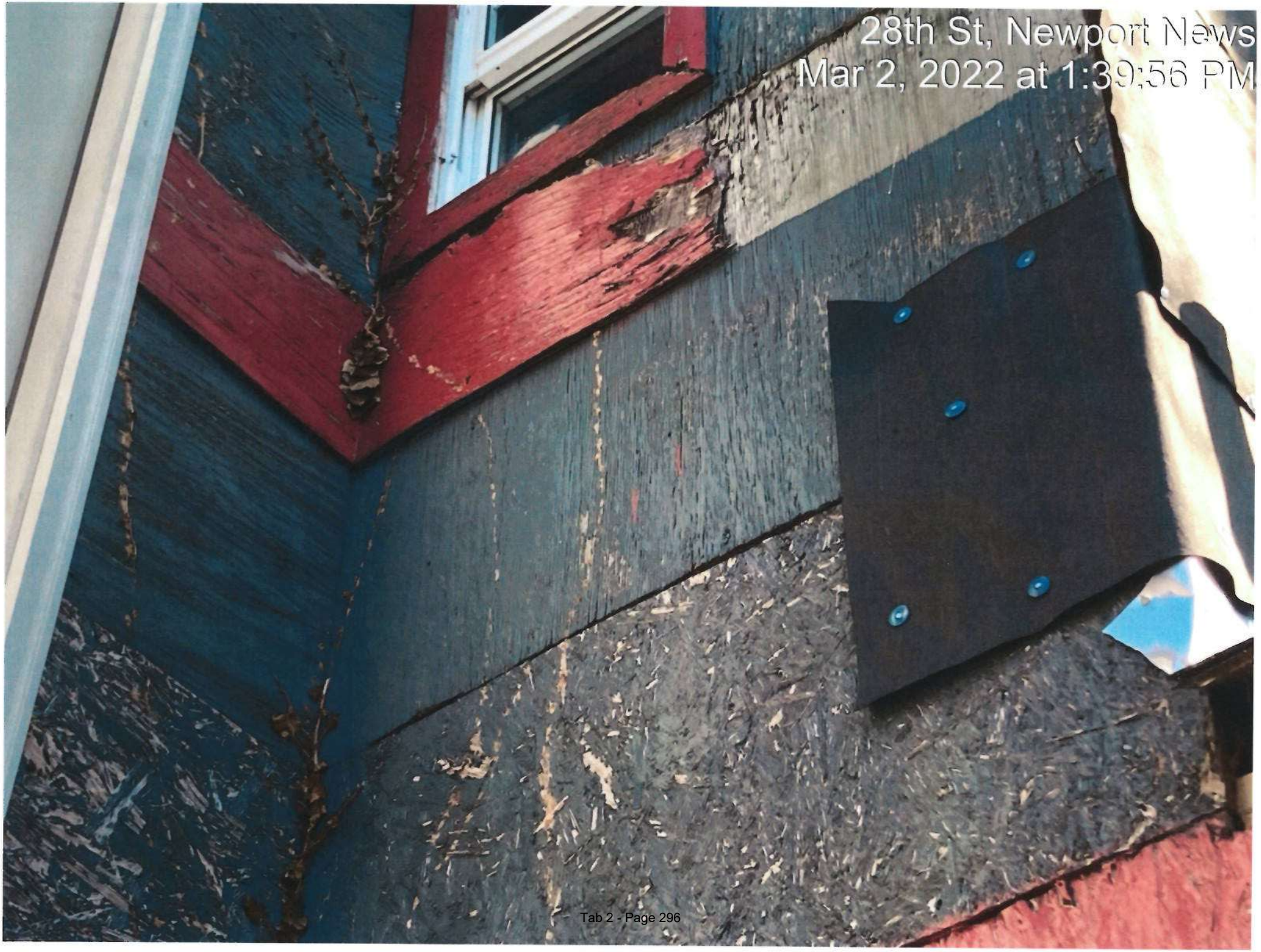
Mar 2, 2022 at 1:40:07 PM


28th St, Newport News
Mar 2, 2022 at 1:40:42 PM


28th St, Newport News
Mar 2, 2022 at 1:40:55 PM


28th St, Newport News
Mar 2, 2022 at 1:40:10 PM
2x4 Walls
R19
R13


28th St, Newport News
Mar 2, 2022 at 1:39:54 PM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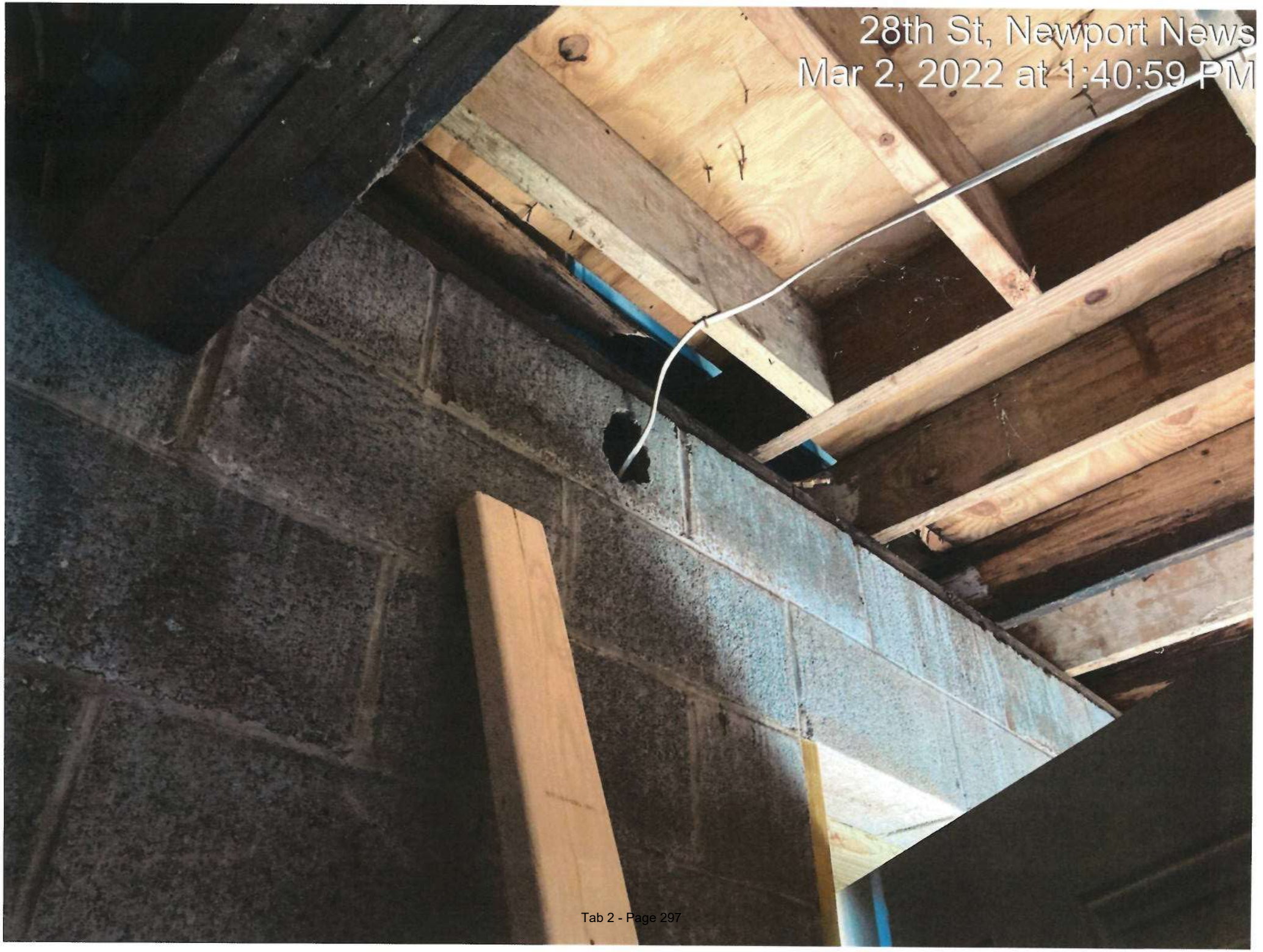
Mar 2, 2022 at 1:39:56 PM


28th St, Newport News
Mar 2, 2022 at 1:40:59 PM


28th St, Newport News
Mar 2, 2022 at 1:41:26 PM


28th St, Newport News
Mar 2, 2022 at 1:41:28 PM

Jackson, Christina D.

From: Zack Hurley <zhurley23@gmail.com>
Sent: Tuesday, March 8, 2022 12:54 AM
To: Paz Amor
Cc: Jackson, Christina D.; Watford, Angela H.; Woods, Vernell A.
Subject: Re: 822 24th Street-Demolition Case

I am not there physically but Wilmer will be there at 10am.
I'm happy to join via phone you can always call me at 757-529-1449

Sent from my iPhone

On Mar 7, 2022, at 3:17 PM, Paz Amor <pazamor8814@gmail.com> wrote:

Sure, no problem.

El lun., 7 de marzo de 2022 5:37 p. m., Jackson, Christina D. <Jacksoncd@nnva.gov> escribió:

Good Afternoon,

I am sorry the meeting tomorrow at 11: 00 a.m. will conflict with another on my schedule. Can we move the meeting up to 10: 00 a.m.? Sorry about the inconvenience.

Respectfully,

Christina Jackson

Department of Codes Compliance

City of Newport News

2400 Washington Avenue, Newport News, VA 23607

(757) 926-8870 (Office); (757) 926-8311 (Fax)

Email: jacksoncd@nnva.gov

From: Jackson, Christina D.
Sent: Monday, March 7, 2022 5:18 PM
To: Zack Hurley <zhurley23@gmail.com>
Cc: pazamor8814@gmail.com; Watford, Angela H. <watfordah@nnva.gov>; Woods, Vernell A. <woodsva@nnva.gov>
Subject: RE: 822 24th Street-Demolition Case

Good Afternoon Mr. Hurley and Mr. Pinot,

Can you please schedule to meet in our office at 11:00 a.m. tomorrow to discuss the outstanding violations with the property? I will put that on our calendar then. Thank you again for your attention in this matter.

Respectfully,

Christina Jackson

Department of Codes Compliance

City of Newport News

2400 Washington Avenue, Newport News, VA 23607

(757) 926-8870 (Office); (757) 926-8311 (Fax)

Email: jacksoncd@nnva.gov

From: Zack Hurley <zhurley23@gmail.com>
Sent: Monday, March 7, 2022 10:03 AM
To: Jackson, Christina D. <Jacksoncd@nnva.gov>
Cc: pazamor8814@gmail.com; Watford, Angela H. <watfordah@nnva.gov>; Woods, Vernell A. <woodsva@nnva.gov>
Subject: Re: 822 24th Street-Demolition Case

Thanks so much. He would like to meet you tomorrow. What time is good for you?

Sent from my iPhone

> On Mar 7, 2022, at 6:36 AM, Jackson, Christina D. <Jacksoncd@nnva.gov> wrote:
>
> Good Morning Mr. Hurley,
>
> Our office can schedule a meeting either tomorrow or Friday with Mr. Wilmer Pinot. Please let me know of your availability. Thank you in advance.
>
> Respectfully,
>
> Christina Jackson
>
> Department of Codes Compliance
>
> City of Newport News
>
> 2400 Washington Avenue, Newport News, VA 23607
>
> (757) 926-8870 (Office); (757) 926-8311 (Fax)
>
> Email: jacksoncd@nnva.gov

From: Zack Hurley <zhurley23@gmail.com>
Sent: Friday, March 4, 2022 3:39 PM
To: Jackson, Christina D. <Jacksoncd@nnva.gov>; pazamor8814@gmail.com
Cc: Watford, Angela H. <watfordah@nnva.gov>; Woods, Vernell A. <woodsva@nnva.gov>
Subject: Re: 822 24th Street-Demolition Case

CAUTION: This email originated from **outside** your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Hey all,

Wilmer came by yesterday but you were not available. Can you let us know what days you're free to speak? He is ccd on this email.

Sent from my iPhone

> On Mar 2, 2022, at 11:07 AM, Jackson, Christina D. <Jacksoncd@nnva.gov> wrote:
>
> Good Afternoon Mr. Hurley,
>
> This email is a follow up to the property at 822 28th Street. The property is condemned and NO WORK is to begin until a structural engineer's report, plans, and permits have been issued for the property. Upon reinspection today, myself and the Building Official caught someone working on the property

without the proper permits. Due to the lack of submission of the information requested for repairs to the property, our office will be requesting that the power be pulled and patrolled by the NNPD. Please review and let me know if you have any additional questions or concerns.

Respectfully,

Christina Jackson

Department of Codes Compliance

City of Newport News

2400 Washington Avenue, Newport News, VA 23607

(757) 926-8870 (Office); (757) 926-8311 (Fax)

Email: jacksoncd@nnva.gov

From: Jackson, Christina D.
Sent: Wednesday, February 23, 2022 4:36 PM
To: zhurley23@gmail.com
Cc: Watford, Angela H. <watfordah@nnva.gov>
Subject: 822 24th Street-Demolition Case

Good Afternoon Mr. Hurley,

Thank you for your phone call yesterday. This email is a follow up to our conversation regarding the property at 822 28th Street. The property has been issued notices for the unsafe conditions of the property and is currently on our demolition list. Attached our the photos of the property showing the structural deterioration of the exterior walls and the interior has been gutted. All repairs will

require a design professional drawing's to be submitted and reviewed for permits to be issued. Please let me know when you will have your contractor come into the office to discuss this matter further.

Respectfully,

Christina Jackson

Department of Codes Compliance

City of Newport News

2400 Washington Avenue, Newport News, VA 23607

(757) 926-8870 (Office); (757) 926-8311 (Fax)

Email: jacksoncd@nnva.gov

Attendees

KEYLU LLC
MR. ~~529~~. Hurley 529.1449
meet @ the property who is
working on property.
Started working on property
Wilmer - owner's contractor -
meeting @ property.

Meeting w/ Wilmer Pinot 757.740.2729
He represents Mr. Hurley in selling
the property - Has a contract w/
Rent to own ~~Rent~~ Rent to own
Issue new notices
told that a structural engineer
- report is needed for repair of house -
- Double fee work w/o PE
Found facebook house
looking for a house two who

Derelict Structure

Hyatt Markup Notation: [ ] or Number = To-Do Item, O = Delegate, * = Important Fact, ? = Research Needed

PM505.3-21

Proponents: Ronald Clements (clementsro@chesterfield.gov)

2018 Virginia Maintenance Code

Revise as follows:

505.3 ~~Inspection and testing of~~ backflow prevention systems. ~~Inspection~~ Maintenance and testing shall comply with Sections 505.3.1 and 505.3.2.

505.3.1 ~~Inspections~~ Maintenance. ~~Inspections shall be made of all~~ backflow assemblies and air gaps ~~to determine whether they are operable.~~ shall be maintained in an operable condition.

505.3.2 Testing. Reduced pressure principle backflow preventer assemblies, double check-valve assemblies, double-detector check valve assemblies, and pressure vacuum breaker assemblies shall be tested at ~~the time of installation, immediately after repairs or relocation and at least annually.~~ least annually. Records of testing shall be available for inspection by the code official. The testing procedure shall be performed in accordance with one of the following standards: ASSE 5010-1013-1, Sections 1 and 2; ASSE 5010-1015-1, Sections 1 and 2; ASSE 5010-1015-2; ASSE 5010-1015-3, Sections 1 and 2; ASSE 5010-1015-4, Sections 1 and 2; ASSE 5010-1020-1, Sections 1 and 2; ASSE 5010-1047-1, Sections 1, 2, 3 and 4; ASSE 5010-1048-1, Sections 1, 2, 3 and 4; ASSE 5010-1048-2; ASSE 5010-1048-3, Sections 1, 2, 3 and 4; ASSE 5010-1048-4, Sections 1, 2, 3 and 4; or CAN/CSA B64.10.

Reason Statement: This code change removes invalid construction provisions for installation and repairs, and construction related inspection provisions. VMC section 103.1 and 103.2 establish that the VMC is for maintenance only and that no provision shall require alteration be made to an existing structure or to equipment unless it is an unsafe structure or unfit for human occupancy as defined in ch.2. Construction is regulated by the VCC and VEBC. Inspection and testing for new installations are already addressed in IPC and VRC. The code change maintains the code provisions for maintenance and maintenance based annual testing. Also, the annual tests are done by certified backflow prevention device workers so the added text in 505.3.2 codifies that the records of the tests shall be maintained and available for inspection by the code official.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This code change proposal is removing invalid provisions.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

---

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: PM505.3-21

This proposal doesn't have any public comments.

PM606.1-21

Proponents: Michael Redifer

2018 Virginia Maintenance Code

Revise as follows:

606.1 General. Elevators, dumbwaiters, and escalators shall be *maintained* in compliance with ASME A17.1. An annual periodic inspection is required of all elevators and escalators. A locality shall be permitted to require a 6-month periodic inspection. Periodic tests are required of all elevators and escalators at the intervals listed in ASME A17.1 Appendix N. Periodic tests shall be witnessed by the code official. The code official may provide for such inspections and test witnessing by an approved agency or through agreement with other local certified elevator inspectors. An approved agency includes any individual, partnership or corporation who has met the certification requirements established in the VCS. The most current certificate of inspection shall be on display at all times within the elevator or attached to the escalator ~~or dumbwaiter~~, be available for public inspection in the office of the building operator, or be posted in a publicly conspicuous location *approved* by the *code official.* Where not displayed in the elevator or attached ~~on~~ to the escalator ~~or dumbwaiter~~, there shall be a notice of where the certificate of inspection is available for inspection. ~~An annual periodic inspection and test is required of elevators and escalators. A locality shall be permitted to require a 6-month periodic inspection and test. All periodic inspections shall be performed in accordance with Section 8.11 of ASME A17.1. The *code official* may also provide for such inspection by an *approved* agency or through agreement with other local certified elevator inspectors. An *approved* agency includes any individual, partnership, or corporation who has met the certification requirements established by the VCS.~~

Reason Statement: Recent DHCD review of the applicability of periodic testing (Category 1,3 and 5) requirements for elevators and escalators led to the determination that long-standing practice of requiring these tests was not enforceable since their reference was contained in the non-mandatory Appendix N of ASME A17.1. This proposal is an effort to correct the unintended consequence of deleting reference to Appendix N from the International Property Maintenance Code. These periodic tests are essential to maintaining operational safety of the equipment. The section is re-ordered so that inspection types follow the inspection requirement and display of the certificate of inspection follows inspection types. Since dumbwaiters have historically been omitted from the annual inspection requirement they are also deleted from testing and display of certificate of inspection while maintenance in compliance with ASME A17.1 remains.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The safety tests associated with this proposal are not performed until at least 12 months after completion of construction.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
Performing the required safety tests at various intervals will have no effect on the susceptibility to or recovery from flooding, hazards related to projected sea level rise or damage caused by other natural disasters.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: PM606.1-21

This proposal doesn't have any public comments.

Proposal # 1060

PM703.2-21

Proponents: Ronald Clements (clementsro@chesterfield.gov)

2021 International Property Maintenance Code

Delete without substitution:

~~**[BF] 703.2 Unsafe conditions.** Where any components are not maintained and do not function as intended or do not have the fire resistance required by the code under which the building was constructed or altered, such components or portions thereof shall be deemed unsafe conditions in accordance with Section 114.1.1 of the International Fire Code. Components or portions thereof determined to be unsafe shall be repaired or replaced to conform to that code under which the building was constructed or altered. Where the condition of components is such that any building, *structure* or portion thereof presents an *imminent danger* to the *occupants* of the building, *structure* or portion thereof, the fire *code official* shall act in accordance with Section 114.2 of the *International Fire Code*.~~

Revise as follows:

[BF] 703.3 Maintenance. The required fire-resistance rating of fire-resistance-rated construction, including walls, firestops, shaft enclosures, partitions, smoke barriers, floors, fire-resistive coatings and sprayed fire-resistant materials applied to structural members and joint systems, shall be maintained. Such elements shall be visually inspected annually by the *owner* and ~~repaired, restored or replaced where damaged, altered, breached or penetrated.~~ maintained as constructed in accordance with the applicable building code. 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 entry to the space. ~~Openings made therein for the passage of pipes, electrical conduit, wires, ducts, air transfer and any other 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.~~

Delete without substitution:

~~**[BF] 703.7 Vertical shafts.** Interior vertical shafts, including stairways, elevator hoistways and service and utility shafts, which connect two or more stories of a building shall be enclosed or protected as required in Chapter 11 of the International Fire Code. New floor openings in existing buildings shall comply with the *International Building Code*.~~

Revise as follows:

[BF] 703.8 Opening protective closers. Where openings are required to be protected, opening protectives shall be maintained self-closing or automatic-closing by smoke detection. ~~Existing fusible link-type automatic door-closing devices shall be replaced if the fusible link rating exceeds 135°F (57°C).~~

Reason Statement: Deletion of Section 703.2- This provision is currently invalid per VMC section 101.6 #1 and #2 because unsafe structures are addressed in VMC section 106, which is the same subject matter as VMC 703.2 and IFC Section 111.1.1. The section is proposed for deletion, so it does not cause confusion.
Revision of Section 703.3- This code change removes invalid construction provisions for alterations and repairs that are regulated by the VEBC. VMC section 103.1 and 103.2 establish that the VMC is for maintenance only and that no provision shall require alteration be made to an existing structure or to equipment unless it is an unsafe structure or unfit for human occupancy as defined in ch.2. Construction is regulated by the VCC and VEBC. The added language clarifies that fire rated construction must be maintained as constructed.

Deletion of Section 703.7- This code change removes invalid retrofit provisions. VMC section 103.1 and 103.2 establish that the VMC is for maintenance only and that no provision shall require alteration be made to an existing structure or to equipment unless it is an unsafe structure or unfit for human occupancy as defined in ch.2. Furthermore, IFC Chapter 11 is not adopted as part of the USBC or SFPC. Retrofit requirements are provided in VEBC chapter 11 and have historically only been adopted by the BHCD based on legislative direction.

Revision of Section 703.8- This code change removes invalid retrofit provisions. VMC section 103.1 and 103.2 establish that the VMC is for maintenance only and that no provision shall require alteration be made to an existing structure or to equipment unless it is an unsafe structure or unfit for human occupancy as defined in ch.2. Retrofit requirements are provided in VEBC chapter 11 and have historically only been adopted by the BHCD based on legislative direction.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposal removes provisions that are currently invalid; therefore, there is no cost impact to the change.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: PM703.2-21

This proposal doesn't have any public comments.

Proposal # 1010

PM704.1.1-21

Proponents: Ronald Clements (clementsro@chesterfield.gov)

2018 Virginia Maintenance Code

Revise as follows:

704.1.1 Maintenance ~~and alterations.~~ Fire protection systems shall be *maintained* in accordance with the applicable building code and the Statewide Fire Prevention Code ~~original installation standards for that system. Alterations and repairs to fire protection systems shall be done in accordance with the *applicable building code* and the applicable standards.~~

Delete without substitution:

~~**704.1.2 Required fire protection systems.** Fire protection systems shall be repaired, operated, tested, and maintained in accordance with this code. A fire protection system for which a design option, exception, or reduction to the provisions of this code or the *applicable building code* has been granted shall be considered to be a required system.~~

~~**704.1.3 Fire protection systems.** Fire protection systems shall be *maintained* in accordance with the *Statewide Fire Prevention Code.*~~

Reason Statement: Sections 704.1.1 and 704.1.3- The "applicable building code" is the standard reference for maintenance standards in the VMC and SFPC. Additionally, providing a cross reference to the SFPC allows deletion of section 704.1.3. All alterations and repairs are required to comply with applicable building codes and it should not be restated in each or select sections of the VMC.
Section 704.1.2- This code change removes invalid construction provisions in the first sentence for repairs that are regulated by the VEBC. Operation of fire protection systems is addressed in the SFPC, not this code (the VMC) as the first sentence states. VMC section 103.1 and 103.2 establish that the VMC is for maintenance only and that no provision shall require alteration be made to an existing structure or to equipment unless it is an unsafe structure or unfit for human occupancy as defined in ch.2. VMC Section 704.1 already requires maintenance of all fire protection systems. Whether or not the system is considered required does not impact application of VMC 704.1 so the second sentence is redundant in that regard. VMC section 103.2.2 addresses maintenance of nonrequired fire protection systems.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This code change to the Virginia Maintenance Code does not affect the cost of construction.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: PM704.1.1-21

This proposal doesn't have any public comments.

PM704.2-21

Proponents: Ronald Clements (clementsro@chesterfield.gov)

2021 International Property Maintenance Code

Delete without substitution:

~~**[F] 704.2 Standards.** Fire protection systems shall be inspected, tested and maintained in accordance with the referenced standards listed in Table 704.2 and as required in this section.~~

~~**TABLE 704.2 FIRE PROTECTION SYSTEM MAINTENANCE STANDARDS**~~

~~**SYSTEM**~~	~~**STANDARD**~~
~~Portable fire extinguishers~~	~~NFPA 10~~
~~Carbon dioxide fire-extinguishing system~~	~~NFPA 12~~
~~Halon 1301 fire-extinguishing systems~~	~~NFPA 12A~~
~~Dry-chemical extinguishing systems~~	~~NFPA 17~~
~~Wet-chemical extinguishing systems~~	~~NFPA 17A~~
~~Water-based fire protection systems~~	~~NFPA 25~~
~~Fire alarm systems~~	~~NFPA 72~~
~~Smoke and heat vents~~	~~NFPA 204~~
~~Water-mist systems~~	~~NFPA 750~~
~~Clean-agent extinguishing systems~~	~~NFPA 2001~~

Revise as follows:

[F] ~~704.2.1~~ 704.2.~~1~~ Records. ~~Records~~
Inspection, testing and maintenance records shall be maintained in accordance with the Statewide Fire Prevention Code ~~of all system inspections, tests and maintenance required by the referenced standards.~~

Delete without substitution:

~~**[F] 704.2.2 Records information.** Initial records shall include the: name of the installation contractor; type of components installed; manufacturer of the components; location and number of components installed per floor; and manufacturers' operation and maintenance instruction manuals. Such records shall be maintained for the life of the installation.~~

Reason Statement: 704.2- Inspection, testing and maintenance of fire protection systems is addressed in detail in the SFPC and this table is in SFPC Section 901.6 (SFPC table 901.6.1). The general provision already in 704 to maintain in accordance with the SFPC and USBC is enough for the VMC. At what point will a maintenance code inspector also need to be certified as a fire prevention inspector? At some point we have crossed the line between code lanes and this provision crosses that line.
704.2.1 and 704.2.2- 704.2.1 should simply reference the SFPC and 704.2.2 is not needed since it is copied from SFPC section 901.6.3.1.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This change does not impact construction costs.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

☐ Approved
☐ Approved with Modifications
☐ Carryover

☐ Disapproved
☐ None

Public Comments for: PM704.2-21

This proposal doesn't have any public comments.

Proposal # 1016

PM704.3-21

Proponents: Ronald Clements (clementsro@chesterfield.gov)

2021 International Property Maintenance Code

Revise as follows:

[F] 704.3 Systems out of service. Where a required fire protection system is taken out of service, it shall be taken out of service in accordance with the Statewide Fire Prevention Code and the fire department and the fire *code official* shall be notified immediately ~~and, where required by the fire *code official*, either the building shall be evacuated or an *approved* fire watch shall be provided for all *occupants* left unprotected by the shutdown until the fire protection system has been returned to service. Where utilized, fire watches shall be provided with not less than one *approved* means for notification of the fire department and shall not have duties beyond performing constant patrols of the protected *premises* and keeping watch for fires. Actions shall be taken in accordance with Section 901 of the International Fire Code to bring the systems back in serviceservice.~~ .

> ~~**Exception:** Facilities with an approved notification and impairment management program. The notification and impairment program for water-based fire protection systems shall comply with NFPA 25.~~

2018 Virginia Maintenance Code

Delete without substitution:

~~**704.3.1 Preplanned impairment programs.** Preplanned impairments shall be authorized by the impairment coordinator. Before authorization is given, a designated individual shall be responsible for verifying that all of the following procedures have been implemented:~~

1. ~~The extent and expected duration of the impairment have been determined.~~
2. ~~The areas or buildings involved have been inspected, and the increased risks determined.~~
3. ~~Recommendations have been submitted to management or the building *owner* or manager.~~
4. ~~The fire department has been notified.~~
5. ~~The insurance carrier, the alarm company, the building *owner* or manager, and other authorities having jurisdiction have been notified.~~
6. ~~The supervisors in the areas to be affected have been notified.~~
7. ~~A tag impairment system has been implemented.~~
8. ~~Necessary tools and materials have been assembled on the impairment site.~~

Reason Statement: VMC 704.3 is proposed to be revised to refer to the SFPC rather than reproduce the section here in the VMC. All of the code provisions and subsequent sub-sections proposed for deletion are in SFPC 901.7. All of these code provisions are within the authority of the fire official and belong in the SFPC.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This code change will not impact construction cost.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: PM704.3-21

This proposal doesn't have any public comments.

Proposal # 1018

PM704.4-21

Proponents: Ronald Clements (clementsro@chesterfield.gov)

2018 Virginia Maintenance Code

Delete without substitution:

~~**704.4 Removal of or tampering with equipment.** It shall be unlawful for any person to remove, tamper with, or otherwise disturb any fire hydrant, fire detection and alarm system, fire suppression system, or other fire appliance required by this code or the *applicable building code* except for the purpose of extinguishing fire, for training purposes, for recharging or making necessary repairs, or where *approved* by the fire code official.~~

2021 International Property Maintenance Code

Delete without substitution:

~~**[F] 704.4.1 Removal of or tampering with appurtenances.** Locks, gates, doors, barricades, chains, enclosures, signs, tags and seals that have been installed by or at the direction of the fire *code official* shall not be removed, unlocked, destroyed or tampered with in any manner.~~

2018 Virginia Maintenance Code

Delete without substitution:

~~**704.4.2 Removal of existing occupant-use hose lines.** The fire code official is authorized to permit the removal of existing occupant-use hose lines where all of the following conditions exist:~~

1. ~~Installation is not required by this code or the *applicable building code.*~~
2. ~~The hose line would not be utilized by trained personnel or the fire department.~~
3. ~~The remaining outlets are compatible with local fire department fittings.~~

2021 International Property Maintenance Code

Delete without substitution:

~~**[F] 704.4.3 Termination of monitoring service.** For fire alarm systems required to be monitored by the *International Fire Code*, notice shall be made to the fire *code official* whenever alarm monitoring services are terminated. Notice shall be made in writing by the provider of the monitoring service being terminated.~~

Reason Statement: The provisions of VMC section 704.4 and the sub-sections are copied directly from SFPC sections 901.8 and 901.9. These are clearly SFPC provisions that are enforced by the fire code official, as referenced in each VMC version of the sections, and should not be copied and pasted into the VMC. These provisions should be enforced by the fire code official, not the maintence code official.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This code change will not impact construction costs.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: PM704.4-21

This proposal doesn't have any public comments.

Proposal # 1019

PM704.5-21

Proponents: Ronald Clements (clementsro@chesterfield.gov)

2018 Virginia Maintenance Code

Delete without substitution:

~~**[F] 704.5 Fire department connection.** (Section deleted.)~~

2021 International Property Maintenance Code

Revise as follows:

[F] ~~704.5.1~~ 704.5.~~1~~ Fire department connection access. Ready access to fire department connections shall be maintained at all times ~~and without obstruction by fences, bushes, trees, walls or any other fixed or movable object. Access to fire department connections shall be *approved* by the fire chief chief.~~ .

> ~~**Exception:** Fences, where provided with an access gate equipped with a sign complying with the legend requirements of Section 912.5 of the International Fire Code and a means of emergency operation. The gate and the means of emergency operation shall be *approved* by the fire chief and maintained operational at all times.~~

[F] ~~704.5.2~~ 704.5.1 Clear space around connections. A working space of not less than 36 inches (914 mm) in width, 36 inches (914 mm) in depth and 78 inches (1981 mm) in height shall be ~~provided and~~ maintained in front of and to the sides of wall-mounted fire department connections and around the circumference of free-standing fire department connections.

Reason Statement: SFPC section 912 provides these code provisions for the fire code official to use for SFPC enforcement. The provision for the VMC should be limited to maintenance of the clearances and access.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This code change will not impact construction cost.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: PM704.5-21

This proposal doesn't have any public comments.

PM705.1-21

Proponents: Ronald Clements (clementsro@chesterfield.gov)

2021 International Property Maintenance Code

Delete without substitution:

~~**[F] 705.1 General.** Carbon monoxide alarms shall be installed in dwellings in accordance with Section 1103.9 of the International Fire Code, except that alarms in dwellings covered by the International Residential Code shall be installed in accordance with Section R315 of that code.~~

Reason Statement: This code change removes invalid retrofit provisions. VMC section 103.1 and 103.2 establish that the VMC is for maintenance only and that no provision shall require alteration be made to an existing structure or to equipment unless it is an unsafe structure or unfit for human occupancy as defined in ch.2. Furthermore, IFC Chapter 11 is not adopted as part of the USBC or SFPC. Retrofit requirements are provided in VEBC chapter 11 and have historically only been adopted by the BHCD based on legislative direction.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This removes a currently invalid provision so there is no cost impact.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- ☐ Approved
- ☐ Approved with Modifications
- ☐ Carryover
- ☐ Disapproved
- ☐ None

Public Comments for: PM705.1-21

This proposal doesn't have any public comments.

Proposal # 1021

B1020.2.1-21

Proponents: Christopher Campbell

2021 International Building Code - Second Printing

Delete without substitution:

~~**1020.2.1 Hoistway opening protection.** Elevator hoistway openings shall be protected in accordance with Section 3006.2.1.~~

Reason Statement: The VCC has historically eliminated the requirement for hoistway opening protection in 3006. As long as that section is eliminated in the 2021 VCC, the refence to 3006 from 1020 is invalid.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposal is simply removing an invalid reference created by the removal of Section 3006, part of a separate code change.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Approval

2021 Workgroups Reason:

Board Decision

C & S Action: None

Board Reason: N/A

Board Decisions

- [ ] Approved
- [ ] Approved with Modifications
- [ ] Carryover
- [ ] Disapproved
- [ ] None

Public Comments for: B1020.2.1-21

This proposal doesn't have any public comments.

