

2015



Virginia Construction Code

Part I of the Virginia Uniform Statewide Building Code



Effective September 4, 2018

PREFACE

Introduction

The Virginia Uniform Statewide Building Code (USBC) is a state regulation promulgated by the Virginia Board of Housing and Community Development, a Governor-appointed board, for the purpose of establishing minimum regulations to govern the construction and maintenance of buildings and structures.

The provisions of the USBC are based on nationally recognized model building and fire codes published by the International Code Council, Inc.. The model codes are made part of the USBC through a regulatory process known as incorporation by reference. The USBC also contains administrative provisions governing the use of the model codes and establishing requirements for the enforcement of the code by the local building departments and other code enforcement agencies.

In keeping with the designations of the USBC used previously, since the 2015 editions of the International Codes are incorporated by reference into this version of the USBC, it is known as the 2015 edition of the USBC.

Arrangement

The USBC is part of the Virginia Administrative Code (VAC), the official compilation of state regulations published under the authority and guidance of the Virginia Code Commission. Due to the difference in the section numbering system between the VAC and the model codes incorporated by reference into the USBC, the USBC utilizes a dual section numbering system. In the USBC, the VAC section numbers are listed first, followed by a section number matching the model code system. In this printing of the USBC, the VAC section numbers are omitted and only the model code numbering system is utilized. The version of the USBC containing both the VAC section numbers and the model code numbering is available from the Virginia Department of Housing and Community Development (DHCD) and may also be accessed through the website of the Virginia Code Commission or by subscription to the VAC.

Overview

The USBC is divided into three stand-alone parts. Part I contains regulations specific to the construction of new buildings and structures and is known as the Virginia Construction Code. Part II contains regulations specific to the rehabilitation of existing buildings, including repair, alterations, additions and change of occupancy in existing buildings and structures, and is known as the Virginia Existing Building Code. Part III of the USBC contains the regulations for the maintenance of existing structures which is enforced at the option of the local governments. It is known as the Virginia Maintenance Code.

Codes Purchased from ICC

The 2015 edition of the USBC is being made available in pamphlet form as in past editions of the USBC. In addition to the pamphlet form of the USBC published by DHCD, the International Code Council (ICC) publishes versions of the Virginia Construction Code, Virginia Existing Building Code, Virginia Maintenance Code and a series of Virginia specific trade codes. In the ICC published versions, marginal markings are provided to distinguish between text which is part of the International Codes and text which is part of the state regulations. Double vertical lines in the margins within the body of the codes indicate state amendments to the International Codes. As in the standard printings of the International Codes, a single vertical line in the margins within the body of the code indicates a technical change from the previous edition of the International Codes. Deletions from the previous editions of the International Codes are indicated in the form of an arrow (→) in the margin where an entire section, paragraph, exception or table has been deleted or an item in a list of items or a table has been deleted.

Technical Assistance

The local building departments and enforcing agencies may be contacted for further information concerning the USBC. Contact information for DHCD is below.

DHCD, Division of Building and Fire Regulation
State Building Codes Office
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CHAPTER 1

ADMINISTRATION

SECTION 101 GENERAL

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 2015 edition of the USBC due to the use of the 2015 editions of the model codes.

101.2 Incorporation by reference. Chapters 2 - 35 of the 2015 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 2015 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:

2015 International Plumbing Code (IPC)
2015 International Mechanical Code (IMC)
2014 NFPA 70
2015 International Fuel Gas Code (IFGC)
2015 International Energy Conservation Code (IECC)
2015 International Residential Code (IRC)

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.

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.

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.

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.

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

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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.

101.7 Administrative provisions. The provisions of Chapter 1 establish administrative requirements, which include but are not limited to 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.

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.

SECTION 102 PURPOSE AND SCOPE

102.1 Purpose. In accordance with Section 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.

102.2 Scope. This section establishes the scope of the USBC in accordance with Section 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 Section 15.2-2242 of the Code of Virginia or Section 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 Section 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 103.10 of this code.

102.2.1 Invalidity of provisions. To the extent that any provisions of this code are in conflict with Chapter 6 (Section 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.

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 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 Section 35.1-1 of the Code of Virginia and licensed as such by the Virginia Board of Health pursuant to Chapter 2 (Section 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.

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12. Automotive lifts.

SECTION 103 APPLICATION OF CODE

103.1 General. In accordance with Section 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.

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.

103.2 When applicable to new construction. *Construction* for which a permit application is submitted to the *local building department* on or after the effective date of the 2015 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 2015 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 2015 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.

103.3 Nonrequired equipment. The following criteria for nonrequired *equipment* is in accordance with Section 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.

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.

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, but not limited to, 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 an 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.

103.5 Functional design. The following criteria for functional design is in accordance with Section 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 but not limited to (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*.

103.6 Amusement devices and inspections. In accordance with Section 36-98.3 of the Code of Virginia, to the extent they are not superseded by the provisions of Section 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.

103.7 State buildings and structures. This section establishes the application of the USBC to state-owned buildings and structures in accordance with Section 36-98.1 of the Code of Virginia. The USBC shall be applicable to all state-owned buildings and structures, with the exception that Sections 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 subdivision E of Section 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 subdivision A of Section 23.1-1002 of the Code of Virginia.

Note: In accordance with Section 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.

103.7.1 Certification of state enforcement personnel. State enforcement personnel shall comply

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with the applicable requirements of Section 105 for certification.

SECTION 104 ENFORCEMENT, GENERALLY

104.1 Scope of enforcement. This section establishes the requirements for enforcement of the USBC in accordance with Section 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 or 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 Section 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*.

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*.

SECTION 105 LOCAL BUILDING DEPARTMENT

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.

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.

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*.

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.

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.

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 shall be deemed to satisfy this requirement. The *locality* may establish additional qualification requirements.

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.

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 (Section 2.2-3100 et seq.) of Title 2.2 of the Code of Virginia.

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.

SECTION 106 POWERS AND DUTIES OF THE BUILDING OFFICIAL

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*.

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.

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

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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.

106.3.1 Substantiation of modification. The building official may require or may consider a statement from an 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.

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*.

SECTION 107 FEES

107.1 Authority for charging fees. In accordance with Section 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 Section 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 Virginia Amusement Device Regulations (13VAC5-31).

107.2 Code academy fee levy. In accordance with subdivision 7 of Section 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.

SECTION 108 APPLICATION FOR PERMIT

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, (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.

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 m²) 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 m²).
4. Tents or air-supported structures, or both, that cover an area of 900 square feet (84 m²) 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 m²), 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 Group 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, luminaries (lighting fixtures) and ceiling (paddle) fans in Group R-2

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- 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 Groups 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 m²) or less of roof covering in all groups and all wind zones.
 - 14.6. Replacement of 256 square feet (23.78 m²) or less of roof decking in Groups R-3, R-4 or R-5 unless the decking to be replaced was required at the time or 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 1500 square feet (139.35 m²) 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 Section 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 which are located in a special flood hazard area.

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.

108.4 Prerequisites to obtaining permit. In accordance with Section 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 (Section 54.1-1000 et seq.) of Title 54.1 of the Code of Virginia to carry out or superintend the same or (ii) file a written statement, supported by an affidavit, 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.

108.5 Mechanics' lien agent designation. In accordance with Section 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 Section 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 Section 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.

108.6 Application form, description of work. The application for a permit shall be submitted on a form or forms 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.

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.

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.

SECTION 109 CONSTRUCTION DOCUMENTS

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*.

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*.

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. All engineered documents, including relevant computations, shall be sealed by the RDP responsible for the design.

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*.

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.

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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.

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.

SECTION 110 PERMITS

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.

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.

110.3 Asbestos inspection in buildings to be renovated or demolished; exceptions. In accordance with Section 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 Section 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).

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.

110.5 Signature on and posting of permits; limitation of approval. The signature of the building official or authorized representative shall be on or affixed to every permit. 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.

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.

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.

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 or incorrect information supplied by the applicant in the application or *construction* documents on which the permit or approval was based.

SECTION 111 RDP SERVICES

111.1 When required. In accordance with Section 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 Sections 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 Section 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*.

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.

SECTION 112 WORKMANSHIP, MATERIALS AND EQUIPMENT

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.

112.2 Alternative methods or materials. In accordance with Section 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

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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*.

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.

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.

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.

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 Section 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.

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.

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

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 Section 15(a)(2) of the Consumer Product Safety Act (15 USC Section 2064(a)(2)).

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.

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.

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.

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.

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.

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

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of defective drywall shall be permitted to be left in place or reused.

112.5.1.1.3.5 Mechanical systems. All heating, air-conditioning, and ventilation system components, including but not limited to 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.

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.

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.

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.

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.

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.

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 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.

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.

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.

SECTION 113 INSPECTIONS

113.1 General. In accordance with Section 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.

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.

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.

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.

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.

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.

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6. Inspection of energy conservation material prior to concealment.
7. Final inspection.

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 are met.

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.

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.

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.

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.

Exception: The licensed mechanical contractor installing the mechanical system shall be permitted to perform duct tests required by Section R403.3.3 of the IECC or Section N1103.3.3 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.

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.

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.

113.8 Final inspection. Upon completion of a building or structure and before the issuance of a certificate of occupancy, 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. The approval of a final inspection shall be permitted to serve as the new certificate of occupancy required by Section 116.1 in the case of additions or alterations to existing buildings or structures that already have a certificate of occupancy.

SECTION 114 STOP WORK ORDERS

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.

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.

SECTION 115 VIOLATIONS

115.1 Violation a misdemeanor; civil penalty. In accordance with Section 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 Section 36-106 of the Code of Virginia for additional requirements and criteria pertaining to legal action relative to violations of the code.

115.2 Notice of violation. The building official shall issue a written notice of violation to the responsible party if any violations of this code or any directives or orders of the building official have not been corrected or complied with in a reasonable time. The notice shall reference the code section or sections 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 to the responsible party by mail to the last known address or delivering the notice in person or 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 permit holder for the *construction* in question, or the tenants of such building or structure, are not the responsible party to whom the notice of violation is issued, then a copy of the notice shall also be delivered to the such owner, permit holder 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.

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 Section 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.

115.3 Further action when violation not corrected. If the responsible party has not complied 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.

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

115.4 Penalties and abatement. Penalties for violations of the USBC shall be as set out in Section 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.

115.5 Transfer of ownership. In accordance with Section 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.

SECTION 116 CERTIFICATES OF OCCUPANCY

116.1 General; when to be issued. A certificate of occupancy indicating completion of the work for which a permit was issued shall be obtained prior to the occupancy of any building or structure, except as provided for in this section generally and as specifically provided for in Section 113.8 for additions or alterations. The certificate shall be issued after completion of the final inspection and when the building or structure is in compliance with this code and any pertinent laws or ordinances, or when otherwise entitled. The building official shall, however, issue a certificate of occupancy within five working days after being requested to do so, provided the building or structure meets all of the requirements for a certificate.

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

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 or structure may be occupied safely prior to full completion of the building or structure without endangering life or public safety.

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 of the IRC shall have a notation of compliance with that section on the certificate.

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 105.7 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.

116.3.1 Reissuance of 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.

116.4 Issuance of certificate for pre-USBC buildings or structures. When a building or structure was constructed prior to being subject to the initial edition of the USBC and the *local building department* does not have a certificate of occupancy for the 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.

Exception: When no certificate exists, but the *local building department* has records indicating that a certificate did exist, then the building official may either verify in writing that a certificate did exist or issue a certificate based upon the records.

SECTION 117 TEMPORARY AND MOVED BUILDINGS AND STRUCTURES; DEMOLITION

117.1 Temporary building 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.

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.

117.2 Moved buildings and structures. Any building or structure moved into a *locality* or moved to a new location within a *locality* shall not be occupied or used until a 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.

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.

SECTION 118 UNSAFE BUILDINGS OR STRUCTURES

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.

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.

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.

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.

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.

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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.

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.

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 Sections 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 (Section 58.1-3940 et seq.) and 4 (Section 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 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.

SECTION 119 APPEALS

119.1 Establishment of appeals board. In accordance with Section 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*.

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.

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*.

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 (Section 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.

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.

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. 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.

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."

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 36-98.2 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 (Section 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.

CHAPTER 2

DEFINITIONS

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 but is not limited to 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 but not limited to fires, medical emergencies, violent crimes, and terrorist attacks.

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.

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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 cells, or a holding room or rooms, 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.

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 with an occupancy in Group R-2, R-3, R-4 or R-5 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 or the Virginia Department of Juvenile Justice.

STATE REVIEW BOARD. The Virginia State Building Code Technical Review Board as established under Section 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 development 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 but not limited to 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.

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.

For application of this code, each portion of a building that is completely separated from other portions by fire walls complying with Section 706 shall be considered as a separate building (see Section 503.1).

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) which has been previously approved, or (iii) which 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.

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 Section 54.1-400 of the Code of Virginia.

SUBSTANTIAL DAMAGE. For the purpose of determining compliance with the flood provisions of this code, 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. For the purpose of determining compliance with the flood provisions of this code, any improvement, including repair, reconstruction, rehabilitation, alteration, or addition, or other improvement of a building or structure or a portion thereof the cost of which equals or exceeds 50% of the market value of the building or structure before the improvement or repair is started. If the building or structure or portion thereof has sustained substantial damage, any improvements are considered substantial improvements

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regardless of the actual improvement performed. The term does not, however, include either:

1. Any project for improvement of a building or a structure or portion thereof required to correct existing health, sanitary, or safety code violations identified by the building official and that is the minimum necessary to assure safe living conditions; or
2. Any alteration of a historic structure, provided that the alteration will not preclude the building or structure's continued designation as a historic building or structure.

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

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.

Delete the following definitions from Section 202 of the IBC:

AGRICULTURAL BUILDING.

APPROVED.

HISTORIC BUILDINGS.

CHAPTER 3

USE AND OCCUPANCY CLASSIFICATION

Change Section 303.1.1 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 m²) in area and ancillary to another occupancy.

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, but not limited to:

- Amusement park structures
- Bleachers
- Grandstands
- Stadiums
- Swimming pools

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.

Change exception number 14 of Section 307.1.1 and add a new exception number 15 to Section 307.1.1 to 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.
15. 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.

Change the following row in Table 307.1(1) of the IBC to read:

| | | | | | | | | | | |
|---|-----|------------|-----|------------------------|-----|-----|---------------------|-----|-----|-----------------------|
| Flammable liquid combination (IA, IB, IC) | N/A | H-2 or H-3 | N/A | 120 ^{d, e, h} | N/A | N/A | 120 ^{d, h} | N/A | N/A | 30 ^{d, h, r} |
|---|-----|------------|-----|------------------------|-----|-----|---------------------|-----|-----|-----------------------|

Add a new row to Table 307.1(1) of the IBC to read:

| | | | | | | | | | | |
|-----------------------|------|-----|------------------------|-----|-----|-----|-----|-----|-----|-----|
| Permissible fireworks | 1.4G | H-3 | 125 ^{d, e, l} | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
|-----------------------|------|-----|------------------------|-----|-----|-----|-----|-----|-----|-----|

Add a new footnote "r" to Table 307.1(1) to read:

- r. The tabular value for distilled spirit distillation and blending rooms is 120 gallons.

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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:

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.

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.

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 vender may store is limited to the storage arrangements and storage amounts established in Section 5506.5.2.1.
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 5506.5.2.3.

Change Exception 4 and add Exceptions 10 and 11 to Section 5501.1 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.

Change Section 5506.4 of the IFC to read as follows:

5506.4 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 Group 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.

Delete Sections 5506.4.1 and 5506.4.2 of the IFC.

Change Section 5506.5.1.1 of the IFC to read as follows:

5506.5.1.1 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.

Delete Section 5506.5.1.3 of the IFC.

Change Section 5506.5.2.1 of the IFC as follows:

5506.5.2.1 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.

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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 storage is inaccessible 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 3304 and NFPA 495.

Add the following term to the list of terms in Section 308.2 of the IBC:

HOSPICE FACILITY.

Change Sections 308.3, 308.3.1, and 308.3.2 of the IBC to read:

308.3 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, other than assisted living facilities licensed by the Virginia Department of Social Services, shall be classified as the occupancy condition indicated in Section 308.3.1. Assisted living facilities licensed by the Virginia Department of Social Services shall be classified as one of the occupancy conditions indicated in Section 308.3.1 or 308.3.2. This group shall include, but not be limited to, the following:

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

308.3.1 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 that may require the physical assistance reside on a single level of exit discharge.

308.3.2 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

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more than one staff member to respond to an emergency.

Change Section 308.4 of the IBC to read:

308.4 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. This group shall include, but not be limited to, the following:

Convalescent facilities
Detoxification facilities
Foster care facilities
Hospice facilities
Hospitals
Nursing homes
Psychiatric hospitals

Exception: Hospice facilities occupied by 16 or less occupants, excluding staff, are permitted to be classified as Group R-4.

Add the following exception to Section 308.6 of the IBC to read:

Exception: Family day homes under Section 310.9.

Change Section 310.3 of the IBC to read:

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

Boarding houses (transient) with more than 10 occupants
Congregate living facilities (transient) with more than 10 occupants
Hotels (transient)
Motels (transient)

Exceptions:

1. Nonproprietor occupied bed and breakfast and other transient boarding facilities not more than three stories above grade plane in height with a maximum of 10 occupants total are 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.
2. Proprietor occupied bed and breakfast and other transient boarding facilities not more than three stories above grade plane in height, that are also occupied as

the residence of the proprietor, with a maximum of five guest room sleeping units provided for the transient occupants are 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.

Change Section 310.6 of the IBC to read:

310.6 Residential Group R-4. This occupancy shall include buildings, structures or portions thereof for 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 310.6.1. Assisted living facilities licensed by the Virginia Department of Social Services shall be classified as one of the occupancy conditions indicated in Sections 310.6.1 or 310.6.2. This group shall include, but not be limited to, the following:

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

This occupancy shall also include hospice facilities with not more than 16 occupants, excluding staff.

Group R-4 occupancies shall meet the requirements for *construction* as defined for Group R-3, except as otherwise provided for in this code.

Exceptions:

1. Group homes licensed by the Virginia Department of Behavioral Health and Developmental Services that house no more than eight persons with one or more resident counselors shall be classified as Group R-2, R-3, R-4 or R-5. Not more than five of the persons may require physical assistance from staff to respond to an emergency situation.
2. In Group R-4 occupancies classified as the occupancy condition indicated in Section 310.6.1, other than in hospice

facilities, 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 single level of exit discharge and other than using a ramp, a change of elevation using steps or stairs is not within the path of egress to an exit door.

3. Assisted living facilities licensed by the Virginia Department of Social Services that house no more than eight persons, with one or more resident counselors, and all of the residents are capable of responding to an emergency situation without physical assistance from staff, may be classified as Group R-2, R-3 or R-5.
4. Assisted living facilities licensed by the Virginia Department of Social Services that house no more than eight persons, with one or more resident counselors, may be classified as Group R-5 when in compliance with all of the following:
 - 4.1. The building is protected by an automatic sprinkler system installed in accordance with Section 903.3 or Section P2904 of the IRC.
 - 4.2. Not more than five of the residents may require physical assistance from staff to respond to an emergency situation.
 - 4.3. All residents who may require physical assistance from staff to respond to an emergency situation reside on a single level of exit discharge and other than using a ramp, a change in elevation using steps or stairs is not within the path of egress to an exit door.
5. Hospice facilities with five or fewer occupants are permitted to comply with the IRC provided the building is protected by an automatic sprinkler system in accordance with IRC Section P2904 or IBC Section 903.3.

Change Sections 310.6.1 and 310.6.2 of the IBC to read:

310.6.1 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 and hospice facilities.

310.6.2 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.

Change Section 310.7 of the IBC to read:

310.7 Residential Group R-5. Residential occupancies in detached single-family and two-family dwellings, townhouses and accessory structures within the scope of the IRC.

Change Sections 310.8 and 310.8.1 of the IBC to read:

310.8 Group R-5. The *construction* of Group R-5 structures shall comply with the IRC. The amendments to the IRC set out in Section 310.11 shall be made to the IRC for its use as part of this code. In addition, all references to the IRC in the IBC shall be considered to be references to this section.

310.8.1 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.

Change Section 310.9 of the IBC to read:

310.9 Family day homes. Family day homes where program oversight is provided by the Virginia Department of Social Services shall be classified as Group R-2, R-3 or R-5.

Note: Family day homes may generally care for up to 12 children. See the *DHCD* Related Laws Package for additional information.

Change Section 310.10 of the IBC to read:

310.10 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 of the IRC.

Change Section 310.11 of the IBC to read:

310.11 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:

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, but are not limited to 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.

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 m²), 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 m²)

shall not be permitted in dwellings or townhouses that are three stories above grade plane in height.

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

3. Change 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(4)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 R802.11.1 from the roof assembly to the foundation. 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 110 mph (48.4 m/s) and areas under 4,000 feet in elevation shall use nominal design wind speed of 90 mph (39.6 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.

