

PREFACE

This edition of the Virginia Uniform Statewide Building Code (USBC) was adopted on January 27, 1997, by order of the Virginia Board of Housing and Community Development (BHCD), and became effective on April 15, 1997. The adoption was made in accordance with the regulatory authority granted the BHCD by Chapter 6 (§ 36-97 et seq.) of Title 36 of the Code of Virginia. The adoption order was prepared according to the requirements of the Administrative Process Act.

The USBC prescribes building regulations to be complied with when constructing, repairing, maintaining and changing the use of buildings and structures. Where practical the code provisions have been stated in terms of required level of performance, so as to facilitate the prompt acceptance of new building materials and methods. Also, the code provisions allow construction at the least possible cost consistent with nationally recognized standards for health, safety, welfare, accessibility, energy and water conservation. Enforcement of the USBC is the responsibility of each local government's building department and the local governing body may charge a fee to defray the cost of enforcement and appeals arising from application of the code.

The USBC provides optional enforcement regulations to protect occupants of existing buildings and structures from health and safety hazards arising from the improper maintenance or use of buildings and structures. Any local government may enforce the maintenance provisions of the USBC and may assign the responsibility to a local agency of its choice.

Contained in the USBC are enforcement procedures that must be used by the enforcing agency. An administrative appeals system has been established to resolve disagreements that may occur between the enforcing agency and an aggrieved party. Any provision of the USBC which is in conflict with the applicable laws of this Commonwealth, is invalid.

The BHCD bases the technical requirements of the USBC on nationally accepted model codes and standards and makes as few amendments as possible. Local government has not been given authority to amend the provisions of the USBC. The purpose is to benefit the citizens of Virginia by promoting efficiency in the construction industry, many aspects of which are interstate in nature. For this reason, the BHCD encourages anyone who believes that a technical amendment is needed to submit their proposal directly to the model code or standard writing organization. Amendments made by such organizations will then be considered for inclusion in future editions of the USBC. State law requires the BHCD to properly maintain the USBC. The BHCD plans to do this by updating the USBC when new editions of the model codes become publicly available. Suggestions for improvements are invited at any time. Information on how to present proposals to model code or standard organizations may be obtained from the State Building Code Office. Double vertical lines in the margin of replacement pages indicate changes made by the BHCD for use with the 1996 BOCA National Code.

The local building inspection department should be consulted for information and assistance regarding application of the USBC. Additional technical assistance may be obtained by contacting a regional State Fire Marshal's office.

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CHAPTER 1

ADMINISTRATION

SECTION 101.0 SCOPE

101.1 Title: These regulations shall be known as the Virginia Uniform Statewide Building Code, hereinafter referred to as “this code.” This code contains provisions of the BNBC as published by BOCA International, Inc. and provisions adopted by the Virginia Board of Housing and Community Development which change provisions of the BNBC. Where conflicts occur between unchanged and changed provisions of the BNBC, the changed provisions shall govern.

Note: The Virginia Uniform Statewide Building Code (13 VAC 5-61-10 et seq.) as on file with the Virginia Code Commission sets out the changed sections of the BNBC using the Virginia Administrative Code (VAC) section numbering and correlates those changes to conform to the BNBC section numbering. Replacement pages for the BNBC containing the changed sections marked in the margin with a double line may be obtained from DHCD.

101.2 Scope: This code prescribes building regulations to be complied with in the construction and maintenance of structures and the equipment therein including provisions for administration and enforcement. To the extent that any provisions of this code are not within this scope, those provisions are considered to be invalid.

Note: The BNBC and its referenced standards contain some areas of regulation outside of the scope of this code, as established under state law. Examples are certain worker protection requirements, private sewage disposal system criteria and certain functional design considerations. Where conflicts have been readily noted, changes have been made to the BNBC to bring it within the scope of authority, however, in some areas, judgement will have to be made as to whether the provisions of the BNBC and its referenced standards are fully applicable. Code officials may request the TRB to give guidance in these areas and should consider precedent established through appeal decisions rendered by the TRB.