Proposal # 928

Tab 3

USBC Proposals Recommended by Workgroups as Consensus for Disapproval

Proposal ID	Description	Page
B109.4.1-21	Changes the definition of Approved Agency to require its staff (i.e. 3rd party plan reviewers and inspectors) to hold the applicable DHCD certifications	Tab 3 – Page 1
B115.2-21	Clarifies the party to whom a notice of violation must be issued	Tab 3 – Page 5
B202(2)-21	Deletes the definition of Permit Holder	Tab 3 – Page 7
B903.4.2-21	Exempts buildings supplied with an off site monitored fire alarm system from the audible alarm device requirements in Section 903.4.2	Tab 3 – Page 9
B1206.2-21	Increases the minimum sound transmission class and impact insulation class from 50 to 60; Increases the minimum Normalized Noise Isolation Class and Normalized Impact Sound Rating from 45 to 55	Tab 3 – Page 11
B2403.6-21	Adds requirements for bird friendly design and construction to the VCC	Tab 3 – Page 21
B3007.6-21	Brings in the code language from the IBC to correct a broken link to fire service access elevator lobby requirements	Tab 3 – Page 25
BF202-21	Aligns the definition for flammable gas with the Globally Harmonized Flammable classification system	Tab 3 – Page 27
BF608.9-21	Updates and correlates scoping of the IFC and IMC refrigeration system provisions	Tab 3 – Page 31
BF608.17-21	Removes the exception for machinery rooms for systems using Group A2L refrigerants, given updates in the 2021 IMC	Tab 3 – Page 37
BF608.17(2)-21	Removes the exception for ammonia machinery rooms that are provided with ventilation in accordance with Section 1101.1.2, Exception 1 of the IMC	Tab 3 – Page 41
BF911.1-21	Coordinates with the change in the definition of flammable gas by providing exceptions to explosion control methods for Category 1B flammable gasses having a burning velocity not exceeding 3.9 in/s	Tab 3 – Page 45
B1022.2.3-21	Requires the installation of push button type door openers at all exterior exit doors	Tab 3 – Page 51
BF5003.1.1(1)-21	Makes changes to the maximum allowable quantity table for hazardous materials in accordance with the Globally Harmonized System of Classification and Labeling of Chemicals	Tab 3 – Page 55
M-FG404.6-21	Allows the use of PEX-AL-PEX piping for fuel gas	Tab 3 – Page 65
M-FG Ch. 8-21	Adds ASTM F1281 as a referenced standard for PEX-AL-PEX piping	Tab 3 – Page 79

P401.4-21	Requires automatic or touchless control devices on plumbing fixtures and accessory controls	Tab 3 – Page 81
RB308.7-21	Adds requirements for bird friendly construction to the VRC	Tab 3 – Page 83
RB310.2.1-21	Modifies how the minimum opening area of an emergency escape and rescue opening can be measured	Tab 3 – Page 87
RB324.6.1-21	Requires a minimum 36" wide pathway on roof planes with photovoltaic arrays	Tab 3 – Page 89
RE3902.16-21	Deletes the Virginia amendment to the AFCI provisions.	Tab 3 – Page 91
EB102.2.2(2)-21	Deletes the requirements applicable to the replacement of smoke alarms powered by battery-only	Tab 3 – Page 105

B109.4.1-21

Proponents: David Kidd (vabldgofficial@yahoo.com)

2018 Virginia Construction Code

Revise as follows:

109.4.1 Expedited construction document review. The *building official* may accept reports from an *approved* person or agency that the *construction documents* have been examined and conform to the requirements of the USBC and ~~may~~ shall ~~establish~~ requirements for the person or agency submitting such reports. In addition, where such reports have been submitted, the *building official* may expedite the issuance of the permit. The established requirements shall include active DHCD certificates for the services being rendered.

[A] APPROVED AGENCY. An established and recognized agency that is regularly engaged in conducting tests, furnishing inspection services or furnishing product certification where such agency has been *approved* by the *building official*~~.~~ . The approved agency and/or personnel performing the work shall be certified by DHCD for the types of inspection and plan review services being rendered. The building official shall review required certifications and maintain a record of approval.

Reason Statement: Currently 3rd party plan reviewers are not required to have Va DHCD certification to perform plan reviews in the disciplines being performed. Plan reviews by these agencies/persons lend themselves to being incorrect due to lack of knowledge of the Virginia amendments. I request consideration to change the definition of approved agency to require DHCD certifications in the plan review categories for which a plan review is being performed and approved by the agency staff. Such certifications from DHCD must be provided to the building official for review and consideration to be an approved reviewer.

Argument for this change: With the current language ***any*** person can be considered approved by the building official reqardless of qualifications or certifications. An ICC cert does NOT provide the knowledge of Virginia amendments to accurately perform in-depth reviews. A professional engineer or architect have the same qualifications as the individuals designing the construction documents and we often find violations from their designs but yet we expect their peers to have better abilities to perform document review. If we as inspectors and plan reviewers are required to have DHCD certifications, then why are 3rd party plan reviewers and inspectors not required to have the same qualifications?

Cost Impact: The code change proposal will not increase or decrease the cost of construction
No foreseeable cost impact to construction cost.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Disapproval

2021 Workgroups Reason:

Public Comments for: B109.4.1-21

Discussion by David Kidd
Mar 25, 2022 16:59 UTC

I request consideration to change the definition of approved agency to require DHCD certifications in the plan review categories for which a plan review is being performed and approved by the agency staff. Such certifications from DHCD must be provided to the building official for review and consideration to be an approved reviewer.

I also request consideration to include a new definition for approved person as described in VCC section 109.4.1 *...approved person or agency...* to further describe and require any or all persons performing plan reviews for a building official must have DHCD certifications as a plan reviewer in all disciplines for which plan reviews are being performed and approved.

Argument for this change: With the current language ***any*** person can be considered approved by the building official reqardless of qualifications or certifications. An ICC cert does NOT provide the knowledge of Virginia amendments to accurately perform in-depth reviews. A professional engineer or architect have the same qualifications as the individuals designing the construction documents and we often find violations from their designs but yet we expect their peers to have better abilities to perform document review. If we as inspectors and plan reviewers are required to have DHCD certifications, then why are 3rd party plan reviewers and inspectors not required to have the same qualifications?
Attachments: https://va.cdpaccess.com/proposal/1085/discuss/130/file/download/581/DKidd%20VDHCD%20Certification%201.6.22.pdf

Virginia Department of Housing and Community Development

Code Enforcement Certificate Search

Under the Freedom of Information Act (FOIA) and 22 Code of Federal Regulations (CFR) Part 171 records of the Department of State are to be made available to those interested parties.

By Name (First Name + Last Name, ex: John Smith): David Kidd Go

By Certification:

All

And Locality: All Go

David Kidd: George Mason University

Certificate	Certficate. #	Status	Issued Date
Amusement Device Inspector	OLD-034943	Certified	06/19/2000
Building Inspector General	OLD-034945	Certified	12/05/2000
Building Inspector One & Two Family Dwellings	OLD-034944	Certified	02/18/2000
Building Maintenance Inspector	BMI/08-0061	Certified	02/04/2008
Building Maintenance Official	ADD-000078	Certified	03/07/2007
Combination Commercial Inspector	OLD-034949	Certified	02/18/2000
Combination Residential Inspector	OLD-034948	Certified	12/08/2002
Commercial Building Plans Examiner	OLD-034946	Certified	07/28/2000
Electrical Inspector General	OLD-034951	Certified	12/08/2000
Electrical Inspector One & Two Family Dwellings	OLD-034950	Certified	02/18/2000
Electrical Plans Examiner	OLD-034952	Certified	04/05/2001
Elevator Inspector General	OLD-034953	Certified	04/05/2001
Fire Official	CFO/08-0026	Certified	02/04/2008
Fire Prevention Inspector	FPI/08-0100	Certified	02/04/2008
Fire Protection Inspector	OLD-034954	Certified	02/06/2001
Fire Protection Plans Examiner	OLD-034955	Certified	02/06/2001
Instructor	IB/10-0075	Certified	01/11/2010
Instructor - pending	IP/08-0008	Certified	07/25/2008
May 1, 2010 Continuing Education Requirement	C16/10-0766	Certified	07/30/2010
May 1, 2022 Continuing Education Requirement	C22/21-0036	Certified	08/20/2021
Mechanical Inspector General	OLD-034957	Certified	10/10/2000
Mechanical Inspector One and Two Family Dwellings	OLD-034956	Certified	02/18/2000
Mechanical Plans Examiner	OLD-034958	Certified	02/12/2001
Plumbing Inspector General	OLD-034960	Certified	12/05/2000
Plumbing Inspector One & Two Family Dwellings	OLD-034959	Certified	02/18/2000

Plumbing Plans Examiner	OLD-034961	Certified	02/12/2001
Virginia Certified Building Official	OLD-034947	Certified	08/29/2000

B115.2-21

Proponents: David Sharp (David.Sharp@fairfaxcounty.gov)

2018 Virginia Construction Code

Revise as follows:

115.2 Notice of violation. The *building official* shall issue a written notice of violation to the ~~*permit holder*~~ responsible party as set forth in Section 112.1 if any violations of this code or any directives or orders of the *building official* have not been corrected or complied with within a reasonable time. When the *owner* of the *building* or *structure* or the tenants of such *building* or *structure* are not the party to whom the notice of violation is issued, then a copy of the notice shall also be delivered to the *owner* or tenants. ~~The *building official* may also issue a notice of violation to other persons found to be responsible in addition to the *permit holder.* If the violations, directives, or orders involve work without a permit, the notice of violation shall be issued to the responsible party.~~

The notice shall reference the code section upon which the notice is based and direct the correction of the violation or the compliance with such directive or order and specify a reasonable time period within which the corrections or compliance must occur. The notice shall be issued by either delivering a copy by mail to the last known address of the *permit holde*r or responsible party, by delivering the notice in person, by leaving it in the possession of any person in charge of the premises, or by posting the notice in a conspicuous place if the person in charge of the premises cannot be found. The notice of violation shall indicate the right of appeal by referencing the appeals section. ~~When the *owner* of the *building* or *structure* or the tenants of such *building* or *structure* are not the party to whom the notice of violation is issued, then a copy of the notice shall also be delivered to the *owner* or tenants.~~

Note: A notice of *unsafe building* or *structure* for *structures* that become unsafe during the *construction* process is issued in accordance with Section 118.

115.2.1 Notice not to be issued under certain circumstances.

When violations are discovered more than 2 years after the certificate of occupancy is issued or the date of initial occupancy, whichever occurred later, or more than 2 years after the *approved* final inspection for an alteration or renovation, a notice of violation shall only be issued upon advice from the legal counsel of the *locality* that action may be taken to compel correction of the violation. When compliance can no longer be compelled by prosecution under § 36-106 of the Code of Virginia, the *building official*, when requested by the building *owner*, shall document in writing the existence of the violation noting the edition of the USBC the violation is under.

Reason Statement: Section 112.1 is clear that the person who is responsible for securing the results intended by Code is the person who performs the work - regardless of whether that individual "holds" the permit. Moreover, because a building code violation is a criminal offense (non-classed misdemeanor), the section as it currently exists may result in charging the permit holder with a criminal act, even if they were, in fact, the victim in the situation. Issuing the NOV to the "responsible party" as set forth in Section 112.1 brings these sections into agreement and ensures that the individual who violates the Code is charged with the criminal act.
In the event that the "Responsible Party" flees and the code official is unable to force compliance through pursuit of the responsible party, the language of the section already provides for additional measures. By issuing a copy of the NOV to the owner of the structure when they are not the responsible party, a path is already in place to pursue a code compliant structure with the owner or tenant when other appropriate measures fail. Relocating this language within the section helps to clarify this point.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This change will not result in any additional costs. The change is purely to administrative procedures.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Disapproval

2021 Workgroups Reason:

Public Comments for: B115.2-21

Discussion by Paul Messplay
Aug 18, 2022 11:45 UTC

Proponents: Michael Redifer, representing self requests Disapprove

Commenter's Reason: It should remain clear that the building official has the authority to determine responsibility for work performed under the permit. Section 112.1 is clear in that the person performing the work has a duty to comply but it does not establish exclusive responsibility for the work. Section 115.2 does not mandate the citing of the person performing the work but rather the person determined to be responsible for the work. There is no conflict between Sections 112.1 and 115.2 as they exist in the 2018 USBC. The person who performed the work, if known, could be one of potentially multiple individuals cited. Even though the building official is required to issue a Notice of Violation for unabated discrepancies, prosecution is discretionary. Should the building official choose to proceed, the court will decide if the person cited is responsible for the violation as provided in Code of Virginia 36-106. When a licensed contractor obtains a permit and, upon subsequent inspection a discrepancy is found, the Notice of Violation will likely not be issued only to the apprentice who performed the work. If an owner or tenant wishes to exercise their right of license exemption and take responsibility for the work, the building official should maintain the ability to determine they are responsible for compliance should facts support a determination they have sufficient involvement in or knowledge, control or supervision of the proposed work.

Proposal # 1147

B202(2)-21

Proponents: David Sharp (David.Sharp@fairfaxcounty.gov)

2018 Virginia Construction Code

SECTION 202
DEFINITIONS

Delete without substitution:

~~**PERMIT HOLDER.** The person to whom the permit is issued.~~

Reason Statement: The definition of "Permit Holder" provides little value as it lacks clarity. Moreover, where the term permit holder is found throughout code, its meaning is contextual. Section 108 requires the recording of information on multiple parties in the permit application and issuance process. Information (name and address) is captured for the owner, lessee, applicant, contractors, corporate officers, and the agents of eligible parties (see 108.3 & 108.4). "The person to whom the permit is issued" does not make clear which of the 4 or more parties captured in the permit process is intended by this definition.
Because the term is contextual, it allows Code Officials to properly exercise their discretion in ensuring that the appropriate party is notified as required by the context of a given code provision. Thus, NOVs are issued to the party responsible for violating the code, rather than to the applicant who was present at the time of application. Refunds can be issued to the party who paid the fees for the permit instead of to any of the others who might meet a strict reading of the definition. Inspection results may be conveyed to the contractor and the owner without limitation by a definition.

The definition was added as a companion to changes to section 115.2 in the 2015 code cycle, but it provided little in the way of clarity to resolve the inherent problems with that section's revisions.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Deletion is purely administrative.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Disapproval

2021 Workgroups Reason:

Public Comments for: B202(2)-21

Discussion by Paul Messplay
Aug 18, 2022 11:46 UTC

Proponents: Michael Redifer, representing self requests Disapprove

Commenter's Reason: This public comment is companion to public comment for disapproval of B115.2-21. The term, undefined until the 2015 USBC, was proposed primarily as a companion to a proposed change to Section 115.2 regarding NOVs. The determination of the permit holder is left to the discretion of the individual building official. The locality is not prohibited from giving a refund of permit fees to anyone but is mandated to provide a refund in certain cases when requested by the permit holder (Section 107.1.2). The term is used extensively in Section 113 for inspections. The permit holder has the duty to request required inspections (Section 113.1.2), the permit holder must provide equipment deemed necessary to conduct inspections (Section 113.1.1) and any inspections required in addition to those listed in 113.3 must be conveyed to the permit holder (Section 113.4).

Proposal # 1181

B903.4.2-21

Proponents: Charles Littlefield (caseylittlefieldmcp@gmail.com)

2018 Virginia Construction Code

Revise as follows:

[F] 903.4.2 Alarms. *Approved* audible devices shall be connected to every automatic sprinkler system. Such sprinkler water-flow alarm devices shall be activated by water flow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. Alarm devices shall be provided on the exterior of the *building* in an *approved* location. Where a *fire alarm system* is installed, actuation of the automatic sprinkler system shall actuate the *building fire alarm system.* Group R-2 occupancies that contain 16 or more *dwelling units* or *sleeping units*, any *dwelling unit* or *sleeping unit* two or more stories above the lowest level of exit discharge, or any *dwelling unit* or *sleeping unit* more than one story below the highest level of exit discharge of exits serving the *dwelling unit* or *sleeping unit* shall provide a manual fire alarm box at an *approved* location to activate the suppression system alarm.

Exception: Buildings supplied with an off site monitored Fire Alarm System installed in accordance with VCC 907.

Reason Statement: The intent of 903.4.2 is to provide an outside alarm that notifies anyone in the immediate vicinity that the fire sprinkler system in the building has been activated.
Almost all new buildings that have a Fire Sprinkler system installed also have a Fire Alarm system that provides both occupant notification and monitoring of the fire sprinkler system as in accordance with 903.4.1. with the requirement to add an alarm on a building that has off-site monitoring of the fire alarm system is redundant and unnecessary. A case in point would be a building in an urban environment would most likely get attention from passerby's on the street where that same building located in an rural environment most likely would not. To be clear the exception is only allowed if a off-site monitored Fire alarm system also monitors the fire sprinkler system.

Cost Impact: The code change proposal will decrease the cost of construction
This proposal may decrease the cost of construction.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Disapproval

2021 Workgroups Reason:

Public Comments for: B903.4.2-21

This proposal doesn't have any public comments.

Proposal # 1154

B1206.2-21

Proponents: Oleg Bulshteyn (olegbulshteyn@hotmail.com)

2021 International Building Code

Revise as follows:

1206.2 Airborne sound. Walls, partitions and floor-ceiling assemblies separating *dwelling units* and *sleeping units* from each other or from public or service areas shall have a sound transmission class of not less than ~~50 where~~ 60 where tested in accordance with ASTM E90, or have a Normalized Noise Isolation Class (NNIC) rating of not less than ~~45~~ 55 if field tested, in accordance with ASTM E336 for airborne noise. Alternatively, the sound transmission class of walls, partitions and floor-ceiling assemblies shall be established by engineering analysis based on a comparison of walls, partitions and floor-ceiling assemblies having sound transmission class ratings as determined by the test procedures set forth in ASTM E90. Penetrations or openings in construction assemblies for piping; electrical devices; recessed cabinets; bathtubs; soffits; or heating, ventilating or exhaust ducts shall be sealed, lined, insulated or otherwise treated to maintain the required ratings. This requirement shall not apply to entrance doors; however, such doors shall be tight fitting to the frame and sill.

1206.3 Structure-borne sound. Floor-ceiling assemblies between *dwelling units* and *sleeping units* or between a *dwelling unit* or *sleeping unit* and a public or service area within the structure shall have an impact insulation class rating of not less than ~~50 where~~ 60 where tested in accordance with ASTM E492, or have a Normalized Impact Sound Rating (NISR) of not less than ~~45~~ 55 if field tested in accordance with ASTM E1007. Alternatively, the impact insulation class of floor-ceiling assemblies shall be established by engineering analysis based on a comparison of floor-ceiling assemblies having impact insulation class ratings as determined by the test procedures in ASTM E492.

Reason Statement: According to National Multifamily Housing Council (www.nmhc.org), noise has been identified as a major issue by residents of multifamily residential buildings. In addition, according to Alexandria, VA Office of Housing (Housing | City of Alexandria, VA (alexandriava.gov), noise transmission is one of the biggest issues for renters in multifamily buildings. The problem is worst in buildings constructed of wood above concrete podiums, and better in steel and concrete high rises. Finally, thousands of resident reviews are available on the internet citing poor sound insulation of multifamily residential buildings including those recently constructed. Some of these reviews have been included as the attachments. Effectively, a lot of shiny-looking substandard housing has been built in Virginia lately. This needs to stop! Virginia renters/condo owners deserve better living conditions!

Cost Impact: The code change proposal will increase the cost of construction
This proposal will increase the cost of construction somewhat, but we are talking about the quality of life issue here. The existing building codes/construction techniques do not seem to result in the adequate level of the sound insulation in multifamily buildings, which is evident by the thousands of noise-related complaints.

Resiliency Impact Statement: This proposal will increase Resiliency
This proposal addresses one of the Indoor Environmental Quality (IEQ) factors: noise. Reduced impact and airborne noise levels inside the apartments will surely reduce stress and enhance the lives of multifamily building occupants.

Attached Files

- **review 16 672 Flats.jpg**
  https://va.cdpaccess.com/proposal/951/1198/files/download/556/
- **review 15 672 Flats.jpg**
  https://va.cdpaccess.com/proposal/951/1198/files/download/555/
- **review 14 Platform.jpg**
  https://va.cdpaccess.com/proposal/951/1198/files/download/554/
- **review 13.jpg**
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  https://va.cdpaccess.com/proposal/951/1198/files/download/527/
- **review 1.jpg**
  https://va.cdpaccess.com/proposal/951/1198/files/download/526/

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Disapproval

2021 Workgroups Reason:

Public Comments for: B1206.2-21

Discussion by Oleg Bulshteyn
Feb 1, 2022 23:07 UTC

Let's discuss the subject proposal.

Proposal # 951

LOUD AGAIN: Both my roommate and I live underneath an apartment with dogs that cry in both rooms. I've already spoken to the upstairs unit and they've rectified the situation for me, but not for my roommate, who lives below a dog that cries and barks nonstop from 9am-5pm. We've asked highgate to intervene and they have but there's not much that can be done in our situation since the owners are really trying to get them to be quiet but it is the dogs themselves that just cant stop barking for some reason. Oh well.

Poorly painted units: Whatever paint they chose for the walls is really awful- the walls get so dirty just from day to day use. I once washed my hands and accidentally brushed up against the wall with them, and that somehow left fingerprints. I grew up in a house with all white walls and

★★☆☆☆ 5 months ago

Update (2/5/2021): Just wanted to post a quick update / amendment to my earlier review. We continue to believe the building has nice finishes and amenities and everyone is very friendly. However, I do think it is important for prospective tenants to know that the noise levels in this building are VERY high. The walls, ceilings, and floors are not well-insulated and the result for us has been round the clock noise from neighbors on three sides of our apartment. This includes a couple next door with loud verbal confrontations, upstairs neighbors who stomp and throw loud parties at night, and loud TV noise. We have contacted management several times and while they've contacted the other tenants, there has been no ultimate resolution. As individuals who work from home, we have found this environment really stressful.

Hyeseon Lee
9 reviews

★☆☆☆☆ 3 months ago

I was really happy when I first moved here. But now I just want to leave here as soon as possible. It's 11:50 p.m., but I can't sleep today too.because of the music I hear next door. I told the apartment office about this problem, but they told me to record it. So I tried to record with my cell phone, but it was hard to record, so I have been living a painful life until now. I can hear the sound of words because the wall is thin. I can hear the footsteps of a person who lives upstairs. It's like a giant is living on the upper floor of my house. The carpet in the hallway is too dirty. My previous apartment cleaned the hallway on the first day of every month. I also contacted the apartment office for this problem. A few days later, I received a message from the cleaning company that they cleaned, but I couldn't tell where they cleaned. One of the lights on the way to the parking lot has been off since I moved in last year. The parking lot, which pays $60 per month, is always worried about accidents because the lanes are too narrow and narrow enough to bump into the car that comes across each curve. No one manages the parking lot. Only the lobby on the first floor is kept clean. If anyone wants to live here by paying almost $2,000 a month for rent, I hope you think carefully.

9 Share

Joshua Cooper
1 review

★☆☆☆☆ 3 months ago

I went on a self guided tour last week and it was ok. The layout was very confusing and it was hard to find the units. The apartments are on the higher end as far as cost, even though the appliances, gym, and other amenities are very basic. The four apartments I looked at had limited closet space, as well as limited space in the living room, two of them were facing the main road which is arlington blvd so it was very noisy. While doing the tour I noticed that the apartments had paper thin walls and I could literally hear people next door and upstairs. Another problem was smoking. I know this is supposed to be a smoke free community ho while doing my tour there were various apartments I walked by that smelled like cigarettes. This was a horrible experience doing this tour. Thin walls, smoking, lack of amenities, and small apartments. No one should have to pay $2000+ and live in an apartment that has little to no space, especially during a time of a pandemic. Even though they are offering specials, there are plenty of other complexes that have better specials and offer much more. For the price you're paying just evaluate what you will be getting!!! Sometimes those specials are just used to draw you in so beware!!

 5

 Share

A M
4 reviews

★ ☆ ☆ ☆ ☆ a month ago

I really wanted to like living here. The location is nice, the building is nice, and the staff is very friendly. Unfortunately, the walls are paper thin. I constantly have to listen to my neighbors stomping around their apartment. I've spoken to management so many times, I've lost count. Maybe there is nothing they can do, but so far nothing has been done.

If you are a quiet professional or if you work from home, I do not recommend living here at all. Many of us just want to quietly enjoy our homes, but you will not be able to do that here. You will hear your neighbors walking, their children running, their doors opening, their dogs barking, and their toilets flushing.

The rent is too high, for sure, to justify the poor construction of these apartments.

Efe Taner Koldas
2 reviews

★ ☆ ☆ ☆ ☆ 3 hours ago NEW

I'm living in Platform since it was opened back in August. I'd strongly suggest you to stay away from this apartment complex and the management. I haven't seen any other front office that is this much unwilling to help their tenants. After you sign the lease, you mean nothing to them. I shared my concerns with them, they didn't help a bit. Assistant manager Sarah told me she will talk with the manager and call me back. Three days later, no one called or emailed so I called Sarah again; she told me the manager will call tomorrow. Its has been another 4-5 days but no one has reached me.

These were the issues with management that can be solved if they change their attitude; however, there are huge unsolvable problems about the community:

1. Walls are like paper thin. You can hear your neighbors and probably they can hear you.
2. I know its hard to believe but the entire building shakes when a train/metro passes by. So every 5-10 mins. You can literally feel it every time even if you are sitting on your couch. Feels like an earthquake every 5-10 mins
3. You can literally hear every step of your upper neighbor because of none-to-limited isolation on the ceilings. And imagine hearing the "bang" "bang" sound at random times. And the issue is not the upper neighbor, its the cheap quality of the construction material of the site. I'd say worse quality than a college dorm.
4. Due to the proximity of buildings to each other, there is no privacy once you open your shades
5. The complex is in a construction site which wont end before late 2023. So exterior is extremely loud
6. Even if you decide to move to this property, PLEASE stay away from Building 2. It doesn't have access to the second garage level and it's almost impossible to find a parking spot at the very limited first floor of the garage.

I was in a hurry when I moved and didn't have a chance to see the apartment in person before move-in (i was living out-of-state) they didn't meet the promises they made when I was moving in. For the same rent you can surely find better apartments. If you want to witness the awful quality of this complex, please be my guest one day

Arlington White-Walker
11 reviews

★★★☆☆ 2 years ago

Boutique in Concept, Lackluster in Quality

Upon initial move-in at 672 Flats, I was excited about the new, boutique-style property. Great location, close to everyday amenities, easy access to metro, live/work/play vibe for the surrounding neighborhood… it seemed like a great place to live for a hard-working professional.

The apartment itself has a decent layout and all the modern perks: White countertops, huge island, stainless steel appliances, floor-to-ceiling windows…all the HGTV buzzwords. However, the appliances are of poor quality and significantly less than builder-grade. More than one appliance has been inoperable at one time or another over the last few months. A few cabinets are not plum and don't fully close appropriately. For a short period, the patio door was unable to open without brute force.

Although this is a contemporary building using "cutting-edge" technology such as keyless entry, e-concierge, and push-to-enter options for guests, the overall quality of the construction is lackluster at best. There is little to no soundproofing between the floors and I often hear neighbors in the hallway, even though the neighbors are using normal indoor voices. In all fairness, it is entirely possible that there is a small herd of baby elephants that live directly above me. And, while feasible but unlikely, there is also a canine with a promising career in singing/howling looking for his next big break and dedicated to practicing every day and night to chase his dreams. But after speaking to others and having random, independent visitors listen in, the **noise** permeation is more audible than the norm for apartments in this area.

shivani shekher
8 reviews

★☆☆☆☆ a year ago

Hi,

To anyone who is planning to move here, my honest feedback about the property.

Pros:

Convenient location
New building and amenities
Flats are modern and have good quality appliances
Lot of ventilation and sunshine
Maintenance staff is amazing
The leasing office staff (Megnot) is utmost helpful and will answer all your queries very patiently

Cons:

Kids cannot play in their own homes as the wooden flooring is thin as a wafer and is a nuisance. You will be in a constant grinding situation between managing the **noise** levels to keep it sane for residents of floor below and keep requesting the management to manage the **noise** from the floor above (let alone day time - even in the dead of the night)

The management (limiting it to the APM and PM here as I am yet to interact with the rest) is biased and would be differential in the treatment of complaints if you are a non nationals. You will be called overly sensitive for complaining and be given lecture on community living. Meanwhile, they wont be shy in dealing very promptly if there is a **noise** complaint one against you.

Once you make a complaint for a persistent issue; among other choices (which are not feasible); they will ask you to move out at their whim.

We burnt our fingers! It was a bad choice... you choose carefully!


8


Share

B2403.6-21

Proponents: William Penniman (wpenniman@aol.com)

2021 International Building Code

Add new text as follows:

2403.6 Bird-Friendly Design and Construction .. Within the Bird Activity Zone, the exterior envelope of any commercial or multifamily building, High-Risk Building Features and High-Risk Auxiliary Structures will be made of Bird Friendly Materials as defined in 2403.6.1.

2403.6.1 Definitions for Bird-Friendly Design and Construction. "Bird-Friendly Materials" means Bird-Friendly Glass and envelope materials that are neither transparent (such as traditional outside walls of wood, brick, concrete) nor highly reflective (such as polished metals or plastics). "Bird Activity Zone" means the zone from zero to 100 feet from grade.

"Glazing" means all glass, including spandrel glass, as well as any other materials, including but not limited to: plexiglass, polished metal, or materials that are transparent or highly reflective

"High-Risk Building Features" means transparent or highly reflective external surfaces of any of the following building features: skyways/skywalks; building connectors; outside corners where a bird can see in one side of the building and out the other ("flythrough conditions"), within 30 feet of the corner; parallel glass walls less than 50 feet apart; courtyards, including atria, open to bird entry; three floors of glazing adjacent to and above green roofs.

"Bird-Friendly Glass" means glass, other glazing materials or screening that meet any of the following conditions:

a. Frosted or opaque glass or glass with exterior surface (surface 1) obstructed and effectively covered by building-integrated structures that do not have gaps larger than 12" in any dimension, including non-glass double-skin facades, metal screens, fixed solar shading, exterior insect or solar screens, grilles, child guards and other features that meet these conditions.

b. Un-tinted glass with an outer total reflectance of ≤15% that contains a pattern of visual markers that conforms to the following rules: (i) dots or other isolated solid shapes that are ≥¼" in diameter and are either ≤ two-inches (2") apart in horizontal lines and ≤ four inches (4") apart in vertical lines or ≤ two-inches (2") apart if randomly distributed or (ii) horizontal lines that are ≥⅛" in width and spaced ≤2" apart or vertical lines that are ≥⅛" in width and spaced ≤4" apart.

c. Any product with a Threat Factor Rating of 30 or less as determined and published by the American Bird Conservancy. See www.birdsmartglass.org

"High-Risk Auxiliary Structures" means structures with glazing that poses significant collision risks to birds wherever they are found, including but not limited to:

a. Transparent or highly-reflective railings or barriers, including along balconies; noise or wind barriers (including parking structures); transportation (e.g., bus stops) or weather shelters;

b. Small, stand-alone buildings that present conditions that can be either transparent or reflective such as gazebos and external ticket booths;

c. Any other free-standing glass, plexiglass, or other clear, transparent, or highly-reflective free-standing structure.

CHAPTER 35 REFERENCED STANDARDS :. Add the following:

ABC American Bird Conservancy

Reason Statement: This proposal is supported by the Audubon Society of Northern Virginia.
Collisions with buildings kill up to 1 billion birds per year in the United States primarily due to the "invisibility" of clear glass to birds and due to reflections that appear to be attractive places to fly. https://abcbirds.org/glass-collisions/why-birds-hit-glass/ This high annual loss of birds to building collisions has contributed to the significant decline that has been recorded in many bird populations during recent decades. The danger to birds exists for the full height of buildings, since migratory birds can hit a building at any level. Most collisions actually occur with glass on homes and buildings up to 10 stories because of the prevalence of such buildings, but taller buildings, though less common, pose a greater danger on a per-building basis. https://abcbirds.org/glass-collisions/why-birds-hit-glass/ The amount of glass is the strongest predictor of bird collisions. https://abcbirds.org/glass-collisions/architecture-planning/ The choice of design and glass can reduce collisions by a huge amount. https://abcbirds.org/glass-collisions/architecture-planning/ Clear glass is a threat whether it is part of the building envelope or an extension of glass above the building walls or incorporated into skyways or balconies or even smaller auxiliary structures.

Although the risks extend to the tops of the tallest buildings, the American Bird Conservancy proposes defining the “bird activity zone” as being up to 100 feet above grade where both local flights and migrations occur. This proposal is generally modeled upon ABC’s proposal with some effort to simplify the language. It is important to note that portions of structures without glazing are not affected. Above-grade parking structures without glass, for example, are not affected.

Bird-friendly solutions may involve building design, the glass itself (e.g., frits or printed patterns, coatings, frosting) or physical structures (as simple as window screens, grills, shades or less glazing), https://abcbirds.org/glass-collisions/architecture-planning/ (“Bird Friendly Design Guide”); https://abcbirds.org/glass-collisions/why-birds-hit-glass/ ; https://abcbirds.org/glass-collisions/photo-gallery/ ; https://www.collidescape.org/ As illustrated by the Javits Center window replacement, the choice of bird-friendly glass can reduce collisions by over 90%. https://abcbirds.org/glass-collisions/architecture-planning/

The range of bird-friendly glazing and design is growing as architects, builders and glass companies make concerted efforts to minimize building threats to birds. https://abcbirds.org/glass-collisions/products-database/

https://nationalaudubon.app.box.com/s/lmf7vijbohuds6j92igzl1dzy8398ckj

https://www.featherfriendly.com/residential ;

https://www.featherfriendly.com/commercial?hsLang=en ;

https://www.birdsavers.com/ ;

https://www.windowfilms.ca/window-film-products/feather-friendly/ ;

https://www.conveniencegroup.com/featherfriendly/feather-friendly ;

https://www.walkerglass.com/resources/bird-safe-glass/

A simple rule is the “2X4” standard: the 2 x 4 Rule is defined as a collision deterrence module based upon the physical profile of a bird in flight. Current research has established maximum module dimensions of 2” high x 4” wide. Some solutions, such as films meeting the 2X4 standard, can be applied to windows and effectively reduce collisions.