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

R302.1 Exterior walls. *Construction*, projections, openings and penetrations of exterior walls of dwellings and accessory buildings shall comply with Table R302.1(1); or dwellings equipped throughout with an automatic sprinkler system installed in accordance with Section P2904 shall comply with Table R302.1(2).

Exceptions:

1. Walls, projections, openings or penetrations in walls perpendicular to

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the line used to determine the fire separation distance.

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

5. Change Section R302.3 to read:

R302.3 Two-family dwellings. 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 E 119 or UL 263. 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.

Exceptions:

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.
2. Wall assemblies need not extend through attic spaces where the ceiling is protected by not less than 5/8-inch (15.9 mm) Type X gypsum board, an attic draft stop constructed as specified in Section R302.12.1 is provided above and along the wall assembly separating the dwellings and the structural framing supporting the ceiling is protected by not less than 1/2-inch (12.7 mm) gypsum board or equivalent.

6. Change Section R302.5.1 to read and delete Section R302.13 in its entirety:

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, solid or honeycomb-core steel doors not less than 1-3/8 inches (35 mm) thick, or 20-minute fire-rated doors.

R302.13 Fire protection of floors. (Section deleted)

7. Change Section R303.4 to read:

R303.4 Mechanical ventilation. Dwelling units shall be provided with mechanical ventilation in accordance with Section M1507.

8. Add an exception to Section R303.9 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.

9. Add Section R303.9.1 to read:

R303.9.1 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 R303.9 during the period from October 15 to May 1.

required in each sleeping room. Emergency escape and rescue openings shall open directly into a public way, or to a yard or court that opens to a public way.

10. Add Section R303.10 to read:

R303.10 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.

Exceptions:

1. 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 m²).

11. 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.

14. Change Section R310.2.1 to read:

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 m²). 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 m²).

12. 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.

15. Change the exception in Section R311.3.1 to read:

Exception: The landing or floor on the exterior side shall not be 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.

13. Change Section R310.1 to read:

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

16. 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

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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.

17. 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).

18. 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).

19. Change Section R312.2.1 to read:

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.

20. 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.

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 or Section P2904.

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.

21. Delete Section R314.2.2.

R314.2.2 Alterations, repairs and additions. (Section deleted)

22. Change Section R314.7.3 to read:

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

23. 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.

24. Change Section R315.2 to read:

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

25. Delete Section R315.2.2.

R315.2.2 Alterations, repairs and additions.
(Section deleted)

26. Delete Section R315.5.

R315.5 Power source. (Section deleted)

27. Change Section R315.6.3 to read:

R315.6.3 Permanent fixture. Where a household carbon monoxide detection system is installed, it shall become a permanent fixture of the occupancy.

28. Add Section R320.2 to read:

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

29. 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 of the ISPSC 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.

30. Add Section R327 to read:

**SECTION R327
RADON-RESISTANT CONSTRUCTION**

31. Add Section R327.1 to read:

R327.1 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.

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

32. Add Section R328 to read:

**SECTION R328
PATIO COVERS**

33. Add Section R328.1 to read:

R328.1 Use of Appendix H for patio covers. Patio covers shall comply with the provisions in Appendix H.

34. Add Section R329 to read:

**SECTION R329
SOUND TRANSMISSION**

35. Add Section R329.1 to read:

R329.1 Sound transmission between dwelling units. *Construction* assemblies separating dwelling units shall provide airborne sound insulation as required in Appendix K.

36. Add Section R329.2 to read:

R329.2 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

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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 1207.4 of the state amendments to the IBC.

37. Add Section R330 to read:

SECTION R330 FIRE EXTINGUISHERS

38. Add Section R330.1 to read:

R330.1 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.

39. Add Section R331 to read:

SECTION R331 INTERIOR PASSAGE

40. Add Sections R331.1 through R331.6 to read:

R331.1 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.

R331.2 Kitchen. One interior passage route from the egress door to the kitchen shall comply with R331.6.

R331.3 Living area. One interior passage route from the egress door to at least one living area shall comply with R331.6.

R331.4 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 R331.6.

R331.5 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 R331.6. Bathroom fixture clearances

shall comply with R307 and access to fixtures is not required to comply with R331.6.

R331.6 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.

41. 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 2.0% away from the building.

42. 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 m²) of building area, provided 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.
 - 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 Group R-3 and R-5 occupancies where the height of the entrance is no more than 30 inches (762 mm) above grade.

43. Delete Section R404.1.9.2.

R404.1.9.2 Masonry piers supporting floor girders. (Section deleted)

44. 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.

45. 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).
- 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), 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.

46. 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.

47. 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.

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48. Change Item 4 in Table R602.3(1) to read:

**TABLE R602.3(1)
FASTENING SCHEDULE**

| ITEM | DESCRIPTION OF BUILDING ELEMENTS | NUMBER AND TYPE OF FASTENER ^{a, b, c} | SPACING AND LOCATION |
|-------------|---|--|--|
| Roof | | | |
| 1 | Blocking between ceiling joists or rafters to top plate | 4-8d box (2 1/2" × 0.113") or 3-8d common (2 1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails | Toe nail |
| 2 | Ceiling joists to top plate | 4-8d box (2 1/2" × 0.113"); or 3-8d common (2 1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails | Per joist, toe nail |
| 3 | Ceiling joist not attached to parallel rafter, laps over partitions [see Sections R802.3.1, R802.3.2 and Table R802.5.1(9)] | 4-10d box (3" × 0.128"); or 3-16d common (3 1/2" × 0.162"); or 4-3" × 0.131" nails | Face nail |
| 4 | Ceiling joist attached to parallel rafter (heel joint) [see Sections R802.3.1 and R802.3.2 and Table R802.5.1(9)] | Table Table R802.5.2 | Face nail |
| 5 | Collar tie to rafter, face nail or 1 1/4" × 20 ga. ridge strap to rafter | 4-10d box (3" × 0.128"); or 3-10d common (3" × 0.148"); or 4-3" × 0.131" nails | Face nail each rafter |
| 6 | Rafter or roof truss to plate | 3-16d box nails (3 1/2" × 0.135"); or 3-10d common nails (3" × 0.148"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails | 2 toe nails on one side and 1 toe nail on opposite side of each rafter or truss ⁱ |
| 7 | Roof rafters to ridge, valley or hip rafters or roof rafter to minimum 2" ridge beam | 4-16d (3 1/2" × 0.135"); or 3-10d common (3 1/2" × 0.148"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails | Toe nail |
| | | 3-16d box 3 1/2" × 0.135"); or 2-16d common (3 1/2" × 0.162"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails | End nail |
| Wall | | | |
| 8 | Stud to stud (not at braced wall panels) | 16d common (3 1/2" × 0.162") | 24" o.c. face nail |
| | | 10d box (3" × 0.128"); or 3" × 0.131" nails | 16" o.c. face nail |
| 9 | Stud to stud and abutting studs at intersecting wall corners (at braced wall panels) | 16d box (3 1/2" × 0.135"); or 3" × 0.131" nails | 12" o.c. face nail |
| | | 16d common (3 1/2" × 0.162") | 16" o.c. face nail |

(continued)

**TABLE R602.3(1)—continued
FASTENING SCHEDULE**

| ITEM | DESCRIPTION OF BUILDING ELEMENTS | NUMBER AND TYPE OF FASTENER ^a b, c | SPACING AND LOCATION |
|------|---|---|--|
| 10 | Built-up header (2" to 2" header with 1/2" spacer) | 16d common (3 1/2" × 0.162") | 16" o.c. each edge face nail |
| | | 16d box (3 1/2" × 0.135") | 12" o.c. each edge face nail |
| 11 | Continuous header to stud | 5-8d box (2 1/2" × 0.113"); or 4-8d common (2 1/2" × 0.131"); or 4-10d box (3" × 0.128") | Toe nail |
| 12 | Top plate to top plate | 16d common (3 1/2" × 0.162") | 16" o.c. face nail |
| | | 10d box (3" × 0.128"); or 3" × 0.131" nails | 12" o.c. face nail |
| 13 | Double top plate splice for SDCs A-D ₂ with seismic braced wall line spacing < 25' | 8-16d common (3 1/2" × 0.162"); or 12-16d box (3 1/2" × 0.135"); or 12-10d box (3" × 0.128"); or 12-3" × 0.131" nails | Face nail on each side of end joint (minimum 24" lap splice length each side of end joint) |
| | Double top plate splice SDCs D ₀ , D ₁ , or D ₂ ; and braced wall line spacing ≥ 25' | 12-16d (3 1/2" × 0.135") | |
| 14 | Bottom plate to joist, rim joist, band joist or blocking (not at braced wall panels) | 16d common (3 1/2" × 0.162") | 16" o.c. face nail |
| | | 16d box (3 1/2" × 0.135"); or 3" × 0.131" nails | 12" o.c. face nail |
| 15 | Bottom plate to joist, rim joist, band joist or blocking (at braced wall panel) | 3-16d box (3 1/2" × 0.135"); or 2-16d common (3 1/2" × 0.162"); or 4-3" × 0.131" nails | 3 each 16" o.c. face nail 2 each 16" o.c. face nail 4 each 16" o.c. face nail |
| 16 | Top or bottom plate to stud | 4-8d box (2 1/2" × 0.113"); or 3-16d box (3 1/2" × 0.135"); or 4-8d common (2 1/2" × 0.131"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails | Toe nail |
| | | 3-16d box (3 1/2" × 0.135"); or 2-16d common (3 1/2" × 0.162"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails | End nail |
| 17 | Top plates, laps at corners and intersections | 3-10d box (3" × 0.128"); or 2-16d common (3 1/2" × 0.162"); or 3-3" × 0.131" nails | Face nail |
| 18 | 1" brace to each stud and plate | 3-8d box (2 1/2" × 0.113"); or 2-8d common (2 1/2" × 0.131"); or 2-10d box (3" × 0.128"); or 2 staples 1 3/4" | Face nail |

(continued)

**TABLE R602.3(1)—continued
FASTENING SCHEDULE**

| ITEM | DESCRIPTION OF BUILDING ELEMENTS | NUMBER AND TYPE OF FASTENER ^a b, c | SPACING AND LOCATION |
|--------------|---|---|----------------------|
| 19 | 1" × 6" sheathing to each bearing | 3-8d box (2 1/2" × 0.113"); or 2-8d common (2 1/2" × 0.131"); or 2-10d box (3" × 0.128"); or 2 staples, 1" crown, 16 ga., 1 3/4" long | Face nail |
| 20 | 1" × 8" and wider sheathing to each bearing | 3-8d box (2 1/2" × 0.113"); or 3-8d common (2 1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 3 staples, 1" crown, 16 ga., 1 3/4" long | Face nail |
| | | Wider than 1" × 8" 4-8d box (2 1/2" × 0.113"); or 3-8d common (2 1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 4 staples, 1" crown, 16 ga., 1 3/4" long | |
| Floor | | | |
| 21 | Joist to sill, top plate or girder | 4-8d box (2 1/2" × 0.113"); or 3-8d common (2 1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails | Toe nail |
| 22 | Rim joist, band joist or blocking to sill or top plate (roof applications also) | 8d box (2 1/2" × 0.113") | 4" o.c. toe nail |
| | | 8d common (2 1/2" × 0.131"); or 10d box (3" × 0.128"); or 3" × 0.131" nails | 6" o.c. toe nail |
| 23 | 1" × 6" subfloor or less to each joist | 3-8d box (2 1/2" × 0.113"); or 2-8d common (2 1/2" × 0.131"); or 3-10d box (3" × 0.128"); or 2 staples, 1" crown, 16 ga., 1 3/4" long | Face nail |

(continued)

TABLE 602.3(1)
FASTENING SCHEDULE—continued

| ITEM | DESCRIPTION OF BUILDING ELEMENTS | NUMBER AND TYPE OF FASTENER ^{a, b, c} | SPACING AND LOCATION |
|--------------|--|---|---|
| Floor | | | |
| 24 | 2" subfloor to joist or girder | 3-16d box (3 1/2" × 0.135"); or 2-16d common (3 1/2" × 0.162") | Blind and face nail |
| 25 | 2" planks (plank & beam—floor & roof) | 3-16d box (3 1/2" × 0.135"); or 2-16d common (3 1/2" × 0.162") | At each bearing, face nail |
| 26 | Band or rim joist to joist | 3-16d common (3 1/2" × 0.162") 4-10 box (3" × 0.128"), or 4-3" × 0.131" nails; or 4-3" × 14 ga. staples, 7/16" crown | End nail |
| 27 | Built-up girders and beams, 2-inch lumber layers | 20d common (4" × 0.192"); or | Nail each layer as follows: 32" o.c. at top and bottom and staggered. |
| | | 10d box (3" × 0.128"); or 3" × 0.131" nails | 24" o.c. face nail at top and bottom staggered on opposite sides |
| | | And: 2-20d common (4" × 0.192"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails | Face nail at ends and at each splice |
| 28 | Ledger strip supporting joists or rafters | 4-16d box (3 1/2" × 0.135"); or 3-16d common (3 1/2" × 0.162"); or 4-10d box (3" × 0.128"); or 4-3" × 0.131" nails | At each joist or rafter, face nail |
| 29 | Bridging to joist | 2-10d (3" × 0.128") | Each end, toe nail |

(continued)

TABLE 602.3(1)
FASTENING SCHEDULE—continued

| ITEM | DESCRIPTION OF BUILDING ELEMENTS | NUMBER AND TYPE OF FASTENER ^{a, b, c} | SPACING OF FASTENERS | |
|--|---|---|-----------------------------|--|
| | | | Edges (inches) ^h | Intermediate supports ^{c, e} (inches) |
| Wood structural panels, subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing [see Table R602.3(3) for wood structural panel exterior wall sheathing to wall framing] | | | | |
| 30 | 3/8" – 1/2" | 6d common (2" × 0.113") nail (subfloor, wall) ⁱ 8d common (2 1/2" × 0.131") nail (roof) | 6 | 12f |
| 31 | 19/32" – 1" | 8d common nail (2 1/2" × 0.131") | 6 | 12f |
| 32 | 1 1/8" – 1 1/4" | 10d common (3" × 0.148") nail; or 8d (2 1/2" × 0.131") deformed nail | 6 | 12 |
| Other wall sheathing^g | | | | |
| 33 | 1/2" structural cellulosic fiberboard sheathing | 1 1/2" galvanized roofing nail, 7/16" head diameter, or 1" crown staple 16 ga., 1 1/4" long | 3 | 6 |
| 34 | 25/32" structural cellulosic fiberboard sheathing | 1 3/4" galvanized roofing nail, 7/16" head diameter, or 1" crown staple 16 ga., 1 1/4" long | 3 | 6 |
| 35 | 1/2" gypsum sheathing ^d | 1 1/2" galvanized roofing nail; staple galvanized, 1 1/2" long; 1 1/4" screws, Type W or S | 7 | 7 |
| 36 | 5/8" gypsum sheathing ^d | 1 3/4" galvanized roofing nail; staple galvanized, 1 5/8" long; 1 5/8" screws, Type W or S | 7 | 7 |
| Wood structural panels, combination subfloor underlayment to framing | | | | |
| 37 | 3/4" and less | 6d deformed (2" × 0.120") nail; or 8d common (2 1/2" × 0.131") nail | 6 | 12 |
| 38 | 7/8" – 1" | 8d common (2 1/2" × 0.131") nail; or 8d deformed (2 1/2" × 0.120") nail | 6 | 12 |
| 39 | 1 1/8" – 1 1/4" | 10d common (3" × 0.148") nail; or 8d deformed (2 1/2" × 0.120") nail | 6 | 12 |

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s; 1 ksi = 6.895 MPa.

USE AND OCCUPANCY CLASSIFICATION

- a. Nails are smooth-common, box or deformed shanks except where otherwise stated. Nails used for framing and sheathing connections shall have minimum average bending yield strengths as shown: 80 ksi for shank diameter of 0.192 inch (20d common nail), 90 ksi for shank diameters larger than 0.142 inch but not larger than 0.177 inch, and 100 ksi for shank diameters of 0.142 inch or less.
- b. Staples are 16 gage wire and have a minimum 7/16-inch on diameter crown width.
- c. Nails shall be spaced at not more than 6 inches on center at all supports where spans are 48 inches or greater
- d. Four-foot by 8-foot or 4-foot by 9-foot panels shall be applied vertically.
- e. Spacing of fasteners not included in this table shall be based on Table R602.3(2).
- f. Where the ultimate design wind speed is 130 mph or less, nails for attaching wood structural panel roof sheathing to gable end wall framing shall be spaced 6 inches on center. Where the ultimate design wind speed is greater than 130 mph, nails for attaching panel roof sheathing to intermediate supports shall be spaced 6 inches on center for minimum 48-inch distance from ridges, eaves and gable end walls; and 4 inches on center to gable end wall framing.
- g. Gypsum sheathing shall conform to ASTM C 1396 and shall be installed in accordance with GA 253. Fiberboard sheathing shall conform to ASTM C 208.
- h. Spacing of fasteners on floor sheathing panel edges applies to panel edges supported by framing members and required blocking and at floor perimeters only. Spacing of fasteners on roof sheathing panel edges applies to panel edges supported by framing members and required blocking. Blocking of roof or floor sheathing panel edges perpendicular to the framing members need not be provided except as required by other provisions of this code. Floor perimeter shall be supported by framing members or solid blocking.
- i. Where a rafter is fastened to an adjacent parallel ceiling joist in accordance with this schedule, provide two toe nails on one side of the rafter and toe nails from the ceiling joist to top plate in accordance with this schedule. The toe nail on the opposite side of the rafter shall not be required.

49. Change Table R602.7(1) to read:

TABLE R602.7(1)
HEADER AND GIRDER SPANS^{a, b} FOR EXTERIOR BEARING WALLS
(Maximum spans for Douglas Fir-Larch, Hem-Fir, Southern Pine and Spruce-Pine-Fir^b and required number of jack studs)

| GIRDERS AND HEADERS SUPPORTING | SIZE | GROUND SNOW LOAD (psf) ^e | | | | | | | | | | | | | | | | | |
|--------------------------------|-----------------|-------------------------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|-----------------|------|---|
| | | 30 | | | | | | 50 | | | | | | 70 | | | | | |
| | | Building width (feet) ^c | | | | | | | | | | | | | | | | | |
| | | 12 | | 24 | | 36 | | 12 | | 24 | | 36 | | 12 | | 24 | | 36 | |
| Span ^f | NJ ^d | Span ^f | NJ ^d | Span ^f | NJ ^d | Span ^f | NJ ^d | Span ^f | NJ ^d | Span ^f | NJ ^d | Span ^f | NJ ^d | Span ^f | NJ ^d | Span ^f | NJ ^d | | |
| Roof and ceiling | 1-2x6 | 4-0 | 1 | 3-1 | 2 | 2-7 | 2 | 3-5 | 1 | 2-8 | 2 | 2-3 | 2 | 3-0 | 2 | 2-4 | 2 | 2-0 | 2 |
| | 1-2x8 | 5-1 | 2 | 3-11 | 2 | 3-3 | 2 | 4-4 | 2 | 3-4 | 2 | 2-10 | 2 | 3-10 | 2 | 3-0 | 2 | 2-6 | 3 |
| | 1-2x10 | 6-0 | 2 | 4-8 | 2 | 3-11 | 2 | 5-2 | 2 | 4-0 | 2 | 3-4 | 2 | 4-7 | 2 | 3-6 | 3 | 3-0 | 3 |
| | 1-2x12 | 7-1 | 2 | 5-5 | 2 | 4-7 | 3 | 6-1 | 2 | 4-8 | 3 | 3-11 | 3 | 5-5 | 2 | 4-2 | 3 | 3-6 | 3 |
| | 2-2x4 | 4-0 | 1 | 3-1 | 1 | 2-7 | 1 | 3-5 | 1 | 2-7 | 1 | 2-2 | 1 | 3-0 | 1 | 2-4 | 1 | 2-0 | 1 |
| | 2-2x6 | 6-0 | 1 | 4-7 | 1 | 3-10 | 1 | 5-1 | 1 | 3-11 | 1 | 3-3 | 2 | 4-6 | 1 | 3-6 | 2 | 2-11 | 2 |
| | 2-2x8 | 7-7 | 1 | 5-9 | 1 | 4-10 | 2 | 6-5 | 1 | 5-0 | 2 | 4-2 | 2 | 5-9 | 1 | 4-5 | 2 | 3-9 | 2 |
| | 2-2x10 | 9-0 | 1 | 6-10 | 2 | 5-9 | 2 | 7-8 | 2 | 5-11 | 2 | 4-11 | 2 | 6-9 | 2 | 5-3 | 2 | 4-5 | 2 |
| | 2-2x12 | 10-7 | 2 | 8-1 | 2 | 6-10 | 2 | 9-0 | 2 | 6-11 | 2 | 5-10 | 2 | 8-0 | 2 | 6-2 | 2 | 5-2 | 3 |
| | 3-2x8 | 9-5 | 1 | 7-3 | 1 | 6-1 | 1 | 8-1 | 1 | 6-3 | 1 | 5-3 | 2 | 7-2 | 1 | 5-6 | 2 | 4-8 | 2 |
| | 3-2x10 | 11-3 | 1 | 8-7 | 1 | 7-3 | 2 | 9-7 | 1 | 7-4 | 2 | 6-2 | 2 | 8-6 | 1 | 6-7 | 2 | 5-6 | 2 |
| | 3-2x12 | 13-2 | 1 | 10-1 | 2 | 8-6 | 2 | 11-3 | 2 | 8-8 | 2 | 7-4 | 2 | 10-0 | 2 | 7-9 | 2 | 6-6 | 2 |
| | 4-2x8 | 10-11 | 1 | 8-4 | 1 | 7-0 | 1 | 9-4 | 1 | 7-2 | 1 | 6-0 | 1 | 8-3 | 1 | 6-4 | 1 | 5-4 | 2 |
| | 4-2x10 | 12-11 | 1 | 9-11 | 1 | 8-4 | 1 | 11-1 | 1 | 8-6 | 1 | 7-2 | 2 | 9-10 | 1 | 7-7 | 2 | 6-4 | 2 |
| 4-2x12 | 15-3 | 1 | 11-8 | 1 | 9-10 | 2 | 13-0 | 1 | 10-0 | 2 | 8-5 | 2 | 11-7 | 1 | 8-11 | 2 | 7-6 | 2 | |