101.2.1 State structures: This code shall be applicable to all state-owned structures, with the exception that §§ 2.1-514 through 2.1-521.1 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 structure for which preliminary plans were prepared or on which construction commenced after the initial effective date of this code, shall remain subject to the provisions of this code that were in effect at the time such plans were completed or such construction commenced. Subsequent reconstruction, renovation or demolition of such structures 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 code official for state-owned buildings as prescribed by § 36-98.1 of the

6. Manufactured homes however, applicable requirements of this code affecting site preparation, utility connections, skirting installation and maintenance of the manufactured

Code of Virginia.

101.3 Application of references: Unless otherwise specifically provided for in this code, all references to chapter or section numbers, or to provisions not specifically identified by number, shall be construed to refer to such chapter, section or provision of this code.

101.4: Deleted.

SECTION 102.0 APPLICABILITY

102.1 General: The provisions of this code shall apply to all matters affecting or relating to structures, as set forth in Section 101.0. The construction, *alteration*, repair, *addition* and removal of all structures shall comply with this code.

102.2 When applicable; existing structures: Construction for which a permit application is submitted to the code official after April 15, 1997 shall comply with the provisions of this code, except when construction documents for proposed construction were substantially complete prior to the above date and a permit application is submitted to the code official within one year after the above date. In such cases, construction shall comply with either the provisions of this code or the provisions of this code in effect immediately prior to April 15, 1997.

All structures shall comply with the applicable requirements of this code for the maintenance of existing structures.

102.3 Exemptions: The following are exempt from this code.

1. Equipment controlled by a publicly regulated utility service and located on property by established rights.
2. Manufacturing and processing machines including the following service equipment associated with the manufacturing or processing machines:
 - 2.1. Electrical equipment connected after the last disconnecting means;
 - 2.2. Plumbing piping and equipment connected after the last shutoff valve or backflow device or before the equipment drain trap; and
 - 2.3. Gas piping and equipment connected after the outlet shutoff valve.
3. Parking lots and sidewalks which are not part of an accessible route.
4. Recreational equipment such as swing sets, sliding boards, climbing bars, jungle gyms, skateboard ramps and similar equipment when such equipment is not regulated by the Virginia Amusement Device Regulations (13 VAC 5-31-10 et seq.).
5. Industrialized buildings however, applicable requirements of this code affecting site preparation, utility connections and maintenance of the unit remain in full force and effect.

home remain in full force and effect.

102.4 Referenced standards: The standards referenced in this

code and listed in Chapter 35 shall be considered part of the requirements of this code to the prescribed extent of each such reference. Where differences occur between provisions of this code and referenced standards, the provisions of this code shall apply.

SECTION 103.0 ENFORCEMENT

103.1 Responsibility for enforcement: Enforcement of the provisions of this code governing construction is the responsibility of the department of building inspection. Whenever a county or a municipality does not have such a 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 the DHCD for such enforcement. Towns with a population of less than 3,500 may elect to administer and enforce this code; however, where the town does not elect to administer and enforce this code, the county in which the town is situated shall administer and enforce this code for the town. In the event such town is situated in two or more counties, those counties shall administer and enforce this code within their respective boundaries.

103.2 Authority to defray cost; fee levy: Fees may be levied by the local governing body in order to defray the cost of enforcement and appeals pursuant to this code. The department of building inspection shall collect a 1.0% levy of fees charged for building permits issued under this code and transmit it quarterly to the DHCD to support training programs of the Virginia Building Code Academy. Localities which maintain, individual or regional, training academies accredited by the DHCD shall retain such levy.

103.3 Existing structures: The local governing body may inspect and enforce the provisions of this code for the maintenance of existing structures, whether occupied or not, including provisions for elevators. Such inspection and enforcement shall be carried out by an agency or department designated by the local governing body. However, upon a finding by the local building department, following a complaint by a tenant of a residential rental unit which is the subject of such complaint, that the structure is unsafe, the local building department shall enforce the provisions of this code relating to unsafe structures.

SECTION 104.0 DEPARTMENT OF BUILDING INSPECTION

104.1 Code official: The department of building inspection is hereby created and the executive official in charge thereof shall be known as the code official.

104.1.1 Code official for existing structure provisions: A separate department of building inspection may be created for enforcement of the provisions of this code for the maintenance of existing structures and the executive official in charge thereof shall also be known as the code official.