The American Bird Conservancy maintains and continuously updates a list of bird-friendly materials, which can be used for compliance in order to provide flexibility for builders and architects. The ABC list of bird friendly materials are rates products based on the hazard they pose for birds (“Threat Factor”). https://abcbirds.org/glass-collisions/threat-factor-rating/ The data base is available in printed form or found at https://abcbirds.org/glass-collisions/products-database/ ; www.birdsmartglass.org . As of November 2021, there were nearly 120 bird-friendly products that had been tested and found to pass the ABC's "threat" standard.

Government bodies around the country have begun to address these issues with mandatory standards for bird-friendly construction. The ABC Threat Factor Rating is based upon testing and is commonly cited (e.g., by NYC and GSA) as a source of acceptable compliance standards.

Depending on designs and materials chosen, the solutions may be essentially invisible to occupants (e.g., UV patterns) or fit with the overall design pattern (e.g., insect screens on windows) or be such (e.g., frits) that occupants quickly get used to and see beyond the patterns.

Cost Impact: The code change proposal will increase the cost of construction
The proposed provision may, but need not, increase building costs. See https://abcbirds.org/glass-collisions/architecture-planning/ (“Bird Friendly Design Guide”: "New construction can incorporate from the beginning bird-friendly design strategies that are cost neutral.").

Some approaches can raise costs of construction, since bird-friendly glass is somewhat more costly than traditional glass. However, patterns on glass are only one solution. Design decisions for new buildings can mitigate or eliminate increased costs. For example, design changes to reduce the glass areas can result in mitigate construction costs and also save energy costs with a more efficient building envelope. There are also more manufacturers of bird-friendly glass and other bird-friendly solutions. In one example, construction of a building with 9,500 SF of glass incurred higher building costs of "less than a fifth of a percent of total construction costs". https://livingbuilding.kendedafund.org/2019/04/26/kendeda-buildings-bird-safe-glass-shockingly-huge-issue/ Many non-glass solutions, such as screens, sunshades or less glass, are cheaper and have other benefits.

Resiliency Impact Statement: This proposal will increase Resiliency
This proposal will enhance the resiliency and survival of both local and migratory birds, which are currently killed and injured by impacts to windows and other glazing of buildings. Buildings are the second leading cause of death to birds with up to 1 billion birds killed annually by striking buildings, mainly windows and other glass. The problem exists for both residential and commercial buildings, including low-rise buildings. Bird populations have declined substantially in the United States in the past 50 years, in significant part due to buildings and increased quantities of glass used in construction

By implementing the requirements for Bird-Friendly Materials in new construction, adoption of the proposal will substantially reduce bird injuries and mortality. Experience indicates that there could be a reduction of 90% or greater with full implementation.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Disapproval

2021 Workgroups Reason:

Public Comments for: B2403.6-21

Discussion by Thomas Blackburn
May 18, 2022 17:25 UTC

Via website: https://va.cdpaccess.com/login/

Re: Uniform Statewide Building Code Recommendations for Bird-Friendly Construction, International Residential Code (RB308.7-21) and International Building Code (B2403.6-21)

Ladies and Gentlemen:

I write on behalf of Virginia Department of Housing and Community Development (DHCD)

the more than 5,000 members of Audubon Society of Northern Virginia ("ASNV"), a chapter of the National Audubon Society. ASNV supports recommendations submitted by William Penniman to change the Residential Code and the Building Code to require design and construction standards that minimize the threat of birds colliding with buildings. The American Bird Conservancy estimates that collisions with buildings kill up to 1 billion birds per year in North America (https://abcbirds.org/glass-collisions/why-birds-hit-glass/), an estimate also reported by a joint 2014 study by the U.S. Fish & Wildlife Service and the Smithsonian Institution. https://www.audubon.org/news/reducing-collisions-glass. The collisions arise because clear glass is invisible to birds and reflective glass makes the solid surface look like an attractive place to fly. https://abcbirds.org/glass-collisions/why-birds-hit-glass/.

The population of North American birds is declining dramatically. Recent science estimates that North America has lost 1 in 4 birds since 1970, roughly 30 billion birds. https://www.audubon.org/news/north-america-has-lost-more-1-4-birds-last-50-years-new-study-says. The loss arises from a number of factors, including habitat loss, pesticide use, outdoor cats, climate change, and building collisions.

The way to arrest the decline and begin to restore a resilient and biodiverse habitat in Virginia is to tackle every significant factor that endangers birds, including building collisions. As Mr. Penniman's proposals make clear, there are a variety of ways to decrease the threat of fatal collisions through building design and construction. The range of solutions is growing as architects, builders and glass companies act to minimize building

threats to birds.

ASNV urges you to adopt the proposed changes to the Residential Code and Building Code.

Sincerely,

Tom Blackburn

President

Audubon Society of Northern Virginia

Proposal # 1178

B3007.6-21

Proponents: Daniel Willham (daniel.willham@fairfaxcounty.gov)

2018 Virginia Construction Code

Revise as follows:

3007.6 Fire service access elevator lobby. The fire service access elevator shall open into an enclosed fire service access elevator lobby in accordance with Sections 3007.6.1 through 3007.6.5. Egress is permitted through the enclosed elevator lobby in accordance with Item 1 of Section 1016.2.

Exception: Where a fire service access elevator has two entrances onto a floor, the second entrance shall be permitted to be protected in accordance with ~~Section 3006.3 of the *International Building Code*.~~ one of the following:

1. An enclosed elevator lobby shall be provided at each floor to separate the elevator hoistway shaft enclosure doors from each floor by fire partitions in accordance with Section 708. In addition, doors protecting openings in the elevator lobby enclosure walls shall comply with Section 716.2.2.1 as required for corridor walls. Penetrations of the enclosed elevator lobby by ducts and air transfer openings shall be protected as required for corridors in accordance with Section 717.5.4.1.

2. An enclosed elevator lobby shall be provided at each floor to separate the elevator hoistway shaft enclosure doors from each floor by smoke partitions in accordance with Section 710 where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2. In addition, doors protecting openings in the smoke partitions shall comply with Sections 710.5.2.2, 710.5.2.3 and 716.2.6.1. Penetrations of the enclosed elevator lobby by ducts and air transfer openings shall be protected as required for corridors in accordance with Section 717.5.4.1.

3. Additional doors shall be provided at each elevator hoistway door opening in accordance with Section 3002.6. Such door shall comply with the smoke and draft control door assembly requirements in Section 716.2.2.1.1 when tested in accordance with UL 1784

without an artificial bottom seal.

4. The elevator hoistway shall be pressurized in accordance with Section 909.21

Reason Statement: Last cycle, this exception was revised to reference section 3006.3 of the International Building Code, since Virginia deletes that section from the Virginia Construction Code. Another code change to section 101.5 added language that redirects references to the International Building Code back to the Virginia Construction Code, effectively negating the prior approved change. This revision brings in the actual code language from the International Building Code to correct the broken link to the alternate provisions of the exception.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposal corrects broken links in the code and does not impact construction costs.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
This is not related to resiliency and has no impact.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Disapproval

2021 Workgroups Reason:

Public Comments for: B3007.6-21

This proposal doesn't have any public comments.

Proposal # 1077

BF202-21

Proponents: Mary Koban (mkoban@ahrinet.org)

2021 International Fire Code

Revise as follows:

FLAMMABLE GAS. A material which is a gas at 68°F (20°C) or less at 14.7 pounds per square inch atmosphere (psia) (101 kPa) of pressure [a material that has a *boiling point* of 68°F (20°C) or less at 14.7 psia (101 kPa)] ~~which~~ subdivided as follows:
1.

~~Is~~
Category 1A

1. ~~Is~~ A gas which is ignitable at 14.7 psia (101 kPa) when in a mixture of 13 percent or less by volume with air; or
2. ~~Has~~ A gas with a flammable range at 14.7 psia (101 kPa) with air of not less than 12 percent, regardless of the lower

~~limit.~~
limit, unless data shows compliance with Category 1B

2. Category 1B.

A gas which meets the flammability criteria for Category 1A, is not pyrophoric or chemically unstable, and meets one or more of the following:

1. A lower flammability limit of more than 6% by volume of air; or

2. A fundamental burning velocity of less than 3.9 in/s (10 cm/s).

The limits specified shall be determined at 14.7 psi (101 kPa) of pressure and a temperature of 68°F (20°C) in accordance with ASTM E681.

Where not otherwise specified, the term "flammable gas" includes both Category 1A and 1B.

2021 International Building Code

Revise as follows:

[F] FLAMMABLE GAS. A material that is a gas at 68°F (20°C) or less at 14.7 pounds per square inch atmosphere (psia) (101 kPa) of pressure [a material that has a *boiling point* of 68°F (20°C) or less at 14.7 psia (101 kPa)], ~~which also meets one of the following~~ subdivided as follows:
1. ~~Is~~ Category 1A.

1. A gas which is ignitable at 14.7 psia (101 kPa) when in a mixture of 13 percent or less by volume with air. ~~has~~

2.

~~Has~~
A gas with a flammable range at 14.7 psia (101 kPa) with air of at least 12 percent, regardless of the lower

~~limit.~~
limit unless data shows compliance with Category 1B .

2. Category 1B .

A gas which meets the flammability criteria for Category 1A, is not pyrophoric or chemically unstable, and meets one or more of the following:

1. A lower flammability limit of more than 6% by volume in air; or

2. A fundamental burning velocity of less than 3.9 in/s (10 cm/s) .

The limits specified shall be determined at 14.7 psi (101 kPa) of pressure and a temperature of 68°F (20°C) in accordance with ASTM E681.

Where not otherwise specified, the term "flammable gas" includes both Category 1A and 1B.

Reason Statement: In the 7th edition of the Global Harmonization System of Classification and Labelling of Chemicals (GHS) the classification of flammable gas was expanded. Flammable gases have three categories, Category 1A, Category 1B, and Category 2. The definition is revised to be consistent with the GHS. However, some of the subgroups of Category 1A are not identified since all of the subclass still fall within Category 1A. Not included in the definition are pyrophoric (flammable) gas and chemically unstable (flammable) gas. Within these two additional terms is a requirement that the gas must first meet the Category 1A definition. Hence, including these terms becomes unnecessary in the Fire Code. GHS also defines a Category 2 flammable gas. The definition of a Category 2 flammable gas is: Category 2 - A gas not meeting the criteria of Category 1A or 1B, which, at 68°F (20 °C) and a pressure of 14.7 psia (101 kPa), has a flammable range while mixed in air. It is recommended that ICC consider adding a note in the commentary that Category 2 flammable gases are not regulated as flammable gases in the Fire Code, however, GHS has a classification for such flammable gases.

The GHS flammable gas categories are noted as follows (the table from GHS could not be pasted into the VA.cdpaccess):

- Category 1A flammable gases have a higher flammability and become explosive. These are the flammable gases typically understood such as propane, acetylene, and butane.
- Category 1B flammable gases have a lower flammability and are not inherently explosive, although all flammable gases can have deflagration under the right conditions. A typical Category 1B flammable gas would be difluoromethane. The gas has a lower flammable limit of 13.8 percent and an upper flammable limit of 29.9 percent. The burning velocity is 6.7 cm/s or 2.6 in/s. Other Category 1B flammable gases would include: 1,1,1-trifluoroethane; and 2,3,3,3-tetrafluoro-1-propene.
- Ammonia is a Category 2 flammable gas.

The last statement in the definition is to clarify that when not indicated, the term flammable gas applies to both Category 1A and Category 1B. When appropriate, the section in the code will state, “Category 1A flammable gas” or “Category 1B flammable gas.”

This proposal was 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 and life safety in new and existing buildings and facilities as well as the protection of life and property in wildland urban interface areas. In 2020 and 2021 the Fire-CAC held multiple virtual meetings that were

open to any interested party. In addition, there were numerous virtual specific working group meetings that were also open to any interested parties, to develop, discuss and debate the proposed changes. Related documentation and reports are posted on the FCAC website at: https://www.iccsafe.org/products-and-services/i-codes/code-development/cs/fire-code-action-committee-fcac/

This code proposal was accepted and approved for the 2024 IFC and IBC model codes

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This change neither increases or decreases the cost of construction. The change only impacts the classification of flammable gases, thus there are no other technical changes to the code through this revision of the definition.

Resiliency Impact Statement: This proposal will increase Resiliency
This code proposal will increase resiliency as it will allow users to align with upcoming changes to OSHA which are expected to align with GHS Purple Book 7.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Disapproval

2021 Workgroups Reason:

Public Comments for: BF202-21

Discussion by Richard Potts
Jun 13, 2022 13:58 UTC

Supporting information provided by proponent.
Attachments: https://va.cdpaccess.com/proposal/1116/discuss/152/file/download/741/A2L%20Refrigerants%20Best%20Practices_Jan2022.pdf, https://va.cdpaccess.com/proposal/1116/discuss/152/file/download/740/UL1995to60355_timeline2019_vDIGITAL1-1.pdf

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A2L Equipment Best Practices

Before Installing or Servicing Equipment

- SAFETY FIRST
- Read SDS and OEM Equipment Manual
- Follow lockout/tagout procedures when needed.
- Verify no voltage present before working.
- Ensure area is well ventilated.
- Evaluate jobsite for a) ignition sources b) flammable vapors c) controlling area, d) confined spaces and e) clear exit points.

A2L Installation

- Follow OEM guidelines for minimum room area/refrigerant charge limits.
- Ensure mitigation components are installed and operating per OEM instructions.
- Use locking refrigerant caps to prevent unauthorized access to the system
- Ensure a filter drier is installed

A2L Evacuation and Pressure Test

- Consult the OEM instructions to determine proper evacuation targets/procedures
- Pressure test field erected components
- Evacuate the system before charging using an A2L rated vacuum pump
- Record a) *date*, b) *test pressure* c) *vacuum level on the label* (UL 60335-2-40).

A2L Charging (if required)

- Do NOT exceed the maximum allowable refrigerant charge per OEM instructions (charge amounts may vary due to line-sets.)
- Follow OEMs procedure for proper charging techniques. (Superheat/Subcooling)
- If refrigerant is a 400-series, the refrigerant must leave the cylinder in 'liquid form'.
- Record a) *date* b) *total refrigerant charge weight on the unit label* (UL 60335-2-40).

A2L System Repairs

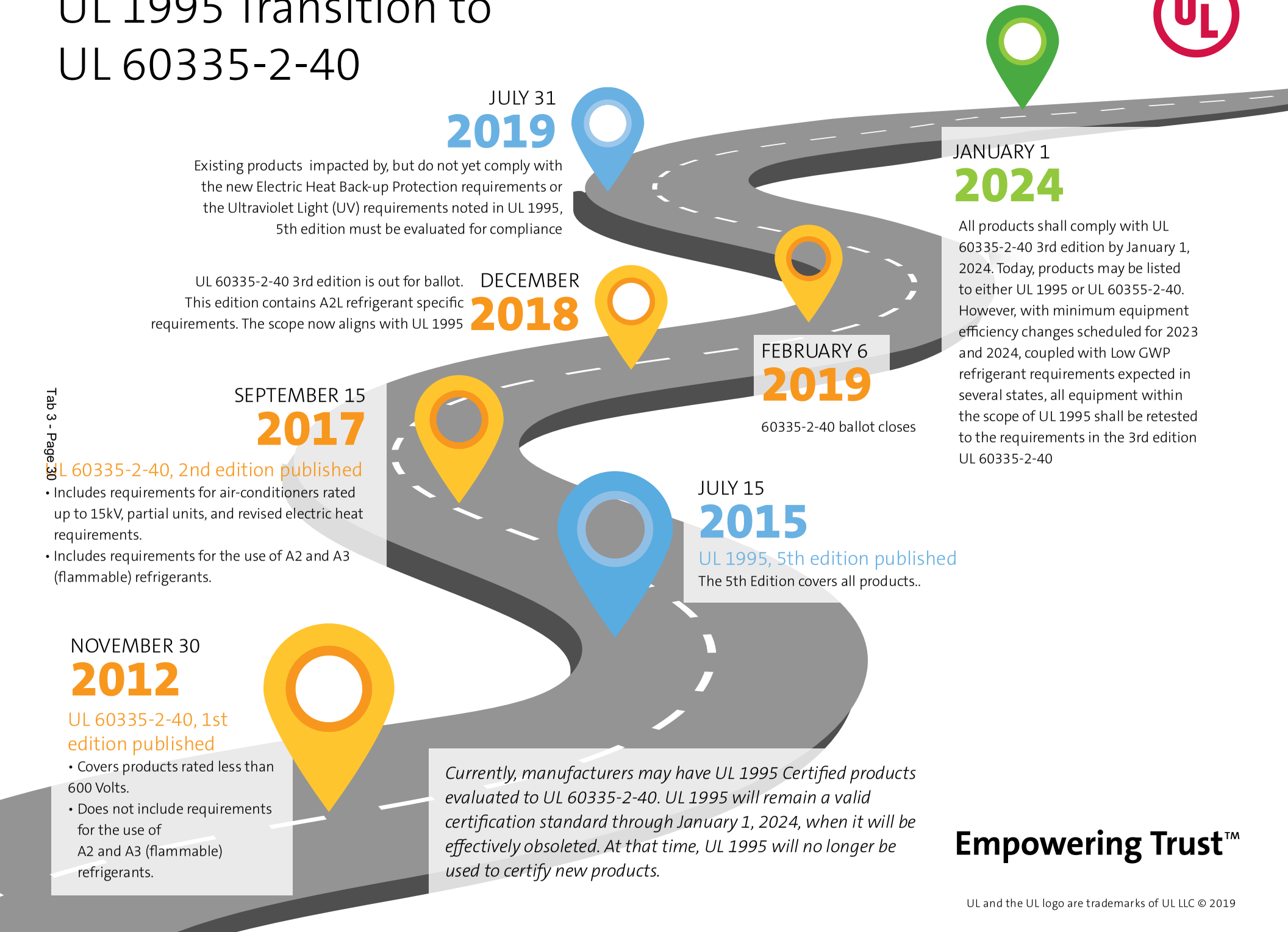
- Leak check to verify no refrigerant is present.
- Ensure equipment is grounded before working.
- Use Proper capacitor discharge methods.
- Use only OEM approved replacement parts.
- Use nitrogen before and during all brazing.

A2L Recovery

- Do NOT vent
- Do NOT mix refrigerants
- Use recovery tools rated for use with A2L refrigerants
- Recover all refrigerant before opening system
- Recover into DOT approved recovery cylinder.
- Do not exceed cylinder fill weights.
- Label recovery cylinder contents

For more information visithttps://www.ahrinet.org/saferefrigerant V1.0_1/2022

UL 1995 Transition to UL 60335-2-40



JULY 31
2019

Existing products impacted by, but do not yet comply with the new Electric Heat Back-up Protection requirements or the Ultraviolet Light (UV) requirements noted in UL 1995, 5th edition must be evaluated for compliance

JANUARY 1
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All products shall comply with UL 60335-2-40 3rd edition by January 1, 2024. Today, products may be listed to either UL 1995 or UL 60355-2-40. However, with minimum equipment efficiency changes scheduled for 2023 and 2024, coupled with Low GWP refrigerant requirements expected in several states, all equipment within the scope of UL 1995 shall be retested to the requirements in the 3rd edition UL 60335-2-40

UL 60335-2-40 3rd edition is out for ballot. This edition contains A2L refrigerant specific requirements. The scope now aligns with UL 1995

DECEMBER
2018

FEBRUARY 6
2019

60335-2-40 ballot closes

SEPTEMBER 15
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UL 60335-2-40, 2nd edition published

- Includes requirements for air-conditioners rated up to 15kV, partial units, and revised electric heat requirements.
- Includes requirements for the use of A2 and A3 (flammable) refrigerants.

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UL 60335-2-40, 1st edition published

- Covers products rated less than 600 Volts.
- Does not include requirements for the use of A2 and A3 (flammable) refrigerants.

Currently, manufacturers may have UL 1995 Certified products evaluated to UL 60335-2-40. UL 1995 will remain a valid certification standard through January 1, 2024, when it will be effectively obsoleted. At that time, UL 1995 will no longer be used to certify new products.

Empowering Trust™

BF608.9-21

Proponents: Mary Koban (mkoban@ahrinet.org)

2021 International Fire Code

Revise as follows:

608.9 Refrigerant detection. Machinery rooms shall be provided with a refrigerant detector with an audible and visible alarm. ~~Where ammonia is used as the refrigerant, detection shall comply with IIAR 2. For refrigerants other than ammonia, refrigerant detection shall comply with Section 608.9.1.~~ A detector, or a sampling tube that draws air to a detector, shall be provided at an approved location where refrigerant from a leak is expected to accumulate. The system shall be designed to initiate audible and visible alarms inside of and outside each entrance to the refrigerating machinery room and transmit a signal to an approved location where the concentration of refrigerant detected exceeds the lesser of the following:

1. The corresponding TLV-TWA values shown in the International Mechanical Code for the refrigerant classification.

2. Twenty-five percent of the lower flammable limit (LFL).

Detection of a refrigerant concentration exceeding the upper detection limit or 25 percent of the lower flammable limit (LFL), whichever is lower, shall stop refrigerant equipment in the machinery room in accordance with Section 608.10.1.

Delete without substitution:

~~**608.9.1 Refrigerants other than ammonia.** A detector, or a sampling tube that draws air to a detector, shall be provided at an *approved* location where refrigerant from a leak is expected to accumulate. The system shall be designed to initiate audible and visible alarms inside of and outside each entrance to the refrigerating machinery room and transmit a signal to an *approved* location where the concentration of refrigerant detected exceeds the lesser of the following:~~

~~1. The corresponding TLV-TWA values shown in the *International Mechanical Code* for the refrigerant classification.~~

~~2. Twenty-five percent of the lower flammable limit (LFL).~~

~~Detection of a refrigerant concentration exceeding the upper detection limit or 25 percent of the lower flammable limit (LFL), whichever is lower, shall stop refrigerant equipment in the machinery room in accordance with Section 608.10.1.~~

Revise as follows:

608.11 Emergency pressure control system. Permanently installed refrigeration systems in machinery rooms containing more than 6.6 pounds (3 kg) of flammable, toxic or highly toxic refrigerant ~~or ammonia~~ shall be provided with an emergency pressure control system in accordance with Sections 608.11.1 and 608.11.2.

608.13 Discharge and termination of pressure relief and purge systems. Pressure relief devices, fusible plugs and purge systems discharging to the atmosphere from refrigeration systems containing flammable, toxic or highly toxic refrigerants ~~or ammonia~~ shall comply with Sections 608.13.2 ~~through 608.13.4.~~ and 608.13.3.

608.13.2 Flammable refrigerants. Systems containing more than 6.6 pounds (3 kg) of flammable refrigerants having a density equal to or greater than the density of air shall discharge vapor to the atmosphere only through an *approved* treatment system in accordance with Section ~~608.13.5~~ 608.13.4or a flaring system in accordance with Section ~~608.13.6.~~ 608.13.5 . Systems containing more than 6.6 pounds (3 kg) of flammable refrigerants having a density less than the density of air shall be permitted to discharge vapor to the atmosphere provided that the point of discharge is located outside of the structure at not less than 15 feet (4572 mm) above the adjoining grade level and not less than 20 feet (6096 mm) from any window, ventilation opening or *exit*.

608.13.3 Toxic and highly toxic refrigerants. Systems containing more than 6.6 pounds (3 kg) of toxic or highly toxic refrigerants shall discharge vapor to the atmosphere only through an *approved* treatment system in accordance with Section ~~608.13.5~~ 608.13.4 or a flaring system in accordance with Section ~~608.13.6.~~ 608.13.5.

Delete without substitution:

~~**608.13.4 Ammonia refrigerant.** Systems containing more than 6.6 pounds (3 kg) of ammonia refrigerant shall discharge vapor to the atmosphere in accordance with one of the following methods:~~

~~1. Directly to atmosphere where the *fire code official* determines, on review of an analysis prepared in accordance with Section 104.8.2, that a health hazard would not result from atmospheric discharge of ammonia.~~

~~2. Through an *approved* treatment system in accordance with Section 608.13.5.~~

~~3. Through a flaring system in accordance with Section 608.13.6.~~

~~4. Through an *approved* ammonia diffusion system in accordance with Section 608.13.7.~~

~~5. By other *approved* means.~~

~~**Exception:** Ammonia/water absorption systems containing less than 22 pounds (10 kg) of ammonia and for which the ammonia circuit is located entirely outdoors.~~

Revise as follows:

608.13.4 ~~**608.13.5**~~ **Treatment systems.** Treatment systems shall be designed to reduce the allowable discharge concentration of the refrigerant gas to not more than 50 percent of the IDLH at the point of exhaust. Treatment systems shall be in accordance with Chapter 60.

608.13.5 ~~**608.13.6**~~ **Flaring systems.** Flaring systems for incineration of flammable refrigerants shall be designed to incinerate the entire discharge. The products of refrigerant incineration shall not pose health or environmental hazards. Incineration shall be automatic upon initiation of discharge, shall be designed to prevent blowback and shall not expose structures or materials to threat of fire. Standby fuel, such as LP-gas, and standby power shall have the capacity to operate for one and one-half the required time for complete incineration of refrigerant in the system. Standby electrical power, where required to complete the incineration process, shall be in accordance with Section 1203.

Delete without substitution:

~~**608.13.7 Ammonia diffusion systems.** Ammonia diffusion systems shall include a tank containing 1 gallon of water for each pound of ammonia (8.3 L of water for each 1 kg of ammonia) that will be released in 1 hour from the largest relief device connected to the discharge pipe. The water shall be prevented from freezing. The discharge pipe from the pressure relief device shall distribute ammonia in the bottom of the tank, but not lower than 33 feet (10 058 mm) below the maximum liquid level. The tank shall contain the volume of water and ammonia without overflowing.~~

Revise as follows:

608.14 Mechanical ventilation exhaust. Exhaust from mechanical ventilation systems serving refrigeration machinery rooms containing flammable, toxic or highly toxic refrigerants, ~~other than ammonia,~~ capable of exceeding 25 percent of the LFL or 50 percent of the IDLH shall be equipped with *approved* treatment systems to reduce the discharge concentrations to those values or lower.

Exception: Refrigeration systems containing Group A2L complying with Section 608.18.

Reason Statement: This is a companion to the 2021 FCAC proposal that updates and correlates scoping of the IFC and IMC refrigeration system provisions. The 2021 IMC and all other model mechanical and fire codes no longer directly regulate ammonia refrigeration systems. Instead, they require compliance with ANSI/IIAR standards that provide comprehensive requirements for ammonia refrigeration, from system design through system decommissioning.
Revisions provided by this proposal duplicate that approach in the IFC. The 2020 edition of IIAR 2, which will be referenced by the 2024 IFC, serves as both a code and standard with respect to design of ammonia refrigeration systems, and it incorporates content that was previously handled by model fire and mechanical codes. A gap analysis between the IFC and IIAR 2 has been
performed to verify that the 2020 edition of IIAR 2 includes 2021 IFC provisions.

This code proposal was accepted and adopted in the 2024 IFC code cycle

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The proposal removes overlapping requirements from the IFC that are provided by IIAR standards. IIAR standards already apply by specific references in the IFC, so there is no added cost associated with eliminating the overlap.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Disapproval

2021 Workgroups Reason:

Public Comments for: BF608.9-21

Discussion by Richard Potts
Jun 13, 2022 14:00 UTC

Supporting information provided by proponent.
Attachments: https://va.cdpaccess.com/proposal/1117/discuss/153/file/download/743/A2L%20Refrigerants%20Best%20Practices_Jan2022.pdf, https://va.cdpaccess.com/proposal/1117/discuss/153/file/download/742/UL1995to60355_timeline2019_vDIGITAL1-1.pdf

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A2L Equipment Best Practices

Before Installing or Servicing Equipment

- SAFETY FIRST
- Read SDS and OEM Equipment Manual
- Follow lockout/tagout procedures when needed.
- Verify no voltage present before working.
- Ensure area is well ventilated.
- Evaluate jobsite for a) ignition sources b) flammable vapors c) controlling area, d) confined spaces and e) clear exit points.

A2L Installation

- Follow OEM guidelines for minimum room area/refrigerant charge limits.
- Ensure mitigation components are installed and operating per OEM instructions.
- Use locking refrigerant caps to prevent unauthorized access to the system
- Ensure a filter drier is installed

A2L Evacuation and Pressure Test

- Consult the OEM instructions to determine proper evacuation targets/procedures
- Pressure test field erected components
- Evacuate the system before charging using an A2L rated vacuum pump
- Record a) *date*, b) *test pressure* c) *vacuum level on the label* (UL 60335-2-40).

A2L Charging (if required)

- Do NOT exceed the maximum allowable refrigerant charge per OEM instructions (charge amounts may vary due to line-sets.)
- Follow OEMs procedure for proper charging techniques. (Superheat/Subcooling)
- If refrigerant is a 400-series, the refrigerant must leave the cylinder in 'liquid form'.
- Record a) *date* b) *total refrigerant charge weight on the unit label* (UL 60335-2-40).

A2L System Repairs

- Leak check to verify no refrigerant is present.
- Ensure equipment is grounded before working.
- Use Proper capacitor discharge methods.
- Use only OEM approved replacement parts.
- Use nitrogen before and during all brazing.

A2L Recovery

- Do NOT vent
- Do NOT mix refrigerants
- Use recovery tools rated for use with A2L refrigerants
- Recover all refrigerant before opening system
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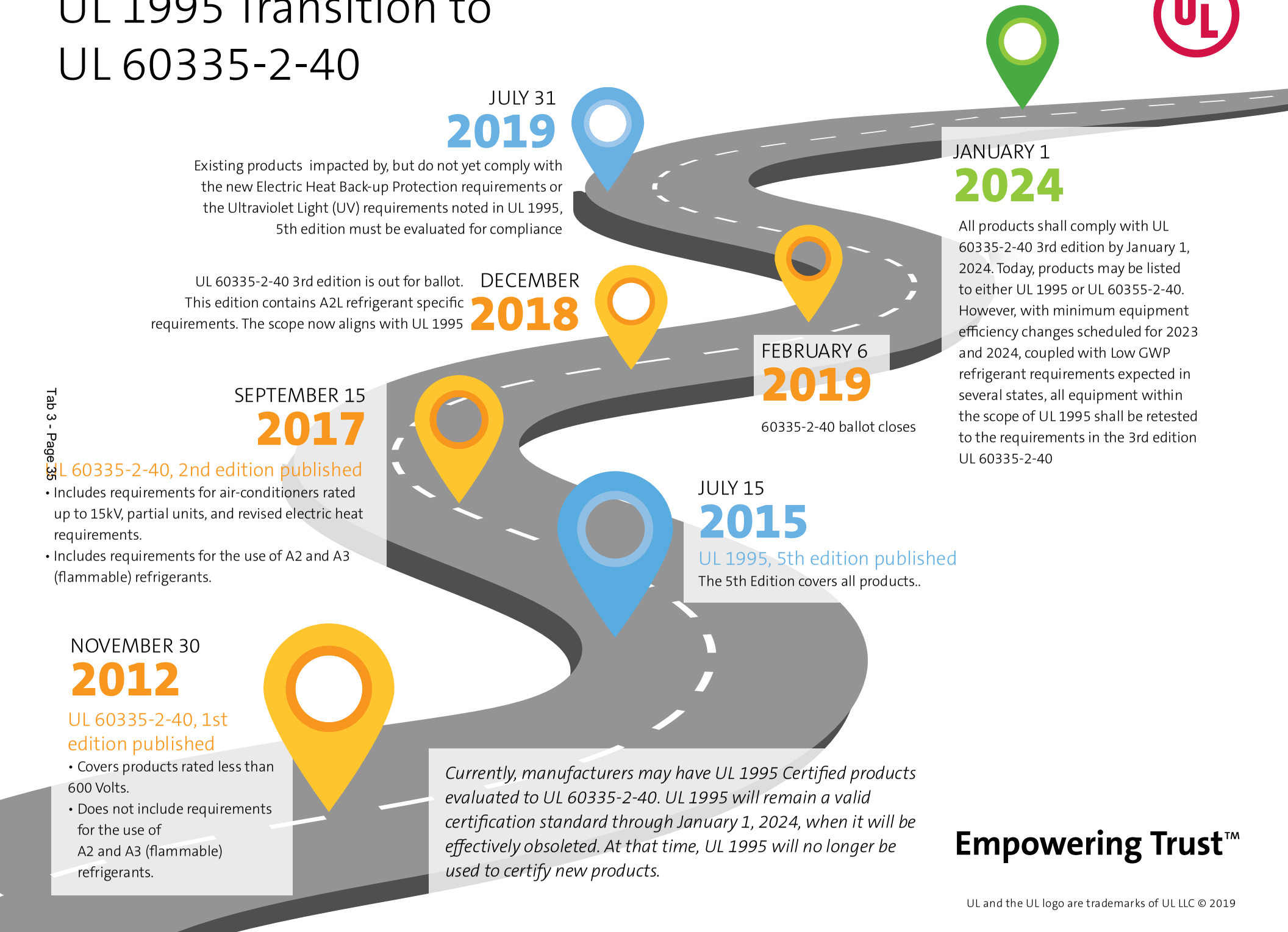
- Do not exceed cylinder fill weights.
- Label recovery cylinder contents

For more information visithttps://www.ahrinet.org/saferefrigerant V1.0_1/2022

UL 1995 Transition to UL 60335-2-40



JULY 31
2019

Existing products impacted by, but do not yet comply with the new Electric Heat Back-up Protection requirements or the Ultraviolet Light (UV) requirements noted in UL 1995, 5th edition must be evaluated for compliance

JANUARY 1
2024

All products shall comply with UL 60335-2-40 3rd edition by January 1, 2024. Today, products may be listed to either UL 1995 or UL 60355-2-40. However, with minimum equipment efficiency changes scheduled for 2023 and 2024, coupled with Low GWP refrigerant requirements expected in several states, all equipment within the scope of UL 1995 shall be retested to the requirements in the 3rd edition UL 60335-2-40

UL 60335-2-40 3rd edition is out for ballot. This edition contains A2L refrigerant specific requirements. The scope now aligns with UL 1995

DECEMBER
2018

FEBRUARY 6
2019

60335-2-40 ballot closes

SEPTEMBER 15
2017

UL 60335-2-40, 2nd edition published

- Includes requirements for air-conditioners rated up to 15kV, partial units, and revised electric heat requirements.
- Includes requirements for the use of A2 and A3 (flammable) refrigerants.