(continued)

TABLE R602.7(1)
HEADER AND GIRDER SPANS^{a, b} FOR EXTERIOR BEARING WALLS
 (Maximum spans for Douglas Fir-Larch, Hem-Fir, Southern Pine and Spruce-Pine-Fir^b and required number of jack studs) —continued

| GIRDERS AND HEADERS SUPPORTING | SIZE | GROUND SNOW LOAD (psf) ^e | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--------------|-------------------------------------|-------------------|--------------|------|-------------------|--------------|------|-------------------|--------------|------|-------------------|--------------|------|-------------------|--------------|------|-------------------|--------------|------|-------------------|--------------|------|-------------------|--------------|------|-------------------|--------------|--|
| | | 30 | | | | | | 50 | | | | | | 70 | | | | | | | | | | | | | | | |
| | | Building width ^c (feet) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 12 | | | 24 | | | 36 | | | 12 | | | 24 | | | 36 | | | 12 | | | 24 | | | 36 | | | |
| Span ^f | ^d | | Span ^f | ^d | | Span ^f | ^d | | Span ^f | ^d | | Span ^f | ^d | | Span ^f | ^d | | Span ^f | ^d | | Span ^f | ^d | | Span ^f | ^d | | Span ^f | ^d | |
| | NJ | | | NJ | | | NJ | | | NJ | | | NJ | | | NJ | | | NJ | | | NJ | | | NJ | | | NJ | |
| Roof, ceiling and one center-bearing floor | 1-2x6 | 3-3 | 1 | | 2-7 | 2 | | 2-2 | 2 | | 3-0 | 2 | | 2-4 | 2 | | 2-0 | 2 | | 2-9 | 2 | | 2-2 | 2 | | 1-10 | 2 | | |
| | 1-2x8 | 4-1 | 2 | | 3-3 | 2 | | 2-9 | 2 | | 3-9 | 2 | | 3-0 | 2 | | 2-6 | 3 | | 3-6 | 2 | | 2-9 | 2 | | 2-4 | 3 | | |
| | 1-2x10 | 4-11 | 2 | | 3-10 | 2 | | 3-3 | 3 | | 4-6 | 2 | | 3-6 | 3 | | 3-0 | 3 | | 4-1 | 2 | | 3-3 | 3 | | 2-9 | 3 | | |
| | 1-2x12 | 5-9 | 2 | | 4-6 | 3 | | 3-10 | 3 | | 5-3 | 2 | | 4-2 | 3 | | 3-6 | 3 | | 4-10 | 3 | | 3-10 | 3 | | 3-3 | 4 | | |
| | 2-2x4 | 3-3 | 1 | | 2-6 | 1 | | 2-2 | 1 | | 3-0 | 1 | | 2-4 | 1 | | 2-0 | 1 | | 2-8 | 1 | | 2-2 | 1 | | 1-10 | 1 | | |
| | 2-2x6 | 4-10 | 1 | | 3-9 | 1 | | 3-3 | 2 | | 4-5 | 1 | | 3-6 | 2 | | 3-0 | 2 | | 4-1 | 1 | | 3-3 | 2 | | 2-9 | 2 | | |
| | 2-2x8 | 6-1 | 1 | | 4-10 | 2 | | 4-1 | 2 | | 5-7 | 2 | | 4-5 | 2 | | 3-9 | 2 | | 5-2 | 2 | | 4-1 | 2 | | 3-6 | 2 | | |
| | 2-2x10 | 7-3 | 2 | | 5-8 | 2 | | 4-10 | 2 | | 6-8 | 2 | | 5-3 | 2 | | 4-5 | 2 | | 6-1 | 2 | | 4-10 | 2 | | 4-1 | 2 | | |
| | 2-2x12 | 8-6 | 2 | | 6-8 | 2 | | 5-8 | 2 | | 7-10 | 2 | | 6-2 | 2 | | 5-3 | 3 | | 7-2 | 2 | | 5-8 | 2 | | 4-10 | 3 | | |
| | 3-2x8 | 7-8 | 1 | | 6-0 | 1 | | 5-1 | 2 | | 7-0 | 1 | | 5-6 | 2 | | 4-8 | 2 | | 6-5 | 1 | | 5-1 | 2 | | 4-4 | 2 | | |
| | 3-2x10 | 9-1 | 1 | | 7-2 | 2 | | 6-1 | 2 | | 8-4 | 1 | | 6-7 | 2 | | 5-7 | 2 | | 7-8 | 2 | | 6-1 | 2 | | 5-2 | 2 | | |
| | 3-2x12 | 10-8 | 2 | | 8-5 | 2 | | 7-2 | 2 | | 9-10 | 2 | | 7-8 | 2 | | 6-7 | 2 | | 9-0 | 2 | | 7-1 | 2 | | 6-1 | 2 | | |
| | 4-2x8 | 8-10 | 1 | | 6-11 | 1 | | 5-11 | 1 | | 8-1 | 1 | | 6-4 | 1 | | 5-5 | 2 | | 7-5 | 1 | | 5-11 | 1 | | 5-0 | 2 | | |
| | 4-2x10 | 10-6 | 1 | | 8-3 | 2 | | 7-0 | 2 | | 9-8 | 1 | | 7-7 | 2 | | 6-5 | 2 | | 8-10 | 1 | | 7-0 | 2 | | 6-0 | 2 | | |
| 4-2x12 | 12-4 | 1 | | 9-8 | 2 | | 8-3 | 2 | | 11-4 | 2 | | 8-11 | 2 | | 7-7 | 2 | | 10-4 | 2 | | 8-3 | 2 | | 7-0 | 2 | | | |
| Roof, ceiling and one clear span floor | 1-2x6 | 2-11 | 2 | | 2-3 | 2 | | 1-11 | 2 | | 2-9 | 2 | | 2-1 | 2 | | 1-9 | 2 | | 2-7 | 2 | | 2-0 | 2 | | 1-8 | 2 | | |
| | 1-2x8 | 3-9 | 2 | | 2-10 | 2 | | 2-5 | 3 | | 3-6 | 2 | | 2-8 | 2 | | 2-3 | 3 | | 3-3 | 2 | | 2-6 | 3 | | 2-2 | 3 | | |
| | 1-2x10 | 4-5 | 2 | | 3-5 | 3 | | 2-10 | 3 | | 4-2 | 2 | | 3-2 | 3 | | 2-8 | 3 | | 3-11 | 2 | | 3-0 | 3 | | 2-6 | 3 | | |
| | 1-2x12 | 5-2 | 2 | | 4-0 | 3 | | 3-4 | 3 | | 4-10 | 3 | | 3-9 | 3 | | 3-2 | 4 | | 4-7 | 3 | | 3-6 | 3 | | 3-0 | 4 | | |
| | 2-2x4 | 2-11 | 1 | | 2-3 | 1 | | 1-10 | 1 | | 2-9 | 1 | | 2-1 | 1 | | 1-9 | 1 | | 2-7 | 1 | | 2-0 | 1 | | 1-8 | 1 | | |
| | 2-2x6 | 4-4 | 1 | | 3-4 | 2 | | 2-10 | 2 | | 4-1 | 1 | | 3-2 | 2 | | 2-8 | 2 | | 3-10 | 1 | | 3-0 | 2 | | 2-6 | 2 | | |
| | 2-2x8 | 5-6 | 2 | | 4-3 | 2 | | 3-7 | 2 | | 5-2 | 2 | | 4-0 | 2 | | 3-4 | 2 | | 4-10 | 2 | | 3-9 | 2 | | 3-2 | 2 | | |
| | 2-2x10 | 6-7 | 2 | | 5-0 | 2 | | 4-2 | 2 | | 6-1 | 2 | | 4-9 | 2 | | 4-0 | 2 | | 5-9 | 2 | | 4-5 | 2 | | 3-9 | 3 | | |
| | 2-2x12 | 7-9 | 2 | | 5-11 | 2 | | 4-11 | 3 | | 7-2 | 2 | | 5-7 | 2 | | 4-8 | 3 | | 6-9 | 2 | | 5-3 | 3 | | 4-5 | 3 | | |
| | 3-2x8 | 6-11 | 1 | | 5-3 | 2 | | 4-5 | 2 | | 6-5 | 1 | | 5-0 | 2 | | 4-2 | 2 | | 6-1 | 1 | | 4-8 | 2 | | 4-0 | 2 | | |
| | 3-2x10 | 8-3 | 2 | | 6-3 | 2 | | 5-3 | 2 | | 7-8 | 2 | | 5-11 | 2 | | 5-0 | 2 | | 7-3 | 2 | | 5-7 | 2 | | 4-8 | 2 | | |
| | 3-2x12 | 9-8 | 2 | | 7-5 | 2 | | 6-2 | 2 | | 9-0 | 2 | | 7-0 | 2 | | 5-10 | 2 | | 8-6 | 2 | | 6-7 | 2 | | 5-6 | 3 | | |
| | 4-2x8 | 8-0 | 1 | | 6-1 | 1 | | 5-1 | 2 | | 7-5 | 1 | | 5-9 | 2 | | 8-4 | 1 | | 6-5 | 2 | | 5-5 | 2 | | 4-7 | 2 | | |
| | 4-2x10 | 9-6 | 1 | | 7-3 | 2 | | 6-1 | 2 | | 8-10 | 1 | | 6-10 | 2 | | 5-9 | 2 | | 8-4 | 1 | | 6-5 | 2 | | 5-5 | 2 | | |
| 4-2x12 | 11-2 | 2 | | 8-6 | 2 | | 7-2 | 2 | | 10-5 | 2 | | 8-0 | 2 | | 6-9 | 2 | | 9-10 | 2 | | 7-7 | 2 | | 6-5 | 2 | | | |

(continued)

TABLE R602.7(1)
HEADER AND GIRDER SPANS^{a, b} FOR EXTERIOR BEARING WALLS
 (Maximum spans for Douglas Fir-Larch, Hem-Fir, Southern Pine and Spruce-Pine-Fir^b and required number of jack studs) — continued

| GIRDERS AND HEADERS SUPPORTING | SIZE | GROUND SNOW LOAD (psf) ^e | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--------|-------------------------------------|----------------|------|-------------------|----------------|-----|-------------------|----------------|------|-------------------|----------------|-----|-------------------|----------------|------|-------------------|----------------|----|-------------------|----------------|----|-------------------|----------------|----|-------------------|----------------|----|
| | | 30 | | | | | | 50 | | | | | | 70 | | | | | | | | | | | | | | |
| | | Building width ^c (feet) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 12 | | | 24 | | | 36 | | | 12 | | | 24 | | | 36 | | | 12 | | | 24 | | | 36 | | |
| | | Span ^f | d ^d | NJ | Span ^f | d ^d | NJ | Span ^f | d ^d | NJ | Span ^f | d ^d | NJ | Span ^f | d ^d | NJ | Span ^f | d ^d | NJ | Span ^f | d ^d | NJ | Span ^f | d ^d | NJ | Span ^f | d ^d | NJ |
| Roof, ceiling and two center-bearing floors | 1-2x6 | 2-8 | 2 | 2-1 | 2 | 1-10 | 2 | 2-7 | 2 | 2-0 | 2 | 1-9 | 2 | 2-5 | 2 | 1-11 | 2 | 1-8 | 2 | | | | | | | | | |
| | 1-2x8 | 3-5 | 2 | 2-8 | 2 | 2-4 | 3 | 3-3 | 2 | 2-7 | 2 | 2-2 | 3 | 3-1 | 2 | 2-5 | 3 | 2-1 | 3 | | | | | | | | | |
| | 1-2x10 | 4-0 | 2 | 3-2 | 3 | 2-9 | 3 | 3-10 | 2 | 3-1 | 3 | 2-7 | 3 | 3-8 | 2 | 2-11 | 3 | 2-5 | 3 | | | | | | | | | |
| | 1-2x12 | 4-9 | 3 | 3-9 | 3 | 3-2 | 4 | 4-6 | 3 | 3-7 | 3 | 3-1 | 4 | 4-3 | 3 | 3-5 | 3 | 2-11 | 4 | | | | | | | | | |
| | 2-2x4 | 2-8 | 1 | 2-1 | 1 | 1-9 | 1 | 2-6 | 1 | 2-0 | 1 | 1-8 | 1 | 2-5 | 1 | 1-11 | 1 | 1-7 | 1 | | | | | | | | | |
| | 2-2x6 | 4-0 | 1 | 3-2 | 2 | 2-8 | 2 | 3-9 | 1 | 3-0 | 2 | 2-7 | 2 | 3-7 | 1 | 2-10 | 2 | 2-5 | 2 | | | | | | | | | |
| | 2-2x8 | 5-0 | 2 | 4-0 | 2 | 3-5 | 2 | 4-10 | 2 | 3-10 | 2 | 3-3 | 2 | 4-7 | 2 | 3-7 | 2 | 3-1 | 2 | | | | | | | | | |
| | 2-2x10 | 6-0 | 2 | 4-9 | 2 | 4-0 | 2 | 5-8 | 2 | 4-6 | 2 | 3-10 | 3 | 5-5 | 2 | 4-3 | 2 | 3-8 | 3 | | | | | | | | | |
| | 2-2x12 | 7-0 | 2 | 5-7 | 2 | 4-9 | 3 | 6-8 | 2 | 5-4 | 3 | 4-6 | 3 | 6-4 | 2 | 5-0 | 3 | 4-3 | 3 | | | | | | | | | |
| | 3-2x8 | 6-4 | 1 | 5-0 | 2 | 4-3 | 2 | 6-0 | 1 | 4-9 | 2 | 4-1 | 2 | 5-8 | 2 | 4-6 | 2 | 3-10 | 2 | | | | | | | | | |
| | 3-2x10 | 7-6 | 2 | 5-11 | 2 | 5-1 | 2 | 7-1 | 2 | 5-8 | 2 | 4-10 | 2 | 6-9 | 2 | 5-4 | 2 | 4-7 | 2 | | | | | | | | | |
| | 3-2x12 | 8-10 | 2 | 7-0 | 2 | 5-11 | 2 | 8-5 | 2 | 6-8 | 2 | 5-8 | 3 | 8-0 | 2 | 6-4 | 2 | 5-4 | 3 | | | | | | | | | |
| | 4-2x8 | 7-3 | 1 | 5-9 | 1 | 4-11 | 2 | 5-11 | 1 | 5-6 | 2 | 4-8 | 2 | 6-7 | 1 | 5-2 | 2 | 4-5 | 2 | | | | | | | | | |
| | 4-2x10 | 8-8 | 1 | 6-10 | 2 | 5-10 | 2 | 8-3 | 2 | 6-6 | 2 | 5-7 | 2 | 7-10 | 2 | 6-2 | 2 | 5-3 | 2 | | | | | | | | | |
| | 4-2x12 | 10-2 | 2 | 8-1 | 2 | 6-10 | 2 | 9-8 | 2 | 7-8 | 2 | 6-7 | 2 | 9-2 | 2 | 7-3 | 2 | 6-2 | 2 | | | | | | | | | |
| Roof, ceiling, and two clear span floors | 1-2x6 | 2-3 | 2 | 1-9 | 2 | 1-5 | 2 | 2-3 | 2 | 1-9 | 2 | 1-5 | 3 | 2-2 | 2 | 1-8 | 2 | 1-5 | 3 | | | | | | | | | |
| | 1-2x8 | 2-10 | 2 | 2-2 | 3 | 1-10 | 3 | 2-10 | 2 | 2-2 | 3 | 1-10 | 3 | 2-9 | 2 | 2-1 | 3 | 1-10 | 3 | | | | | | | | | |
| | 1-2x10 | 3-4 | 2 | 2-7 | 3 | 2-2 | 3 | 3-4 | 3 | 2-7 | 3 | 2-2 | 4 | 3-3 | 3 | 2-6 | 3 | 2-2 | 4 | | | | | | | | | |
| | 1-2x12 | 4-0 | 3 | 3-0 | 3 | 2-7 | 4 | 4-0 | 3 | 3-0 | 4 | 2-7 | 4 | 3-10 | 3 | 3-0 | 4 | 2-6 | 4 | | | | | | | | | |
| | 2-2x4 | 2-3 | 1 | 1-8 | 1 | 1-4 | 1 | 2-3 | 1 | 1-8 | 1 | 1-4 | 1 | 2-2 | 1 | 1-8 | 1 | 1-4 | 2 | | | | | | | | | |
| | 2-2x6 | 3-4 | 1 | 2-6 | 2 | 2-2 | 2 | 3-4 | 2 | 2-6 | 2 | 2-2 | 2 | 3-3 | 2 | 2-6 | 2 | 2-1 | 2 | | | | | | | | | |
| | 2-2x8 | 4-3 | 2 | 3-3 | 2 | 2-8 | 2 | 4-3 | 2 | 3-3 | 2 | 2-8 | 2 | 4-1 | 2 | 3-2 | 2 | 2-8 | 3 | | | | | | | | | |
| | 2-2x10 | 5-0 | 2 | 3-10 | 2 | 3-2 | 3 | 5-0 | 2 | 3-10 | 2 | 3-2 | 2 | 4-10 | 2 | 3-9 | 3 | 3-2 | 3 | | | | | | | | | |
| | 2-2x12 | 5-11 | 2 | 4-6 | 3 | 3-9 | 3 | 5-11 | 2 | 4-6 | 3 | 3-9 | 3 | 5-8 | 2 | 4-5 | 3 | 3-9 | 3 | | | | | | | | | |
| | 3-2x8 | 5-3 | 1 | 4-0 | 2 | 3-5 | 2 | 5-3 | 2 | 4-0 | 2 | 3-5 | 2 | 5-1 | 2 | 3-11 | 2 | 3-4 | 2 | | | | | | | | | |
| 3-2x10 | 6-3 | 2 | 4-9 | 2 | 4-0 | 2 | 6-3 | 2 | 4-9 | 2 | 4-0 | 2 | 6-1 | 2 | 4-8 | 2 | 4-0 | 3 | | | | | | | | | | |

(continued)

TABLE R602.7(1)
HEADER AND GIRDER SPANS^{a, b} FOR EXTERIOR BEARING WALLS
(Maximum spans for Douglas Fir-Larch, Hem-Fir, Southern Pine and Spruce-Pine-Fir^b and required
number of jack studs) —continued

| GIRDERS AND HEADERS SUPPORTING | SIZE | GROUND SNOW LOAD (psf) ^e | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--------|-------------------------------------|---|-----|-------------------|------|----|-------------------|---|-----|-------------------|------|----|-------------------|---|-----|-------------------|------|----|-------------------|---|----|-------------------|---|----|----|--|--|
| | | 30 | | | | | | 50 | | | | | | 70 | | | | | | | | | | | | | | |
| | | Building width (feet) ^c | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 12 | | | 24 | | | 36 | | | 12 | | | 24 | | | 36 | | | 12 | | | 24 | | | 36 | | |
| | | Span ^f | d | NJ | Span ^f | d | NJ | Span ^f | d | NJ | Span ^f | d | NJ | Span ^f | d | NJ | Span ^f | d | NJ | Span ^f | d | NJ | Span ^f | d | NJ | | | |
| Roof, ceiling, and two clear span floors | 3-2x12 | 7-5 | 2 | 5-8 | 2 | 4-9 | 3 | 7-5 | 2 | 5-8 | 2 | 4-9 | 3 | 7-2 | 2 | 5-6 | 3 | 4-8 | 3 | | | | | | | | | |
| | 4-2x8 | 6-1 | 1 | 4-8 | 2 | 3-11 | 2 | 6-1 | 1 | 4-8 | 2 | 3-11 | 2 | 5-11 | 1 | 4-7 | 2 | 3-11 | 2 | | | | | | | | | |
| | 4-2x10 | 7-3 | 2 | 5-6 | 2 | 4-8 | 2 | 7-3 | 2 | 5-6 | 2 | 4-8 | 2 | 7-0 | 2 | 5-5 | 2 | 4-7 | 2 | | | | | | | | | |
| | 4-2x12 | 8-6 | 2 | 6-6 | 2 | 5-6 | 2 | 8-6 | 2 | 6-6 | 2 | 5-6 | 2 | 8-3 | 2 | 6-4 | 2 | 5-4 | 3 | | | | | | | | | |

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

- a. Spans are given in feet and inches.
- b. Spans are based on the minimum design properties for No. 2 grade lumber of Douglas Fir-Larch, Hem-Fir, Southern Pine, and Spruce-Pine Fir.
- c. Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.
- d. NJ - Number of jack studs required to support each end. Where the number of required jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.
- e. Use 30 psf ground snow load for cases in which ground snow load is less than 30 psf and the roof live load is equal to or less than 20 psf.
- f. Spans are calculated assuming the top of the header or girder is laterally braced by perpendicular framing. Where the top of the header or girder is not laterally braced (e.g. cripple studs bearing on the header), tabulated spans for headers consisting of 2x8, 2x10, or 2x12 sizes shall be multiplied by 0.70 or the header shall be designed.

50. Change Table R602.7(2) to read:

Table R602.7(2)
Girder Spans^a and Header Spans^a for Interior Bearing Walls
(Maximum spans for Douglas Fir-Larch, Hem-Fir, Southern Pine, and Spruce-Pine Fir^b and required number of jack studs)

| Headers and Girders Supporting | Size | Building Width ^c (feet) | | | | | |
|--------------------------------|----------|------------------------------------|-----------------|-------------------|-----------------|-------------------|-----------------|
| | | 12 | | 24 | | 36 | |
| | | Span ^e | NJ ^d | Span ^e | NJ ^d | Span ^e | NJ ^d |
| One floor only | 2-2 x 4 | 4-1 | 1 | 2-10 | 1 | 2-4 | 1 |
| | 2-2 x 6 | 6-1 | 1 | 4-4 | 1 | 3-6 | 1 |
| | 2-2 x 8 | 7-9 | 1 | 5-5 | 1 | 4-5 | 2 |
| | 2-2 x 10 | 9-2 | 1 | 6-6 | 2 | 5-3 | 2 |
| | 2-2 x 12 | 10-9 | 1 | 7-7 | 2 | 6-3 | 2 |
| | 3-2 x 8 | 9-8 | 1 | 6-10 | 1 | 5-7 | 1 |
| | 3-2 x 10 | 11-5 | 1 | 8-1 | 1 | 6-7 | 2 |
| | 3-2 x 12 | 13-6 | 1 | 9-6 | 2 | 7-9 | 2 |
| | 4-2 x 8 | 11-2 | 1 | 7-11 | 1 | 6-5 | 1 |
| | 4-2 x 10 | 13-3 | 1 | 9-4 | 1 | 7-8 | 1 |
| 4-2 x 12 | 15-7 | 1 | 11-0 | 1 | 9-0 | 2 | |
| Two floors | 2-2 x 4 | 2-7 | 1 | 1-11 | 1 | 1-7 | 1 |
| | 2-2 x 6 | 3-11 | 1 | 2-11 | 2 | 2-5 | 2 |
| | 2-2 x 8 | 5-0 | 1 | 3-8 | 2 | 3-1 | 2 |
| | 2-2 x 10 | 5-11 | 2 | 4-4 | 2 | 3-7 | 2 |
| | 2-2 x 12 | 6-11 | 2 | 5-2 | 2 | 4-3 | 3 |
| | 3-2 x 8 | 6-3 | 1 | 4-7 | 2 | 3-10 | 2 |
| | 3-2 x 10 | 7-5 | 1 | 5-6 | 2 | 4-6 | 2 |
| | 3-2 x 12 | 8-8 | 2 | 6-5 | 2 | 5-4 | 2 |
| | 4-2 x 8 | 7-2 | 1 | 5-4 | 1 | 4-5 | 2 |
| | 4-2 x 10 | 8-6 | 1 | 6-4 | 2 | 5-3 | 2 |
| 4-2 x 12 | 10-1 | 1 | 7-5 | 2 | 6-2 | 2 | |

a. Spans are given in feet and inches.

b. Spans are based on the minimum design properties for No. 2 grade lumber of Douglas Fir-Larch, Hem-Fir, Southern Pine, and Spruce-Pine Fir.

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

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

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

USE AND OCCUPANCY CLASSIFICATION

51. 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.

52. Change 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) threaded 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.

53. 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.

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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 |

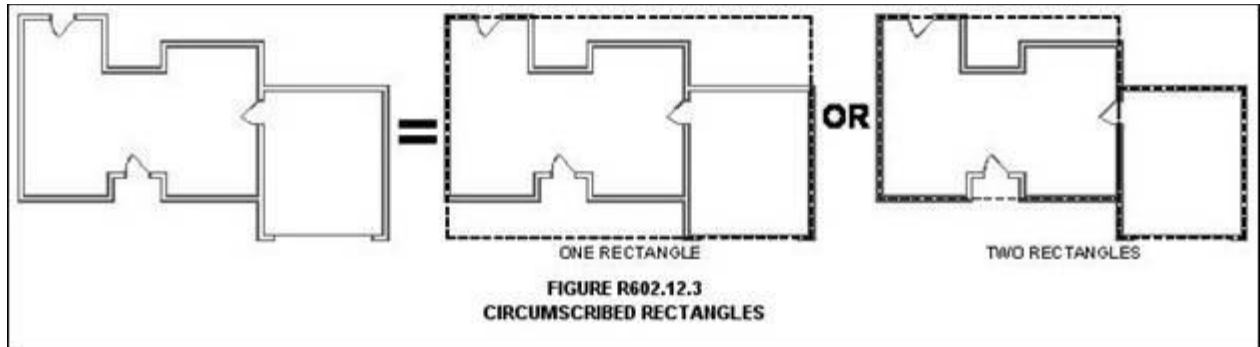
For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

- a. Braced wall panels supporting a gable end wall or roof load only.
- b. Interpolation shall be permitted.

USE AND OCCUPANCY CLASSIFICATION

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.



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 |
| | | 1d | 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 |
| | | 2d | 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 |
| | | 1d | 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 |
| | | 2d | 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 |
| | | 1d | 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 |
| | | 2d | 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 |

(continued)

Table R602.12.4
Required Length of Bracing Along Each Side of a Circumscribed Rectangle^{a,b,c}—continued

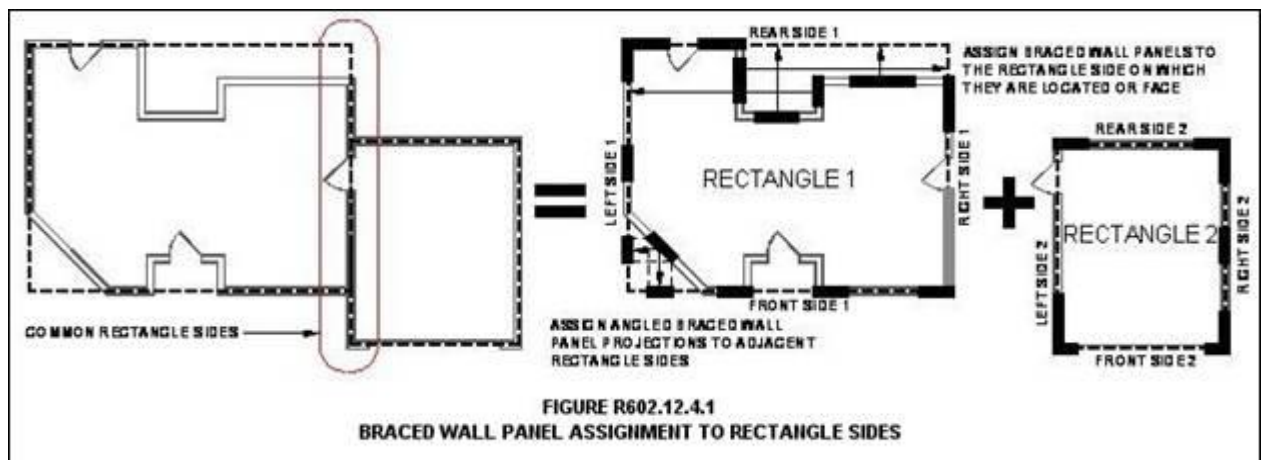
| | | | | | | | | | | | | | | | | | | |
|-----|----|----|-----|------|------|------|------|------|------|------|-----|------|------|------|------|------|------|------|
| 130 | 10 | 0 | 2.5 | 4.0 | 6.0 | 7.5 | 9.5 | 11.0 | 12.8 | 14.6 | 2.5 | 4.0 | 6.0 | 7.5 | 9.5 | 11.0 | 12.8 | 14.6 |
| | | 1d | 4.5 | 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 |
| | | 2d | 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 |
| | | 1d | 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 |
| | | 2d | 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 |
| | | 1d | 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 |
| | | 2d | 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.

- Interpolation shall be permitted; extrapolation shall be prohibited.
- 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.
- 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).
- 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.
- 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.
- 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.

- Exterior braced wall panels shall be assigned to the parallel rectangle side on which they are located or in which they face.
- 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.
- The projections of angled braced wall panels shall be assigned to the adjacent rectangle sides.



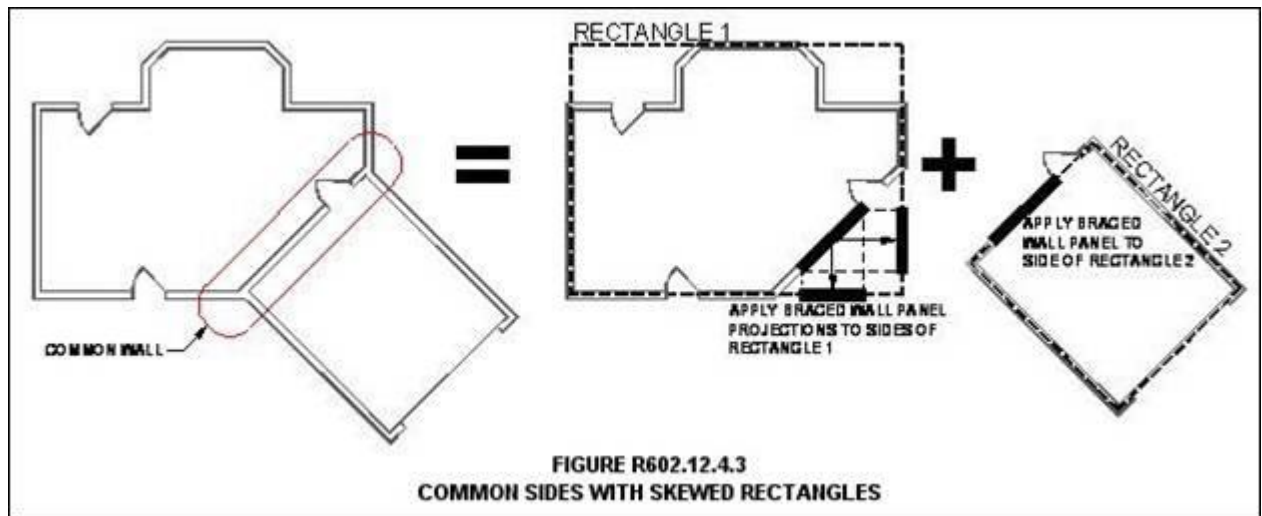
USE AND OCCUPANCY CLASSIFICATION

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.

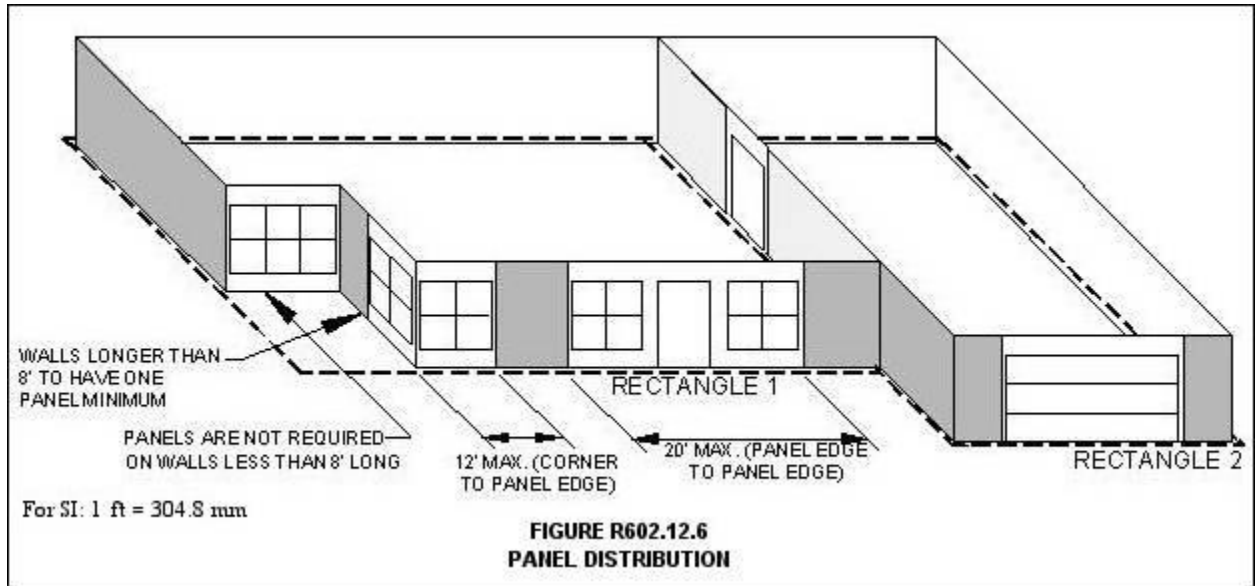
R602.12.4.3 Common sides with skewed rectangles. Braced wall panels located on a common wall where skewed rectangles intersect, as shown in Figure R602.12.4.3, shall be permitted to be assigned to the parallel rectangle side, and their projections shall be permitted to be assigned to the adjacent skewed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



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.



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.

R802.3.1 Ceiling joist and rafter connections. (Section deleted)

R802.3.2 Ceiling joists lapped. (Section deleted)

R802.3.3 Blocking. (Section deleted)

54. Change Sections R802.2 and R802.3 to read:

R802.2 Design and construction. The roof and ceiling assembly shall provide continuous ties across the structure to prevent roof thrust from being applied to the supporting walls. The assembly shall be designed and constructed in accordance with the provisions of this chapter and Figures R606.11(1), R606.11(2) and R606.11(3) or in accordance with AWC NDS.

R802.3 Ridge. A ridge board used to connect opposing rafters shall be not less than 1 inch (25 mm) nominal thickness and not less in depth than the cut end of the rafter. Where ceiling joist or rafter ties do not provide a continuous ties across the structure, a ridge beam shall be provided and supported on each end by a wall or girder.

56. Change Section R802.4 and add Section R802.4.1 to read:

R802.4 Rafters. Rafters shall be in accordance with this section.

R802.4.1 Rafter size. Rafters shall be sized based on the rafter spans in Tables R802.4.1(1) through R802.4.1(8). Rafter spans shall be measured along the horizontal projection of the rafter. For other grades and species and for other loading conditions, refer to the AWC STJR.

57. Change the titles of Tables R802.4(1) and R802.4(2) to Tables R802.5.1(1) and R802.5.1(2), respectively, and change the titles of Tables R802.5.1(1) through R802.5.1(8) to Tables R802.4.1(1) through R802.4.1(8), respectively.

55. Delete Sections R802.3.1, R802.3.2 and R802.3.3.

TABLE R802.5(1)
CEILING JOIST SPANS FOR COMMON LUMBER SPECIES
(Uninhabitable attics without storage, live load = 10 psf, $L/\Delta = 240$)

TABLE R802.5(2)
CEILING JOIST SPANS FOR COMMON LUMBER SPECIES
(Uninhabitable attics with limited storage, live load = 20 psf, $L/\Delta = 240$)

TABLE R802.4.1(1)
RAFTER SPANS FOR COMMON LUMBER SPECIES
(Roof live load = 20 psf, ceiling not attached to rafters, $L/\Delta = 180$)

TABLE R802.4.1(2)
RAFTER SPANS FOR COMMON LUMBER SPECIES
(Roof live load = 20 psf, ceiling attached to rafters, $L/\Delta = 240$)

TABLE R802.4.1(3)
RAFTER SPANS FOR COMMON LUMBER SPECIES
(Ground snow load = 30 psf, ceiling not attached to rafters, $L/\Delta = 180$)

TABLE R802.4.1(4)
RAFTER SPANS FOR COMMON LUMBER SPECIES
(Ground snow load = 50 psf, ceiling not attached to rafters, $L/\Delta = 180$)

TABLE R802.4.1(5)
RAFTER SPANS FOR COMMON LUMBER SPECIES
(Ground snow load = 30 psf, ceiling attached to rafters, $L/\Delta = 240$)

TABLE R802.4.1(6)
RAFTER SPANS FOR COMMON LUMBER SPECIES
(Ground snow load = 50 psf, ceiling attached to rafters, $L/\Delta = 240$)

TABLE R802.4.1(7)
RAFTER SPANS FOR 70 PSF GROUND SNOW LOAD
(Ceiling not attached to rafters, $L/\Delta = 180$)

TABLE R802.4.1(8)

RAFTER SPANS FOR 70 PSF GROUND SNOW LOAD
(Ceiling attached to rafters, $L/\Delta = 240$)

58. Add Sections R802.4.2 through R802.4.5 to read:

R802.4.2 Framing details. Rafters shall be framed not more than 1-1/2 inches (38 mm) offset from each other to a ridge board or directly opposite from each other with a collar tie, gusset plate or ridge strap in accordance with Table R602.3(1). Rafters shall be nailed to the top wall plates in accordance with Table R602.3(1) unless the roof assembly is required to comply with the uplift requirements of Section R802.11.

R802.4.3 Hips and valleys. Hip and valley rafters shall be not less than 2 inches (51 mm) nominal in thickness and not less in depth than the cut end of the rafter. Hip and valley rafters shall be supported at the ridge by a brace to a bearing partition or be designed to carry and distribute the specific load at that point.

R802.4.4 Rafter supports. Where the roof pitch is less than 3:12 (25-percent slope), structural members that support rafters, such as ridges, hips and valleys, shall be designed as beams, and bearing shall be provided for rafters in accordance with Section R802.6.

R802.4.5 Purlins. Installation of purlins to reduce the span of rafters is permitted as shown in Figure R802.4.5. Purlins shall be sized not less than the required size of the rafters that they support. Purlins shall be continuous and shall be supported by 2-inch by 4-inch (51 mm by 102 mm) braces installed to bearing walls at a slope not less than 45 degrees (0.79 rad) from the horizontal. The braces shall be spaced not more than 4 feet (1219 mm) on center and the unbraced length of braces shall not exceed 8 feet (2438 mm).