JULY 15
2015

UL 1995, 5th edition published

The 5th Edition covers all products..

NOVEMBER 30
2012

UL 60335-2-40, 1st edition published

- Covers products rated less than 600 Volts.
- Does not include requirements for the use of A2 and A3 (flammable) refrigerants.

Currently, manufacturers may have UL 1995 Certified products evaluated to UL 60335-2-40. UL 1995 will remain a valid certification standard through January 1, 2024, when it will be effectively obsoleted. At that time, UL 1995 will no longer be used to certify new products.

Empowering Trust™

BF608.17-21

Proponents: Mary Koban (mkoban@ahrinet.org)

2021 International Fire Code

Revise as follows:

[M] 608.17 Electrical equipment. Where refrigerant of Groups A2, A3, B2 and B3, as defined in the *International Mechanical Code*, are used, refrigeration machinery rooms shall conform to the Class I, Division 2, hazardous location classification requirements of NFPA 70.

Exception ~~**Exceptions:**~~

1. Ammonia machinery rooms that are provided with ventilation in accordance with Section 1101.1.2, Exception 1 of the International Mechanical Code.
2. ~~Machinery rooms for systems containing Group A2L refrigerants that are provided with ventilation in accordance with Section 608.18.~~

Reason Statement: The second exception in the Fire Code and the exception in the Mechanical Code are no longer necessary with the revision in the 2021 International Mechanical Code regarding refrigerant classification. A2L is a separate group of refrigerants. Both sections state that the requirements apply to A2, A3, B2, and B3. Hence, A2L is not included in the requirements, so the two exceptions proposed for deletion no longer are needed.

This code proposal was accepted and adopted at the 2024 IFC code cycle.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This change is editorial in nature. As a result, there is no impact to the cost of construction.

Resiliency Impact Statement: This proposal will increase Resiliency
This code proposal will enable the use of low GWP refrigerants and help manufacturers meet the AIM Act.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Disapproval

2021 Workgroups Reason:

Public Comments for: BF608.17-21

Discussion by Richard Potts
Jun 13, 2022 14:02 UTC

Supporting information provided by proponent.
Attachments: https://va.cdpaccess.com/proposal/1100/discuss/155/file/download/747/A2L%20Refrigerants%20Best%20Practices_Jan2022.pdf, https://va.cdpaccess.com/proposal/1100/discuss/155/file/download/746/UL1995to60355_timeline2019_vDIGITAL1-1.pdf

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A2L Installation

- Follow OEM guidelines for minimum room area/refrigerant charge limits.
- Ensure mitigation components are installed and operating per OEM instructions.
- Use locking refrigerant caps to prevent unauthorized access to the system
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A2L Evacuation and Pressure Test

- Consult the OEM instructions to determine proper evacuation targets/procedures
- Pressure test field erected components
- Evacuate the system before charging using an A2L rated vacuum pump
- Record a) *date*, b) *test pressure* c) *vacuum level on the label* (UL 60335-2-40).

A2L Charging (if required)

- Do NOT exceed the maximum allowable refrigerant charge per OEM instructions (charge amounts may vary due to line-sets.)
- Follow OEMs procedure for proper charging techniques. (Superheat/Subcooling)
- If refrigerant is a 400-series, the refrigerant must leave the cylinder in 'liquid form'.
- Record a) *date* b) *total refrigerant charge weight on the unit label* (UL 60335-2-40).

A2L System Repairs

- Leak check to verify no refrigerant is present.
- Ensure equipment is grounded before working.
- Use Proper capacitor discharge methods.
- Use only OEM approved replacement parts.
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A2L Recovery

- Do NOT vent
- Do NOT mix refrigerants
- Use recovery tools rated for use with A2L refrigerants
- Recover all refrigerant before opening system
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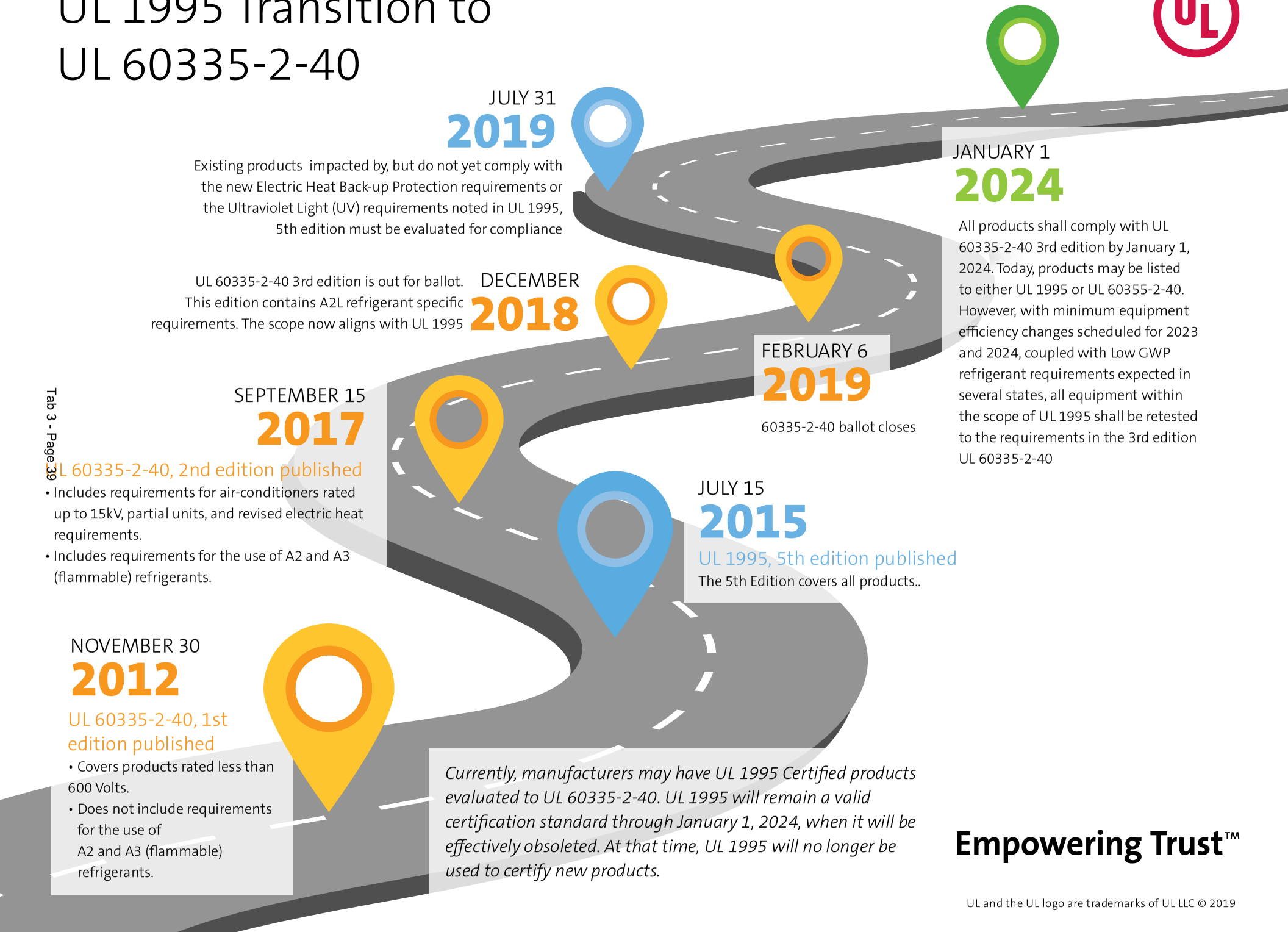
- Do not exceed cylinder fill weights.
- Label recovery cylinder contents

UL 1995 Transition to UL 60335-2-40



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Empowering Trust™

BF608.17(2)-21

Proponents: Mary Koban (mkoban@ahrinet.org)

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~~1. Ammonia machinery rooms that are provided with ventilation in accordance with Section 1101.1.2, Exception 1 of the International Mechanical Code.~~

2. Machinery rooms for systems containing Group A2L refrigerants that are provided with ventilation in accordance with Section 608.18.

Reason Statement: Information regarding machinery rooms with ammonia are now contained within IIAR. The 2020 edition of IIAR 2, which will be referenced by the 2024 IFC, serves as both a code and standard with respect to design of ammonia refrigeration systems, and it incorporates content that was previously handled by model fire and mechanical codes. A gap analysis between the IFC and IIAR 2 has been performed to verify that the 2020 edition of IIAR 2 includes 2021 IFC provisions.
This code change was accepted and adopted for the 2024 IFC code cylce.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The proposal removes overlapping requirements from the IFC that are provided by IIAR standards. IIAR standards already apply by specific references in the IFC, so there is no added cost associated with eliminating the overlap.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
This code proposal will neither increase nor decrease resiliency. It updates the code by referring to the IIAR for ammonia usage.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Disapproval

2021 Workgroups Reason:

Public Comments for: BF608.17(2)-21

Discussion by Richard Potts
Jun 13, 2022 14:02 UTC

Supporting information provided by proponent.
Attachments: https://va.cdpaccess.com/proposal/1118/discuss/156/file/download/749/A2L%20Refrigerants%20Best%20Practices_Jan2022.pdf, https://va.cdpaccess.com/proposal/1118/discuss/156/file/download/748/UL1995to60355_timeline2019_vDIGITAL1-1.pdf

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Proposal # 1118

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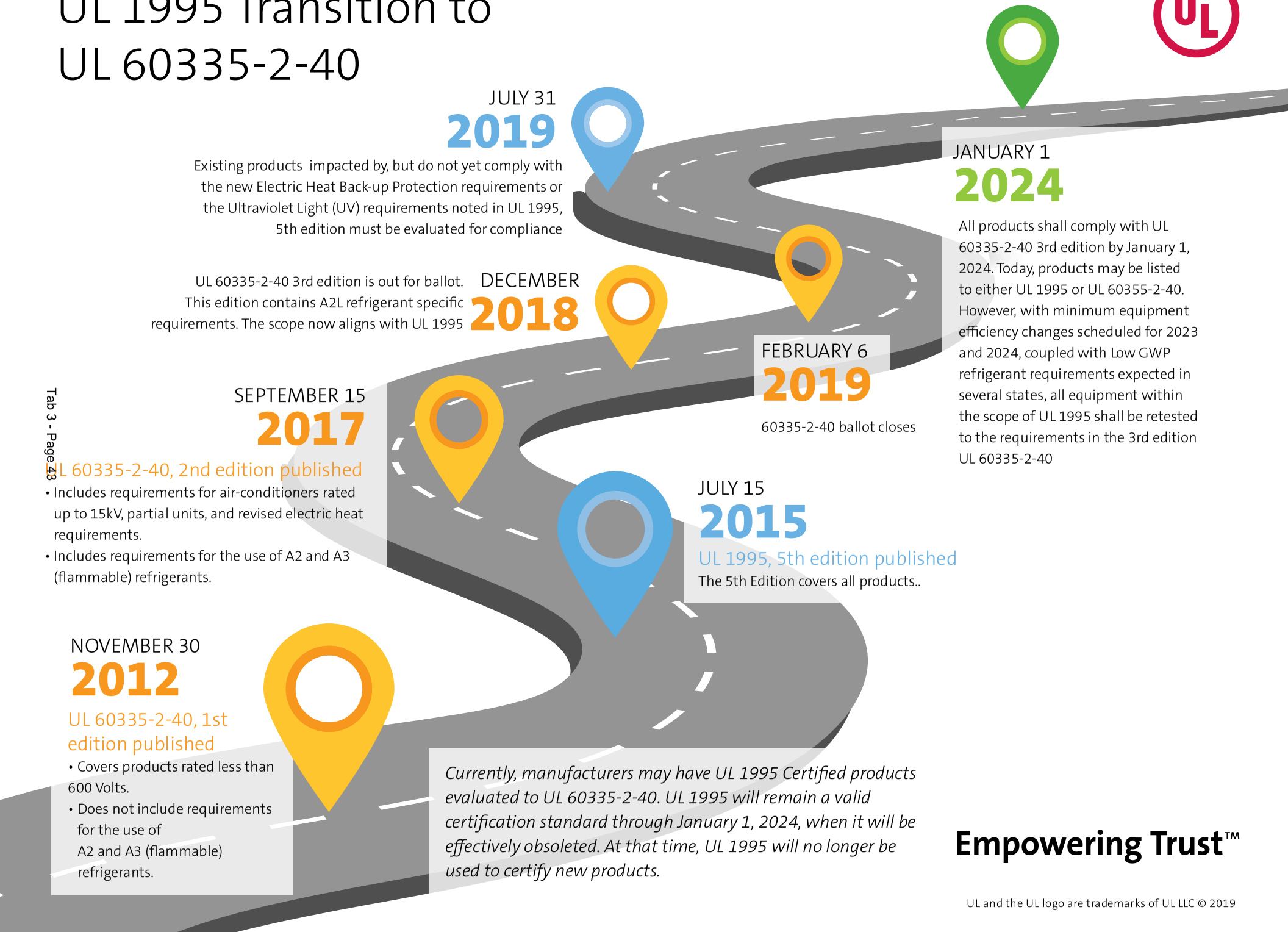
- Recover all refrigerant before opening system
- Recover into DOT approved recovery cylinder.
- Do not exceed cylinder fill weights.
- Label recovery cylinder contents

For more information visithttps://www.ahrinet.org/saferefrigerant V1.0_1/2022

UL 1995 Transition to UL 60335-2-40



JULY 31
2019

Existing products impacted by, but do not yet comply with the new Electric Heat Back-up Protection requirements or the Ultraviolet Light (UV) requirements noted in UL 1995, 5th edition must be evaluated for compliance

JANUARY 1
2024

All products shall comply with UL 60335-2-40 3rd edition by January 1, 2024. Today, products may be listed to either UL 1995 or UL 60355-2-40. However, with minimum equipment efficiency changes scheduled for 2023 and 2024, coupled with Low GWP refrigerant requirements expected in several states, all equipment within the scope of UL 1995 shall be retested to the requirements in the 3rd edition UL 60335-2-40

UL 60335-2-40 3rd edition is out for ballot. This edition contains A2L refrigerant specific requirements. The scope now aligns with UL 1995

DECEMBER
2018

FEBRUARY 6
2019

60335-2-40 ballot closes

SEPTEMBER 15
2017

UL 60335-2-40, 2nd edition published

- Includes requirements for air-conditioners rated up to 15kV, partial units, and revised electric heat requirements.
- Includes requirements for the use of A2 and A3 (flammable) refrigerants.

JULY 15
2015

UL 1995, 5th edition published

The 5th Edition covers all products..

NOVEMBER 30
2012

UL 60335-2-40, 1st edition published

- Covers products rated less than 600 Volts.
- Does not include requirements for the use of A2 and A3 (flammable) refrigerants.

Currently, manufacturers may have UL 1995 Certified products evaluated to UL 60335-2-40. UL 1995 will remain a valid certification standard through January 1, 2024, when it will be effectively obsoleted. At that time, UL 1995 will no longer be used to certify new products.

Empowering Trust™

BF911.1-21

Proponents: Mary Koban (mkoban@ahrinet.org)

2021 International Fire Code

Revise as follows:

TABLE 911.1 EXPLOSION CONTROL REQUIREMENTS[f]

Portions of table not shown remain unchanged.

MATERIAL	CLASS	EXPLOSION CONTROL METHODS	
		Barricade construction	**Explosion (deflagration) venting or explosion (deflagration) prevention systems**
Hazard Category			
Flammable gas	Gaseous	Not required	Required[h]
	Liquefied	Not required	Required[h]

a. Combustible dusts where manufactured, generated or used in such a manner that the concentration and conditions create a fire or explosion hazard based on information prepared in accordance with Section 104.8.2. See definition of “Combustible dust” in Chapter 2.

b. Storage or use.

c. In open use or dispensing.

d. Rooms containing dispensing and use of hazardous materials where an explosive environment can occur because of the characteristics or nature of the hazardous materials or as a result of the dispensing or use process.

e. A method of explosion control shall be provided where Class 2 water-reactive materials can form potentially explosive mixtures.

f. Explosion venting is not required for Group H-5 Fabrication Areas complying with Chapter 27 and the International Building Code.

g. Where explosion control is required in Section 1207.6.3.

h. Not required for Category 1B Flammable Gases having a burning velocity not exceeding 3.9 in/s (10 cm/s).

3307.2.1 Pipe cleaning and purging. The cleaning and purging of flammable gas piping systems, including cleaning new or existing piping systems, purging piping systems into service and purging piping systems out of service, shall comply with NFPA 56.

Exceptions:

1. *Compressed gas* piping systems other than fuel gas piping systems where in accordance with Chapter 53.
2. Piping systems regulated by the *International Fuel Gas Code*.
3. Liquefied petroleum gas systems in accordance with Chapter 61.
4. Cleaning and purging of refrigerant piping systems shall comply with the International Mechanical Code.

2021 International Building Code

Revise as follows:

TABLE 414.5.1 EXPLOSION CONTROL REQUIREMENTS[a, h]

Portions of table not shown remain unchanged.

MATERIAL	CLASS	EXPLOSION CONTROL METHODS	
		Barricade construction	Explosion (deflagration) venting or explosion (deflagration) prevention systems[b]
HAZARD CATEGORY			
Flammable gas	Gaseous	Not Required	Required[k]
	Liquefied	Not Required	Required[k]

a. See Section 414.1.3.

b. See the *International Fire Code*.

c. Combustible dusts where manufactured, generated or used in such a manner that the concentration and conditions create a fire or explosion hazard based on information prepared in accordance with Section 104.8.2 of the *International Fire Code*. See definition of "Combustible dust" in Chapter 2.

d. Storage or use.

e. In open use or dispensing.

f. Rooms containing dispensing and use of hazardous materials where an explosive environment can occur because of the characteristics or nature of the hazardous materials or as a result of the dispensing or use process.

g. A method of explosion control shall be provided where Class 2 water-reactive materials can form potentially explosive mixtures.

h. Explosion venting is not required for Group H-5 fabrication areas complying with Section 415.11.1 and the *International Fire Code*.

i. Where explosion control is required in Section 1207 of the *International Fire Code*.

k Not required for Category 1B Flammable Gases having a burning velocity not exceeding 3.9 in/s (10 cm/s).

Reason Statement: This change coordinates with the change in the definition of flammable gas. Explosive flammable gases do not include Category 1B flammable gases having a burning velocity of 3.9 in/s or less (Low BV). Table 911.1 has been modified accordingly. Category 1B low burning velocity flammable gases are excluded from the explosive flammable gas requirements.A reference to the International Mechanical Code has been added as an exception for the cleaning and purging of flammable gas piping systems requirements. Chapter 11 of the International Mechanical Code includes requirements for cleaning and purging using Category 1B low burning velocity flammable gases.
This proposal 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 and life safety in new and existing buildings and facilities as well as the protection of life and property in wildland urban interface areas. In 2020 and 2021 the Fire-CAC held multiple virtual meetings that were open to any interested party. In addition, there were numerous virtual specific working group meetings that were also open to any interested parties, to develop, discuss and debate the proposed changes. Related documentation and reports are posted on the FCAC website at: https://www.iccsafe.org/products-and-services/i-codes/code-development/cs/fire-code-action-committee-fcac/.
This code proposal was accepted and adopted in the 2024 IFC and IBC

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This code change neither increased nor decreased in the cost of construction. The change clarifies that the requirements in these sections are applicable to Category 1A flammable gases.

Resiliency Impact Statement: This proposal will increase Resiliency
This code proposal will increase resiliency by further enabling the use of low GWP refrigerants and allow manufacturers greater flexibility with regards to storage and handling of systems.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Disapproval

2021 Workgroups Reason:

Public Comments for: BF911.1-21

Discussion by Richard Potts
Jun 13, 2022 14:01 UTC

Supporting information provided by proponent.
Attachments: https://va.cdpaccess.com/proposal/1119/discuss/154/file/download/745/A2L%20Refrigerants%20Best%20Practices_Jan2022.pdf, https://va.cdpaccess.com/proposal/1119/discuss/154/file/download/744/UL1995to60355_timeline2019_vDIGITAL1-1.pdf

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Proposal # 1119

A2L Equipment Best Practices

Before Installing or Servicing Equipment

- SAFETY FIRST
- Read SDS and OEM Equipment Manual
- Follow lockout/tagout procedures when needed.
- Verify no voltage present before working.
- Ensure area is well ventilated.
- Evaluate jobsite for a) ignition sources b) flammable vapors c) controlling area, d) confined spaces and e) clear exit points.

A2L Installation

- Follow OEM guidelines for minimum room area/refrigerant charge limits.
- Ensure mitigation components are installed and operating per OEM instructions.
- Use locking refrigerant caps to prevent unauthorized access to the system
- Ensure a filter drier is installed

A2L Evacuation and Pressure Test

- Consult the OEM instructions to determine proper evacuation targets/procedures
- Pressure test field erected components
- Evacuate the system before charging using an A2L rated vacuum pump
- Record a) *date*, b) *test pressure* c) *vacuum level on the label* (UL 60335-2-40).

A2L Charging (if required)

- Do NOT exceed the maximum allowable refrigerant charge per OEM instructions (charge amounts may vary due to line-sets.)
- Follow OEMs procedure for proper charging techniques. (Superheat/Subcooling)
- If refrigerant is a 400-series, the refrigerant must leave the cylinder in 'liquid form'.
- Record a) *date* b) *total refrigerant charge weight on the unit label* (UL 60335-2-40).

A2L System Repairs

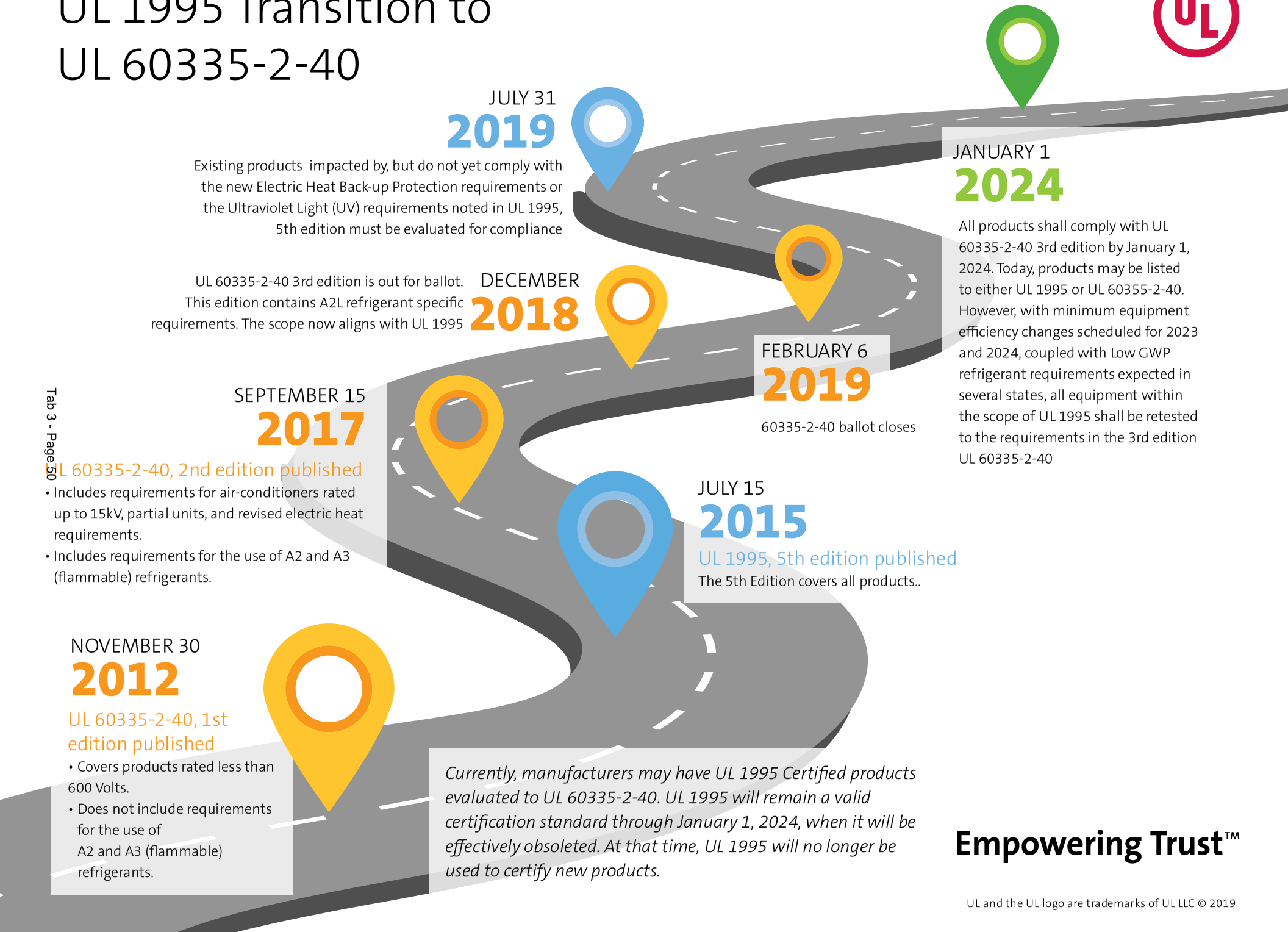
- Leak check to verify no refrigerant is present.
- Ensure equipment is grounded before working.
- Use Proper capacitor discharge methods.
- Use only OEM approved replacement parts.
- Use nitrogen before and during all brazing.

A2L Recovery

- Do NOT vent
- Do NOT mix refrigerants
- Use recovery tools rated for use with A2L refrigerants
- Recover all refrigerant before opening system
- Recover into DOT approved recovery cylinder.
- Do not exceed cylinder fill weights.
- Label recovery cylinder contents

For more information visithttps://www.ahrinet.org/saferefrigerant V1.0_1/2022

UL 1995 Transition to UL 60335-2-40



JULY 31
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Empowering Trust™

B1022.2.3-21

Proponents: DHCD Staff (sbco@dhcd.virginia.gov)

2021 International Building Code

Add new text as follows:

1022.2.3 Door Operations. Exterior exit doors shall be either power-operated doors or low-energy power-operated doors.

1022.2.3.1 Doors in a series. Where doors in a series are provided, such as at vestibules, each door, including the interior door serving such spaces, shall be either power-operated doors or low-energy power operated doors.

Reason Statement: Proposal submitted as a response to letter received from the Virginia Delegate David A. Reid and Virginia Senator Jennifer Boysko. In the letter, Delegate Reid and Senator Boysko "recommend that the Virginia Building Code be amended to ensure that handicap accessible buttons are required on all doors leading to the building exit and not just the final exterior doors". See attached letter for additional details. Doors served by push plate buttons are commonly referred to by the codes as low-energy power-operated doors. Given that power-operated doors would provide similar door functions, the proposal uses the two defined terms as options for achieving the intended result - door operation assistance for "Virginia's elderly and handicapped residents".

Cost Impact: The code change proposal will increase the cost of construction
Given that the proposal mandates the installation of features not currently required by the code, the construction cost would increase.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
While the proposal would not increase the resiliency of buildings, it could be argued that the resiliency of elderly and handicapped occupants would be increased.

Attached Files

- **LETTER-Handicap_Accessibility_(2).pdf**
  https://va.cdpaccess.com/proposal/1132/1506/files/download/649/

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Disapproval

2021 Workgroups Reason:

Public Comments for: B1022.2.3-21

This proposal doesn't have any public comments.

Proposal # 1132

Commonwealth of Virginia

General Assembly

RICHMOND

March 25th, 2021

Director Johnston
Department of Housing and Community Development
Virginia Uniform Statewide Building Code
600 East Main Street #300
Richmond, VA, 23219

SUBJ: Virginia Uniform Statewide Building Code Updates – Handicap Accessibility

Dear Director Johnston:

Our offices dually represent a constituent in Ashburn, Virginia that has encountered a significant issue related to handicap accessible exit buttons in their condominium complex.

The constituent, Ms. Siglind McGimsey, purchased a condo in a Toll Brothers development called *The Regency at Ashburn,* marketed as an "over 55 active community." This part of the county that was rezoned from 'industrial' to '55+' housing, and part of the proffers for the development included land for the nearby Ashburn Senior Center.

When purchasing the condo, Ms. McGimsey looked for a condo that was handicap accessible for an elderly person. I recently had the opportunity to walk through the building with Ms. McGimsey and she demonstrated that the front doors, the main entrance and exit for each of the seven buildings, have two sets of doors. A covered outside set of doors and then a second interior set that requires a PIN to pass inside to the foyer. When entering the building, both sets of doors have handicap accessible buttons that allow for entrance. However, when exiting the building the interior, or first set of exit doors have no handicap accessible buttons. An elderly or handicap person must first get through this set of doors before a handicap accessible button is available on the second set of doors to completely exit the building. This configuration has made it increasingly difficult and dangerous for elderly or handicapped residents to exit the building.

In order to accommodate Virginia's elderly and handicapped residents and ensure buildings are safe for exit, we recommend that the Virginia Building Code be amended to ensure that handicap accessible buttons are required on <u>all</u> doors leading to the building exit and not just the final exterior doors.

Thank you in advance for your attention to this matter. Please feel free to contact our offices, if you have any questions or need clarification.

Yours in service,

David A. Reid
House of Delegates (VA-32)

Commonwealth of Virginia

General Assembly

RICHMOND

Jennifer Boysko
Virginia Senate (VA-33)

BF5003.1.1(1)-21

Proponents: Mary Koban (mkoban@ahrinet.org)

2021 International Fire Code

Revise as follows:

TABLE 5003.1.1(1) MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A PHYSICAL HAZARD[a, j, m, n, p]

Portions of table not shown remain unchanged.

MATERIAL	CLASS	GROUP WHEN THE MAXIMUM ALLOWABLE QUANTITY IS EXCEEDED	STORAGE[b]			USE-CLOSED SYSTEMS[b]			USE-OPEN SYSTEMS[b]	
			Solid pounds (cubic feet)	Liquid gallons (pounds)	Gas (cubic feet at NTP)	Solid pounds (cubic feet)	Liquid gallons (pounds)	Gas (cubic feet at NTP)	Solid pounds (cubic feet)	Liquid gallons (pounds)
Flammable gas	Gaseous	H-2	NA			NA	NA		NA	NA
	1A and 1B (High BV)[r]			NA	1,000[d, e]			1,000[d, e]		
	1B (Low BV)[r]				162,500 [d,e]			162,500 [d,e]		
	Liquefied				NA			NA		
	1A and 1B (High BV)[r]			(150)[d, e]			(150)[d, e]			
	1B (Low BV)[r]			(10,000)[d, e]			(10,000)[d, e]			

For SI: 1 cubic foot = 0.02832 m^3, 1 pound = 0.454 kg, 1 gallon = 3.785 L.

NA = Not Applicable, NL = Not Limited, UD = Unclassified Detonable.

a. For use of control areas, see Section 5003.8.3.

b. The aggregate quantity in use and storage shall not exceed the quantity listed for storage.

c. The quantities of alcoholic beverages in retail and wholesale sales occupancies shall not be limited providing the liquids are packaged in individual containers not exceeding 1.3 gallons. In retail and wholesale sales occupancies, the quantities of medicines, foodstuff or consumer products and cosmetics containing not more than 50 percent by volume of water-miscible liquids with the remainder of the solutions not being flammable shall not be limited, provided that such materials are packaged in individual containers not exceeding 1.3 gallons.

d. Maximum allowable quantities shall be increased 100 percent in buildings equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1. Where Note e applies, the increase for both notes shall be applied accumulatively.

e. Maximum allowable quantities shall be increased 100 percent where stored in approved storage cabinets, day boxes, gas cabinets, gas rooms, exhausted enclosures or in listed safety cans in accordance with Section 5003.9.10. Where Note d applies, the increase for both notes shall be applied accumulatively.

f. Quantities shall not be limited in a building equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.

g. Allowed only in buildings equipped throughout with an approved automatic sprinkler system.

h. Containing not more than the maximum allowable quantity per control area of Class IA, Class IB or Class IC flammable liquids.

i. The maximum allowable quantity shall not apply to fuel oil storage complying with Section 605.4.2.

j. Quantities in parenthesis indicate quantity units in parenthesis at the head of each column.

k. A maximum quantity of 220 pounds of solid or 22 gallons of liquid Class 3 oxidizers is allowed where such materials are necessary for maintenance purposes, operation or sanitation of equipment where the storage containers and the manner of storage are approved.

l. Net weight of pyrotechnic composition of the fireworks. Where the net weight of the pyrotechnic composition of the fireworks is not known, 25 percent of the gross weight of the fireworks including packaging shall be used.

m. For gallons of liquids, divide the amount in pounds by 10 in accordance with Section 5003.1.2.

n. For storage and display quantities in Group M and storage quantities in Group S occupancies complying with Section 5003.11, see Table 5003.11.1.

o. Densely-packed baled cotton that complies with the packing requirements of ISO 8115 shall not be included in this material class.

p. The following shall not be included in determining the maximum allowable quantities:

1. Liquid or gaseous fuel in fuel tanks on vehicles.
2. Liquid or gaseous fuel in fuel tanks on motorized equipment operated in accordance with this code.
3. Gaseous fuels in piping systems and fixed appliances regulated by the *International Fuel Gas Code*.
4. Liquid fuels in piping systems and fixed appliances regulated by the *International Mechanical Code*.
5. Alcohol-based hand rubs classified as Class I or II liquids in dispensers that are installed in accordance with Sections 5705.5 and 5705.5.1. The location of the alcohol-based hand rub (ABHR) dispensers shall be provided in the construction documents.

q. Where manufactured, generated or used in such a manner that the concentration and conditions create a fire or explosion hazard based on information prepared in accordance with Section 104.8.2.

r "High BV" Category 1B flammable gas has a burning velocity greater than 3.9 in/s (10cm/s). "Low BV" Category 1B flammable gas has a burning velocity of 3.9 in/s (10 cm/s) or less.