59. Add Figure R802.4.5 to read:

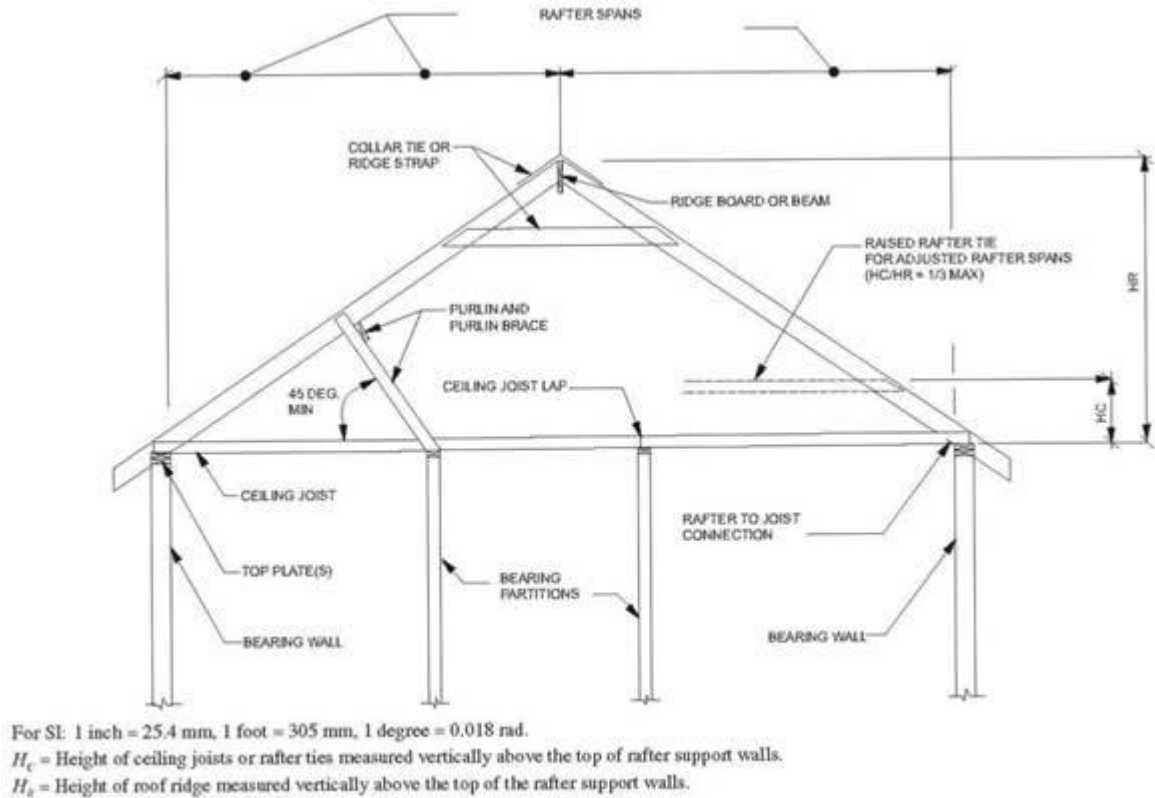


FIGURE R802.4.5
BRACED RAFTER CONSTRUCTION

60. Add Section R802.4.6 to read:

R802.4.6 Collar ties. Where collar ties are used to connect opposing rafters, they shall be located in the upper third of the attic space and fastened in accordance with Table R602.3(1). Collar ties shall be not less than 1 inch by 4 inches (25 mm by 102 mm) nominal, spaced not more than 4 feet (1219 mm) on center. Ridge straps in accordance with Table R602.3(1) shall be permitted to replace collar ties.

61. Change Sections R802.5 and R802.5.1 to read:

R802.5 Ceiling joists. Ceiling joists shall be continuous across the structure or securely joined where they meet over interior partitions in accordance with Table R802.5.2.

R802.5.1 Ceiling joist size. Ceiling joists shall be sized based on the joist spans in Tables R802.4(1) and R802.4(2). For other grades and species and for other loading conditions, refer to the AWC STJR.

62. Delete Figure R802.5.1 and change the title of Table R802.5.1(9) to Table R802.5.2.

TABLE R802.5.2
RAFTER/CEILING JOIST HEEL JOINT CONNECTIONS^{a, b, c, d, e, f, h}

63. Add Section R802.5.2 to read:

R802.5.2 Ceiling joist and rafter connections. Where ceiling joists run parallel to rafters, they shall be connected to rafters at the top wall plate in accordance with Table R802.5.2. Where ceiling joists are not connected to the rafters at the top wall plate, they shall be installed in the bottom third of the rafter height in accordance with Figure R802.4.5 and Table R802.5.2. Where the ceiling joists are installed above the bottom third of the rafter height, the ridge shall be designed as a beam. Where ceiling joists do not run parallel to rafters, the ceiling joists shall be connected to top plates in accordance with Table R602.3(1). Each rafter shall be tied across the structure with a rafter tie or a 2-inch by 4-inch (51 mm x 102 mm) kicker connected to the ceiling diaphragm with nails equivalent in capacity to Table R802.5.2.

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64. Add Sections R802.5.2.1 through R802.5.2.3 to read:

R802.5.2.1 Ceiling joists lapped. Ends of ceiling joists shall be lapped a minimum of 3 inches (76 mm) or butted over bearing partitions or beams and toenailed to the bearing member. Where ceiling joists are used to provide resistance to rafter thrust, lapped joists shall be nailed together in accordance with Table R802.5.2, and butted joists shall be tied together in a manner to resist such thrust. Joists that do not resist thrust shall be permitted to be nailed in accordance with Table R602.3(1). Wood structural panel roof sheathing, in accordance with Table R503.2.1.1(1), shall not cantilever more than 9 inches (229 mm) beyond the gable endwall unless supported by gable overhang framing.

R802.5.2.2 Rafter ties. Wood rafter ties shall be not less than 2 inches by 4 inches (51 mm by 102 mm) installed in accordance with Table R802.5.2 at each rafter. Other approved rafter tie methods shall be permitted.

R802.5.2.3 Blocking. Blocking shall be not less than utility grade lumber.

65. Delete Section R905.2.8.5.

R905.2.8.5 Drip edge. (Section deleted)

66. 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.

67. 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 2015 IECC.

Note: See REScheck compliance guidance issued by *DHCD*, available at the Department's website.

68. Delete Section N1101.14 (R401.3).

N1101.14 (R401.3) Certificate (Mandatory). (Section deleted)

69. Change the ceiling R-value and wood frame wall R-value categories for climate zone "4 except Marine" in Table N1102.1.2 (R402.1.2) to read: (Changes shown with strikethroughs and underlines)

| CLIMATE ZONE | CEILING R-VALUE | WOOD FRAME WALL R-VALUE |
|-----------------|-----------------|---------------------------|
| 4 except Marine | 38 | 15 or 13 + 1 ^h |

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70. Change the ceiling U-factor and frame wall U-factor categories for climate zone "4 except Marine" in Table N1102.1.4 (R402.1.4) to read: (Changes shown with strikethroughs and underlines)

| CLIMATE ZONE | CEILING U-FACTOR | FRAME WALL U-FACTOR |
|-----------------|------------------|---------------------|
| 4 except Marine | 0.030 | 0.079 |

71. 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.

72. 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 N1102.4.4.

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.

73. 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" to Table N1102.4.1.1 (R402.4.1.1) to read:

| COMPONENT | AIR BARRIER CRITERIA | INSULATION INSTALLATION CRITERIA ^b |
|--|---|---|
| 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. |

- b. Structural integrity of headers shall be in accordance with the applicable building code.
- c. Air barriers used behind showers and tubs on exterior walls shall be of a permeable material that does not cause the entrapment of moisture in the stud cavity.

74. Change Section N1102.4.1.2 (R402.4.1.2) and add Sections N1102.4.1.2.1 (R402.4.1.2.1), N1102.4.1.2.2 (R402.4.1.2.2), and N1102.4.1.3 (R402.4.1.3) to read:

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

N1102.4.1.2.1 (R402.4.1.2.1) Testing option. The building or dwelling unit shall be tested for air

leakage. Testing shall be conducted with a blower door at a pressure of 0.2 inches w.g. (50 Pa). Where required by the building official, testing shall be conducted by an approved third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the building official. Testing shall be performed at any time after creation of all penetrations of the building thermal envelope.

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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.

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

N1102.4.1.3 (R402.4.1.3) Leakage rate (Prescriptive). The building or dwelling unit shall have an air leakage rate less than 5 changes per hour as verified in accordance with Section N1102.4.1.2.

75. Change Section N1103.3.3 (R403.3.3) to read:

N1103.3.3 (R403.3.3) Duct testing (Mandatory). Ducts shall be pressure tested 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.

76. 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.

- The specified *equipment* or appliance is the lowest capacity unit available from the specified manufacturer.

77. Change Table N1106.4 (R406.4) to read:

Table N1106.4 (R406.4)
Maximum Energy Rating Index^a

| Climate Zone | Energy Rating Index |
|--------------|---------------------|
| 1 | 52 |
| 2 | 52 |
| 3 | 51 |
| 4 | 62 |
| 5 | 55 |
| 6 | 54 |
| 7 | 53 |
| 8 | 53 |

a. When on-site 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.

78. Delete Section N1109.1.1.1 (R503.1.1.1).

N1109.1.1.1 (R503.1.1.1) Replacement fenestration. (Section deleted)

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.

79. 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:

- The specified *equipment* or appliance utilizes multi-stage technology or variable refrigerant flow technology

- 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.
- The specified *equipment* or appliance is the lowest capacity unit available from the specified manufacturer.

80. 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

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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.

81. 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.

82. Change Section M1503.4 to read:

M1503.4 Makeup air required. Exhaust hood systems capable of exhausting more than 400 cubic feet per minute (0.19 m³/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 m³/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 m³/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 1500 square feet (139.35 m²), 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 3000 square feet (278.71 m²), and where natural draft space-heating or water-heating appliances are not located within the air barrier.

83. 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.

84. Change Sections G2411.1 and G2411.1.1 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 G2411.1.1 shall apply.

G2411.1.1 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 G2411.1.1.1 through G2411.1.1.5.

85. 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:

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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.

86. 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.

87. 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.

88. 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.

89. 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.

90. 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.

91. 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.

92. 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

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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.



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.

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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.

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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 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.

93. 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 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 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 P2901.1.

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.

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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.

94. Change the title of Section P2911 to read:

**SECTION P2911
GRAY WATER NONPOTABLE WATER
SYSTEMS**

95. 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 |

SECTION P2912

RAINWATER NONPOTABLE WATER SYSTEMS

Table P2911.5.1
Location of Nonpotable Gray Water Reuse
Storage Tanks

| Element | Minimum Horizontal Distance from Storage Tank (feet) |
|-------------------|--|
| Septic tanks | 5 |
| Water wells | 50 |
| Streams and lakes | 50 |
| Water service | 5 |
| Public water main | 10 |

97. 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.

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.

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.

96. Change the title of Section P2912 to read:

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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 but not limited to 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 1000 square feet (92.9 m²) 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.

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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.

P2912.15.5 Water supply system test. (Section deleted)

P2912.15.6 Inspection and testing of backflow prevention assemblies. (Section deleted)

P2912.15.7 Inspection of vermin and insect protection. (Section deleted)

P2912.15.8 Water quality test. (Section deleted)

P2912.16 Operation and maintenance manuals. (Section deleted)

P2912.16.1 Manual. (Section deleted)

P2912.16.2 Schematics. (Section deleted)

P2912.16.3 Maintenance procedures. (Section deleted)

P2912.16.4 Operations procedures. (Section deleted)

98. Delete Sections P2912.11 through P2912.16.

P2912.11 Valves. (Section deleted)

P2912.11.1 Influent diversion. (Section deleted)

P2912.11.2 Backwater valve. (Section deleted)

P2912.12 Pumping and control system. (Section deleted)

P2912.13 Water-pressure-reducing valve or regulator. (Section deleted)

P2912.14 Distribution pipe. (Section deleted)

P2912.14.1 Materials, joints and connections. (Section deleted)

P2912.14.2 Design. (Section deleted)

P2912.14.3 Labeling and marking. (Section deleted)

P2912.15 Tests and inspections. (Section deleted)

P2912.15.1 Roof gutter inspection and test. (Section deleted)

P2912.15.2 Roofwasher test. (Section deleted)

P2912.15.3 Collection pipe and vent test. (Section deleted)

P2912.15.4 Storage tank test. (Section deleted)

99. Delete Section P2913 in its entirety.

**SECTION P2913
RECLAIMED WATER SYSTEMS**

(Section deleted)

100. 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.

101. Add an exception to Section P3301.1 to read:

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P3301.1 Scope. The provisions of this chapter shall govern the materials, design, *construction* and installation of storm drainage.

Exception: Rainwater nonpotable water systems shall be permitted in accordance with the applicable provisions of Sections P2910 and P2912.

102. Add Section E3601.8 to read:

E3601.8 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.

103. 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.

104. Change Section E3902.16 to read:

E3902.16 Arc-fault protection of bedroom outlets. Branch circuits that supply 120-volt, single phase, 15-ampere and 20-ampere outlets installed in bedrooms 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.

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

Change the referenced standards in Chapter 44 as follows:

| Standard Reference Number | Title | Referenced in Code Section Number |
|---------------------------|--|-----------------------------------|
| ANSI LC1/CSA 6.26-14 | Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing (CSST) | G2411.1, G2411.1.1, G2414.5.3 |
| NSF 50-09 | Equipment for Swimming Pools, Spas, Hot Tubs and Other Recreational Water Facilities | P2911.6.1 |

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Add the following term to the list of terms in Section 312.1 of the IBC:

Marinas

CHAPTER 4

SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY

Delete Section 403.4.5 of the IBC.

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.

Add Sections 407.11 and 408.2.1 to the IBC to read:

407.11 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.

408.2.1 Short-term holding areas. Short-term holding areas shall be permitted to comply with Section 429.

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.

Change Section 408.9 of 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.

Add Sections 408.9.1, 408.9.2, and 408.9.3 to the IBC to read:

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.

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- 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.

Add an exception to Section 414.2 of the IBC to read:

Exception: Higher education teaching and research laboratories shall be permitted to comply with Section 430.

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 which are subject to the Virginia State Water Control Board regulations 9VAC25-91 and 9VAC25-580 shall not be applicable.

Add IBC Section 427 Manufactured Homes and Industrialized Buildings.

Add Sections 427.1 through 427.7, including subsections, to the IBC to read:

427.1 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.

427.2 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. Additionally, all applicable provisions of Chapter 1 of this code, including but not limited to 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.

427.2.1 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.

427.2.2 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 this code.

427.2.3 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).

427.3 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.

427.4 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 Section 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 (.28 m²) 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.

427.5 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, but not limited to, 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 Section 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.

427.6 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.

427.7 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.

Add IBC Section 428 Aboveground Liquid Fertilizer Tanks.

Add Sections 428.1 through 428.6, including subsections, to the IBC to read:

428.1 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.

428.1.1 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.

428.2 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

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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.

428.3 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.

428.4 Repair, alteration and reconstruction of ALFSTs. Repair, alteration and reconstruction of *ALFSTs* shall comply with applicable provisions of API 653 and TFI RMIP.

428.5 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*.

428.6 Abandoned ALFSTs. Abandoned *ALFSTs* shall comply with applicable provisions of Section 5704.2.13.2 of the IFC.

Add IBC Section 429 Short-term Holding Area.

Add Section 429.1 to the IBC to read:

429.1 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 retained occupants of *short-term holding areas* at all times.

2. Aggregate area of *short-term holding areas* shall not occupy more than 10 percent of the building area of the story in which they are located and shall not exceed the tabular values for building area in Table 503, 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 would be applicable to 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 would be applicable to I-3 occupancies.
8. Where each fire area containing *short-term holding areas* exceeds 12,000 square feet (1115 m²), 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.

Add IBC Section 430 Higher Education Laboratories.

Add Sections 430.1 through 430.4, including subsections, to the IBC to read:

430.1 Scope. Group B teaching and research laboratories in educational occupancies above the 12th grade complying with the requirements of this section shall be permitted to comply with Table 430.3, 430.4(1), or 430.4(2) without requiring classification as a Group H occupancy. Except as specified in this section, such laboratories shall comply with all applicable provisions of this code. In addition, as set out in Section 5001.7 of the SFPC, approval under this section is contingent upon operational requirements in the SFPC being complied with and maintained.

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

430.3 Laboratory suite construction. Where *laboratory suites* are provided, they shall be constructed in accordance with this section. The number of *laboratory suites* and percentage of maximum allowable quantities of hazardous materials in *laboratory suites* shall be in accordance with Table 430.3.

430.3.1 Separation from adjacent areas. *Laboratory suites* shall be separated from other portions of the building in accordance with the most restrictive of either (i) Table 430.3 with fire barriers constructed in accordance with Section 707 and horizontal assemblies constructed in accordance with Section 711 or (ii) Section 508.4. Where individual laboratories within a *laboratory suite* are separated from each other, the separation shall consist of one-hour fire barriers.

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

430.3.2 Separation from other laboratory suites. *Laboratory suites* shall be separated from other *laboratory suites* in accordance with Table 430.3.

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

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

430.3.4 Maximum number. The maximum number of *laboratory suites* per floor shall be in accordance with Table 430.3. Where a building contains both *laboratory suites* complying with Section 430.3 and control areas complying with Section 414.2, the total number of *laboratory suites* and control areas shall not exceed the maximum number of *laboratory suites* in accordance with Table 430.3.

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

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

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

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

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

430.3.10 Percentage of maximum allowable quantity in each laboratory suite. The percentage of maximum allowable quantities in each *laboratory suite* shall be in accordance with Table 430.3.

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**TABLE 430.3
DESIGN AND NUMBER OF LABORATORY SUITES PER FLOOR**

| FLOOR LEVEL | | PERCENTAGE OF THE MAXIMUM ALLOWABLE QUANTITY PER LAB SUITE ^a | NUMBER OF LAB SUITES PER FLOOR | FIRE-RESISTANCE RATING FOR FIRE BARRIERS IN HOURS ^b |
|----------------------|--------------|---|-----------------------------------|--|
| Above Grade Plane | 21+ | 5 | 1 | 2 |
| | 16-20 | 25 | 1 | 2 |
| | 11-15 | 50 | 1 | 2 |
| | 7-10 | 50 | 2 | 2 |
| | 4-6 | 75 | 4 | 1 |
| | 3 | 100 | 6 | 1 |
| | 1-2 | 100 | 8 | 1 |
| Below Grade Plane | 1 | 75 | 4 | 1 |
| | 2 | 50 | 2 | 1 |
| | Lower than 2 | Not Allowed | Not Allowed | Not Allowed |

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

430.4 Teaching and research laboratories utilizing control areas. Group B teaching and research laboratories in educational occupancies above the 12th grade utilizing control areas are permitted to increase amounts of hazardous materials stipulated in Section 414.2 without the laboratories being classified as Group H. The percentage of maximum allowable quantities of hazardous materials per control area and the number of control areas permitted at each floor level within a building shall be permitted to comply with Table 430.4(1) in buildings

equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or shall be permitted to comply with Table 430.4(2) in buildings not equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. In addition, as set out in Section 5001.7 of the SFPC, approval under this section is contingent upon operational requirements in the SFPC being complied with and maintained.

**TABLE 430.4(1)
DESIGN AND NUMBER OF CONTROL AREAS IN BUILDINGS EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH SECTION 903.1.1 WITH GROUP B TEACHING AND RESEARCH LABORATORIES IN EDUCATIONAL OCCUPANCIES ABOVE THE 12TH GRADE**

| FLOOR LEVEL | | PERCENTAGE OF THE MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA ^a | NUMBER OF CONTROL AREAS PER FLOOR | FIRE-RESISTANCE RATING FOR FIRE BARRIERS AND HORIZONTAL ASSEMBLIES IN HOURS ^b |
|----------------------|----------------|---|--------------------------------------|---|
| Above Grade Plane | Higher than 20 | 5 | 1 | 2 |
| | 11-20 | 10 | 1 | 2 |
| | 7-10 | 25 | 2 | 2 |
| | 4-6 | 50 | 2 | 2 |
| | 3 | 75 | 3 | 1 |
| | 1-2 | 100 | 4 | 1 |
| Below Grade Plane | 1 | 75 | 3 | 1 |
| | 2 | 50 | 2 | 1 |
| | Lower than 2 | Not Allowed | Not Allowed | Not Allowed |

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

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

TABLE 430.4(2)
DESIGN AND NUMBER OF CONTROL AREAS IN BUILDINGS NOT EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH SECTION 903.1.1 WITH GROUP B TEACHING AND RESEARCH LABORATORIES IN EDUCATIONAL OCCUPANCIES ABOVE THE 12TH GRADE

| FLOOR LEVEL | | PERCENTAGE OF THE MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA ^a | NUMBER OF CONTROL AREAS PER FLOOR | FIRE-RESISTANCE RATING FOR FIRE BARRIERS AND HORIZONTAL ASSEMBLIES IN HOURS ^b |
|-------------------|---------------|--|-----------------------------------|--|
| Above Grade Plane | Higher than 9 | 5 | 1 | 2 |
| | 7-9 | 10 | 2 | 2 |
| | 4-6 | 25 | 2 | 2 |
| | 3 | 75 | 3 | 1 |
| | 1-2 | 100 | 4 | 1 |
| Below Grade Plane | 1 | 75 | 3 | 1 |
| | 2 | 50 | 2 | 1 |
| | Lower than 2 | Not Allowed | Not Allowed | Not Allowed |

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

430.4.2 Fire resistance rating requirements. The required fire-resistance rating for fire barriers shall be in accordance with Table 430.4(1) in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or in accordance with Table 430.4(2) in buildings not equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. The floor assembly of the control area and the *construction* supporting the floor of the control area shall have a fire-resistance rating in accordance with Table 430.4(1) in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or in accordance with Table 430.4(2) in buildings not equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

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

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

430.4.4 Restricted materials in storage and use. Where approved by the building official, the storage and use of the following hazardous materials prohibited by Table 307.1(1) in buildings not equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, shall be allowed within a control area at 25% of Table 307.1(1) limits for a building equipped throughout with an automatic sprinkler system:

1. Pyrophorics.
2. Class 4 oxidizers.

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

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

430.4.6 Ventilation. Ventilation shall be in accordance with the International Mechanical code.

CHAPTER 7

FIRE AND SMOKE PROTECTION FEATURES

Change Section 703.7 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.”

Change exception and add an exception 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.