TABLE 5003.1.1(3) MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A PHYSICAL HAZARD IN AN OUTDOOR CONTROL AREA[a, b, c, d]

MATERIAL	CLASS	STORAGE[b]			USE-CLOSED SYSTEMS[b]			USE-OPEN SYSTEMS[b]	
		Solid pounds (cubic feet)	Liquid gallons (pounds)[d]	Gas cubic feet at NTP	Solid pounds (cubic feet)	Liquid gallons (pounds)[d]	Gas cubic feet at NTP	Solid pounds (cubic feet)	Liquid gallons (pounds)[d]
Flammable gas	Gaseous	Not Applicable	Not Applicable		Not Applicable	Not Applicable		Not Applicable	Not Applicable
	1A and 1B (high BV)[e]			3,000			1,500		
	1B (low BV)[e]			195,000			97,500		
	Liquefied			Not Applicable			Not Applicable		
	1A and 1BV (High BV)[e]		(300)			(150)			
	1B (low BV)e		(20,000)			(10,000)			

For SI: 1 pound = 0.454 kg, 1 gallon = 3.785 L, 1 cubic foot = 0.02832 m^3.

a. For gallons of liquids, divide the amount in pounds by 10 in accordance with Section 5003.1.2.

b. The aggregate quantities in storage and use shall not exceed the quantity listed for storage.

c. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials allowed in outdoor storage per single property under the same ownership or control used for retail or wholesale sales is allowed to exceed the maximum allowable quantity per control area where such storage is in accordance with Section 5003.11.

d. Quantities in parentheses indicate quantity units in parentheses at the head of each column.

e "High BV" Category 1B flammable gas has a burning velocity greater than 3.9 in/s (10cm/s). "Low BV" Category 1B flammable gas has a burning velocity of 3.9 in/s (10 cm/s) or less.

5003.8.3.5 Hazardous materials in Group M display and storage areas and in Group S storage areas. Hazardous materials located in Group M and Group S occupancies shall be in accordance with Sections 5003.8.3.5.1 through ~~5003.8.3.5.3.~~ 5003.8.5.4

Add new text as follows:

5003.8.3.5.4 Flammable gas. The aggregate quantity of Category 1B flammable gas having a burning velocity of 3.9 in/s (10 cm/s) or less stored and displayed within a single control area of a Group M occupancy, or in an outdoor control area, or stored in a single control area of a Group S occupancy is allowed to exceed the maximum allowable quantities per control area specified in Table 5003.1.1(1) without classifying the building or use as a Group H occupancy, provided the materials are stored and displayed in accordance with Section 5003.11.2.

Revise as follows:

5003.11 Maximum allowable quantity fo r Group M storage and display and Group S storage. The aggregate quantity of ~~nonflammable solid and nonflammable or noncombustible liquid~~ hazardous materials stored and displayed within a single *control area* of a Group M occupancy, or an outdoor *control area*, or stored in a single *control area* of a Group S occupancy, is allowed to exceed the *maximum allowable quantity per control area* indicated in Section 5003.1 where in accordance with Sections 5003.11.1 ~~through 5003.11.3.11.~~ and 5003.11.2.

5003.11.1 Nonflammable solid and nonflammable or noncombustible liquid hazardous materials ~~Maximum allowable quantity per control area in Group M or S occupancies.~~ The aggregate amount of nonflammable solid and nonflammable or noncombustible liquid hazardous materials stored and displayed within a single *control area* of a Group M occupancy , or an outdoor control area, or stored in a single *control area* of a Group S occupancy shall not exceed the amounts set forth in Table 5003.11.1.

Delete without substitution:

~~**5003.11.2 Maximum allowable quantity per outdoor control area in Group M or S occupancies.** The aggregate amount of nonflammable solid and nonflammable or noncombustible liquid hazardous materials stored and displayed within a single *outdoor control area* of a Group M occupancy shall not exceed the amounts set forth in Table 5003.11.1.~~

Revise as follows:

~~5003.11.3~~ **5003.11.1.1 Storage and display.** Storage and display shall be in accordance with Sections ~~5003.11.3.1~~ 5003.1.1.1 through ~~5003.11.3.11.~~ 5003.11.1.1.11

~~5003.11.3.1~~ **5003.11.1.1.1 Density.** Storage and display of solids shall not exceed 200 pounds per square foot (976 kg/m^2) of floor area actually occupied by solid merchandise. Storage and display of liquids shall not exceed 20 gallons per square foot (0.50 L/m^2) of floor area actually occupied by liquid merchandise.

~~5003.11.3.2~~ **5003.11.1.1.2 Storage and display height.** Display height shall not exceed 6 feet (1829 mm) above the finished floor in display areas of Group M occupancies. Storage height shall not exceed 8 feet (2438 mm) above the finished floor in storage areas of Group M and Group S occupancies.

~~5003.11.3.3~~ **5003.11.1.1.3 Container location.** Individual containers less than 5 gallons (19 L) or less than 25 pounds (11 kg) shall be stored or displayed on pallets, racks or shelves.

~~5003.11.3.45003.11.3.4~~ **5003.11.1.1.4 Racks and shelves.** Racks and shelves used for storage or display shall be in accordance with Section 5003.9.9.

~~5003.11.3.5~~ **5003.11.1.1.5 Container type.** Containers shall be *approved* for the intended use and identified as to their content.

~~5003.11.3.6~~ **5003.11.1.1.6 Container size.** Individual containers shall not exceed 100 pounds (45 kg) for solids or 10 gallons (38 L) for liquids in storage and display areas.

~~5003.11.3.7~~ **5003.11.1.1.7 Incompatible materials.** *Incompatible materials* shall be separated in accordance with Section 5003.9.8.

~~5003.11.3.8~~ **5003.11.1.1.8 Floors.** Floors shall be in accordance with Section 5004.12.

~~5003.11.3.9~~ **5003.11.1.1.9 Aisles.** Aisles 4 feet (1219 mm) in width shall be maintained on three sides of the storage or display area.

~~5003.11.3.10~~ **5003.11.1.1.10 Signs.** Hazard identification signs shall be provided in accordance with Section 5003.5.

~~5003.11.3.11~~ **5003.11.1.1.11 Storage plan.** A storage plan illustrating the intended storage arrangement, including the location and dimensions of aisles, and storage racks shall be provided.

Add new text as follows:

5003.11.2 Category 1B flammable gas with low burning velocity. The aggregate quantity of Category 1B flammable gas having a burning velocity of 3.9 in/s (10 cm/s) or less stored and displayed within a single control area of a Group M occupancy, or an outdoor control area, or stored in a single control area of a Group S occupancy shall not exceed the amounts set forth in Table 5003.11.2.

Table 5003.11.2 MAXIMUM ALLOWABLE QUANTITY OF LOW BURNING VELOCITY CATEGORY 1B FLAMMABLE GAS IN GROUP M AND S OCCUPANCIES PER CONTROL AREA[a]

FLAMMABLE GAS CATEGORY	MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA[a]	
Category 1B (Low BV)[d]	Sprinklered in accordance with Note b	Nonsprinklered
Gaseous	390,000 cu. ft.	195,000 cu. ft
Liquefied	40,000 lbs.[c]	20,000 lbs.

For SI: 1 pound = 0.454 kg, 1 cu. ft. = 0.028 m3

a. Control areas shall be separated from each other by not less than a 1-hour fire barrier.

b. The building shall be equipped throughout with an approved automatic sprinkler system with minimum sprinkler design density of Ordinary Hazard Group 2 in the area where flammable gases are stored or displayed.

c. Where storage areas exceed 50,000 square feet in area, the maximum allowable quantities area allowed to be increased by 2 percent for each 1,000 square feet of area in excess of 50,000 square feet, up to not more than 100 percent of the table amounts. Separation of control areas is not required. The aggregate amount shall not exceed 80,000 pounds.

d. "Low BV" Category 1B flammable gas has a burning velocity of 3.9 in/s (10 cm/s) or less.

5003.11.2.1 Fire protection and storage arrangements. Fire protection and container storage arrangements for quantities of Category 1B flammable gases permitted by Table 5003.11.2 shall be in accordance with the all of the following:

1. Storage of the Category 1B flammable gases on shelves shall not exceed 6 feet (1829 mm) in height, and shelving shall be metal.

2. Rack storage, pallet storage or piles of the Category 1B flammable gas greater than 6 feet 6 inches (1981 mm) in height shall be provided with an automatic sprinkler system with a minimum design of Extra Hazard Group 1.

3. Combustible commodities shall not be stored above the Category 1B flammable gases.

4. Flammable liquids shall be separated from the Category 1B flammable gases by a distance 20 feet (6096 mm). The separation is permitted to be reduced to 10 feet (3048 mm) where secondary containment or diking is provided to retain a flammable liquid spill at a distance of 10 feet (3048 mm) from the Category 1B flammable gas storage.

Reason Statement: This change coordinates the requirements for flammable gas with the change in definition to “flammable gas.” The change in definition results in two categories of flammable gas, Category 1A and Category 1B. The existing requirements in the code are based on Category 1A flammable gases. As a result, new requirements had to be developed to regulate Category 1B flammable gases. It should be noted that there is a distinction between Category 1B flammable gas based on the burning velocity.
The research on this code change is based on a burning velocity of 3.9 in/s (10 cm/s) or less. Higher burning velocity Category 1B flammable gases are not commercially available, hence there is no means of evaluating their performance. The changes to the table for the higher allowable quantities are for the Category 1B low burning velocity flammable gases. There is no change to the Category 1B high burning velocity flammable gases. A change is necessary to Tables 5003.1.1(1) and 5003.1.1(3) regarding the maximum allowable quantities for control area.

The approach that was taken is similar to the approach used in the code for other hazardous materials that have different classes or categories based on the hazard level of the material. The current requirements in the tables will continue to apply to Category 1A flammable gases. This requires the addition of the words “Category 1A and Category 1B (High BV)” to be added in front of the term “flammable gas.” The new requirements for "Category 1B (Low BV)" flammable gases are based on a comparative analysis of the hazard of these flammable gases. The approach was to added limitations in the maximum allowable quantity table with a new section added that specifically regulates the requirements for storage in Use Group M and S.

It should be noted that other than Use Group H, the predominant storage location of flammable gases is in Use Group M and S buildings. Section 5803.1.1 of the Fire Code will continue to have restrictions on the storage and use of flammable gases in other Use Groups. A new Section 5003.11.2 and Table 5003.11.2 in the Fire Code will add specific requirements for Use Group M and S. A similar Section 414.2.5.3 will be added to the Building Code. In developing these limitations, a comparison of existing requirements was evaluated for other hazardous materials. An evaluation of various fire tests on Category 1B (Low BV) flammable gas also helped to establish the MAQ. A conservative value of 10,000 pounds of Category 1B (Low BV) flammable gas was established as the maximum for a nonsprinklered control area. Comparing the deflagration index, Category 1B

(Low BV) range from 0.5 to 11 percent of the deflagration index of Category 1A flammable gases. The minimum ignition energy varies by as much at 58,000 times. The heat of combustion is between 6 and 19 percent of Category 1B (Low BV). Thus, the value selected is conservative but agreeable to industry. With the established base maximum, the value for a control area is double for a sprinklered control area. The special requirements for Use Group M and S are also doubled for a nonsprinklered control area. The maximum allowable quantity is double to 40,000 for a sprinklered control area in a Use Group M or S. The sprinklered control area storage maximum can double again when additional floor area is provided in the control area.

The appendices have been updated to correlate with the revisions to the MAQ table.**If the proposal reclassifying 1B Flammable Gases to association with the Group H-3 occupancy classification is successful, Tables 5003.1.1(1) and 307.1(1) will need to be revised so that the "GROUP WHEN THE MAXIMUM ALLOWABLE QUANTITY IS EXCEEDED" row says "H-2 or H-3."

This proposal was 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 and life safety in new and existing buildings and facilities as well as the protection of life and property in wildland urban interface areas. In 2020 and 2021 the Fire-CAC held multiple virtual meetings that were open to any interested party. In addition, there were numerous virtual specific working group meetings that were also open to any interested parties, to develop, discuss and debate the proposed changes. Related documentation and reports are posted on the FCAC website at: https://www.iccsafe.org/products-and-services/i-codes/code-development/cs/fire-code-action-committee-fcac/

This code proposal was accepted and adopted for the 2024 IFC.

Cost Impact: The code change proposal will decrease the cost of construction
This code change reduces the cost of construction. By modifying the maximum allowable quantities for Category 1B flammable gas, the construction costs are lowered. The construction costs for Category 1A flammable gas remain unchanged, neither increased nor decreased in the cost of construction.

Resiliency Impact Statement: This proposal will increase Resiliency
This code proposal will provide users with the necessary guidelines for storing low GWP refrigerant. It will increase resiliency as users will be able to store larger quantities of low GWP refrigerants to meet the needs of distributors and other stakeholders.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Disapproval

2021 Workgroups Reason:

Public Comments for: BF5003.1.1(1)-21

Discussion by Richard Potts
Jun 13, 2022 14:08 UTC

Supporting information provided by proponent.
Attachments: https://va.cdpaccess.com/proposal/1120/discuss/157/file/download/751/A2L%20Refrigerants%20Best%20Practices_Jan2022.pdf, https://va.cdpaccess.com/proposal/1120/discuss/157/file/download/750/UL1995to60355_timeline2019_vDIGITAL1-1.pdf

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Proposal # 1120

A2L Equipment Best Practices

Before Installing or Servicing Equipment

- SAFETY FIRST
- Read SDS and OEM Equipment Manual
- Follow lockout/tagout procedures when needed.
- Verify no voltage present before working.
- Ensure area is well ventilated.
- Evaluate jobsite for a) ignition sources b) flammable vapors c) controlling area, d) confined spaces and e) clear exit points.

A2L Installation

- Follow OEM guidelines for minimum room area/refrigerant charge limits.
- Ensure mitigation components are installed and operating per OEM instructions.
- Use locking refrigerant caps to prevent unauthorized access to the system
- Ensure a filter drier is installed

A2L Evacuation and Pressure Test

- Consult the OEM instructions to determine proper evacuation targets/procedures
- Pressure test field erected components
- Evacuate the system before charging using an A2L rated vacuum pump
- Record a) *date*, b) *test pressure* c) *vacuum level on the label* (UL 60335-2-40).

A2L Charging (if required)

- Do NOT exceed the maximum allowable refrigerant charge per OEM instructions (charge amounts may vary due to line-sets.)
- Follow OEMs procedure for proper charging techniques. (Superheat/Subcooling)
- If refrigerant is a 400-series, the refrigerant must leave the cylinder in 'liquid form'.
- Record a) *date* b) *total refrigerant charge weight on the unit label* (UL 60335-2-40).

A2L System Repairs

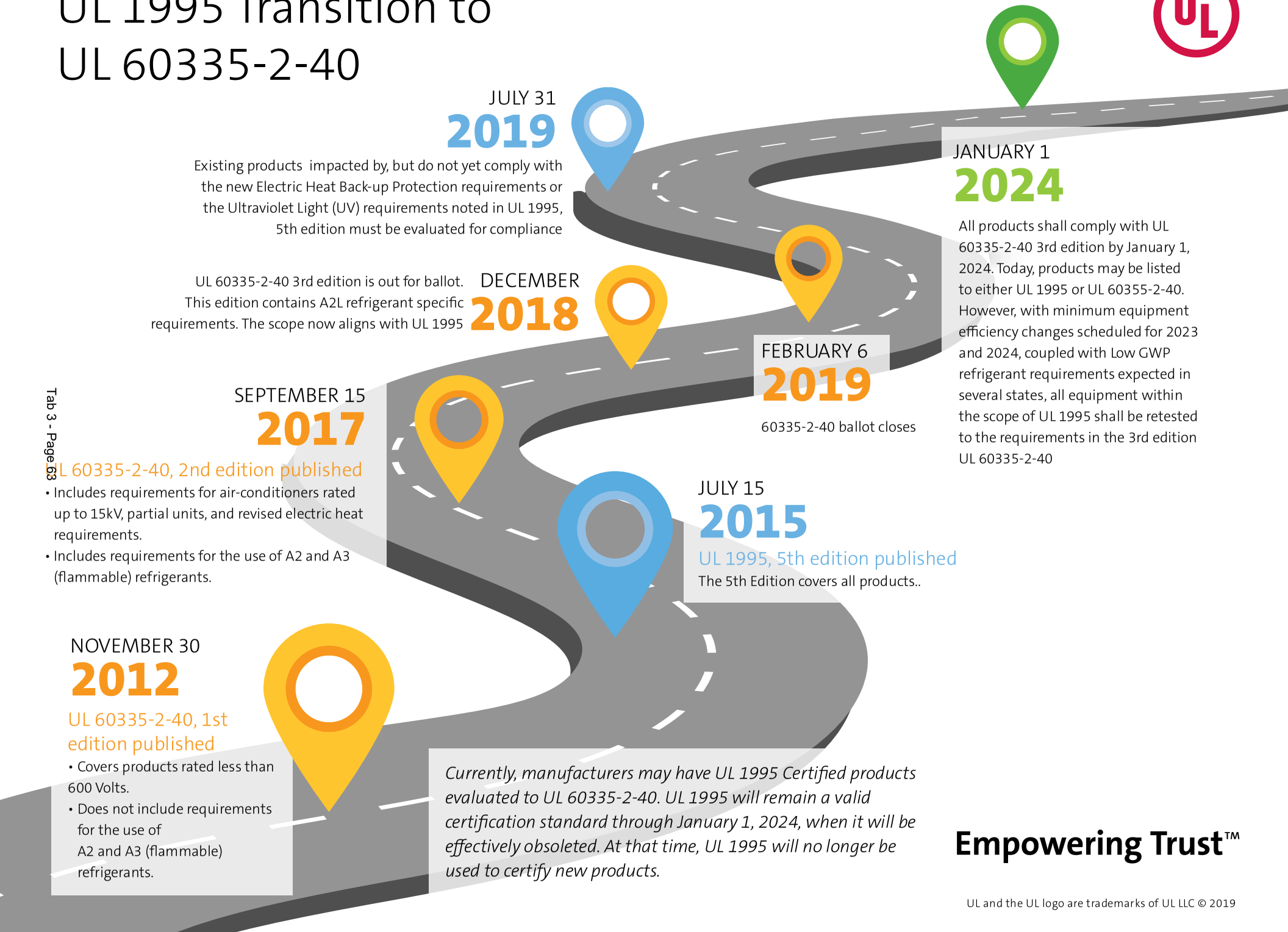
- Leak check to verify no refrigerant is present.
- Ensure equipment is grounded before working.
- Use Proper capacitor discharge methods.
- Use only OEM approved replacement parts.
- Use nitrogen before and during all brazing.

A2L Recovery

- Do NOT vent
- Do NOT mix refrigerants
- Use recovery tools rated for use with A2L refrigerants
- Recover all refrigerant before opening system
- Recover into DOT approved recovery cylinder.
- Do not exceed cylinder fill weights.
- Label recovery cylinder contents

For more information visithttps://www.ahrinet.org/saferefrigerant V1.0_1/2022

UL 1995 Transition to UL 60335-2-40



JULY 31
2019

Existing products impacted by, but do not yet comply with the new Electric Heat Back-up Protection requirements or the Ultraviolet Light (UV) requirements noted in UL 1995, 5th edition must be evaluated for compliance

JANUARY 1
2024

All products shall comply with UL 60335-2-40 3rd edition by January 1, 2024. Today, products may be listed to either UL 1995 or UL 60355-2-40. However, with minimum equipment efficiency changes scheduled for 2023 and 2024, coupled with Low GWP refrigerant requirements expected in several states, all equipment within the scope of UL 1995 shall be retested to the requirements in the 3rd edition UL 60335-2-40

UL 60335-2-40 3rd edition is out for ballot. This edition contains A2L refrigerant specific requirements. The scope now aligns with UL 1995

DECEMBER
2018

FEBRUARY 6
2019

60335-2-40 ballot closes

SEPTEMBER 15
2017

UL 60335-2-40, 2nd edition published

- Includes requirements for air-conditioners rated up to 15kV, partial units, and revised electric heat requirements.
- Includes requirements for the use of A2 and A3 (flammable) refrigerants.

JULY 15
2015

UL 1995, 5th edition published

The 5th Edition covers all products..

NOVEMBER 30
2012

UL 60335-2-40, 1st edition published

- Covers products rated less than 600 Volts.
- Does not include requirements for the use of A2 and A3 (flammable) refrigerants.

Currently, manufacturers may have UL 1995 Certified products evaluated to UL 60335-2-40. UL 1995 will remain a valid certification standard through January 1, 2024, when it will be effectively obsoleted. At that time, UL 1995 will no longer be used to certify new products.

Empowering Trust™

M-FG404.6-21

Proponents: William Chapin (bill@profcc.us)

2021 International Fuel Gas Code

Add new text as follows:

404.6 Composite Pipe and Tubing . Pipe and tubing shall not be used with gases corrosive with the pipe and tubing.
404.6.1 PEX-AL-PEX Crosslinked PEX-Aluminum-PEX (PEX-AL-PEX) composite pipe and fittings used to supply and or distribute fuel gas shall conform to ASTM F1281. Such pipe shall be marked “Gas” and “ASTM F1281” PEX-AL-PEX shall be used indoors or underground when installed in accordance the condition of their listing and the manufacturer's installation instructions

404.6.2 Design and installation. Piping shall be supported with pipe hooks, straps, bands, hangers or building structural components suitable for the size of the piping, of adequate strength and quality and located at intervals to prevent or damp out excessive vibration. Piping shall be anchored to prevent undue strains on connected appliances and shall not be supported by other piping. Supports, hangers and anchors shall be installed to not interfere with the free expansion and contraction of piping between the anchors.

404.6.3 Workmanship and defects

Pipe tubing and fittings shall be clear and free from burrs and defects in structure and be properly reamed

404.6.4 Fittings
Fittings for PEX-AL-PEX gas systems shall be listed to ASTM F1281 for the piping system being installed or repaired.

405.4 Composite pipe. Composite pipe bends shall comply with the following:

1. The pipe shall not be damaged and the internal diameter of the pipe shall not be effectively reduced.
2. Joints shall not be located in pipe bends.
3. The radius of the inner curve of such bends shall be to the limits of the manufacturer's instructions.
4. Where the piping manufacturer specifies the use of special bending tools or procedures, such tools or procedures shall be used.

Reason Statement: PEX-AL-PEX has been used for indoor gas distribution for over 15 years under numerous ISO, EU, and Australian standards. ASTM F1281 was first published in the year 2000 and includes allowance for use with gases that are compatible with the pipe and fittings. Section 405.4 adds pipe bending instructions for composite pipe.

NOTE: ***staff to renumber existing sections accordingly.***

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

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

Attached Files

- **F1281-17.pdf**
  https://va.cdpaccess.com/proposal/1105/1598/files/download/679/

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Disapproval

2021 Workgroups Reason:

Public Comments for: M-FG404.6-21

This proposal doesn't have any public comments.

Designation: F1281 – 17

An American National Standard

Standard Specification for Crosslinked Polyethylene/Aluminum/Crosslinked Polyethylene (PEX-AL-PEX) Pressure Pipe[1]

This standard is issued under the fixed designation F1281; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This specification covers a coextruded crosslinked polyethylene composite pressure pipe with a welded aluminum tube reinforcement between the inner and outer layers. The inner and outer crosslinked polyethylene layers are bonded to the aluminum tube by a melt adhesive. Included is a system of nomenclature for the crosslinked polyethylene-aluminum-crosslinked polyethylene (PEX-AL-PEX) pipes, the requirements and test methods for materials, the dimensions of the component layers and finished pipe, adhesion tests, and the burst and sustained pressure performance. Also given are the requirements and methods of marking. The pipe covered by this specification is intended for use in potable water distribution systems for residential and commercial applications, water service, underground irrigation systems, and radient panel heating systems, baseboard, snow- and ice-melt systems, and gases that are compatible with the composite pipe and fittings.

1.2 This specification covers only composite pipes incorporating a welded aluminum tube. Pipes consisting of metallic layers not welded together are outside the scope of this specification.

1.3 Specifications for connectors for use with pipe meeting the requirements of this specification are given in Annex A1.

1.4 This specification excludes polyethylene-aluminum-polyethylene pipes (see Specification F1282).

1.5 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.6 The following precautionary caveat pertains only to the test methods portion, Section 9, of this specification: *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.7 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D618 Practice for Conditioning Plastics for Testing
D883 Terminology Relating to Plastics
D1598 Test Method for Time-to-Failure of Plastic Pipe Under Constant Internal Pressure
D1599 Test Method for Resistance to Short-Time Hydraulic Pressure of Plastic Pipe, Tubing, and Fittings
D1600 Terminology for Abbreviated Terms Relating to Plastics
D1898 Practice for Sampling of Plastics (Withdrawn 1998)[3]
D2122 Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings
D2765 Test Methods for Determination of Gel Content and Swell Ratio of Crosslinked Ethylene Plastics
D3350 Specification for Polyethylene Plastics Pipe and Fittings Materials
E8 Test Methods for Tension Testing of Metallic Materials
F412 Terminology Relating to Plastic Piping Systems
F1282 Specification for Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Composite Pressure Pipe
F1974 Specification for Metal Insert Fittings for Polyethylene/Aluminum/Polyethylene and Crosslinked Polyethylene/Aluminum/Crosslinked Polyethylene Composite Pressure Pipe

2.2 *National Sanitation Foundation Standard:*

Standard No. 61 Drinking Water System Components—Health Effects[4]

[1] This specification is under the jurisdiction of ASTM Committee F17 on Plastic Piping Systems and is the direct responsibility of Subcommittee F17.11 on Composite.

Current edition approved Aug. 1, 2017. Published August 2017. Originally approved in 1990. Last previous edition approved in 2011 as F1281 – 11. DOI: 10.1520/F1281-17.

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] The last approved version of this historical standard is referenced on www.astm.org.

[4] Available from NSF International, P.O. Box 130140, 789 N. Dixboro Rd., Ann Arbor, MI 48113-0140, http://www.nsf.org.

*A Summary of Changes section appears at the end of this standard

Standard No. 14 Plastics Piping System Components and Related Materials[4]

2.3 *Federal Standard:*

Fed. Std. No. 123 Marking for Shipments (Civil Agencies)[5]

2.4 *Military Standard:*

MIL-STD-129 Marking for Shipment and Storage[5]

2.5 *Uniform Classification Committee Standard:*

Uniform Freight Classification[6]

2.6 *National Motor Freight Traffic Association Standard:*

National Motor Freight Classification[7]

3. Terminology

3.1 *Definitions*—Definitions are in accordance with Terminology F412, and abbreviations are in accordance with Terminology D1600, unless otherwise specified.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *assembly*—the joint between a fitting and a length of pipe.

3.2.2 *PEX-AL-PEX pipe*—composite pipe produced by co-extrusion or extrusion of layers of polyethylene/aluminum/polyethylene bonded together with a melt adhesive and crosslinked by irradiation or chemical means in combination heat and moisture.

3.2.3 *pipe hoop stress*—for simplicity the value of the hoop stress quoted assumes a homogeneous wall. Local values of stress will vary with the different layers (see 3.2.3.1).

3.2.3.1 *Discussion*—Thick walled plastic pipes produced from one material have hoop stresses that vary through the wall, and are usually described by the Lame Theory. The composite nature of the PEX-AL-PEX pipe, composed of materials with very different Young's Modulus values, will, on pressurization, not have a uniform stress distribution through the thickness of the wall of the pipe. The PEX-AL-PEX pipes have a hoop stress distribution that differs substantially from both the thick and thin walled pipe cases.

4. Pipe Classification

4.1 *Pipe Diameter*—The PEX-AL-PEX pipes are classified by the outside diameter.

4.2 *Pipe Dimension Ratio*—The concept of dimension ratio is not relevant to PEX-AL-PEX composite pipes, and cannot be used to relate pressure rating with total wall thickness.

5. Materials

5.1 *General*—The PEX-AL-PEX pipe is composed of one metallic layer, two layers of polymeric adhesive, and two layers of crosslinked polyethylene. For pipe made to this specification the constituent materials must meet the following requirements:

5.2 *Aluminum*—The aluminum shall have a thickness as specified in Table 1. The material shall have minimum elongations and ultimate tensile strengths of 20 % and 100 MPa (14 600 psi), respectively. The tests shall be conducted according to Test Methods E8.

5.3 *Crosslinked Polyethylene:*

5.3.1 The polyethylene shall be, in the final finished state in the pipe, crosslinked as defined in Terminology D883.

5.3.2 Polyethylene plastics used to make pipe meeting the requirements of this specification shall be virgin resin meeting the requirements of either Grade PE20A, B, or C; Grade PE23A, B, or C; Grade PE30A, B, or C; or Grade PE33A, B, or C in accordance with Specification D3350.

5.3.3 Class B compounds shall have sufficient ultraviolet (UV) stabilizers to protect the pipe from deleterious effects due to continuous outdoor exposure during storage and shipping. Pipe produced from Class B compounds are not suitable for exposed outdoor application. Class A, B, and C compounds shall have sufficient antioxidants to meet the requirements in Specification D3350.

5.4 *Melt Adhesive*—The material shall have a density cell of 1, 2, or 3; a melt index cell of 1, 2, or 3; and a color code of A or B, in accordance with Specification D3350.

[5] Available from DLA Document Services, Building 4/D, 700 Robbins Ave., Philadelphia, PA 19111-5094, http://quicksearch.dla.mil.

[6] Available from the Uniform Classification Committee, Suite 1106, 222 South Riverside Plaza, Chicago, IL 60606.

[7] Available from the National Motor Freight Traffic Association, Inc., National Motor Freight Classification, American Tracking Associations, Inc., Traffic Dept., 1616 P St., NW, Washington, DC 20036.

TABLE 1 Outside Diameters, Aluminum Thickness, and Tolerances for PEX-AL-PEX

Diameter Nominal (DN)	Nominal Pipe Size (NPS)	Minimum Outside Diameter, mm (in.)	Tolerance on Minimum, mm (in.)	Maximum Out-of-Roundness,[A] mm (in.)	Minimum Aluminum Thickness, mm (in.)	Tolerance on Thickness, mm (in.)
12	⅜	12.00 (0.472)	+0.30 (0.012)	0.3 (0.012)	0.18 (0.007)	+0.09 (+0.0035)
16	¼	16.00 (0.630)	+0.30 (0.012)	0.4 (0.016)	0.18 (0.007)	+0.15 (+0.006)
20	⅝	20.00 (0.787)	+0.30 (0.012)	0.5 (0.020)	0.23 (0.009)	+0.23 (+0.009)
25	¾	25.00 (0.984)	+0.30 (0.012)	0.5 (0.020)	0.23 (0.009)	+0.09 (+0.0035)
26	⅞	26.00 (1.022)	+0.30 (0.012)	0.5 (0.020)	0.53 (0.021)	+0.10 (+0.004)
32	1	32.00 (1.260)	+0.30 (0.012)	0.5 (0.020)	0.28 (0.011)	+0.09 (+0.0035)
40	1¼	39.95 (1.573)	+0.30 (0.012)	0.5 (0.020)	0.33 (0.013)	...
50	1½	49.90 (1.964)	+0.30 (0.012)	0.5 (0.020)	0.47 (0.018)	...
63	2	62.90 (2.484)	+0.40 (0.016)	0.5 (0.020)	0.57 (0.022)	...
75	2¼	75.10 (2.957)	+0.60 (0.024)	1.0 (0.039)	0.67 (0.026)	...

[A] The out-of-roundness specification applies only to tubing prior to coiling.

5.5 *Rework Material*—The use of reclaimed, recycled, or rework plastics is not permitted.

6. Requirements

6.1 *General*—The requirements and test methods in this specification cover PEX-AL-PEX pipes. Tests on the individual layers that comprise this composite pipe are outside the scope of this specification. The raw materials used, however, must conform to the requirements as set out in Section 5.

6.2 *Dimensions and Tolerances of Pipe:*

6.2.1 *Pipe Diameter*—The minimum outside diameter and tolerances of the pipe shall meet the requirements given in Table 1, when measured in accordance with 9.1 and 9.1.2. Maximum and minimum (out-of-roundness) tolerances apply only to measurements made on pipe prior to coiling.

6.2.2 *Pipe Wall Thickness*—The total pipe wall thickness shall meet the requirements given in Table 2, when measured in accordance with 9.1 and 9.1.3. The minimum wall thickness at any point of measurement of the pipe shall not be less than the value specified in Table 2.

6.2.3 *Inner and Outer Crosslinked Polyethylene Layer Thicknesses*—The thicknesses of the inner and outer layers of crosslinked polyethylene in the PEX-AL-PEX pipe shall have minimum values and tolerance as specified in Table 2, except for the polyethylene material in the outer PEX layer overlaying the weld, which shall have a minimum thickness of half those specified in Table 2. The polyethylene thicknesses shall be measured in accordance with 9.2.

6.2.4 *Pipe Length*—The pipe shall be supplied coiled or in straight lengths as agreed upon with the purchaser and with an allowable tolerance of −0 mm (−0 in.).

6.3 *Adhesion Test:*

6.3.1 For Sizes 0912 (⅜) to 2532 (1) there shall be no delamination of the PEX and AL, either on the bore side or the outside (see Fig. 1). The test shall be conducted in accordance with 9.3.1.

6.3.2 The adhesion test of the PEX-layer to the aluminum for Sizes 3240 (1¼) to 6075 (2½) is carried out by a separation test. The minimum adhesive force is specified in Table 3. The adhesive force shall not fall below these levels. The test shall be conducted in accordance with 9.3.2.

6.4 *Apparent Tensile Strength of Pipe*—The pipe rings, when tested in accordance with 9.4, shall meet the minimum strength specifications defined in Table 4.

6.5 *Burst Pressure*—The minimum burst pressure for PEX-AL-PEX pipe shall be as given in Table 4, when determined in accordance with 9.5.

6.6 *Sustained Pressure*—The PEX-AL-PEX pipe shall not fail, balloon, burst, or weep, as defined in Test Method D1598, when tested for 10 h at the test at the test pressure given in Table 5 at a temperature of 82°C (180°F) in accordance with 9.6.

6.7 *Gel Content*—When tested in accordance with 9.7, the gel content of the inner and outer tubes of crosslinked polyethylene shall have minimum values of either 65 % for the fully crosslinked silane material or 60 % for radiation crosslinked polyethylene. Test Methods D2765 defines gel content (see Note 2).