Add a fourth exception to Section 706.5.2 to the IBC to read:

4. Decks and open porches of buildings in Groups R-3 and R-4.

Change Section 716.5.3.1 of the IBC to read:

716.5.3.1 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. The air leakage rate of the door assembly shall not exceed 3.0 cubic feet per minute per square foot (0.01524 m³/s · m²) of door opening at 0.10 inch (24.9 Pa) of water for both the ambient temperature and elevated temperature tests. Louvers shall be prohibited. Installation of smoke doors shall be in accordance with NFPA 105.

Change Section 717.5.3 of the IBC to read:

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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.

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.

CHAPTER 8

INTERIOR FINISHES

Change Section 806.3 of the IBC to read:

806.3 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 percent 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 percent 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 803.13 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 percent 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 Group 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.

CHAPTER 9

FIRE PROTECTION SYSTEMS

Add the following to the list of terms in Section 902.1 of the IBC:

**EMERGENCY COMMUNICATION
EQUIPMENT.
EMERGENCY PUBLIC SAFETY
PERSONNEL.**

Change Section 903.2.1.2 of the IBC to read:

903.2.1.2 Group A-2. An automatic sprinkler system shall be provided for fire areas containing Group A-2 occupancies and intervening floors of the building where one of the following conditions exists:

1. The fire area exceeds 5,000 square feet (464.5m²).
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.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.
4. The fire area contains a multitheater complex.

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.

Change Section 903.2.3 of the IBC to read:

903.2.3 Group E. An automatic sprinkler system shall be provided for Group E occupancies as follows:

1. Throughout all Group E fire areas greater than 20,000 square feet (1858 m²) in area.
2. Throughout every portion of educational buildings below the lowest level of exit discharge serving that portion of the building.

Exception: An automatic sprinkler system is not required in any area below the lowest level of exit discharge serving that area where every classroom

throughout the building has at least one exterior exit door at ground level.

Add Exception 4 to Section 903.2.6 of the IBC 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 m²) or less in Group I-3 facilities, provided such buildings and overhangs are of noncombustible *construction*.

Change Section 903.2.7 of the IBC to read:

903.2.7 Group M. An automatic sprinkler system shall be provided throughout buildings containing a Group M occupancy where one of the following conditions exists:

1. A Group M fire area exceeds 12,000 square feet (1115 m²).
2. A Group M fire area is located more than three stories above grade plane.
3. The combined area of all Group M fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).

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

FIRE PROTECTION SYSTEMS

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.

Add Section 903.3.1.2.2 to the IBC to read:

903.3.1.2.2 Attics. 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.

Add Section 903.3.5.1.1 to the IBC to read:

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.

Change section number [F] 903.3.5.2 of the IBC to be section number 903.3.5.1.2.

Delete Sections 903.3.8 through 903.3.8.5 of the IBC.

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.

Change Section 905.3.1 of the IBC to read:

905.3.1 Height. Class III standpipe systems shall be installed throughout buildings where 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.

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.

Change Section 907.2.1.1 of the IBC to read:

907.2.1.1 System initiation in Group A occupancies with a 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.

Add Section 907.2.2.2 to the IBC to read:

907.2.2.2 Higher education laboratories. An automatic fire alarm and detection system shall be provided in Group B occupancies where an increase in hazardous materials is permitted in accordance with Section 430.

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.

Add the following 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.

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

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environment is not required in the smoke-control zone of fire origin.

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 m²) 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 chief, 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 m²) in area with a minimum dimension of up to 10 feet (3048 mm).

Change Section 912.4 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 chief.

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 chief.

Change Section 912.4.2 of the IBC to read:

912.4.2 Clear space around connections. A working space of not less than 36 inches (762 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 chief.

Change Section 915.1 of the IBC to read:

915.1 Carbon monoxide alarms. Carbon monoxide alarms shall comply with this section.

Change Section 915.2 of the IBC to read:

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.

Change Section 915.3 of the IBC to read:

915.3 Group E. Classrooms in 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.

5. Where the owner provides technological documentation from a qualified individual that the structure or portion thereof does not impede emergency communication signals.

Change Section 915.4 of the IBC to read:

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.

Change the title of Section 916 and change Sections 916.1 and 916.2, including subsections, of the IBC to read:

**SECTION 916
IN-BUILDING EMERGENCY COMMUNICATIONS
COVERAGE**

916.1 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*.

916.1.1 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.

916.1.2 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*.

916.1.3 Inspection. In accordance with Section 113.3, all installations shall be inspected prior to concealment.

916.2 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.

CHAPTER 10

MEANS OF EGRESS

Delete Section 1001.4 of the IBC.

Change Section 1004.3 of the IBC to read:

1004.3 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 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.

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.

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.

Change Exception 1 of Section 1006.2.1 of the IBC to read:

1. 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.

Change the following rows in Table 1006.2.1 of the IBC to read:

| | | | | |
|-----------------------|----|-----|----|------------------|
| A ^c , E, M | 50 | 75 | 75 | 75 ^a |
| B | 50 | 100 | 75 | 100 ^a |
| F | 50 | 75 | 75 | 100 ^a |
| U | 50 | 100 | 75 | 75 ^a |

Change the following row of Table 1006.3.2(2) of the IBC to read:

| | | | |
|--|--|----|----|
| First story above or below grade plane | A ^b , B ^b , E, F ^b , M, U | 50 | 75 |
|--|--|----|----|

MEANS OF EGRESS

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.

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.

Change Section 1010.1.6 of the IBC to read:

1010.1.6 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).

Change Item 2 of Section 1010.1.9.3 of the IBC to read:

2. 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. The locking device is readily distinguishable as locked.

2.2. 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. The use of the key-operated locking device is revokable by the building official for due cause.

Delete Section 1010.1.9.6 of the IBC.

Add an exception to Section 1010.1.9.7 of the IBC to read:

Exception: 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.

Change Section 1010.1.10 of the IBC to read:

1010.1.10 Panic and fire exit hardware. Doors serving a Group H occupancy and doors serving rooms or spaces with an occupant load of 50 or more in a Group A or E occupancy shall not be provided with a latch or lock other than panic hardware or fire exit hardware.

Exception: Doors serving a Group A or E occupancy shall be permitted to be electromagnetically locked in accordance with Section 1010.1.9.9.

Electrical rooms with equipment rated 1,200 amperes or more and over 6 feet (1829 mm) wide, and that contain overcurrent devices, switching devices or control devices with exit or exit access doors, shall be equipped with panic hardware or fire exit hardware. The doors shall swing in the direction of egress travel.

Add Section 1010.1.11 to the IBC to read:

1010.1.11 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.

Add Section 1010.1.12 to the IBC to read:

1010.1.12 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.

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).

Change 1011.6 of the IBC to read:

1011.6 Stairway landings. There shall be a floor or landing at the top and bottom of each stairway. The width of landings shall be not less than the width of stairways served. Every landing shall have a minimum width measured perpendicular to the direction of travel equal to the width of the stairway. Where the stairway has a straight run the depth need not exceed 48 inches (1219 mm). Doors opening onto a landing shall not reduce the landing to less than one-half the required width. When fully open, the door shall not project more than 7 inches (178 mm) into a landing. Where wheelchair spaces are required on the stairway landing in accordance with Section 1009.6.3, the wheelchair space shall not be located in the required width of the landing and doors shall not swing over the wheelchair spaces.

Exceptions:

1. Where stairways connect stepped aisles to cross aisles or concourses, stairway landings are not required at the transition between stairways and stepped aisles constructed in accordance with Section 1029.
2. 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.

Change Section 1011.16 of the IBC to read:

1011.16 Ladders. Permanent ladders shall not serve as a part of the means of egress from occupied spaces within a building. Permanent ladders shall be permitted to provide access to the following areas:

1. Spaces frequented only by personnel for maintenance, repair or monitoring of equipment.
2. Nonoccupiable spaces accessed only by catwalks, crawl spaces, freight elevators or very narrow passageways.
3. Raised areas used primarily for purposes of security, life safety or fire safety including, but not limited to, observation galleries, prison guard towers, fire towers or lifeguard stands.
4. Elevated levels in Group U not open to the general public.
5. Nonoccupied roofs that are not required to have stairway access in accordance with Section 1011.12.1.

Change Section 1015.8 of the IBC to read:

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

MEANS OF EGRESS

(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.

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.

Change Table 1020.1 of the IBC to read:

| 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 , I-4 | All | Not Permitted | 0 |
| I-1, I-3 | All | Not Permitted | 0 |

- a. For requirements for occupancies in Group I-2, see Sections 407.2 and 407.3.
- b. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 where allowed.

Add an additional row to Table 1020.2 of the IBC to read:

| | |
|---|----|
| 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 |
|---|----|

Change Section 1023.5 of the IBC to read:

1023.5 Penetrations. Penetrations into or through interior exit stairways and ramps are prohibited except for *equipment* and ductwork necessary for independent ventilation or pressurization, sprinkler piping, standpipes, electrical raceway for fire department communication systems and electrical raceway serving the interior exit stairway and ramp and terminating at a steel box not exceeding 16 square inches (0.010 m²). Such penetrations shall be protected in accordance with Section 714. There shall not be penetrations or communication openings, whether protected or not, between adjacent interior exit stairways and ramps.

Exceptions:

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

2. 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.

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.

Change Section 1024.6 of the IBC to read:

1024.6 Penetrations. Penetrations into or through an exit passageway are prohibited except for *equipment* and ductwork necessary for independent pressurization, sprinkler piping, standpipes, electrical raceway for fire department communication and electrical raceway serving the exit passageway and terminating at a steel box not exceeding 16 square inches (0.010 m²). Such penetrations shall be protected in accordance with Section 714. There shall not be penetrations or communicating openings, whether protected or not, between adjacent exit passageways.

Exceptions:

1. Membrane penetrations shall be permitted on the outside of the exit passageway. Such penetrations shall be protected in accordance with Section 714.3.2.
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.

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 Sections 1025.1 through 1025.5.

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.

Change Section 1030.1 of the IBC to read:

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

Exceptions:

1. Basements with a ceiling height of less than 80 inches (2032 mm) shall not be required to have emergency escape and rescue openings.
2. Emergency escape and rescue openings are not required from basements or sleeping rooms that have an exit door or exit access door that opens directly into a public way or to a yard, court or exterior exit balcony that opens to a public way.
3. Basements without habitable spaces and having not more than 200 square feet (18.6 m²) in floor area shall not be required to have emergency escape and rescue openings.

CHAPTER 11

ACCESSIBILITY

Add an exception to Section 1101.2 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.

Change Section 1103.2.8 of the IBC to read:

1103.2.8 Raised and lowered areas in places of religious worship. Raised or lowered 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 exclusively for the performance of religious ceremonies and are located within an accessible story or mezzanine.

Change Section 1106.1 of the IBC to read:

1106.1 Required. Where parking is provided, accessible parking spaces shall be provided in compliance with Tables 1106.1(1) and 1106.1(2), as applicable, except as required by Sections 1106.2 through 1106.4. 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.

Delete Table 1106.1 and add Tables 1106.1(1) and 1106.1(2) to read:

**TABLE 1106.1(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)
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 |

ACCESSIBILITY

Add Section 1106.8 to the IBC to read:

1106.8 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.

Add Sections 1109.16 and 1109.16.1 to the IBC to read:

1109.16 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 may comply with this section and be approved by the *local building department* as dwellings containing universal design features for accessibility.

1109.16.1 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 of ICC A117.1 with the following changes to the those requirements:
 - 1.1. That at least one bedroom be added to the interior spaces required by Section 1005.4 of ICC A117.1.
 - 1.2. In the toilet room or bathroom required by Section 1005 of ICC A117.1, in addition to the lavatory and water closet, a shower or bathtub complying with Section 1004.11.3.2.3 of ICC A117.1 shall be provided and shall include reinforcement for future installation of grab bars in accordance with Section 1004.11.1 of ICC A117.1.

1.3. That the exception to Section 1005.4 of ICC A117.1 is not applicable.

1.4. That there be a food preparation area complying with Section 1005.7 of ICC A117.1 on the entrance level.

1.5. That any thermostat for heating or cooling on the entrance level comply with Section 1005.8 of ICC A117.1.

Change Item 1 of Section 1111.1 of the IBC to read:

1. Accessible parking spaces required by Section 1106.1.

CHAPTER 12

INTERIOR ENVIRONMENT

Add the following to the list of terms in Section 1202.1 of the IBC:

**DAY-NIGHT AVERAGE SOUND LEVEL (LDN).
SOUND TRANSMISSION CLASS (STC)
RATING.**

Add Section 1203.5.4 to the IBC to read:

1203.5.4 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.

Add Section 1203.5.5 to the IBC to read:

1203.5.5 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.

Add Section 1203.7 to the IBC to read:

1203.7 Smoking areas in restaurants. Smoking areas in restaurants, as defined in section 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 (Section 15.2-2820 et seq.) of the Code of Virginia)].

Change Section 1207.1 of the IBC to read:

1207.1 Scope. Sections 1207.2 and 1207.3 shall apply to common interior walls, partitions and floor/ceiling assemblies between adjacent dwelling units or between dwelling units and adjacent public areas such as halls, corridors, stairs or service areas. Section 1207.4 applies to the *construction* of the exterior envelope of Group R occupancies within airport noise zones and to the exterior envelope of Group 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 section 15.2-2295 of the Code of Virginia.

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Add Section and Table 1207.4 to the IBC to read:

1207.4 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 1207.4. As an alternative to compliance with Table 1207.4, 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.

**TABLE 1207.4
AIRPORT NOISE ATTENUATION STANDARDS**

| <i>LDN</i> | <i>STC</i> OF EXTERIOR WALLS AND ROOF/CEILING ASSEMBLIES | <i>STC</i> OF DOORS AND WINDOWS |
|---------------|--|---------------------------------|
| 65-69 | 39 | 25 |
| 70-74 | 44 | 33 |
| 75 or greater | 49 | 38 |

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. Change Table C402.4 to read:

**TABLE C402.4
BUILDING ENVELOPE REQUIREMENTS: FENESTRATION**

| CLIMATE ZONE | 1 | 2 | 3 | 4 EXCEPT MARINE | 5 AND MARINE 4 | 6 | 7 | 8 |
|------------------------------|------|------|------|-----------------|----------------|------|------|------|
| Vertical fenestration | | | | | | | | |
| U-factor | | | | | | | | |
| Fixed fenestration | 0.50 | 0.50 | 0.46 | 0.38 | 0.38 | 0.36 | 0.29 | 0.29 |
| Operable fenestration | 0.65 | 0.65 | 0.60 | 0.45 | 0.45 | 0.43 | 0.37 | 0.37 |
| Entrance doors | 1.10 | 0.83 | 0.77 | 0.77 | 0.77 | 0.77 | 0.77 | 0.77 |
| SHGC | | | | | | | | |
| SHGC | 0.25 | 0.25 | 0.25 | 0.40 | 0.40 | 0.40 | 0.45 | 0.45 |
| Skylights | | | | | | | | |
| U-factor | 0.75 | 0.65 | 0.55 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| SHGC | 0.35 | 0.35 | 0.35 | 0.40 | 0.40 | 0.40 | NR | NR |

NR = No requirement.

2. 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.

$$PF = A/B$$

(Equation 4-5)

where:

PF = Projection factor (decimal).

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

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

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

Where the fenestration projection factor for a specific vertical fenestration product is greater than or equal to 0.20, 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.

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3. 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 |
|---------------------|--|------------------------|
| $0.2 \leq PF < 0.5$ | 1.1 | 1.2 |
| $PF \leq 0.5$ | 1.2 | 1.6 |

4. Add an exception to the first paragraph of Section C403.2.4.3 to read:

Exception: Any grease duct serving a Type I hood installed in accordance with Section 506.3 of the International Mechanical Code shall not be required to have a motorized or gravity damper.

5. Add Section C403.2.6.3 to read:

C403.2.6.3 Dwelling unit mechanical ventilation. Mechanical ventilation shall be provided for dwelling units in accordance with the International Mechanical Code.

6. Change Section C405.5 to read:

C405.5 Exterior lighting (Mandatory). All exterior lighting, other than low-voltage landscape lighting, shall comply with Section C405.5.1.

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

7. 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 2015 International Energy Conservation Code.

Note: See REScheck compliance guidance issued by *DHCD*,

available at the Department’s website.

8. Delete Section R401.3

9. Change the ceiling *R*-value and wood frame wall *R*-value categories for climate zone “4 exception Marine” in Table R402.1.2 to read:

| CEILING R-VALUE | WOOD FRAME WALL R-VALUE |
|-----------------|-------------------------|
| 38 | 15 or 13+1 ^h |

10. Change the ceiling *U*-factor and frame wall *U*-factor categories for climate zone “4 except Marine” in Table R402.1.4 to read:

| CEILING U-VALUE | FRAME WALL U-VALUE |
|-----------------|--------------------|
| 0.030 | 0.079 |

11. 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 percent of the panel area having R-5 rigid insulation.

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

12. 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 R402.4.4.

construction. Where required by the code official, an approved third party shall inspect all components and verify compliance.

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

13. 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” to Table R402.4.1.1 to read:

| COMPONENT | AIR BARRIER CRITERIA | INSULATION INSTALLATION CRITERIA ^b |
|--|---|---|
| Shower/tub on exterior wall ^c | The air barrier installed at exterior wall adjacent to showers and tubs shall be installed on the interior side and separate the exterior walls from the showers or tubs. | Exterior walls adjacent to showers and tubs shall be insulated. |

- b. Structural integrity of headers shall be in accordance with the applicable building code.
- c. Air barriers used behind showers and tubs on exterior walls shall be of a permeable material that does not cause the entrapment of moisture in the stud cavity.

14. Change Section R402.4.1.2 and add Sections R402.4.1.2.1, R402.4.1.2.2, and R402.4.1.3 to read:

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

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

During testing:

1. Exterior windows and doors and fireplace and stove doors shall be closed, but not sealed beyond the intended weatherstripping or other infiltration control measures;

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

R402.4.1.2.2 Visual inspection option. Building envelope tightness shall be considered acceptable when the items listed in Table R402.4.1.1, applicable to the method of *construction*, are field verified. Where required by the

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building official, an approved party, independent from the installer, shall inspect the air barrier.

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

15. Change Section R403.3.3 to read:

R403.3.3 Duct testing (Mandatory). Ducts shall be pressure tested 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.

16. 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.

17. Change Table R406.4 to read:

**TABLE R406.4
MAXIMUM ENERGY RATING INDEX^a**

| CLIMATE ZONE | ENERGY RATING INDEX |
|--------------|---------------------|
| 1 | 52 |
| 2 | 52 |
| 3 | 51 |
| 4 | 62 |
| 5 | 55 |
| 6 | 54 |
| 7 | 53 |
| 8 | 53 |

- a. When on-site 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.

18. Delete Section R503.1.1.1.

CHAPTER 14

EXTERIOR WALLS

Delete Section 1403.5 of the IBC.

Add Section 1403.8 to the IBC to read:

1403.8 Air barriers. The exterior wall envelope shall be designed and constructed by providing air barriers that comply with the IECC.

Change Section 1407.10.4 of the IBC to read:

1407.10.4 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 Sections 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.

CHAPTER 15

ROOF ASSEMBLIES AND ROOFTOP STRUCTURES

Change the title of Section 1511 and Section 1511.1 of the IBC to read:

SECTION 1511 ROOFING AND ROOFING REPAIR

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 Section 303 of the VEBC.

CHAPTER 16

STRUCTURAL DESIGN

Change Section 1609.3 of the IBC to read:

1609.3 Basic wind speed. The ultimate design wind speed, V_{ult} , in miles per hour (mph), for the determination of the wind loads shall be determined by Figures 1609.3(1), 1609.3(2) and 1609.3(3). The ultimate design wind speed, V_{ult} , for use in the design of Risk Category II buildings and structures shall be obtained from Figure 1609.3(1). The ultimate design wind speed, V_{ult} , for use in the design of Risk Categories III and IV buildings and structures shall be obtained from Figure 1609.3(2). The ultimate design wind speed, V_{ult} , for use in the design of Risk Category I buildings and structures shall be obtained from Figure 1609.3(3). The ultimate 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 m/s) and areas under 4,000 feet in elevation shall use 116 V mph (51 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 design wind speed, V_{ult} , is estimated from regional climatic data, the ultimate design wind speed, V_{ult} , shall be determined in accordance with Section 26.5.3 of ASCE 7.

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.

CHAPTER 17

SPECIAL INSPECTIONS AND TESTS

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.

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.

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.

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 5000 square feet (565 m²) in building area; or
 - 2.2. Alterations to Group U structures which do not increase loads in accordance with Sections 403.3 and 403.4 of the VEBC.
3. Unless otherwise required by the building official, special inspections and tests are not required for occupancies in Groups R-3, R-4 or R-5 and occupancies in Group U that are accessory to a residential occupancy including, but not limited to, 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 2211.7 or the conventional light-frame *construction* provisions of Section 2308.

SPECIAL INSPECTIONS AND TESTS

- 5. The contractor is permitted to employ the approved agencies where the contractor is also the owner.

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.

Change category “12” of Table 1705.3 of the IBC to read:

| TYPE | CONTINUOUS SPECIAL INSPECTION | PERIODIC SPECIAL INSPECTION | REFERENCED STANDARD ^a | IBC REFERENCE |
|---|-------------------------------|-----------------------------|----------------------------------|---------------|
| 12. Inspect formwork for shape, location and dimensions of the concrete member being formed, shoring and reshoring. | -- | X | ACI 318: 26.10.1(b) | -- |

Delete Sections 1705.17, 1705.17.1, and 1705.17.2 of the IBC.

CHAPTER 18

SOILS AND FOUNDATIONS

Change the exception to Section 1804.6 of the IBC 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.

Add an exception to Section 1808.1 of the IBC to read:

Exception: One-story detached accessory structures not exceeding 256 square feet (23.78m²) 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.

CHAPTER 23

WOOD

Change Item 2 of Section 2308.2.3 to read:

2. Live loads shall not exceed 40 psf (1916 N/m²) for floors.

Exception: Concrete slab-on-grade live load limited only by allowable soil bearing pressure.

Change Tables 2308.4.1.1(1) and 2308.4.1.1(2) of the IBC to read:

TABLE 2308.4.1.1(1)
HEADER AND GIRDER SPANS^{a, b} FOR EXTERIOR BEARING WALLS

(Maximum spans for Douglas Fir-Larch, Hem-Fir, Southern Pine and Spruce-Pine-Fir^b and required number of jack studs)

| GIRDERS AND HEADERS SUPPORTING | SIZE | GROUND SNOW LOAD (psf) ^e | | | | | | | | | | | | | | | | | | |
|--|--------|-------------------------------------|------|------|-----------------|------|---|-----------------|------|------|-----------------|------|---|-----------------|------|------|-----------------|------|---|-----------------|
| | | 30 | | | | | | 50 | | | | | | 70 | | | | | | |
| | | Building width (feet) ^c | | | | | | | | | | | | | | | | | | |
| | | 12 | | | 24 | | | 36 | | | 12 | | | 24 | | | 36 | | | |
| Span | | NJ ^d | Span | | NJ ^d | Span | | NJ ^d | Span | | NJ ^d | Span | | NJ ^d | Span | | NJ ^d | Span | | NJ ^d |
| Roof and ceiling | 1-2x6 | 4-0 | 1 | 3-1 | 2 | 2-7 | 2 | 3-5 | 1 | 2-8 | 2 | 2-3 | 2 | 3-0 | 2 | 2-4 | 2 | 2-0 | 2 | |
| | 1-2x8 | 5-1 | 2 | 3-11 | 2 | 3-3 | 2 | 4-4 | 2 | 3-4 | 2 | 2-10 | 2 | 3-10 | 2 | 3-0 | 2 | 2-6 | 3 | |
| | 1-2x10 | 6-0 | 2 | 4-8 | 2 | 3-11 | 2 | 5-2 | 2 | 4-0 | 2 | 3-4 | 2 | 4-7 | 2 | 3-6 | 3 | 3-0 | 3 | |
| | 1-2x12 | 7-1 | 2 | 5-5 | 2 | 4-7 | 3 | 6-1 | 2 | 4-8 | 3 | 3-11 | 3 | 5-5 | 2 | 4-2 | 3 | 3-6 | 3 | |
| | 2-2x4 | 4-0 | 1 | 3-1 | 1 | 2-7 | 1 | 3-5 | 1 | 2-7 | 1 | 2-2 | 1 | 3-0 | 1 | 2-4 | 1 | 2-0 | 1 | |
| | 2-2x6 | 6-0 | 1 | 4-7 | 1 | 3-10 | 1 | 5-1 | 1 | 3-11 | 1 | 3-3 | 2 | 4-6 | 1 | 3-6 | 2 | 2-11 | 2 | |
| | 2-2x8 | 7-7 | 1 | 5-9 | 1 | 4-10 | 2 | 6-5 | 1 | 5-0 | 2 | 4-2 | 2 | 5-9 | 1 | 4-5 | 2 | 3-9 | 2 | |
| | 2-2x10 | 9-0 | 1 | 6-10 | 2 | 5-9 | 2 | 7-8 | 2 | 5-11 | 2 | 4-11 | 2 | 6-9 | 2 | 5-3 | 2 | 4-5 | 2 | |
| | 2-2x12 | 10-7 | 2 | 8-1 | 2 | 6-10 | 2 | 9-0 | 2 | 6-11 | 2 | 5-10 | 2 | 8-0 | 2 | 6-2 | 2 | 5-2 | 3 | |
| | 3-2x8 | 9-5 | 1 | 7-3 | 1 | 6-1 | 1 | 8-1 | 1 | 6-3 | 1 | 5-3 | 2 | 7-2 | 1 | 5-6 | 2 | 4-8 | 2 | |
| | 3-2x10 | 11-3 | 1 | 8-7 | 1 | 7-3 | 2 | 9-7 | 1 | 7-4 | 2 | 6-2 | 2 | 8-6 | 1 | 6-7 | 2 | 5-6 | 2 | |
| | 3-2x12 | 13-2 | 1 | 10-1 | 2 | 8-6 | 2 | 11-3 | 2 | 8-8 | 2 | 7-4 | 2 | 10-0 | 2 | 7-9 | 2 | 6-6 | 2 | |
| | 4-2x8 | 10-11 | 1 | 8-4 | 1 | 7-0 | 1 | 9-4 | 1 | 7-2 | 1 | 6-0 | 1 | 8-3 | 1 | 6-4 | 1 | 5-4 | 2 | |
| | 4-2x10 | 12-11 | 1 | 9-11 | 1 | 8-4 | 1 | 11-1 | 1 | 8-6 | 1 | 7-2 | 2 | 9-10 | 1 | 7-7 | 2 | 6-4 | 2 | |
| | 4-2x12 | 15-3 | 1 | 11-8 | 1 | 9-10 | 2 | 13-0 | 1 | 10-0 | 2 | 8-5 | 2 | 11-7 | 1 | 8-11 | 2 | 7-6 | 2 | |
| Roof, ceiling and one center-bearing floor | 1-2x6 | 3-3 | 1 | 2-7 | 2 | 2-2 | 2 | 3-0 | 2 | 2-4 | 2 | 2-0 | 2 | 2-9 | 2 | 2-2 | 2 | 1-10 | 2 | |
| | 1-2x8 | 4-1 | 2 | 3-3 | 2 | 2-9 | 2 | 3-9 | 2 | 3-0 | 2 | 2-6 | 3 | 3-6 | 2 | 2-9 | 2 | 2-4 | 3 | |
| | 1-2x10 | 4-11 | 2 | 3-10 | 2 | 3-3 | 3 | 4-6 | 2 | 3-6 | 3 | 3-0 | 3 | 4-1 | 2 | 3-3 | 3 | 2-9 | 3 | |
| | 1-2x12 | 5-9 | 2 | 4-6 | 3 | 3-10 | 3 | 5-3 | 2 | 4-2 | 3 | 3-6 | 3 | 4-10 | 3 | 3-10 | 3 | 3-3 | 4 | |
| | 2-2x4 | 3-3 | 1 | 2-6 | 1 | 2-2 | 1 | 3-0 | 1 | 2-4 | 1 | 2-0 | 1 | 2-8 | 1 | 2-2 | 1 | 1-10 | 1 | |
| | 2-2x6 | 4-10 | 1 | 3-9 | 1 | 3-3 | 2 | 4-5 | 1 | 3-6 | 2 | 3-0 | 2 | 4-1 | 1 | 3-3 | 2 | 2-9 | 2 | |
| | 2-2x8 | 6-1 | 1 | 4-10 | 2 | 4-1 | 2 | 5-7 | 2 | 4-5 | 2 | 3-9 | 2 | 5-2 | 2 | 4-1 | 2 | 3-6 | 2 | |
| | 2-2x10 | 7-3 | 2 | 5-8 | 2 | 4-10 | 2 | 6-8 | 2 | 5-3 | 2 | 4-5 | 2 | 6-1 | 2 | 4-10 | 2 | 4-1 | 2 | |
| | 2-2x12 | 8-6 | 2 | 6-8 | 2 | 5-8 | 2 | 7-10 | 2 | 6-2 | 2 | 5-3 | 3 | 7-2 | 2 | 5-8 | 2 | 4-10 | 3 | |
| | 3-2x8 | 7-8 | 1 | 6-0 | 1 | 5-1 | 2 | 7-0 | 1 | 5-6 | 2 | 4-8 | 2 | 6-5 | 1 | 5-1 | 2 | 4-4 | 2 | |
| | 3-2x10 | 9-1 | 1 | 7-2 | 2 | 6-1 | 2 | 8-4 | 1 | 6-7 | 2 | 5-7 | 2 | 7-8 | 2 | 6-1 | 2 | 5-2 | 2 | |
| | 3-2x12 | 10-8 | 2 | 8-5 | 2 | 7-2 | 2 | 9-10 | 2 | 7-8 | 2 | 6-7 | 2 | 9-0 | 2 | 7-1 | 2 | 6-1 | 2 | |

(continued)

**TABLE 2308.4.1.1(1)
HEADER AND GIRDER SPANS^{a, b} FOR EXTERIOR BEARING WALLS**

**(Maximum spans for Douglas Fir-Larch, Hem-Fir, Southern Pine and Spruce-Pine-Fir^b and required number of jack studs)—
continued**

| | | | | | | | | | | | | | | | | | | | |
|---|--------|------|-----|------|------|------|------|------|-----|------|-----|------|------|------|-----|------|-----|------|---|
| Roof, ceiling and one center-bearing floor | 4-2x8 | 8-10 | 1 | 6-11 | 1 | 5-11 | 1 | 8-1 | 1 | 6-4 | 1 | 5-5 | 2 | 7-5 | 1 | 5-11 | 1 | 5-0 | 2 |
| | 4-2x10 | 10-6 | 1 | 8-3 | 2 | 7-0 | 2 | 9-8 | 1 | 7-7 | 2 | 6-5 | 2 | 8-10 | 1 | 7-0 | 2 | 6-0 | 2 |
| | 4-2x12 | 12-4 | 1 | 9-8 | 2 | 8-3 | 2 | 11-4 | 2 | 8-11 | 2 | 7-7 | 2 | 10-4 | 2 | 8-3 | 2 | 7-0 | 2 |
| Roof, ceiling and one clear span floor | 1-2x6 | 2-11 | 2 | 2-3 | 2 | 1-11 | 2 | 2-9 | 2 | 2-1 | 2 | 1-9 | 2 | 2-7 | 2 | 2-0 | 2 | 1-8 | 2 |
| | 1-2x8 | 3-9 | 2 | 2-10 | 2 | 2-5 | 3 | 3-6 | 2 | 2-8 | 2 | 2-3 | 3 | 3-3 | 2 | 2-6 | 3 | 2-2 | 3 |
| | 1-2x10 | 4-5 | 2 | 3-5 | 3 | 2-10 | 3 | 4-2 | 2 | 3-2 | 3 | 2-8 | 3 | 3-11 | 2 | 3-0 | 3 | 2-6 | 3 |
| | 1-2x12 | 5-2 | 2 | 4-0 | 3 | 3-4 | 3 | 4-10 | 3 | 3-9 | 3 | 3-2 | 4 | 4-7 | 3 | 3-6 | 3 | 3-0 | 4 |
| | 2-2x4 | 2-11 | 1 | 2-3 | 1 | 1-10 | 1 | 2-9 | 1 | 2-1 | 1 | 1-9 | 1 | 2-7 | 1 | 2-0 | 1 | 1-8 | 1 |
| | 2-2x6 | 4-4 | 1 | 3-4 | 2 | 2-10 | 2 | 4-1 | 1 | 3-2 | 2 | 2-8 | 2 | 3-10 | 1 | 3-0 | 2 | 2-6 | 2 |
| | 2-2x8 | 5-6 | 2 | 4-3 | 2 | 3-7 | 2 | 5-2 | 2 | 4-0 | 2 | 3-4 | 2 | 4-10 | 2 | 3-9 | 2 | 3-2 | 2 |
| | 2-2x10 | 6-7 | 2 | 5-0 | 2 | 4-2 | 2 | 6-1 | 2 | 4-9 | 2 | 4-0 | 2 | 5-9 | 2 | 4-5 | 2 | 3-9 | 3 |
| | 2-2x12 | 7-9 | 2 | 5-11 | 2 | 4-11 | 3 | 7-2 | 2 | 5-7 | 2 | 4-8 | 3 | 6-9 | 2 | 5-3 | 3 | 4-5 | 3 |
| | 3-2x8 | 6-11 | 1 | 5-3 | 2 | 4-5 | 2 | 6-5 | 1 | 5-0 | 2 | 4-2 | 2 | 6-1 | 1 | 4-8 | 2 | 4-0 | 2 |
| | 3-2x10 | 8-3 | 2 | 6-3 | 2 | 5-3 | 2 | 7-8 | 2 | 5-11 | 2 | 5-0 | 2 | 7-3 | 2 | 5-7 | 2 | 4-8 | 2 |
| | 3-2x12 | 9-8 | 2 | 7-5 | 2 | 6-2 | 2 | 9-0 | 2 | 7-0 | 2 | 5-10 | 2 | 8-6 | 2 | 6-7 | 2 | 5-6 | 3 |
| | 4-2x8 | 8-0 | 1 | 6-1 | 1 | 5-1 | 2 | 7-5 | 1 | 5-9 | 2 | 8-4 | 1 | 6-5 | 2 | 5-5 | 2 | 4-7 | 2 |
| | 4-2x10 | 9-6 | 1 | 7-3 | 2 | 6-1 | 2 | 8-10 | 1 | 6-10 | 2 | 5-9 | 2 | 8-4 | 1 | 6-5 | 2 | 5-5 | 2 |
| 4-2x12 | 11-2 | 2 | 8-6 | 2 | 7-2 | 2 | 10-5 | 2 | 8-0 | 2 | 6-9 | 2 | 9-10 | 2 | 7-7 | 2 | 6-5 | 2 | |
| Roof, ceiling and two center-bearing floors | 1-2x6 | 2-8 | 2 | 2-1 | 2 | 1-10 | 2 | 2-7 | 2 | 2-0 | 2 | 1-9 | 2 | 2-5 | 2 | 1-11 | 2 | 1-8 | 2 |
| | 1-2x8 | 3-5 | 2 | 2-8 | 2 | 2-4 | 3 | 3-3 | 2 | 2-7 | 2 | 2-2 | 3 | 3-1 | 2 | 2-5 | 3 | 2-1 | 3 |
| | 1-2x10 | 4-0 | 2 | 3-2 | 3 | 2-9 | 3 | 3-10 | 2 | 3-1 | 3 | 2-7 | 3 | 3-8 | 2 | 2-11 | 3 | 2-5 | 3 |
| | 1-2x12 | 4-9 | 3 | 3-9 | 3 | 3-2 | 4 | 4-6 | 3 | 3-7 | 3 | 3-1 | 4 | 4-3 | 3 | 3-5 | 3 | 2-11 | 4 |
| | 2-2x4 | 2-8 | 1 | 2-1 | 1 | 1-9 | 1 | 2-6 | 1 | 2-0 | 1 | 1-8 | 1 | 2-5 | 1 | 1-11 | 1 | 1-7 | 1 |
| | 2-2x6 | 4-0 | 1 | 3-2 | 2 | 2-8 | 2 | 3-9 | 1 | 3-0 | 2 | 2-7 | 2 | 3-7 | 1 | 2-10 | 2 | 2-5 | 2 |
| | 2-2x8 | 5-0 | 2 | 4-0 | 2 | 3-5 | 2 | 4-10 | 2 | 3-10 | 2 | 3-3 | 2 | 4-7 | 2 | 3-7 | 2 | 3-1 | 2 |
| | 2-2x10 | 6-0 | 2 | 4-9 | 2 | 4-0 | 2 | 5-8 | 2 | 4-6 | 2 | 3-10 | 3 | 5-5 | 2 | 4-3 | 2 | 3-8 | 3 |
| | 2-2x12 | 7-0 | 2 | 5-7 | 2 | 4-9 | 3 | 6-8 | 2 | 5-4 | 3 | 4-6 | 3 | 6-4 | 2 | 5-0 | 3 | 4-3 | 3 |
| | 3-2x8 | 6-4 | 1 | 5-0 | 2 | 4-3 | 2 | 6-0 | 1 | 4-9 | 2 | 4-1 | 2 | 5-8 | 2 | 4-6 | 2 | 3-10 | 2 |
| | 3-2x10 | 7-6 | 2 | 5-11 | 2 | 5-1 | 2 | 7-1 | 2 | 5-8 | 2 | 4-10 | 2 | 6-9 | 2 | 5-4 | 2 | 4-7 | 2 |
| | 3-2x12 | 8-10 | 2 | 7-0 | 2 | 5-11 | 2 | 8-5 | 2 | 6-8 | 2 | 5-8 | 3 | 8-0 | 2 | 6-4 | 2 | 5-4 | 3 |
| | 4-2x8 | 7-3 | 1 | 5-9 | 1 | 4-11 | 2 | 5-11 | 1 | 5-6 | 2 | 4-8 | 2 | 6-7 | 1 | 5-2 | 2 | 4-5 | 2 |
| | 4-2x10 | 8-8 | 1 | 6-10 | 2 | 5-10 | 2 | 8-3 | 2 | 6-6 | 2 | 5-7 | 2 | 7-10 | 2 | 6-2 | 2 | 5-3 | 2 |
| 4-2x12 | 10-2 | 2 | 8-1 | 2 | 6-10 | 2 | 9-8 | 2 | 7-8 | 2 | 6-7 | 2 | 9-2 | 2 | 7-3 | 2 | 6-2 | 2 | |
| Roof, ceiling, and two clear span floors | 1-2x6 | 2-3 | 2 | 1-9 | 2 | 1-5 | 2 | 2-3 | 2 | 1-9 | 2 | 1-5 | 3 | 2-2 | 2 | 1-8 | 2 | 1-5 | 3 |
| | 1-2x8 | 2-10 | 2 | 2-2 | 3 | 1-10 | 3 | 2-10 | 2 | 2-2 | 3 | 1-10 | 3 | 2-9 | 2 | 2-1 | 3 | 1-10 | 3 |

(continued)

TABLE 2308.4.1.1(1)

HEADER AND GIRDER SPANS^{a, b} FOR EXTERIOR BEARING WALLS

(Maximum spans for Douglas Fir-Larch, Hem-Fir, Southern Pine and Spruce-Pine-Fir^b and required number of jack studs)—
continued

| | | | | | | | | | | | | | | | | | | | |
|--|--------|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|---|
| Roof, ceiling, and two clear span floors | 1-2x10 | 3-4 | 2 | 2-7 | 3 | 2-2 | 3 | 3-4 | 3 | 2-7 | 3 | 2-2 | 4 | 3-3 | 3 | 2-6 | 3 | 2-2 | 4 |
| | 1-2x12 | 4-0 | 3 | 3-0 | 3 | 2-7 | 4 | 4-0 | 3 | 3-0 | 4 | 2-7 | 4 | 3-10 | 3 | 3-0 | 4 | 2-6 | 4 |
| | 2-2x4 | 2-3 | 1 | 1-8 | 1 | 1-4 | 1 | 2-3 | 1 | 1-8 | 1 | 1-4 | 1 | 2-2 | 1 | 1-8 | 1 | 1-4 | 2 |
| | 2-2x6 | 3-4 | 1 | 2-6 | 2 | 2-2 | 2 | 3-4 | 2 | 2-6 | 2 | 2-2 | 2 | 3-3 | 2 | 2-6 | 2 | 2-1 | 2 |
| Roof, ceiling, and two clear span floors | 2-2x8 | 4-3 | 2 | 3-3 | 2 | 2-8 | 2 | 4-3 | 2 | 3-3 | 2 | 2-8 | 2 | 4-1 | 2 | 3-2 | 2 | 2-8 | 3 |
| | 2-2x10 | 5-0 | 2 | 3-10 | 2 | 3-2 | 3 | 5-0 | 2 | 3-10 | 2 | 3-2 | 2 | 4-10 | 2 | 3-9 | 3 | 3-2 | 3 |
| | 2-2x12 | 5-11 | 2 | 4-6 | 3 | 3-9 | 3 | 5-11 | 2 | 4-6 | 3 | 3-9 | 3 | 5-8 | 2 | 4-5 | 3 | 3-9 | 3 |
| | 3-2x8 | 5-3 | 1 | 4-0 | 2 | 3-5 | 2 | 5-3 | 2 | 4-0 | 2 | 3-5 | 2 | 5-1 | 2 | 3-11 | 2 | 3-4 | 2 |
| | 3-2x10 | 6-3 | 2 | 4-9 | 2 | 4-0 | 2 | 6-3 | 2 | 4-9 | 2 | 4-0 | 2 | 6-1 | 2 | 4-8 | 2 | 4-0 | 3 |
| | 3-2x12 | 7-5 | 2 | 5-8 | 2 | 4-9 | 3 | 7-5 | 2 | 5-8 | 2 | 4-9 | 3 | 7-2 | 2 | 5-6 | 3 | 4-8 | 3 |
| | 4-2x8 | 6-1 | 1 | 4-8 | 2 | 3-11 | 2 | 6-1 | 1 | 4-8 | 2 | 3-11 | 2 | 5-11 | 1 | 4-7 | 2 | 3-11 | 2 |
| 4-2x10 | 7-3 | 2 | 5-6 | 2 | 4-8 | 2 | 7-3 | 2 | 5-6 | 2 | 4-8 | 2 | 7-0 | 2 | 5-5 | 2 | 4-7 | 2 | |
| 4-2x12 | 8-6 | 2 | 6-6 | 2 | 5-6 | 2 | 8-6 | 2 | 6-6 | 2 | 5-6 | 2 | 8-3 | 2 | 6-4 | 2 | 5-4 | 3 | |

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

- Spans are given in feet and inches.
- Spans are based on minimum design properties for No. 2 grade lumber of Douglas Fir-Larch, Hem-Fir, Southern Pine, and Spruce-Pine Fir.
- Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.
- NJ - Number of jack studs required to support each end. Where the number of required jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.
- Use 30 psf ground snow load for cases in which ground snow load is less than 30 psf and the roof live load is equal to or less than 20 psf.
- Spans are calculated assuming the top of the header or girder is laterally braced by perpendicular framing. Where the top of the header or girder is not laterally braced (e.g. cripple studs bearing on the header), tabulated spans for headers consisting of 2x8, 2x10, or 2x12 sizes shall be multiplied by 0.70 or the header shall be designed.