NOTE 1—The gel test is one of several methods capable of indicating the degree of crosslinking. The different methods for assessing degree of crosslinking do not necessarily agree, so conformity to this specification requires degree of crosslinking to be determined in accordance with 9.7 only.

7. Workmanship

7.1 The pipe shall be free of visible cracks, holes, foreign inclusions, blisters, and other known injurious defects. The pipe shall be as uniform as practicable in color, opacity, density, and other physical properties.

8. Sampling and Conditioning

8.1 *Sampling*—Take a sample of the PEX-AL-PEX pipe sufficient to determine conformance with this specification. The number of specimens designated for each test shall be taken from pipe selected at random in accordance with the random sampling plan of Practice D1898.

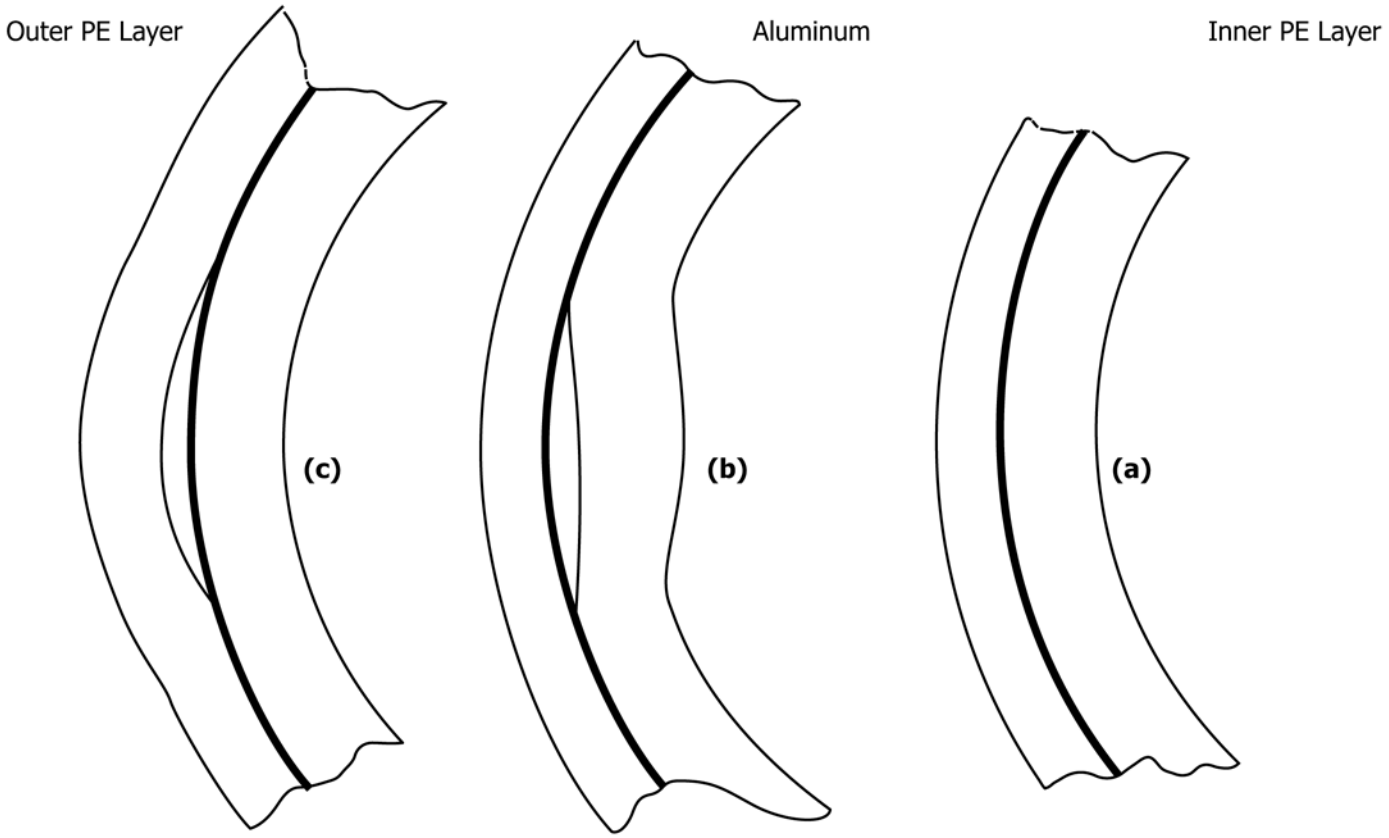
NOTE 2—Sample size and testing frequency of lots for quality control must be established by the manufacturer to ensure conformance to the specification. Sampling and frequency will vary with the specific circumstances.

8.2 *Test Specimens*—Not less than 50 % of the test specimens required for any pressure test shall have at least part of the marking in their central sections. The central section is that portion of the pipe that is at least one pipe diameter away from an end closure.

8.3 *Conditioning*—Condition the specimens at 23 ± 2°C (73.4 ± 3.6°F) and 50 ± 5 % relative humidity for not less than 40 h prior to test in accordance with Procedure A of

TABLE 2 Wall Thickness for PEX-AL-PEX Composite Pipe

Diameter Nominal (DN)	Nominal Pipe Size (NPS)	Total Wall Thickness, min, mm (in.)	Wall Tolerance (+) mm (in.)	Outer PEX Layer Thickness, min, mm (in.)	Inner PEX Layer Thickness, min, mm (in.)
12	⅜	1.60 (0.063)	0.40 (0.016)	0.40 (0.016)	0.70 (0.028)
16	¼	1.65 (0.065)	0.65 (0.022)	0.40 (0.016)	0.90 (0.035)
20	⅝	1.90 (0.075)	0.40 (0.016)	0.40 (0.016)	0.96 (0.038)
25	¾	2.25 (0.089)	0.50 (0.020)	0.40 (0.016)	1.10 (0.043)
26	⅞	3.00 (0.118)	0.33 (0.013)	0.40 (0.016)	1.32 (0.052)
32	1	2.90 (0.114)	0.60 (0.024)	0.40 (0.016)	1.34 (0.053)
40	1¼	3.40 (0.134)	0.60 (0.024)	0.40 (0.016)	1.45 (0.057)
50	1½	4.00 (0.157)	0.60 (0.024)	0.40 (0.016)	1.75 (0.069)
63	2	4.60 (0.181)	0.60 (0.024)	0.40 (0.016)	1.75 (0.069)
75	2¼	7.25 (0.285)	0.60 (0.024)	0.40 (0.016)	2.80 (0.110)



NOTE 1—(a) Good pipe showing no delamination, (b) Delamination between the inner layer and the aluminum, and (c) Delamination between the outer layer and the aluminum.

FIG. 1 Detection of Delamination

TABLE 3 Minimum Adhesive Force for PEX-Al-PEX Composite Pipe

Diameter Nominal (DN)	Nominal Pipe Size (NPS)	Minimum Adhesive Force per 10-mm (0.394-in.) Pipe Strip, N (lbf)
40	1¼	40 (9.0)
50	1½	50 (11.2)
63	2	60 (13.5)
75	2¼	70 (15.7)

TABLE 4 Minimum Pipe Ring Strengths and 23°C (73.4°F) Burst Pressure of PEX-AL-PEX Composite Pipe

Diameter Nominal (DN)	Nominal Pipe Size (NPS)	Minimum Pipe Ring Strength, Type II PE, N(lb)	Minimum Pipe Ring Strength, Type III PE, N(lb)	Minimum 23°C (73.4°F) Burst Pressure, kPa (psi)
12	⅜	2000 (448)	2100 (470)	7000 (1020)
16	¼	2100 (470)	2300 (515)	6000 (880)
20	⅝	2400 (538)	2500 (560)	5000 (730)
25	¾	2400 (538)	2500 (560)	4000 (580)
26	⅞	2400 (538)	2500 (560)	4000 (580)
32	1	2650 (598)	2500 (560)	4000 (580)
40	1¼	3200 (719)	3500 (789)	4000 (580)
50	1½	3500 (789)	3700 (832)	3800 (554)
63	2	5200 (1169)	5500 (1236)	3800 (554)
75	2¼	6000 (1349)	6000 (1349)	3800 (554)

Practice D618, for those tests where conditioning is required. In cases of disagreement, the tolerances shall be ±1°C (±1.8°F) and ±2 % relative humidity.

TABLE 5 Minimum Sustained Pressure for PEX-AL-PEX Composite Pipe

Diameter Nominal (DN)	Nominal Pipe Size (NPS)	Minimum Sustained Pressure PEX-AL-PEX, kPa (psi)
12	⅜	2720 (395)
16	¼	2720 (395)
20	⅝	2720 (395)
25	¾	2720 (395)
26	⅞	2720 (395)
32	1	2720 (395)
40	1¼	2000 (295)
50	1½	2000 (295)
63	2	2000 (295)
75	2¼	2000 (295)

8.4 *Test Conditions*—Conduct the test in the standard laboratory atmosphere of 23 ± 2°C (73.4 ± 3.6°F) and 50 ± 5 % relative humidity, unless otherwise specified in the test methods or in this specification. In cases of disagreement, the tolerances shall be ±1°C (1.8°F) and ±2 % relative humidity.

9. Test Methods

9.1 *Dimensions and Tolerances:*

9.1.1 *Pipe*—Any length of the PEX-AL-PEX composite pipe may be used to determine dimensions.

9.1.2 *Outside Diameter*—Measure the outside diameter of the PEX-AL-PEX pipe in accordance with Test Method D2122.

9.1.3 *Wall Thickness*—Make micrometre measurements of the wall thickness in accordance with Test Method D2122 to determine the maximum and minimum values. Measure the wall thickness at both ends of the pipe to the nearest 0.01 mm (0.0004 in.).

9.2 *Inner and Outer Crosslinked Polyethylene Layer Thicknesses:*

9.2.1 *Sample Preparation*—Cut the pipe with a sharp knife or other suitable cutter, ensuring that the pipe after cutting is not more than 10 % out-of-round.

9.2.2 *Thickness Determination*—Use a hand-held magnifying glass equipped with graduated reticule, or a laboratory microscope with graduated reticule. The reticule should measure to the nearest to 0.1 mm (0.004 in.). Determine the thickness of the inner and outer layers of crosslinked polyethylene (exclusive of the adhesive layer) at six points around the circumference. One of the points only should be at the aluminum weld.

9.3 *Adhesion Tests:*

9.3.1 *Visual Test:*

9.3.1.1 *Cutting the Spiral*—Mount a Stanley 1991 or similarly sharp but rigid razor-like blade within a protective housing and angle to cut a 45 ± 5° spiral in the pipe (see Fig. 2). Choose a PEX-AL-PEX pipe at random and insert into the housing and rotate to form the spiral cut. The cut goes through the complete wall on one side of the pipe only. Run the spiral along the pipe for a minimum distance along the pipe axis equal to five times the outside diameter.

9.3.1.2 *Examining for Delamination*—Firmly hold the pipe with the spiral cut firm at the uncut end and create a ribbon of pipe material by opening out the spiral-cut pipe. Pliers can be used to grip the spiral-cut pipe. Examine the wall of the pipe visually side-on for evidence of delamination between the metal and plastic layers (see Fig. 1).

9.3.2 *Separation Test:*

9.3.2.1 *Specimen*—Five pipe sections of 10-mm (0.394-in.) length are cut at random intervals. The outer layers of the pipe (outer PEX-layer together with the aluminum) are separated mechanically from the inner PEX-layer with an appropriate device on the opposite side to the welding seam. The outer layers are separated on one side to about 5 mm from the pipe in order to allow clamping. The adhesion for the outer PEX-layer to the aluminum is then visually examined for delamination at the corresponding test sample.

9.3.2.2 *Test Equipment:*

(1) Tension Testing Device, with suitable pull-off device (see Fig. 3).

(2) D_{roller} = 95 % of the required pipe inner diameter.

(3) d_i = pipe inner diameter.

9.3.2.3 *Test Procedure*—Remove the outer layers from the pipe at 23 ± 2°C (73.4 ± 3.6°F) with a linear speed of 50 mm/min (≈2 in./min). Record the force diagram.

9.4 *Ring Test:*

9.4.1 *Sample Size and Shape*—Cut rings of the PEX-AL-PEX pipe so that the two sides are parallel and at 90 ± 2° to the pipe axis. The width of each ring shall be 25 ± 1 mm (1 ± 0.04 in.). Cut a minimum of 15 samples consecutively along the axis of the pipe.

9.4.2 *Ring Tests*—Test the 15 consecutively cut samples using a tensile testing machine. Arrange the rings so that the aluminum weld is at 90° to the tensile axis as shown in Fig. 4. The crosshead speed shall be 50 ± 2.5 mm/min (2 ± 0.1 in./min). Mount the rings of pipe on two steel rods of minimum diameter of 4 mm (0.16 in.). Record the peak force.

9.5 *Burst Pressure:*

9.5.1 *Pipe Sample*—Select a length of PEX-AL-PEX pipe at random and prepare five consecutive lengths of 300 ± 5 mm (12 ± 0.2 in.). Seal samples at the ends with the appropriate fittings and test either free- or fixed-end.

9.5.2 *Temperature Control*—Test samples at a temperature of 23 ± 2°C (73.4 ± 3.6°F). Contain samples either in a temperature controlled water bath or in air (at standard laboratory atmosphere). For samples contained in a water bath, 1 h conditioning is required. For samples tested in air, a 16 h conditioning period is required.

9.5.3 *Burst Pressure*—Determine the burst pressure in accordance with the procedure in Test Method D1599.

9.6 *Sustained Pressure Test:*

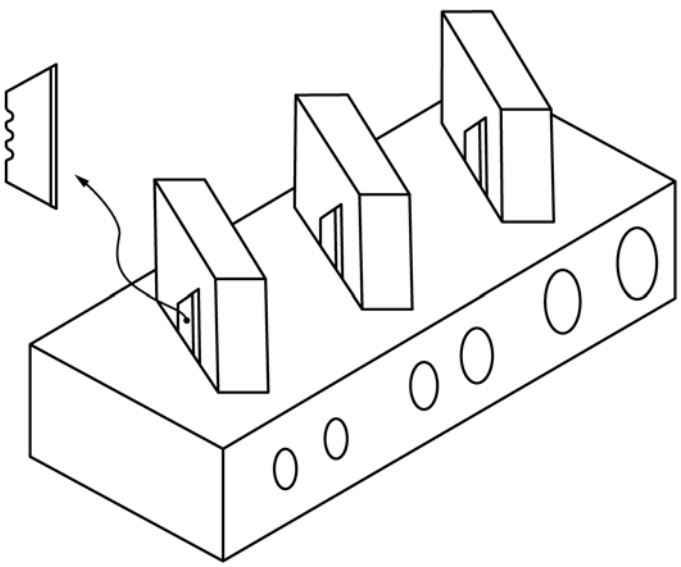


FIG. 2 Spiral Cutter for the Delamination Test

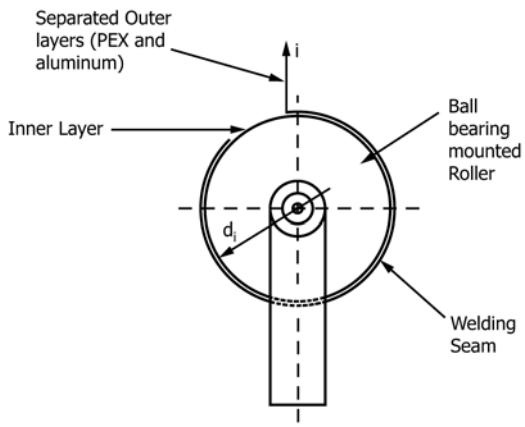


FIG. 3 Setup for Separation Test

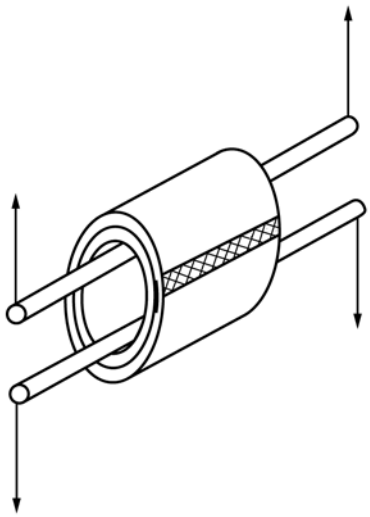


FIG. 4 Schematic Presentation of the Pipe Ring Test Showing the Aluminum Weld at 90° to the Tensile Axis

9.6.1 *Samples*—Each test sample of PEX-AL-PEX pipe shall have a minimum length between end closures of at least ten times the average outside diameter, but not less than 250 mm (10 in.). Seal specimens at both ends with the appropriate fittings and fill the samples for testing with water.

9.6.2 *Test Procedures*—Test the samples in a temperature controlled water bath or in air, in accordance with Test Method D1598. A test temperature of 82 ± 2°C (180 ± 3.6°F) is specified. For each pipe size test six samples. For testing in a water bath, condition the test samples for at least 2 h in the water bath at the test temperature prior to pressurization For testing in air, condition the samples for at least 4 h in air at the test temperature prior to pressurization. Maintain the pressure at the pressure given in Table 5 for the duration of the test.

9.6.3 *Failure*—Any continuous loss of pressure of the test sample shall constitute failure of the test. Failure of one of the six is cause for retest of six additional samples under identical conditions. Failure of one of six of the retested samples below the minimum specified lifetime constitutes failure of the test.

9.7 *Gel Content Determination:*

9.7.1 *Sample Preparation*—Condition the PEX-AL-PEX pipe in a water bath for a minimum of 24 h at a minimum temperature of 80°C (176°F) prior to testing to ensure full crosslinking of the resin. Before taking samples for gel content evaluation, put pipe in an air-circulating oven at 120°C (248°F) for 20 min. Using a lathe, remove 0.1-mm (0.004-in.) thick strands from the outside layer, and 0.2-mm (0.008-in.) thick strands from the inside layer, long enough to obtain a 0.3-g sample for testing. Care should be taken not to cut into the adhesive layer, as it will effect the test results. (See Note 3.)

9.7.2 *Test Method*—Test the sample from the inner and outer surface separately and in accordance with Sections 12 and 13 of Test Methods D2765, Test Method A.

NOTE 3—Including the adhesive in the test specimen will lower the gel content resulting in a false reading.

10. Quality Assurance

10.1 *Quality Assurance*—When the product is marked with this designation, ASTM F1281, the manufacturer affirms that the product was manufactured, inspected, sampled, and tested in accordance with this specification and has been found to meet the requirements of this specification. When specified in the purchase order or contract, a report of the test results shall be furnished.

11. Marking

11.1 *Quality of Marking*—The marking shall be applied to the pipe in such a manner that it remains legible (easily read) after installation.

11.2 Markings on the tubing shall include the following, spaced at intervals of not more than 1.5 m (5 ft):

11.2.1 Nominal tubing size (for example, 1216),

11.2.2 The material designation “PEX-AL-PEX,”

11.2.3 Pressure rating for water and temperature for which the pressure rating is valid,

11.2.4 ASTM designation F1281, with which the tubing complies, and

11.2.5 Manufacturer’s name (or trademark) and production code.

11.2.6 Tubing intended for the transport of potable water shall also include the seal or mark of the laboratory making the evaluation and the number of the standard used for the evaluation.

NOTE 4—Manufacturers using the seal or mark of a laboratory must obtain prior authorization from the laboratory concerned.

12. Keywords

12.1 composite; crosslinked PE; PEX-AL-PEX; pipe; pressure

SUPPLEMENTARY REQUIREMENTS

GOVERNMENT/MILITARY PROCUREMENT

These requirements apply *only* to Federal/Military procurement, not domestic sales or transfers.

S1. *Responsibility for Inspection*—Unless otherwise specified in the contract or purchase order, the producer is responsible for the performance of all inspection and test requirements specified herein. The producer may use his own or any other suitable facilities for the performance of the inspection and test requirements specified herein, unless disapproved by the purchaser. The purchaser shall have the right to perform any of the inspections and tests set forth in this specification where such inspections are deemed necessary to ensure that material conforms to prescribed requirements.

NOTE S1.1—In U. S. Federal Government contracts, the contractor is responsible for inspection.

S2. *Packaging and Marking for U. S. Government Procurement:*

S2.1 *Packaging*—Unless otherwise specified in the contract, the material shall be packaged in accordance with the supplier's standard practice in a manner ensuring arrival at destination in a satisfactory condition and that will be acceptable to the carrier at lowest rates. Containers and packaging shall comply with Uniform Freight Classification rules or National Motor Freight Classification rules.

S2.2 *Marking*—Marking for shipment shall be in accordance with Fed. Std. No. 123 for civil agencies and MIL-STD-129 for military agencies.

NOTE S1.2—The inclusion of U. S. Federal Government procurement requirements should not be construed as an indication that the U. S. Government uses or endorses the products described in this specification.

POTABLE WATER REQUIREMENT

This requirement applies whenever a Regulatory Authority or user calls for product to be used to convey or be in contact with potable water.

S3. Products intended for contact with potable water shall be evaluated, tested and certified for conformance with ANSI/NSF Standard No. 61 or the health effects portion of NSF Standard No. 14 by an acceptable certifying organization when required by the regulatory authority having jurisdiction.

CHLORINE RESISTANCE EVALUATION

The following supplemental requirements shall apply to any product intended to be used in a water system which utilizes residual free chlorine as a disinfecting agent.

S4. *Evaluation Methodology*—Multi-layer (composite) piping shall be tested and evaluated in accordance with S5 for multi-layer products using PEX materials that were tested in a solid-wall form.

S5. *Procedure for Using Data from Solid-wall PEX Testing*—The 95 % lower confidence limit of the multi-layer piping product minimum estimated failure time shall be at least 50 years when evaluated in accordance with S5.1–S5.3 using conditions of 0.55 MPa (80 psig) internal pressure, 25 % use at 60°C (140°F) and 75 % use at 23°C (73°F).

S5.1 *PEX Material Test*—The PEX material shall be tested in accordance with Test Method F2023 using solid-wall pipe samples.

S5.1.1 The test fluid shall be prepared in accordance with 9.1.1 of F2023.

S5.1.2 The regression analysis shall be performed in accordance with, and comply with the requirements of Section 13 Calculation, F2023.

S5.2 *Application to Multi-layer Construction*—Testing of the multi-layer product shall be conducted as specified in S5.2.1–S5.2.7.

S5.2.1 Determine the sizes of pipe for testing. Two sizes are required, such that one size has the inner-layer dimension ratio ($ILDR = OD_{inner\ layer} / t_{inner\ layer}$) in the lowest 25 % of the range of inner layer DR's and the other size has an ILDR in the upper 25 % of the range.

S5.2.2 Initiate testing of one specimen of each of the sizes determined in S5.2.1 at the highest temperature/pressure (for example, 115°C/60 psi) condition used for the solid wall. This is condition ML1.

S5.2.3 Initiate testing of one specimen at the same temperature, but a higher stress level (for example, 115°C/80 psi). This is condition ML2. The specimen shall be the thinnest inner-layer product of the two sizes.

S5.2.4 Initiate testing of one specimen at the same stress level and next lowest temperature used for the original solid-wall testing (for example, 105°C/80 psi). This is condition ML3. The specimen shall be the heavier inner-layer wall thickness product of the two sizes.

S5.2.5 Calculate the expected fail times (EFT) for each size being tested at each condition in accordance with S5.3.

S5.2.6 Two methods of evaluation are available for the multi-layer finished product testing. The pipe specimens tested at conditions ML1, ML2 and ML3 shall meet the requirements of S5.2.6.1 or S5.2.6.2.

S5.2.6.1 For this method, continue testing each specimen to 150 % of EFT for each condition. Failure of any specimen prior to 150 % of EFT shall constitute a failure of this test.

S5.2.6.2 For this alternate method, continue the testing of each specimen until each specimen has the following times are achieved:

(1) ML1 – 100 % of EFT
(2) ML2 – 150 % of EFT
(3) ML3 – 50 % of EFT

Failure of any specimens prior to the EFT at each test condition shall constitute a failure of this test.

S5.2.6.2.1 Examine each of the ML3 specimens to determine the amount of crack propagation through the inner wall at the location with the heaviest signs of cracking. Cracks propagating completely through the inner wall in these specimens shall be considered a failure of this test.

S5.2.6.2.2 To aid in determination of the crack propagation at the inner wall, the ML3 (50 % fail time, heaviest wall) specimen is cut longitudinally and examined microscopically. Regions exhibiting the most severe cracking and oxidation of the inner layer are then sectioned laterally. This lateral cut is examined microscopically to determine if brittle cracks have reached the aluminum layer. If the inner layer is sufficiently embrittled such that the specimen cannot be sectioned for examination, it shall be considered a failure of this test.

S5.3 *Calculation of Expected Fail Times for Multi-layer Construction*—The expected fail times used for testing the multi-layer products shall be determined in accordance with S5.3.1–S5.3.3.

S5.3.1 *Known Quantities and Symbols*— The following values must be known for each multi-layer construction in order to complete the calculations:

Tubing OD, mm
Outer PEX layer thickness, t_{opex}, mm
Aluminum thickness, t_{AL}, mm
Inner PEX layer thickness, t_{ipex}, mm
PEX tensile modulus, E_{pex}, MPa

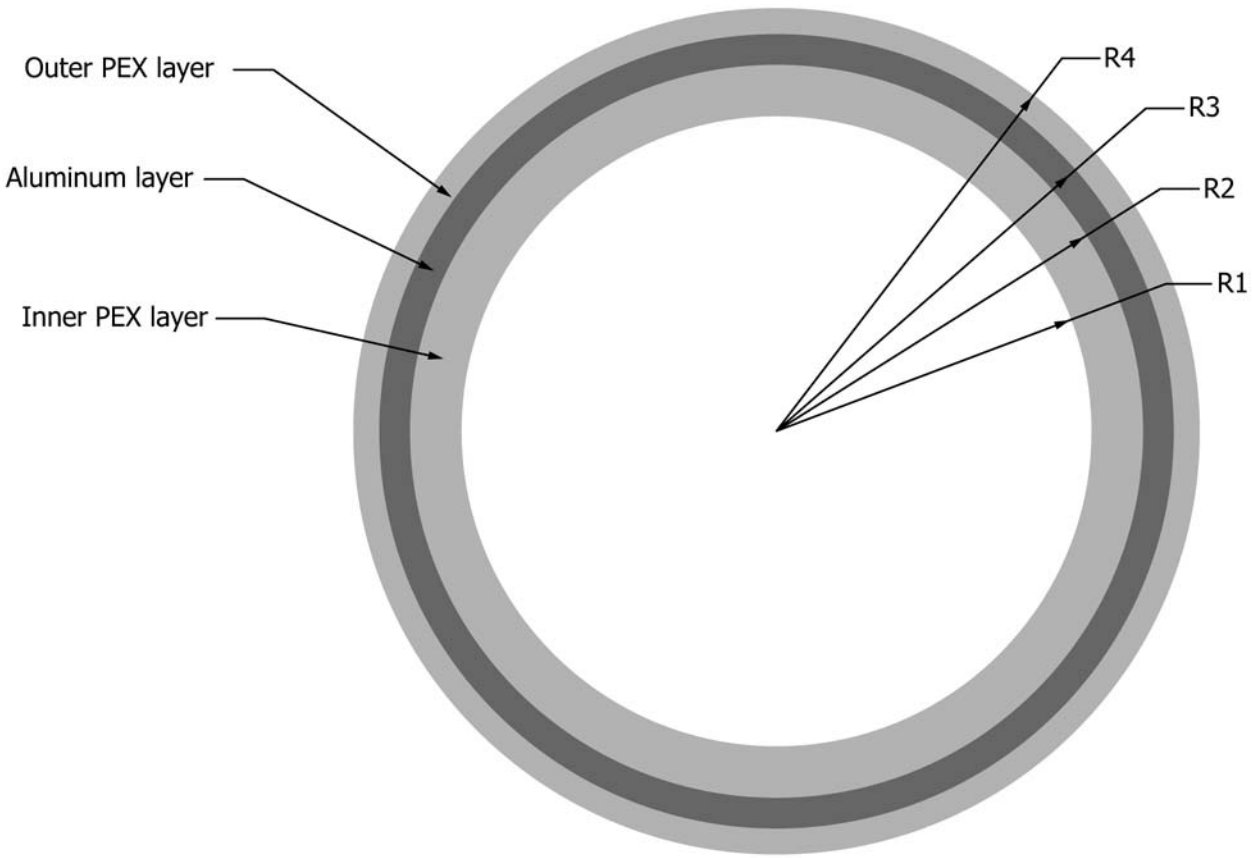


FIG. S1.1 Multi-layer Construction and Definition of Different Radii

Aluminum tensile modulus, E_{AL}, MPa
Adhesive layer thickness, mm
Internal pressure, P, MPa
Temperature, T, K
Coefficients for stress-rupture equation of solid PEX, C1, C2, C4

S5.3.2 *Preliminary Calculations*—Determine the various radii and dimension ratio as follows:

R4 = (tubing OD) / 2

R3 = R4 – (outer PEX layer thickness + outer adhesive thickness)

R2 = R3 – aluminum layer thickness

R1 = R2 – (inner PEX layer thickness + inner adhesive thickness)

Dimension ratio of aluminum, $DR_{AL} = 2 \cdot R3 / t_{AL}$

S5.3.3 *Procedure*—Determine the estimated fail time of the inner layer in accordance with S5.3.3.1–S5.3.3.5.

S5.3.3.1 Calculate the circumferential strain in the aluminum layer based on internal pressure. Assume that the stress is sufficiently low that the aluminum behaves linearly.

Hoop stress in aluminum layer:

$$\sigma_{AL} = \frac{P}{2}\left(DR_{AL} - 1\right) \tag{1}$$

Circumferential strain in aluminum layer:

$$\varepsilon_{AL} = \frac{\sigma_{AL}}{E_{AL}} \tag{2}$$

S5.3.3.2 Assume the strain in the inner PEX layer is the same as the strain in the aluminum layer. Use this strain to calculate stress in the PEX layer.

NOTE 7—This assumes small, linear strains in the PEX. This will be a reasonable assumption with the aluminum reinforcing layer, provided the aluminum is still in the linear region.

Stress at inner PEX layer:

$$\sigma_{PEX} = \left(\varepsilon_{AL}\right)\left(E_{PEX}\right) \tag{3}$$

S5.3.3.3 Calculate the estimated fail time based on this stress and the temperature of interest (that is, test temperature or end-use temperature).

Fail time of inner layer:

$$\mathrm{Log}(f) = C1 + \frac{C2}{T} + \frac{C4}{T}\cdot\mathrm{Log}(\sigma_{PEX}) \tag{4}$$

S5.3.3.4 Adjust the expected fail time based on the ratio of the inner layer thickness to the original solid-wall test sample thickness.

Adjusted inner layer fail time:

$$f' = f\,\frac{(\text{inner layer thickness})}{(\text{solid} - \text{wall thickness})} \tag{5}$$

S5.3.3.5 This adjusted inner layer fail time is the expected fail time (EFT) for use in S5.2, Application to Multi-layer Construction.

S5.3.3.6 Calculate the 95 % lower confidence limit for the multi-layer product at an internal pressure of 5.5 MPa (80 psig) and temperature of 60°C (140°F) using Eq 6 and the pipe dimensions that result in the maximum inner layer hoop stress within the product range. Designate this result as LCL_{60}. Repeat this calculation using an internal pressure of 5.5 MPa (80 psig) and temperature of 23°C (73°F). Designate this as LCL_{23}.

95 % LCL of the expected time to failure for multi-layer product at 60°C (see ISO 9080 or a statistics text for details):

$$\mathrm{Log}(f) = C1 + \frac{C2}{T} + \frac{C4}{T}\cdot\mathrm{Log}(\sigma_{80}) - (t)\,(s)\left[\frac{1}{n} + X_o^T\left(X^T X\right)^{-1} X_o\right]^{1/2} \tag{6}$$

S5.3.3.7 Calculate the Miner's Rule extrapolated time using the LCL values (LCL_{60} and LCL_{23}) from S5.3.3.6 in Eq 7. Eq 7 assumes the product is operated at 23°C for 75 % of the time, and 60°C for 25 % of the time, both at an internal pressure of 80 psig.

Miner's Rule calculation for extrapolated time to failure:

$$\text{Extrapolated time (h)} = \frac{100}{\dfrac{25}{LCL_{60}} + \dfrac{75}{LCL_{23}}} \tag{7}$$

ANNEXES

(Mandatory Information)

A1. CONNECTORS

A1.1 Connectors shall be made from brass or any other material found to be suitable for the service conditions.

A1.2 The connectors shall be designed so that a seal is effected on the internal wall surface of the pipe so that the medium contained in the pipe is precluded from coming into contact with the cut end of the pipe.

A1.3 Connectors not made from brass shall be capable of meeting the short term pipe test requirements listed in 6.5 and 6.6 of this specification and the long-term hydrostatic capabilities of the pipe at elevated temperatures listed in Appendix X1.

A2. PERFORMANCE REQUIREMENTS OF CONNECTORS

A2.1 *General*—All performance testing of connectors shall be performed on assemblies of connectors and PEX/AL/PEX pipe meeting the requirements of this specification. Assembly of test specimens shall be in accordance with Appendix X3. Use separate sets of assemblies for each performance test requirement.

NOTE A2.1—Fittings manufactured in compliance with Specification F1974 meet all of the performance requirements provided in this Annex.

A2.2 *Hydrostatic Burst*—Assemblies shall meet the minimum hydrostatic burst requirements shown in Table A2.1 when tested in accordance with 9.5, except that the test temperature shall be 180°F (82.2°C).

A2.3 *Hydrostatic Sustained Pressure Strength*—Pipe and connector assemblies shall not separate or leak when tested in accordance with A2.6.2.

A2.4 *Thermocycling*—Assemblies shall not leak or separate when thermocycled 1000 cycles between the temperatures of 60°F (15.6°C) and 180°F (82.2°C) in accordance with A2.6.3.

A2.5 *Excessive Temperature–Pressure Capability*:

A2.5.1 *General*—In the event of a water heating system malfunction assemblies shall have adequate strength to accommodate short-term conditions, 48 h or 210 ± 4°F (99 ± 2°C) and 150 psi (1034 kPa) until repairs can be made.

A2.5.2 *Excessive Temperature Hydrostatic Sustained Pressure*—Assemblies shall not leak or separate when tested in accordance with A2.6.4.

A2.6 *Test Methods*:

A2.6.1 Sampling and Conditioning shall be done in accordance with Section 8.

A2.6.2 *Hydrostatic Sustained Pressure:*

A2.6.2.1 Perform the test on at least six assemblies in accordance with Test Method D1598, except for the following:

(1) The test temperature shall be at 180 ± 4°F (82.2 ± 2°C),

(2) Test pressure shall be 320 psi (2 205 kPa),

(3) The external test environment shall be air or water, and

(4) The specimens shall be filled with water at a temperature of at least 120°F (49°C).

TABLE A2.1 Minimum Hydrostatic Burst Strength Requirements for Connector and PEX/AL/PEX Pipe Assemblies

Nominal Pipe Size, mm (in.)		Minimum Burst Pressures	
		psi at 180°F	kPa at 82.2°C
1216	(½)	580	(4000)
1620	(⅝)	550	(3800)
2025	(¾)	465	(3200)
2026	(⅞)	465	(3200)
2532	(1)	465	(3200)
3240	1 (¼)	362	(2500)
4150	1 (½)	333	(2300)
5163	(2)	295	(2000)
6075	2 (½)	295	(2000)

A2.6.2.2 Leakage or separation at any joint tested at less than 1000 h at the sustained pressure shall constitute failure in this test.

A2.6.3 *Thermocycling:*

A2.6.3.1 *Summary of Test Method*—This test method describes a pass-fail test for thermally cycling assemblies comprised of insert connector and pipe over a critical temperature range for a selected number of cycles while subjected to an internal pressure. The test provides a measure of resistance to failure due to the combined effects of differential thermal expansion and creep of connections intended for use up to and including 180°F (82.2°C).

A2.6.3.2 *Apparatus*—A compressed air or nitrogen pressure source capable of maintaining an internal pressure of 100 ± 10 psi (690 ± 69 kPa) on the specimens is required. A dip test apparatus capable of automatically immersing test samples at prescribed intervals in temperature controlled water baths capable of providing continuous water temperatures of 60 ± 4°F (15.6 ± 2°C) and 180 ± 4°F (82.2 ± 2°C) is required.

A2.6.3.3 *Specimen Preparation*—Six assemblies of the type of connector to be tested shall be prepared. The connectors with suitable lengths of pipe meeting the requirements of the applicable standard shall be assembled and attached to a common manifold. Assemble strictly according to the instructions of the connector manufacturer. Close the specimen assembly with any suitable end closures that allow "free end" mounting and will not leak under the thermocycling conditions, and connect the specimen assembly to the pressure source.

A2.6.3.4 *Procedure*—Correction to correspond with 100 ± 10 psi (690) ± 69 kPa), immerse in 60 ± 4°F (15.6 ± 2°C) water, and check for leaks. Eliminate all leaks before the thermocycling test is started. With the specimen assembly pressurized to 100 ± 10 psi (690 ± 69 kPa), thermally cycle it between 60 ± 4°F (15.6 ± 2°C) and 180 ± 4°F (82.2 ± 2°C) by means of immersion in water using the following test cycle (see Note A2.2):

Water immersion at 180°F (82.2°C)	2 min minimum
Air immersion at ambient	2 min maximum
Water immersion at 60°F (15.6°C)	2 min minimum
Air immersion at ambient	2 min maximum

NOTE A2.2—If the test must be interrupted before completion, samples are to be kept at room temperature until the test is restarted.

(1) Upon completion of 1000 cycles, immerse the specimen assembly again in 60°F (15.6 ± 2°C) water, and check for leaks. Any evidence of leakage at the connectors or separation of the connectors from the pipe constitutes failure.

(2) If no failures are evident, the specimen assembly shall immediately be tested for joint integrity (hydrostatic burst) at 73°F (23°C) in accordance with Test Method D1599. Leakage or separation during the hydrostatic burst test of any of the joints in the assembly at less than the pressure shown in Table A2.1 shall constitute failure of this test.

A2.6.3.5 *Interpretation of Results*—Failure of any one of six specimens in the assembly shall constitute failure of this test.

A2.6.4 *Excessive Temperature and Pressure Capability:*

A2.6.4.1 Test six assemblies in accordance with Test Method D1598, except the following:

(1) The test temperature shall be 210 ± 4°F (99 ± 2°C),

(2) The test pressure shall be 150 psi (1 034 kPa),

(3) The external test environment shall be air,

(4) The specimens shall be filled with water at a temperature of at least 120°F (49°C).

A2.6.4.2 Leakage or separation at any joint tested at less than 720 h at the test pressure shall constitute failure in this test.

A2.7 Product Marking of Connectors:

A2.7.1 *Quality Assurance*—When the connector or connector packing is marked with the ASTM Designation F1281, the manufacturer affirms that the product was manufactured, inspected, sampled, and tested in accordance with this specification and has been found to meet the requirements of this specification.

A2.7.2 *Quality of Marking*—The marking shall be applied to the connectors in such a manner that it remains legible after installation and inspection.

A2.7.3 *Content of Marking:*

A2.7.3.1 Marking on connectors shall include:

(1) Manufacturer's name or trademark, or some other identifying mark, and

(2) F1281 or F1281/2, the standard designation.

A2.7.3.2 Marking on packaging shall include:

(1) Manufacturer's name,

(2) Connector size, and

(3) "ASTM F1281".

A2.7.3.3 Marking on crimp rings shall include the code letters, PAP.

APPENDIXES

(Nonmandatory Information)

X1. PRESSURE RATING

X1.1 The hydrostatic design basis-pressures for water recommended by the Plastic Pipe Institute are used to pressure rate the PEX-AL-PEX composite pipe covered by this specification. These design basis-pressures are 2.76 MPa (400 psi) at 23°C (73.4°F), 2.21 MPa (320 psi) at 60°C (140°F) and 1.72 MPa (250 psi) at 83°C (180°F). These hydrostatic design basis-pressures apply only to pipe meeting all of the requirements of this specification.

X1.2 The PEX-AL-PEX composite pipe meeting the requirements of this specification shall be pressure rated for maximum water pressures of 1.38 MPa (200 psi) at 23°C (73.4°F), 1.10 MPa (160 psi) at 60°C (140°F) or 0.86 MPa (125 psi) at 83°C (180°F), or a combination thereof.

X2. STORAGE

X2.1 *Outside Storage*—Pipe should be stored on a flat surface and supported in a manner that will prevent distortion.

X3. JOINING

X3.1 Cut the pipe square to the proper length.

X3.2 Select the proper size tool (if required) for pipe preparation/joining. Only use tools specific to the design of the connector system.

X3.3 Assemble and complete the joint in accordance with the manufacturer's instructions specific to the type of connectors being used.

SUMMARY OF CHANGES

Committee F17 has identified the location of selected changes to this standard since the last issue (F1281–11) that may impact the use of this standard.

(1) Removed dimensions from "Nominal Pipe Size" in Table 1, Table 2, Table 3, Table 4, and Table 5 corrected values for NPS.

(2) Added inner PEX layer to 6.2.3 and 9.2 to be consistent with Table 2.

M-FG Chapter 8-21

Proponents: William Chapin (bill@profcc.us)

2021 International Fuel Gas Code

Add new text as follows:

Chapter 8 . ASTM F1281-17 Standard Specification for Crosslinked Polyethylene/Aluminum/Crosslinked Polyethylene (PEX-AL-PEX) Pressure Pipe

Reason Statement: Adds ASTM F1281 for reference of the approved code changes.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Will not affect the cost of construction.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

Attached Files

- **F1281-17.pdf** **(Same attachment as previous proposal: M-FG Chapter 8-21. See Tab 3 - Page 66)**
  https://va.cdpaccess.com/proposal/1111/1467/files/download/639/

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Disapproval

2021 Workgroups Reason:

Public Comments for: M-FG Chapter 8-21

This proposal doesn't have any public comments.

Proposal # 1111

P401.4-21

Proponents: Paula Eubank (paula.neal.eubank@gmail.com)

2021 International Plumbing Code

Add new text as follows:

401.4 Plumbing fixtures and accessory controls. All plumbing fixtures and restroom accessories located in public restrooms shall be equipped with automatic or touchless control devices required for activation, operation and termination without direct contact by users, including water closet, urinal and bidet flush controls, lavatory and shower faucet controls, and dispenser, dryer and waste restroom accessories. Such automatic or touchless control devices shall be equipped with emergency shut-off provisions accessible to building maintenance personnel.

Reason Statement: This code proposal supports environmental responsibility, sustainability, and resilience by automating plumbing fixture and restroom accessory control devices. The requirement for automatic or touchless operational control devices located in public restrooms promotes public health and sanitation and results in the significant reduction or elimination of germ and disease transfer among occupants and users, especially in consideration of the presence of COVID-19 conditions and considerations.

Cost Impact: The code change proposal will increase the cost of construction
This code change proposal increases the cost of construction by marginally increasing the initial construction costs although potentially reduces the lifespan operational and maintenance costs.

Resiliency Impact Statement: This proposal will increase Resiliency
This proposal positively supports resiliency through the increase in resource conservation and the reduction in resource waste.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Disapproval

2021 Workgroups Reason:

Public Comments for: P401.4-21

This proposal doesn't have any public comments.

Proposal # 1171

RB308.7-21

Proponents: William Penniman (wpenniman@aol.com)

2021 International Residential Code

Add new text as follows:

R308.7 Bird-Friendly Construction. .
All fenestration and other exterior glazing of new residential buildings or supplementary structures (such as garages, sheds or greenhouses) shall use Bird-Friendly Glass as defined in section R308.7.1

308.7.1 Definitions for Bird-Friendly Glazing. For purposes of Section R308.7,
A. "Bird-Friendly Glass" means glass, other glazing materials or obstructed glass that meet any of the following conditions:

a. Frosted or opaque glass or glass with exterior surface (surface 1) obstructed and effectively covered by building-integrated structures that do not have gaps larger than 12" in any dimension, including metal screens, non-glass double-skin facades, fixed solar shading, exterior insect or solar screens, grilles, child-guards and other features that meet these conditions.

b. Un-tinted glass with an outer total reflectance of ≤15% that contains a pattern of visual markers that conforms to the following rules: (i) dots or other isolated solid shapes that are ≥¼" in diameter and are either ≤ two-inches (2") apart in horizontal lines and ≤ four-inches (4") apart in vertical lines or≤ two-inches apart in any direction if randomly distributed or (ii) horizontal lines that are ≥⅛" in width and spaced ≤2" apart or vertical lines that are ≥⅛" in width and spaced ≤4" apart.

c. Any product with a Threat Factor Rating of 30 or less as determined and published by the American Bird Conservancy.

B. "Glazing" means all glass, including spandrel glass, as well as any other materials, including but not limited to: plexiglass, polished metal, or materials that are transparent or highly reflective

Chapter 44 Referenced Standards .. Add:

ABC American Bird Conservancy

Reason Statement: This proposal is supported by the Audubon Society of Northern Virginia.
Collisions with buildings kill up to 1 billion birds per year in the United States primarily due to the "invisibility" of clear glass to birds and due to reflections that appear to be attractive places to fly. https://abcbirds.org/glass-collisions/why-birds-hit-glass/ This high annual loss of birds to building collisions has contributed to the significant decline that has been recorded in many bird populations during recent decades. The danger to birds exists throughout the principle "bird activity zone" up to 100 feet above grade where both local flights and migrations occur. Most collisions actually occur with glass on homes and low-rise buildings because of the prevalence of such buildings, but taller buildings, though less common, pose a greater danger on a per-building basis. https://abcbirds.org/glass-collisions/why-birds-hit-glass/ The amount of glass is the strongest predictor of bird collisions. https://abcbirds.org/glass-collisions/architecture-planning/ Clear glass is a threat whether it is part of the building envelope or an extension of glass above the building walls or incorporated into skyways or balconies or even smaller auxiliary structures. Bird-friendly solutions may involve building design, the glass itself (e.g., frits or printed patterns, coatings, frosting) or physical structures (as simple as window screens, grills, shades or less glazing), https://abcbirds.org/glass-collisions/architecture-planning/ ("Bird Friendly Design Guide"); https://abcbirds.org/glass-collisions/why-birds-hit-glass/ ; https://abcbirds.org/glass-collisions/photo-gallery/ ; https://www.collidescape.org/ As illustrated by the Javits Center window replacement, the choice of bird-friendly glass can reduce collisions by over 90%. https://abcbirds.org/glass-collisions/architecture-planning/

The range of bird-friendly glazing and design is growing as architects, builders and glass companies make concerted efforts to minimize building threats to birds. https://abcbirds.org/glass-collisions/products-database/ ; https://nationalaudubon.app.box.com/s/lmf7vijbohuds6j92igzl1dzy8398ckj ; https://www.featherfriendly.com/residential ; https://www.featherfriendly.com/commercial?hsLang=en ; https://www.birdsavers.com/ ; https://www.windowfilms.ca/window-film-products/feather-friendly/ ; https://www.conveniencegroup.com/featherfriendly/feather-friendly ; https://www.walkerglass.com/resources/bird-safe-glass/

A simple rule is the "2X4" standard: the 2 x 4 Rule is defined as a collision deterrence module based upon the physical profile of a bird in flight. Current research has established maximum module dimensions of 2" high x 4" wide. Some solutions, such as films meeting the 2X4 standard, can be applied to windows and effectively reduce collisions.The American Bird Conservancy maintains and continuously updates a list of bird-friendly materials, which can be used for compliance in order to provide flexibility for builders and architects. The ABC rates products based on the hazard they pose for birds ("Threat Factor"). https://abcbirds.org/glass-collisions/threat-factor-rating/ The data base is available in printed form or found at https://abcbirds.org/glass-collisions/products-database/ ; www.birdsmartglass.org . As of November 2021, there were nearly 120 bird-friendly products that had been tested and found to pass the ABC's "threat" standard.

Government bodies have begun to address these issues with mandatory standards for bird-friendly construction and frequently use the ABC Threat Factor Ratings to assess proposed building solutions (e.g., NYC and GSA).
Depending on designs and materials chosen, the solutions may be essentially invisible to occupants (e.g., UV patterns) or fit with the overall design pattern (e.g., insect screens on windows) or be such (e.g., frits) that occupants quickly get used to and see beyond the patterns.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The proposed building code standards may, but need not, increase building costs. See https://abcbirds.org/glass-collisions/architecture-planning/ ("Bird Friendly Design Guide": "New construction can incorporate from the beginning bird-friendly design strategies that are cost neutral.").
Some approaches can raise costs of construction. However, some solutions, such as insect screens, are already commonly installed on most residential windows. To the extent window screens would be installed to cover windows anyway, no additional costs would be incurred.
Design decisions for new buildings can also mitigate or eliminate increased costs. For example, design changes to reduce the glass areas can result in mitigate construction costs and also save energy costs with a more efficient building envelope. Many non-glass solutions, such as screens, paracords, window films, tape or less glass, are inexpensive and have other benefits. The range of options is expanding and do little to inhibit outdoor viewing.
Even if construction costs were raised by substituting Bird-Friendly Glass for traditional glass, the costs would potentially be very small relative to the total cost of the building. The benefits from protecting our natural heritage from avoidable bird deaths outweigh the incremental construction costs.

Resiliency Impact Statement: This proposal will increase Resiliency
This proposal will enhance the resiliency of both local and migratory birds, which are currently threatened by impacts to windows and other glazing of buildings. Buildings are the second leading cause of death to birds with up to 1 billion birds killed annually by striking buildings, mainly windows. The problem exists for both residential and commercial buildings, including low-rise buildings. Bird populations have declined substantially in the United States in the past 50 years. Buildings have been significant contributors to the population decline.

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Disapproval

2021 Workgroups Reason:

Public Comments for: RB308.7-21

Discussion by Andrew Clark
Jun 2, 2022 20:13 UTC

Home Builders Association of Virginia (HBAV) opposes this proposal for several reasons.

- Adds a non-consensus standard/rating system to the Virginia USBC: To our knowledge, neither the International Residential Code or the Virginia Residential Code contains any reference to the American Bird Conservancy's (ABC) "Threat Factor Rating", and the HBAV is hesitant to add reference to a non-consensus standard or rating system to Virginia's building code, and making the ABC the sole arbiter of what glass products are deemed bird-friendly. The HBAV also has many questions about how the organization develops their "Threat Factor" ratings for various products: we were able to find little information about how often these tests or analysis are conducted and how the organization or its tests are funded. There should be some due diligence before a non-profit advocacy organization becomes a referenced standard in the building code.

- This is a fairly niche issue and there are no widely available products for purchase by homeowners or builders. This proposal would require the use of bird-safe design strategies, including the use of patterned glass or other visual markings that may deter birds from colliding with windows (fritted/etched glass, films applied to glass, or specially made glass with patterned layers of UV materials that birds can see). We have only been able to identify one manufacturer 1-2 manufacturers that produce what would be considered "bird friendly glass" - several of the largest window manufacturers/suppliers in Virginia had little-to-no knowledge of this products. The manufacturer that was aware of these products indicated that the cost increases could range from 7% to 64% - and higher in some instances. In addition to the added cost to the consumer, it is likely that every window order placed by a builder will essentially be a "specialty order" that will extend the already 5-6 month lead time to get windows, if a builder is able to get it at all.

In Virginia, there are roughly 30,000 to 40,000 homes permitted each year year – give or take – and even prior to the pandemic, the availability of construction materials was a challenge for home builders – the pandemic has exacerbated that significantly. This proposal would add to those

challenges

- Enforceability – either the inspector needs to spot-check the measurements on the dot patterns, gaps, etc. or it's another label/etching (or larger one) needed on the product.

- Many homes have drapes, blinds, window shades, etc. which ABC acknowledges in their guides, but can't be used for compliance. Also, how does a builder/homeowner comply in mixed or colder climates where swapping from an insect screen to a storm window is common?

- How do these requirements correlate with energy code and impact resistance requirements? Any impact on U-factor?

Discussion by Thomas Blackburn
May 18, 2022 17:30 UTC

Re: Uniform Statewide Building Code Recommendations for Bird-Friendly Construction, International Residential Code (RB308.7-21) and International Building Code (B2403.6-21)

Ladies and Gentlemen:

I write on behalf of the more than 5,000 members of Audubon Society of Northern Virginia ("ASNV"), a chapter of the National Audubon Society. ASNV supports recommendations submitted by William Penniman to change the Residential Code and the Building Code to require design and construction standards that minimize the threat of birds colliding with buildings. The American Bird Conservancy estimates that collisions with buildings kill up to 1 billion birds per year in North America (https://abcbirds.org/glass-collisions/why-birds-hit-glass/), an estimate also reported by a joint 2014 study by the U.S. Fish & Wildlife Service and the Smithsonian Institution. https://www.audubon.org/news/reducing-collisions-glass. The collisions arise because clear glass is invisible to birds and reflective glass makes the solid surface look like an attractive place to fly. https://abcbirds.org/glass-collisions/why-birds-hit-glass/.

The population of North American birds is declining dramatically. Recent science estimates that North America has lost 1 in 4 birds since 1970, roughly 30 billion birds. https://www.audubon.org/news/north-america-has-lost-more-1-4-birds-last-50-years-new-study-says. The loss arises from a number of factors, including habitat loss, pesticide use, outdoor cats, climate change, and building collisions.

The way to arrest the decline and begin to restore a resilient and biodiverse habitat in Virginia is to tackle every significant factor that endangers birds, including building collisions. As Mr. Penniman's proposals make clear, there are a variety of ways to decrease the threat of fatal collisions through building design and construction. The range of solutions is growing as architects, builders and glass companies act to minimize building threats to birds.

ASNV urges you to adopt Mr. Penniman's proposed changes to the Residential Code and Building Code.

Sincerely,

Tom Blackburn

President

Audubon Society of Northern Virginia

RB310.2.1-21

Proponents: Michael Eutsey (mikeeutsey@yahoo.com); Richard Gordon (rtgordon@hanovercounty.gov); Thomas Cash (trcash@hanovercounty.gov)

2018 Virgina Residential Code

Revise as follows:

R310.2.1 Minimum opening area. Emergency and escape rescue openings shall have a net clear opening of not less than 5.7 square feet (0.53 m^2). The net clear opening dimensions required by this section shall be obtained by the normal operation of the emergency escape and rescue opening from the ~~inside, including~~ inside. ~~including, including the tilting or removal of the sash as the normal operation.~~ The net clear height opening shall be not less than 24 inches (610 mm), and the net clear width shall be not less than 20 inches (508 mm).

Exception: *Grade* floor or below-*grade* openings shall have a net clear opening of not less than 5 square feet (0.465 m^2).

Reason Statement: The way this section is currently written to allow the removal of the upper sash it does not comply with the requirements of R310..1. R310.1.1 states that Emergency escape and rescue openings shall be operational from the inside of the room without the use of keys, tools, or special knowledge. In order to remove a sash to obtain the required opening size a person must know how to operate the latches and also how far to the sash must be moved prior to taking it out. A person that is not familiar with the "normal operation" of that window may waste valuable time trying to get out. In this current time where sprinklers are what folks are asking for to give an occupant a little more time to get to safety this change would also help by saving time trying to figure out how to remove an upper sash while they are trying to escape a fire.
Building Officials and Inspectors in VBCOA Region VII feel that the current code section lessens the safety requirements of the IRC.

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

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Disapproval

2021 Workgroups Reason:

Public Comments for: RB310.2.1-21

This proposal doesn't have any public comments.

Proposal # 1097

RB324.6.1-21

Proponents: Jason Laws (lawsj@chesterfield.gov)

2018 Virgina Residential Code

Revise as follows:

R324.6.1 Pathways. ~~Not fewer than two pathways, on separate roof planes from lowest roof edge to ridge and not less than 36 inches (914 mm) wide,~~ A minimum 36" wide pathway shall be provided on all ~~buildings. Not fewer than one pathway shall be provided on the street or driveway side of the roof. For each roof plane with a photovoltaic array, a pathway not less than 36 inches wide (914 mm) shall be provided~~ roof planes with photovoltaic arrays. Each pathway shall provide access from the lowest roof edge to ~~ridge on the same roof plane as the photovoltaic array, on an adjacent roof plane, or straddling the same and adjacent roof planes. Pathways shall be over areas capable of supporting fire fighters accessing the roof. Pathways shall be located in areas with minimal~~ the ridge and be free of obstructions such as vent pipes, conduit, or mechanical equipment.

Reason Statement: The purpose of this proposal is for clarification. The current code provision includes excessive, unneeded language which makes this section confusing and hard to follow.
The language requiring a pathway "on the street or driveway side of the roof" is not needed. If you have a pathway on any plane a photovoltaic panel is installed, you will always meet this requirement. If panels are only on the rear of the house, the entire front roof plane is clear and creates a pathway by default. If you have panels on the front of the house, then a pathway is needed and would still meet this requirement.

The language requiring a pathway "on an adjacent roof plane, or straddling the same and adjacent roof planes." only creates confusion and could result in "pathways" that are not functional / usable.

The language requiring "Pathways shall be over areas capable of supporting fire fighters accessing the roof." is not needed. The minimum design loads in R301.6 already cover this.

The intent of the code would remain the same but this proposal makes it much easier to understand, making it easier to design and enforce

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The proposal does not increase or decrease the cost of construction. This proposal keeps the intent of the code the same, simply makes it easier for everyone to understand and apply.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Disapproval

2021 Workgroups Reason:

Public Comments for: RB324.6.1-21

This proposal doesn't have any public comments.

Proposal # 1008

RE3902.16-21

Proponents: Bryan Holland (bryan.holland@nema.org)

2018 Virgina Residential Code

Revise as follows:

E3902.16 Arc-fault circuit-interrupter protection. Branch circuits that supply 120-volt, single phase, 15-ampere and 20-ampere outlets installed in kitchens, family rooms, dining rooms, living rooms, parlors, libraries dens, bedrooms, sunrooms, recreation rooms, closets, hallways, laundry areas and similar rooms or areas 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.

    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.

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 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 where GFCI protection is required in accordance with E3902 and NEC 210.8(A).~~

Reason Statement: This proposal deletes an exception that implies that GFCI protection required by this code and the NEC somehow mitigates the hazard of arcing-faults on those branch circuits. This is a technical fallacy. GFCI protection can only mitigate unintended ground-faults that could result in shock or electrocution. AFCI protection detects arcing-faults on the branch circuit that could result in fire. There is no technical correlation between the two life and property safety technologies. By deleting this exception, the AFCI protection requirements in the Commonwealth of Virginia will be restored to the national consensus standard in the 2021 IRC and 2020 NEC.

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

This proposal will increase the cost of construction. The deletion of this exception will require not less than three additional AFCI protection devices to be installed for the two kitchen small appliance branch circuits and one laundry branch circuit. While the code permits several methods for providing AFCI protection of branch circuits, the most common method is by the circuit breaker protecting the branch circuit. The average cost difference between a regular circuit breaker and an AFCI circuit breaker is between $35-50. There is no increase in time or labor to install AFCI circuit breakers versus regular circuit breakers. This would result in an overall cost increase of $105-150 per dwelling unit.

Resiliency Impact Statement: This proposal will increase Resiliency
This proposal will increase the resiliency of occupancies under the scope of the Virginia Residential Code from that hazard of fire as a result of arcing-faults on the branch circuits that are currently exempted by the exception to this section of AFCI protection requirements.

Attached Files

- **AFCI - Myth vs. Fact.pdf**
  https://va.cdpaccess.com/proposal/1140/1523/files/download/657/
- **AFCI National Data - 2020.pdf**
  https://va.cdpaccess.com/proposal/1140/1523/files/download/656/

Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Disapproval

2021 Workgroups Reason:

Public Comments for: RE3902.16-21

This proposal doesn't have any public comments.

Proposal # 1140

Circuit Breaker Arc-Fault Circuit Interrupters (AFCIs) – Myth vs. Fact

Cost

Myth: AFCI circuit breakers required in new home construction can cost $3,000+ per home, making them unaffordable.

Fact: The average cost for an AFCI circuit breaker is $38 (according to a NEMA blind survey for 2017 HUD Manufactured Housing Construction Safety Standards), or approx. $300 to protect a new 2,000-square-foot, four-bedroom home from electrical fires caused by electrical arcing. That's about 83 cents per month to protect a family from electrical fires over a 30-year mortgage. In contrast, material and hefty labor costs associated with installing a home builder upgrade like granite countertops averages around $4,500, or $12.50 per month over the same period. The National League of Cities recently indicated home builder "labor and land costs are by far the biggest construction expenses nationwide," resulting in rapidly rising home prices.

Appliance Compatibility

Myth: AFCI circuit breakers are not compatible with common household appliances.

Fact: AFCI circuit breakers work extremely well with new appliances that meet U.S. product safety standards. Some older appliances may incorporate components that predate current product safety standards or have operational characteristics that are not compatible with AFCI protection. Counterfeit appliances or those not certified by a Nationally Recognized Testing Laboratory (NRTL) may also be incompatible with AFCI circuit breakers.

AFCI/GFCI Compatibility

Myth: AFCI circuit breaker and Ground Fault Circuit Interrupters (GFCIs) won't work together.

Fact: AFCI circuit breakers and GFCIs complement and function well together in providing electrical safety and fire protection throughout a home. Both devices are required by the 2017 National Electrical Code® because they provide different, but critically important, protection. AFCI circuit breakers detect dangerous arcing in a home's wiring and stop electrical fires before they can start. GFCIs are required in rooms like kitchens, bathrooms and laundry rooms where water is present and help prevent possible shock and electrocution. There are dual function AFCI/GFCI circuit breakers on the market today that provide both types of protection in one device.

Product Availability

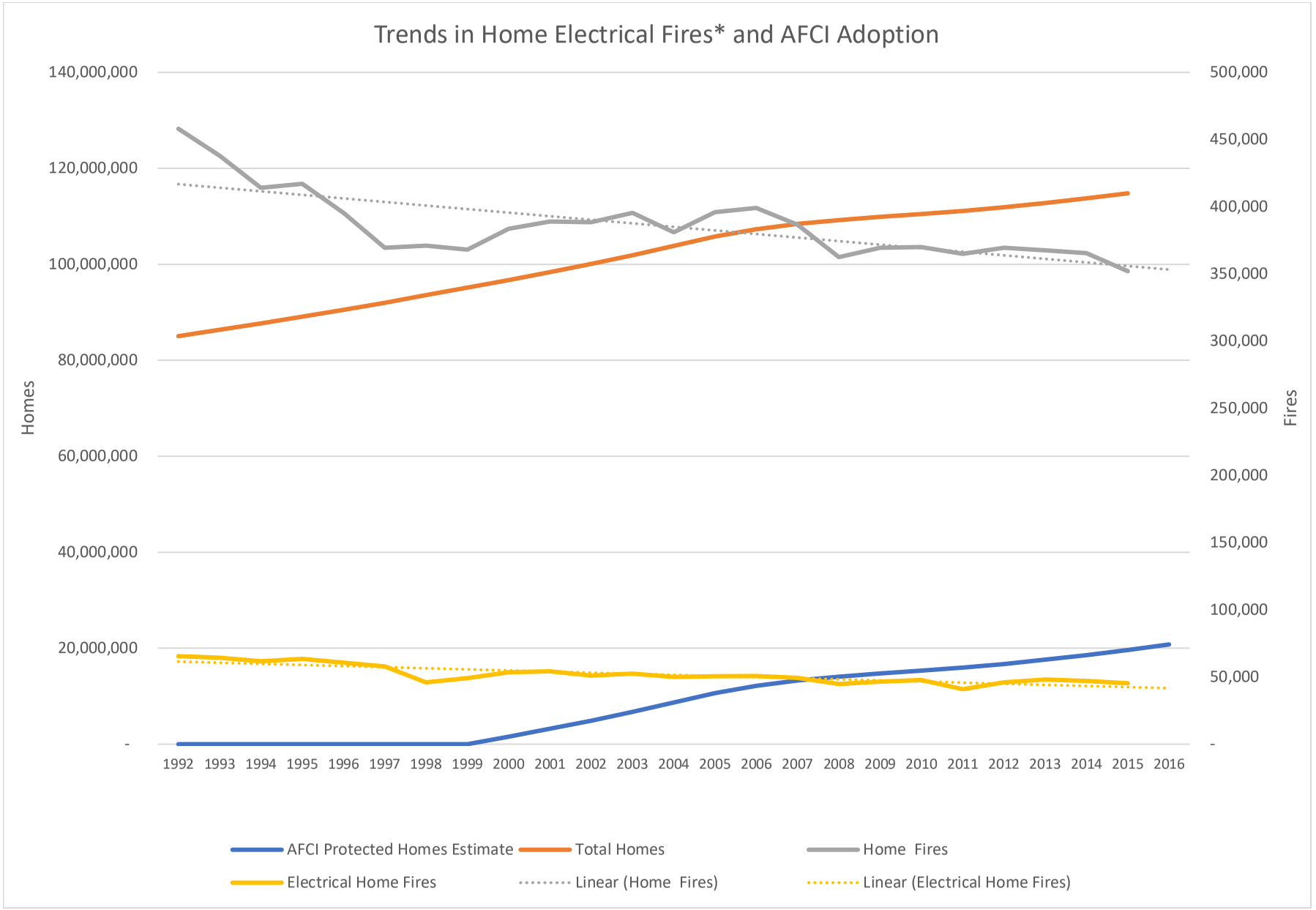
Myth: AFCI circuit breakers are hard to find.

Fact: Several companies manufacture AFCI circuit breakers for consumers to choose from. AFCI circuit breakers can be purchased at electrical supply houses, home improvement stores, and online.

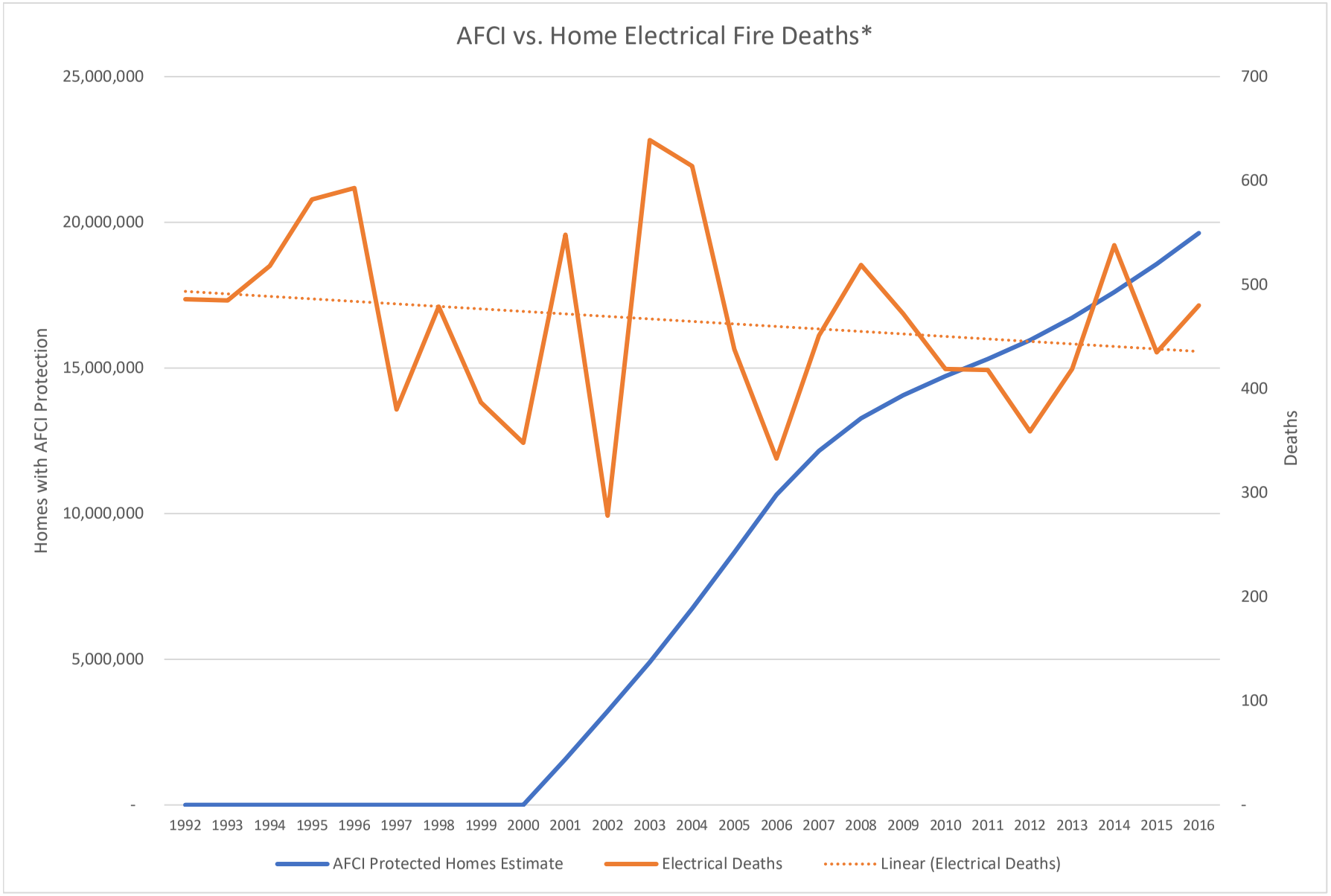
AFCI Lifespan

Myth: AFCI circuit breakers only last one year or need frequent replacement.