TABLE 2308.4.1.1(2)
HEADER AND GIRDER SPANS^{a, b} FOR INTERIOR BEARING WALLS

(Maximum spans for Douglas Fir-Larch, Hem-Fir, Southern Pine and Spruce-Pine-Fir^b and required number of jack studs)

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

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

- Spans are given in feet and inches.
- Spans are based on minimum design properties for No. 2 grade lumber of Douglas Fir-Larch, Hem-Fir, Southern Pine, and Spruce-Pine Fir.
- Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.
- NJ - Number of jack studs required to support each end. Where the number of required jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.
- Spans are calculated assuming the top of the header or girder is laterally braced by perpendicular framing. Where the top of the header or girder is not laterally braced (e.g. cripple studs bearing on the header), tabulated spans for headers consisting of 2x8, 2x10, or 2x12 sizes shall be multiplied by 0.70 or the header shall be designed.

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 Sections 603, 803, 806 or 1406 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; or
 - 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.

CHAPTER 27

ELECTRICAL

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.

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 luminaries 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.

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- 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.

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.

Change Section 2702.2.17 of the IBC to read:

2702.2.17 Group I-2 and I-3 occupancies.

Emergency power shall be provided in accordance with Section 407.10 for Group I-2 occupancies licensed by the Virginia Department of Health as a hospital, nursing or *hospice facility*. Emergency power shall be provided for doors in Group I-3 occupancies in accordance with Section 408.4.2.

CHAPTER 28

MECHANICAL SYSTEMS

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 International Mechanical Code and the International Fuel Gas Code. Masonry chimneys, fireplaces and barbecues shall comply with the International Mechanical Code 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.

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.

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.

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. Add the following definition to Section 202 of the IMC:

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

2. 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.

3. 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

MECHANICAL SYSTEMS

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 where approved statistical data document the accuracy of an alternate anticipated occupant density.

4. Add and change the following areas in Table 403.3.1.1 of the IMC to read:

| OCCUPANCY CLASSIFICATION | OCCUPANT DENSITY #/1000 ft ² a | PEOPLE OUTDOOR AIRFLOW RATE IN BREATHING ZONE, R _p CFM/PERSON | AREA OUTDOOR AIRFLOW RATE IN BREATHING ZONE, R _a CFM/FT ² a | EXHAUST AIRFLOW RATE CFM/FT ² a |
|--|---|--|---|--|
| 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 | -- | -- |

5. Change Section 504.8.2 of the IMC to read:

504.8.2 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.

range hoods shall not be required to discharge to the outdoors.

2. Ducts for domestic kitchen cooking appliances equipped with downdraft exhaust systems shall be permitted to be constructed of Schedule 40 PVC pipe and fittings provided that the installation complies with all of the following:

6. Change Section 505.1 of the IMC to read:

505.1 Domestic systems. Where domestic range hoods and domestic appliances equipped with downdraft exhaust are provided, such hoods and appliances shall discharge to the outdoors through sheet metal ducts constructed of galvanized steel, stainless steel, aluminum or copper. Such ducts shall have smooth inner walls, shall be air tight, shall be equipped with a backdraft damper, and shall be independent of all other exhaust systems.

2.1. The PVC duct shall be installed under a concrete slab poured on grade.

2.2. The underfloor trench in which the PVC duct is installed shall be completely backfilled with sand or gravel.

2.3. The PVC duct shall extend not more than 1 inch (25 mm) above the indoor concrete floor surface.

2.4. The PVC duct shall extend not more than 1 inch (25 mm) above grade outside of the building.

Exceptions:

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

2.5. The PVC duct shall be solvent cemented.

7. Change Section 505.4 of the IMC to read:

505.4 Other than Group R. In other than Group R occupancies, where electric domestic cooking appliances are utilized for domestic purposes, such appliances shall be provided with domestic range hoods. Hoods and exhaust systems for such electric domestic cooking appliances shall be in accordance with Sections 505.1 and 505.2. 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.

8. 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.

9. Add Section 506.5.6 to the IMC to read:

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

1. Pollution control units shall be listed and labeled in accordance with UL 1978.
2. Fans serving pollution control units shall be listed and labeled in accordance with UL 762.
3. Pollution control units shall be mounted and secured in accordance with the manufacturer's installation instructions and the International Building Code.
4. Pollution control units located indoors shall be listed and labeled for such use. Where enclosed duct systems, as required by Section 506.3.11, are connected to a pollution control unit, such unit shall be located in a room or space having the same fire-resistance rating as the duct enclosure. Access shall be provided for serving and cleaning of the unit. The space or enclosure shall be ventilated in accordance with the manufacturer's installation instructions.
5. A clearance of not less than 18 inches (457 mm) shall be maintained between the

pollution control unit and combustible material.

6. Roof mounted pollution control units shall be listed for exterior installation and shall be mounted not less than 18 inches (457 mm) above the roof.
7. Exhaust outlets for pollution control units shall be in accordance with Section 506.3.13.
8. An airflow differential pressure control shall be provided to monitor the pressure drop across the filter sections of a pollution control unit. When the airflow is reduced below the design velocity, the airflow differential pressure control shall activate a visual alarm located in the area where cooking operations occur.
9. Pollution control units shall be provided with a factory installed fire suppression system.
10. Service space shall be provided in accordance with the manufacturer's instructions for the pollution control unit and the requirements of Section 306.
11. Wash down drains shall discharge through a grease interceptor and shall be sized for the flow. Drains shall be sealed with a trap or other approved means to prevent air bypass. Where a trap is utilized it shall have a seal depth that accounts for the system pressurization and evaporation between cleanings.
12. Protection from freezing shall be provided for the water supply and fire suppression systems where such systems are subject to freezing.
13. Duct connections to pollution control units shall be in accordance with Section 506.3.2.3. Where water splash or carryover can occur in the transition duct as a result of a washing operation, the transition duct shall slope downward toward the cabinet drain pan for a length not less than 18 inches (457 mm). Ducts shall transition to the full size of the unit inlet and outlet openings.
14. Extra heavy duty appliance exhaust systems shall not be connected to pollution control units except where such units are

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specifically designed and listed for use with solid fuels.

15. Pollution control units shall be maintained in accordance with the manufacturer's instructions.

10. 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.

11. Add Section 607.6.2.2 of 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.

Add Section 2801.1.4 to the IBC to read:

2801.1.4 Changes to the International Fuel Gas Code. The following changes shall be made to the International Fuel Gas Code:

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 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 Sections 310.1 and 310.1.1 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 310.1.1 shall apply.

310.1.1 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 310.1.1.1 through 310.1.1.5.

3. Add Section 404.11.3 to the IFGC to read:

404.11.3 Coating application. Joints in gas piping systems shall not be coated prior to testing and approval.

4. Change Section 614.8.2 of the IFGC to read:

614.8.2 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.

5. Change the following referenced standard in Chapter 8 of the IFGC to read:

| Standard reference number | Title | Referenced in code section number |
|--|--|-----------------------------------|
| <hr/> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="font-size: 2em; font-weight: bold; margin-right: 20px;">ANSI</div> <div style="text-align: right;"> American National Standards Institute 25 West 43rd Street Fourth Floor New York, NY 10036 </div> </div> <hr/> | | |
| LC 1/CSA 6.26-14 | Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing (CSST) | 310.1, 310.1.1, 403.5.4 |

CHAPTER 29

PLUMBING SYSTEMS

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*.

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, but are not limited to 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.

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 International Plumbing Code to read:

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

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 Sections 311 and 311.1 of the IPC.

5. Modify the Group A-5 “Description” category of Table 403.1 of the IPC to read:

| |
|--|
| Stadiums, amusement parks, pools, bleachers, and grandstands for outdoor sporting events and activities ^f |
|--|

6. Add footnote “f” to Table 403.1 of the IPC to read:

f. The occupant load for pools shall be in accordance with the “Skating rinks, swimming pools” category of Table 1004.1.2 of the International Building Code.

7. Add Section 403.1.3 and Table 403.1.3 to the IPC to read:

403.1.3 Marina fixtures. Notwithstanding any provision to the contrary, plumbing fixtures shall be provided for *marinas* in the minimum number shown in Table 403.1.3. 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.

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Urinals may be substituted for up to 50 percent of water closets.

**TABLE 403.1.3
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 <i>slips</i> . | | |

8. Change Section 403.3.3 of the IPC to read:

403.3.3 Location of toilet facilities in occupancies other than malls. In occupancies other than covered and open mall buildings, 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. 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.

9. Change Section 405.3.2 of the IPC to read:

405.3.2 Public lavatories. In employee and public toilet rooms, the required lavatory shall be located in the same room as the required water closet.

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.

10. 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.

11. 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.

12. Change Section 608.16.10 of the IPC to read:

608.16.10 Coffee machines and noncarbonated beverage dispensers. The water supply connection to coffee machines and noncarbonated beverage dispensers shall be protected against backflow by a backflow preventer conforming to ASSE 1022 or 1024, or by an air gap.

13. Delete Section 701.8 of the IPC to read:

14. 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.

15. 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.

16. 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 Table 1106.2(1) and 1106.2(2).

17. Delete Table 1106.2 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 | 2,880 | 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, 1 square foot = 0.0929 m².

a. Sizes indicated are diameter of circular piping. This table is applicable to piping of other shapes, provided the cross-sectional shape fully encloses 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 width x length | HORIZONTALLY PROJECTED ROOF AREA (square feet) | | | | | | | | | | | |
|--|--|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | Rainfall rate (inches per hour) | | | | | | | | | | | |
| | 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 |

(continued)

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**TABLE 1106.2(2)
SIZE OF RECTANGULAR VERTICAL CONDUCTORS AND LEADERS—continued**

| | | | | | | | | | | | | |
|---------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|
| 3 3/4 × 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 × 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 × 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 × 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 × 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 × 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 = 25.4, 1 square foot = 0.0929 m².

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, D_e, of rectangular piping for use in interpolation using the data from Table 1106.2(1).

$D_e = [\text{width} \times \text{length}]^{1/2}$ (Equation 11-1)

Where:

D_e = equivalent circular diameter and D_e, width and length are inches.

18. 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 one-half

unit or less vertical in 12 units horizontal (4-percent 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 one-eighth unit vertical in 12 units horizontal (1-percent slope) unless otherwise approved.

**TABLE 1106.3
SIZE OF HORIZONTAL STORM DRAINAGE PIPING**

| SIZE OF HORIZONTAL PIPING (inches) | HORIZONTALLY PROTECTED ROOF AREA (square feet) | | | | | |
|--|--|---------|---------|--------|--------|--------|
| | Rainfall rate (inches per hour) | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 1/8 unit vertical in 12 units horizontal (1-percent 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-percent 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 |

(continued)

TABLE 1106.3
SIZE OF HORIZONTAL STORM DRAINAGE PIPING—continued

| 1/2 unit vertical in 12 units horizontal (4-percent 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, 1 square foot = 0.0929 m²

19. 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

| SIZE OF HORIZONTAL PIPING (inches) | HORIZONTALLY PROTECTED 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-percent 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-percent 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-percent 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-percent 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, 1 square foot = 0.0929 m²

20. 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

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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

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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 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 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 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 608.8.

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.

21. Change the title of Section 1302 of the IPC to “Gray Water Nonpotable Water Systems.”

22. Change Sections 1302.1 through 1302.6, including subsections, of the IPC to read as follows and delete Sections 1302.7 through 1302.13:

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

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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.

23. Change the title of Section 1303 of the IPC to “Rainwater Nonpotable Water Systems.”

24. Change Sections 1303.1 through 1303.10, including subsections, to the IPC to read as follows and delete Sections 1303.11 through 1303.16:

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.

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 1000 square feet (92.9 m²) 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 lot | 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.

1303.10 Tests and inspections. Tests and inspections shall be performed in accordance with Sections 1303.10.1 through 1303.10.2.

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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.

25. Change Sections 1304.1 and 1304.2 of the IPC to read as follows and delete Sections 1304.3 through 1304.4:

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.

26. Modify the Group A-5 cell under the column "Description" in Table 2902.1 of the IPC to read:

| |
|--|
| Stadiums, amusement parks, pools, bleachers, and grandstands for outdoor sporting events and activities ^f |
|--|

27. Add footnote "f" to Table 2902.1 of the IPC to read:

- f. The occupant load for pools shall be in accordance with the "Skating rinks, swimming pools" category of Table 1004.1.2.

CHAPTER 30

ELEVATORS AND CONVEYING SYSTEMS

Change 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 on the designated and alternate landing floors required to be established by ASME A17.1.

Exception: Elevators in multistory dwelling units or guest rooms.

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 International Fire Code.

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 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.

Exception: 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.

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.

Delete Section 3006 of the IBC and show the deletion as follows:

SECTION 3006 ELEVATOR LOBBIES AND HOISTWAY OPENING PROTECTION (Section deleted)

3006.1 General. (Section deleted)

3006.2 Hoistway opening protection required. (Section deleted)

3006.3 Hoistway opening protection. (Section deleted)

3006.4 Means of egress. (Section deleted)

ELEVATORS AND CONVEYING SYSTEMS

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.

CHAPTER 31

SPECIAL CONSTRUCTION

Change the title of Section 3109 of the IBC to read:

**SECTION 3109
SWIMMING POOLS, SWIMMING POOL ENCLOSURES AND
AQUATIC RECREATIONAL FACILITIES**

Change Section 3109.1 of the IBC to read:

3109.1 General. Swimming pools, swimming pool enclosures and aquatic recreational facilities, as that term is defined in the International Swimming Pool and Spa Code, shall comply with applicable provisions of the International Swimming Pool and Spa Code.

Add Section 3109.1.1 to the IBC to read:

3109.1.1 Changes to the International Swimming Pool and Spa Code. The following changes shall be made to the International Swimming Pool and Spa Code:

1. Change Section 305.2.9 of the ISPSC 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.

2. Add Section 410.2, including 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).

3. Change the title of Section 609 of the ISPSC to read:

**SECTION 609
DRESSING AND SANITARY FACILITIES**

4. 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.

CHAPTER 33

SAFEGUARDS DURING CONSTRUCTION

SECTION 3305

SANITARY (Section deleted)

3305.1 Facilities required. (Section deleted)

CHAPTER 35

REFERENCED STANDARDS

Change the referenced standards as follows:

| | | |
|--|---|---|
| API | | |
| American Petroleum Institute 1220 L. Street, NW Washington, DC 20005 | | |
| Standard reference number | Title | Referenced in code section number |
| 650—09 | Welded Steel Tanks for Oil Storage | 428.2 |
| 653—09 | Tank Inspection, Repair, Alteration and Reconstruction | 428.4, 428.5 |
| ASME | | |
| American Society of Mechanical Engineers Three Park Avenue New York, NY 10016-5990 | | |
| Standard reference number | Title | Referenced in code section number |
| A18.1—2011 | Safety Standard for Platform Lifts and Stairway Chairlifts | 1109.8 |
| ASTM | | |
| ASTM International 100 Barr Harbor Drive West Conshohocken, PA 19428-2959 | | |
| Standard reference number | Title | Referenced in code section number |
| E 329—02 | Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction | 1703.1, 1703.1.3 |
| ICC | | |
| International Code Council, Inc. 500 New Jersey Avenue, NW 6th Floor Washington, DC 20001 | | |
| Standard reference number | Title | Referenced in code section number |
| ISPSC—15 | International Swimming Pool and Spa Code | 202, 3109.1, 3109.1.1 |
| NFPA | | |
| National Fire Protection Association 1 Batterymarch Park Quincy, MA 02169-7471 | | |
| Standard reference number | Title | Referenced in code section number |
| 91—15 | Standard for Exhaust Systems for Air Conveying of Vapors, Mists and Particulate Solids | 430.3.6 |

REFERENCED STANDARDS

TFI

The Fertilizer Institute
 820 First Street, NE, Suite 430
 Washington, DC 20002

| Standard reference number | Title | Referenced in code section number |
|---------------------------|--|-----------------------------------|
| RMP—09 | Aboveground Storage Tanks Containing Liquid Fertilizer, Recommended Mechanical Integrity Practices | 428.2, 428.4, 428.5 |

UL

Underwriters Laboratories, Inc.
 333 Pfingsten Road
 Northbrook, IL 60062

| Standard reference number | Title | Referenced in code section number |
|---------------------------|--|-----------------------------------|
| 2075—13 | Standard for Gas and Vapor Detectors and Sensors | 915.4 |

APPENDIX E
SUPPLEMENTARY ACCESSIBILITY REQUIREMENTS

Appendix E of the IBC shall be part of this code.

APPENDIX F

RODENTPROOFING

The following provisions of Appendix F of the IBC are part of this code:

F101.2 Foundation wall ventilation openings.

Foundation wall ventilator openings shall be covered for their height and width with perforated sheet metal plates no less than 0.070 inch (1.8 mm) thick, expanded sheet metal plates not less than 0.047 inch (1.2 mm) thick, cast-iron grills or grating, extruded aluminum load-bearing vents or with hardware cloth of 0.035 inch (0.89 mm) wire or heavier. The openings therein shall not exceed 1/4 inch (6.4 mm).

3. By encasing the pipes, cables, conduits or wires in an enclosure constructed in accordance with Section F101.6.1.1.

F101.6 Pier and wood construction.

F101.6.1 Sill less than 12 inches above ground.

Buildings not provided with a continuous foundation shall be provided with protection against rodents at grade by providing either an apron in accordance with Section F101.6.1.1 or a floor slab in accordance with Section F101.6.1.2.

F101.6.1.1 Apron. Where an apron is provided, the apron shall not be less than 8 inches (203 mm) above, nor less than 24 inches (610 mm) below, grade. The apron shall not terminate below the lower edge of the siding material. The apron shall be constructed of an approved nondecayable, water-resistant rodentproofing material of required strength and shall be installed around the entire perimeter of the building. Where constructed of masonry or concrete materials, the apron shall not be less than 4 inches (102 mm) in thickness.

F101.6.1.2 Grade floors. Where continuous concrete grade floor slabs are provided, open spaces shall not be left between the slab and walls, and openings in the slab shall be protected.

F101.6.2 Sill at or above 12 inches above ground.

Buildings not provided with a continuous foundation and which have sills 12 or more inches (305 mm) above the ground level shall be provided with protection against rodents at grade in accordance with any of the following:

1. Section F101.6.1.1 or F101.6.1.2;
2. By installing solid sheet metal collars at least 0.024 inch (0.6 mm) thick at the top of each pier or pile and around each pipe, cable, conduit, wire or other item which provides a continuous pathway from the ground to the floor; or

APPENDIX G

FLOOD-RESISTANT CONSTRUCTION

This appendix is informative and is not part of the code.

APPENDIX H

SIGNS

Appendix H of the IBC shall be part of this code.

Delete Section H101.1.

H101.1 General. (Section deleted)

Delete Sections H104 and H115 in their entirety.

SECTION H104
IDENTIFICATION (Section deleted)

SECTION H115
REFERENCED STANDARDS (Section deleted)

APPENDIX I

PATIO COVERS

Appendix I of the IBC shall be part of this code.-