Fact: AFCI circuit breakers are tested and certified to extremely rigorous U.S. product safety standards. When installed correctly, AFCI circuit breakers are expected to last the life of a standard circuit breaker under normal operating conditions. AFCI circuit breakers also carry a manufacturer's warranty.



*Caused only by Electrical Failure of Malfunction



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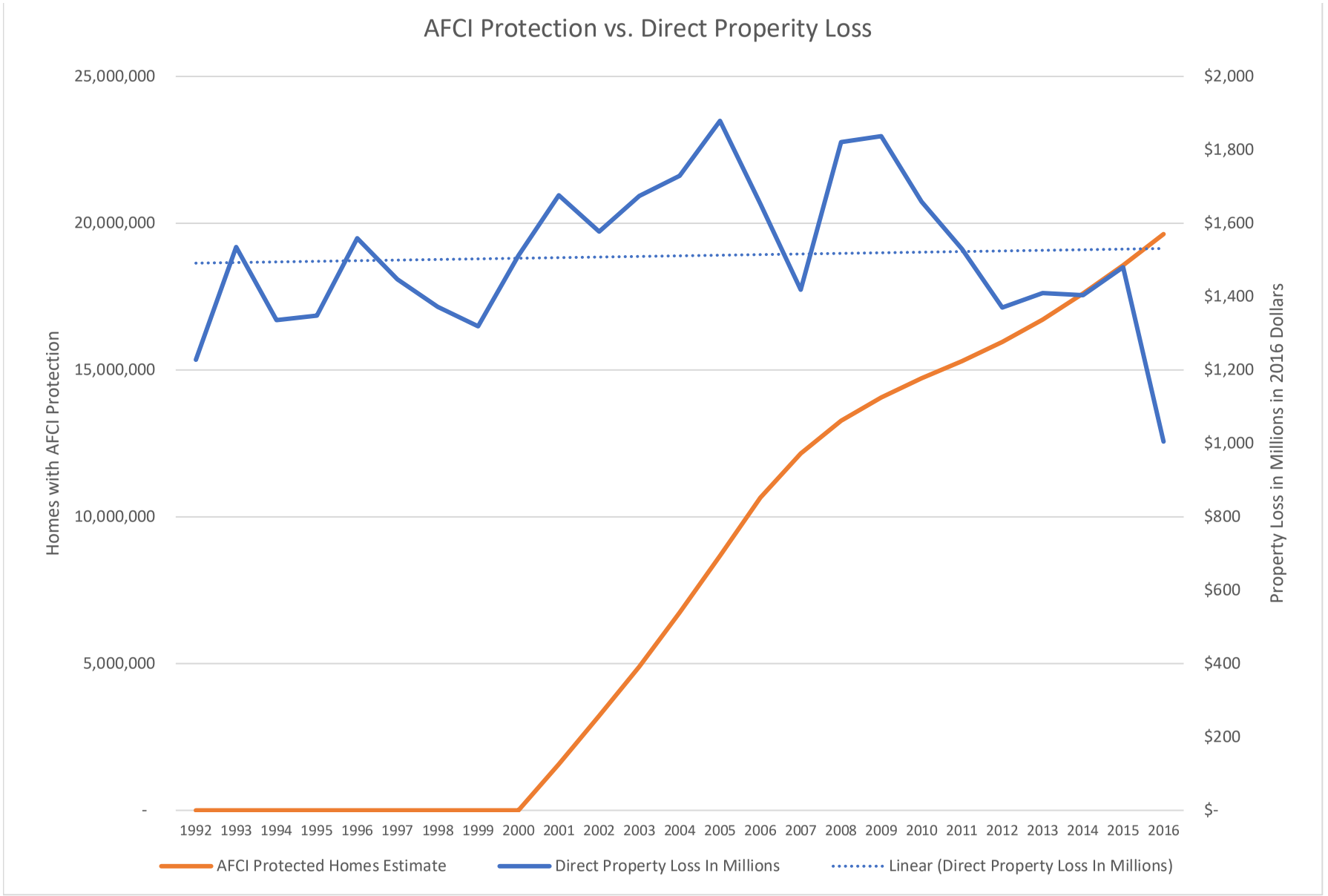

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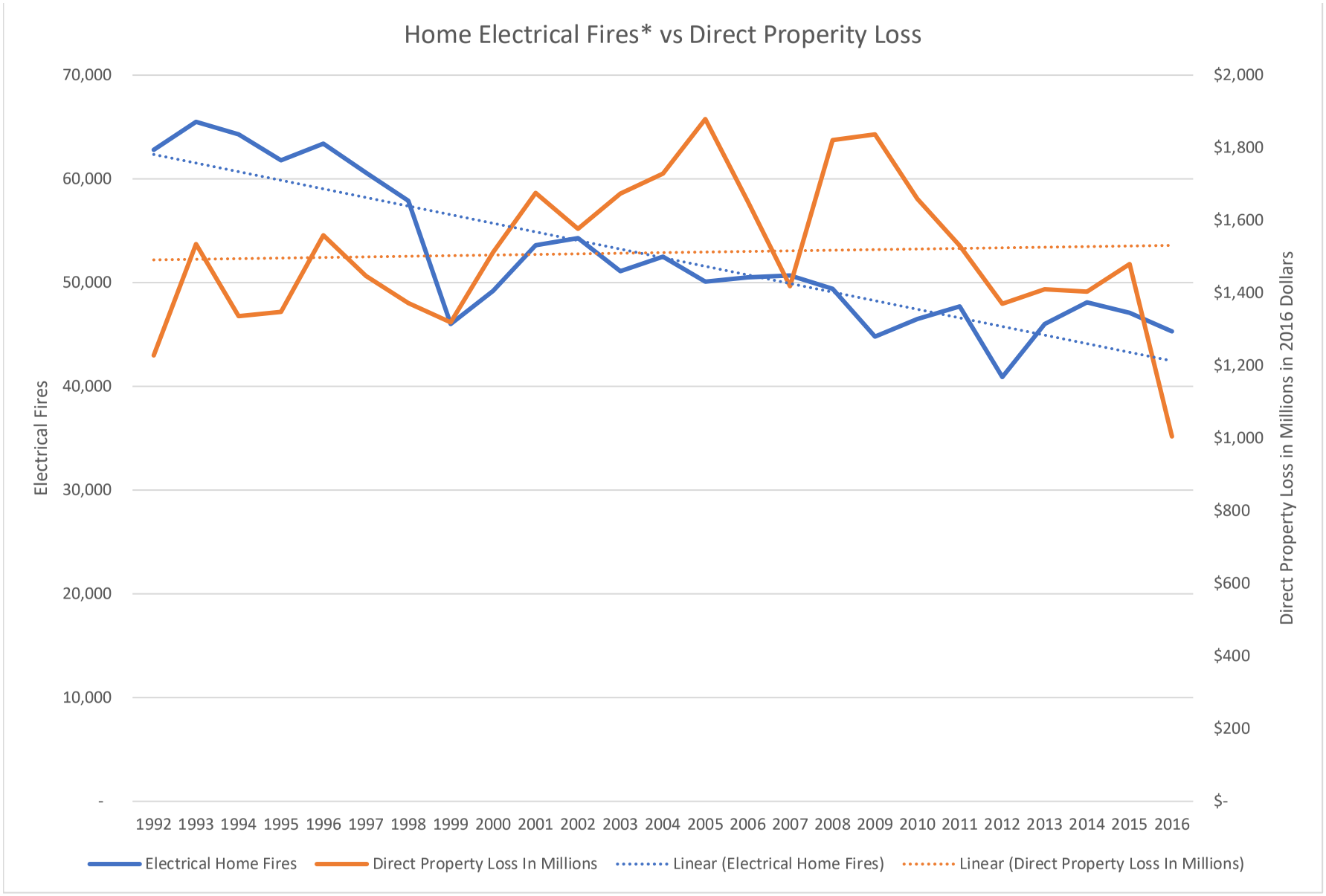

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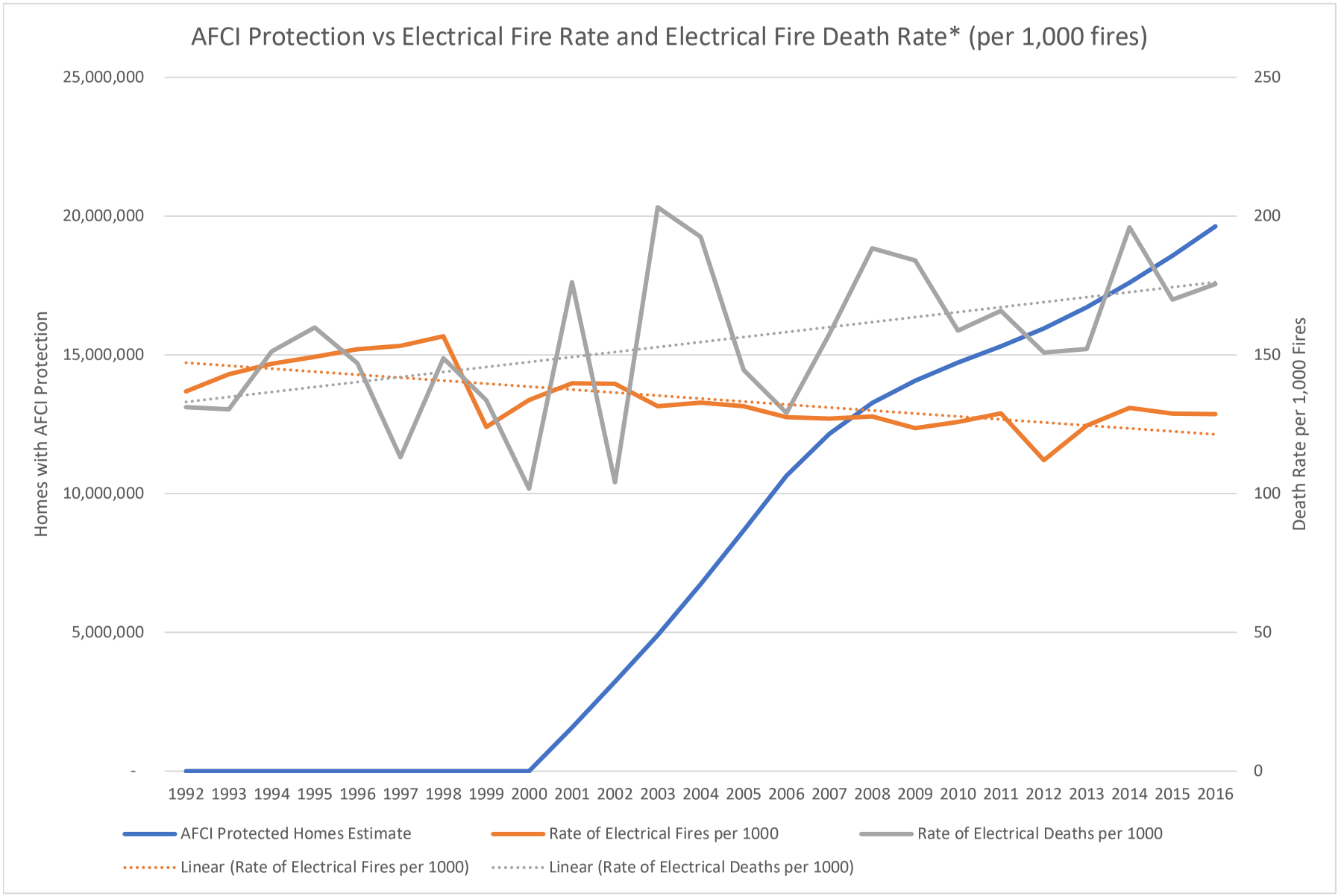
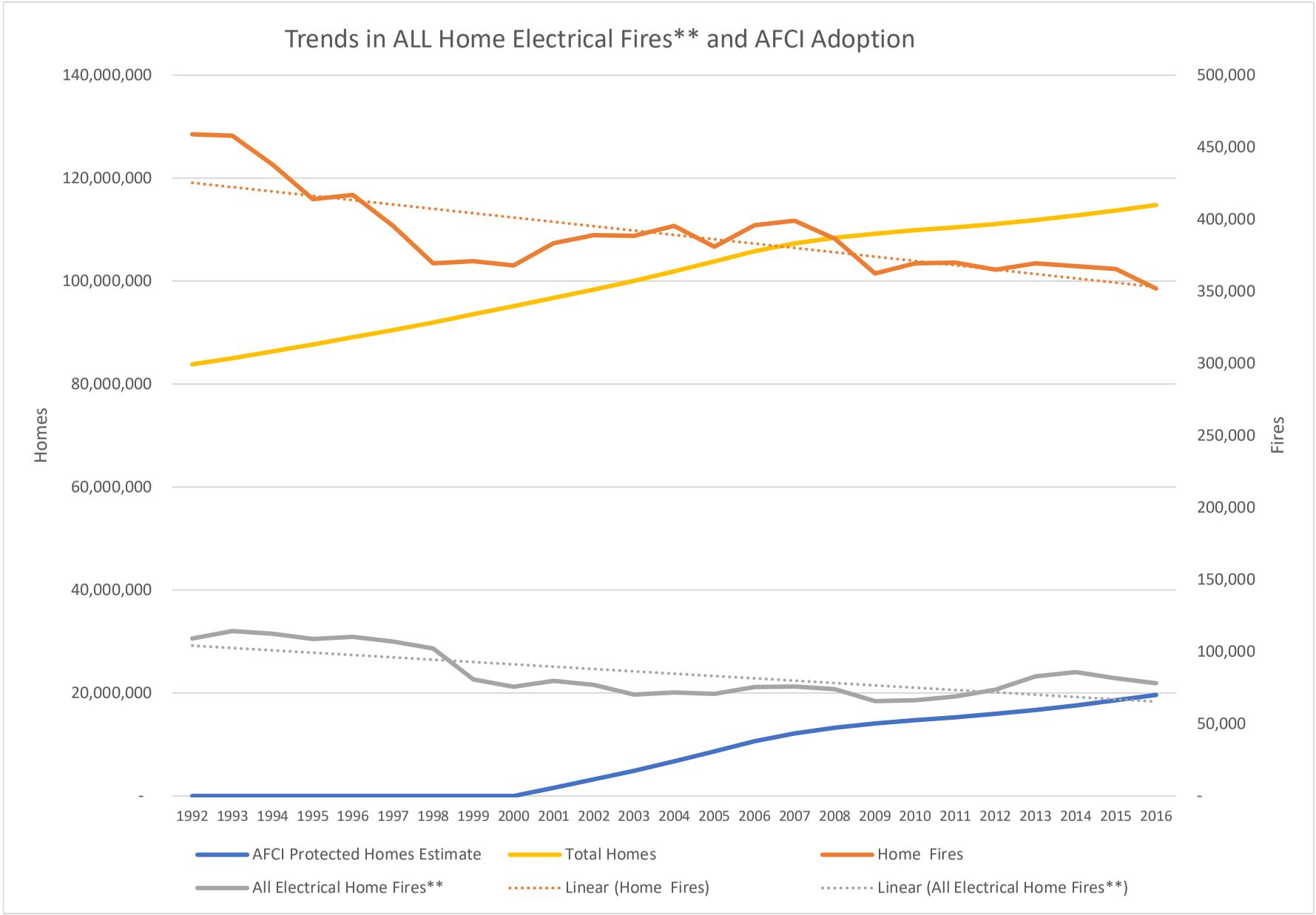
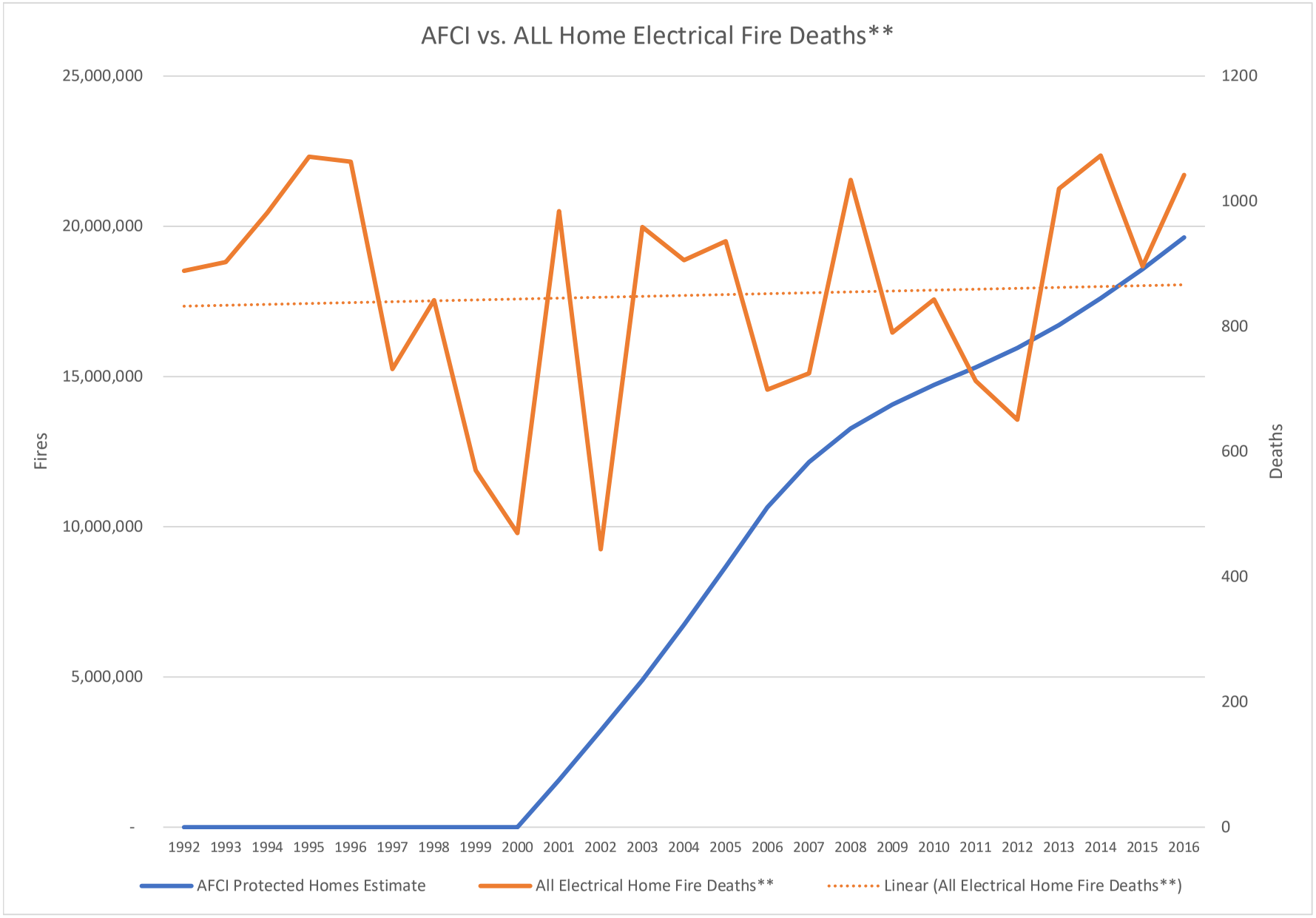


*Caused only by Electrical Failure of Malfunction



**Caused by Electrical Failure, Malfunction, Distribution, and Lighting



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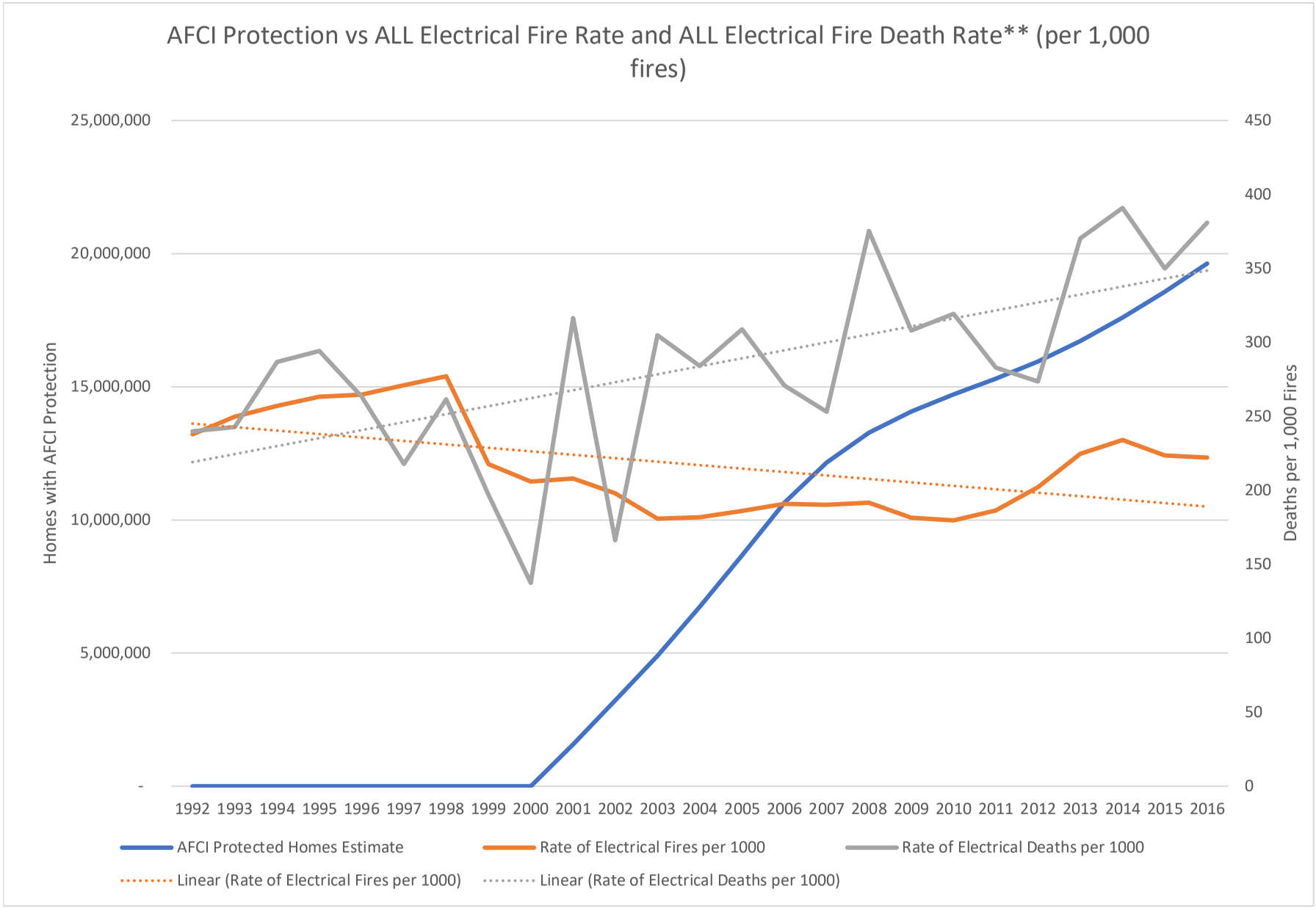

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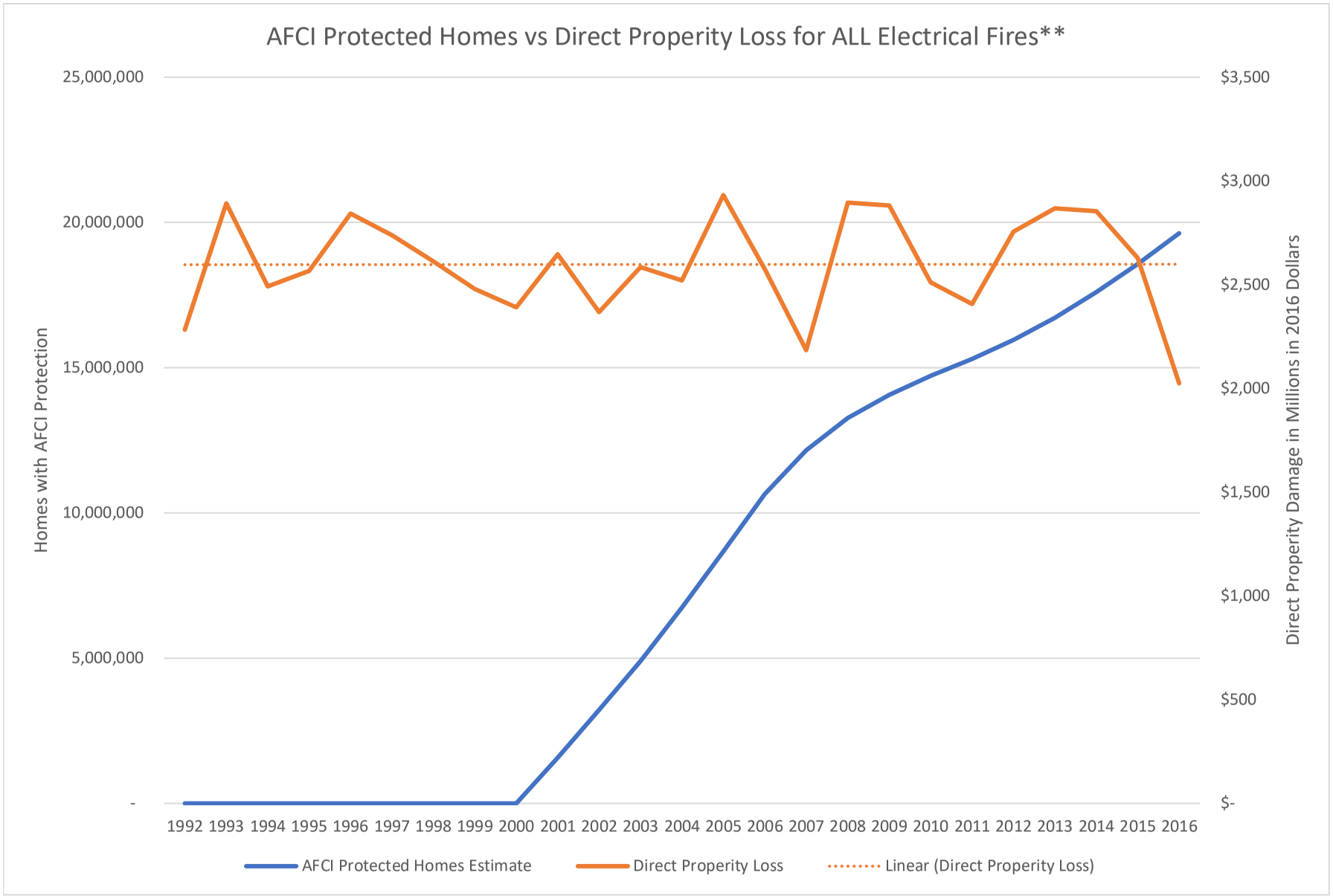
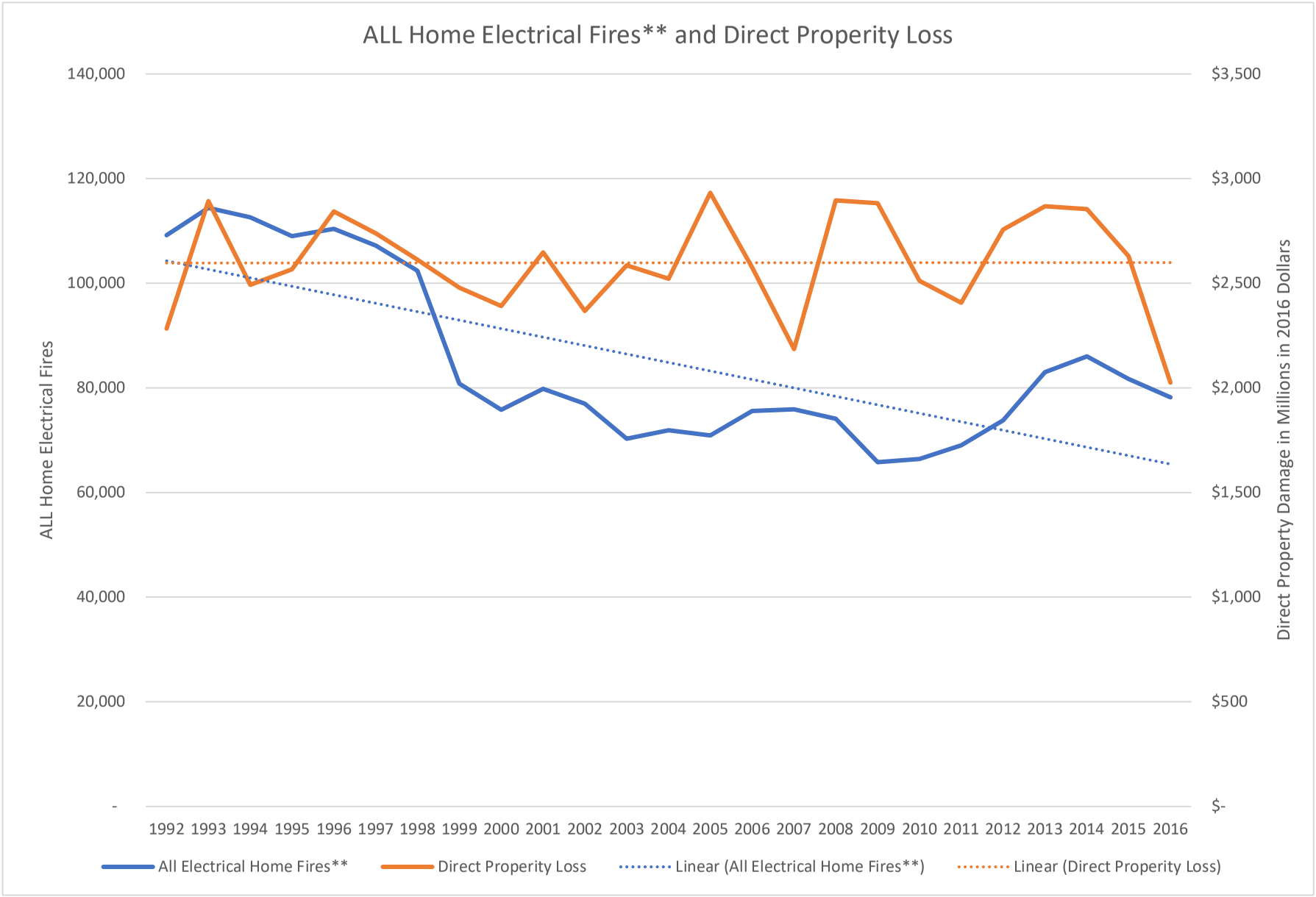


**Caused by Electrical Failure, Malfunction, Distribution, and Lighting



**Caused by Electrical Failure, Malfunction, Distribution, and Lighting

EB102.2.2(2)-21

Proponents: Bryan Holland (bryan.holland@nema.org); Megan Hayes (megan.hayes@nema.org)

2018 Virginia Existing Building Code

Revise as follows:

102.2.2 Reconstruction, alteration, or repair in Group R-5 occupancies. Compliance with this section shall be an acceptable alternative to compliance with this code at the discretion of the owner or owner's agent. The VCC may be used for the reconstruction, *alteration,* or *repair* of Group R-5 *buildings* or *structures* subject to the following criteria:

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 the VCC 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 the VCC 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.
5. In accordance with § 36-99.2 of the Code of Virginia, installation or replacement of glass shall comply with Section R308 or Chapter 24 of the VCC.

Exceptions:

1. This section shall not be construed to permit non-compliance with any applicable flood load or flood-resistant construction requirements of the VCC.
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.

   3. Replacement of smoke alarms shall be with devices listed in accordance with UL217 and that are no more than 10 years from the date of manufacture.

302.3 Smoke alarms. ~~*Repair* or replacement~~ Replacement of smoke alarms shall be with devices listed in accordance with UL217 and that are no more than 10 years from the date of manufacture. ~~Battery-only powered devices shall be powered by a 10-year sealed battery.~~

Reason Statement: First, smoke alarms are not "repaired," but designed to be replaced after ten years, so this terminology is being removed from 302.3. Second, this public comment is seeking to ensure the safety of occupants in existing buildings by removing a requirement for battery-only smoke alarms to be powered by a 10-year sealed battery. Requiring sealed, ten-year devices may preclude some important safety features, such as wireless interconnection and low frequency notification. In addition, research shows that sealed products may not last 10 years. According to a 2015 NFPA Study titled "Smoke Alarms in US Home Fires" 47% of the 10-year battery smoke alarms installed in 427 homes had dead batteries. A study of smoke alarms installed in Georgia (https://digitalcommons.georgiasouthern.edu/cgi/viewcontent.cgi?article=1115&context=biostat-facpubs) found the mean survival time of sealed ten year devices was just over six years. Also, the ICC membership disapproved proposal EB80-19 for the 2021 edition of the International Existing Building Code. This proposal was seeking to permit battery operated smoke alarms (sealed ten-year) to replace existing AC/DC single-station smoke alarms in sleeping units of Group I and R occupancies. It's important to note, that the ICC Fire Code Action Committee, UL and NEMA spoke against EB80-19.
The proposed addition of Exception 3 to 102.2.2 aligns that section with the proposed change in 302.3.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposal simply harmonizes section 302.3 with a new exception in 102.2.2. The editorial revisions to 302.3 do not have a cost impact.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

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Workgroup Recommendation

2021 Workgroups Workgroup Action: Consensus Disapproval

2021 Workgroups Reason:

Public Comments for: EB102.2.2(2)-21

This proposal doesn't have any public comments.

Proposal # 1139