104.2 Appointment: The code official shall be appointed by the chief appointing authority of the jurisdiction; and the code official shall not be removed from office except for cause and after full opportunity to be heard on specific and relevant charges by and before the appointing authority.

104.2.1 Certification: The code official shall obtain a certificate of competence from the Virginia Board of Housing and Community Development within one year after appointment unless appointed prior to April 1, 1983 with continued appointment or appointed prior to April 1, 1995 with continued appointment for enforcement of the provisions of this code for the maintenance of existing structures.

104.2.2 Training: A code official that has not been certified shall attend the core module of the Virginia Building Code Academy or its equivalent in an individual or regional training academy accredited by the DHCD within 90 days after

105.4 Inspections: The code official shall make all of the required inspections, or the code official shall accept reports of inspection by *approved agencies* or individuals in accordance with Section

appointment.

104.2.3 Notification of appointment: The appointing authority of the jurisdiction shall notify the DHCD of the appointment of a code official within 30 days after such appointment.

104.3 Organization: The code official shall appoint such number of officers, technical assistants, inspectors and other employees as shall be necessary for the administration of this code and as authorized by the appointing authority.

104.3.1 Certification: The inspector or technical assistant shall obtain a certificate of competence in the appropriate subject areas from the Virginia Board of Housing and Community Development within three years after appointment unless appointed prior to March 1, 1988 with continued appointment or appointed prior to April 1, 1995 with continued appointment for enforcement of the provisions of this code for the maintenance of existing structures.

104.4 Deputy: The code official is authorized to designate an employee as deputy who shall exercise all the powers of the code official during the temporary absence or disability of the code official.

104.5: Continuing education: Code officials, inspectors and technical assistants enforcing this code shall attend periodic training courses as designated and provided by the DHCD.

104.6 Relief from personal responsibility: The code official, officer or employee charged with the enforcement of this code, while acting for the jurisdiction, shall not thereby be rendered liable personally, and is hereby relieved from all personal liability for any damage accruing to persons or property as a result of any act required or permitted in the discharge of official duties. Any suit instituted against an officer or employee in the lawful discharge of duties and under the provisions of this code shall be defended by the legal representative of the jurisdiction until final termination of the proceedings. The code official or any subordinate shall not be liable for costs in any action, suit or proceeding that is instituted in pursuance of the provisions of this code; and any officer of the department of building inspection, acting in good faith and without malice, shall be free from liability for acts performed under any of its provisions or by reason of any act or omission in the performance of official duties in connection therewith.

104.7 Deleted.

SECTION 105.0 DUTIES AND POWERS OF THE CODE OFFICIAL

105.1 General: The code official shall enforce all of the provisions of this code and shall act on any question relative to the mode or manner of construction and materials to be used in the erection, *addition* to, *alteration*, repair, removal, demolition, installation of service equipment and the location, occupancy and maintenance of all buildings and structures, except as otherwise specifically provided for by statutory requirements or as provided for in Sections 105.2 through 105.8.

105.2 Applications and permits: The code official shall receive applications and issue permits for the erection and *alteration* of buildings and structures, inspect the premises for which such permits have been issued and enforce compliance with the provisions of this code.

105.3 Notices and orders: The code official shall issue all necessary notices or orders to ensure compliance with this code.

113.2.1. All reports of such inspections shall be in *writing* and be certified by a responsible officer of such *approved agency* or by the responsible individual. The code official is authorized to engage such expert opinion as deemed necessary to report upon unusual technical issues that arise, subject to the approval of the appointing authority.

105.5 Identification: The code official shall carry proper identification when inspecting structures or premises in the performance of duties under this code.

105.6 Delegation of duties and powers: The code official is permitted to delegate duties and powers subject to any limitations imposed by the appointing authority and shall be responsible for assuring that delegated duties and powers are carried out in accordance with this code.

105.7 Department records: The code official shall keep official records of applications received, permits and certifications issued, fees collected, reports of inspections, and notices and orders issued. Such records shall be retained in the official records or shall be permitted to be disposed of in accordance with General Schedule Number Six from the Library of Virginia.

105.8 Annual report: At least annually, the code official shall submit to the chief authority of the jurisdiction a written statement of operations in the form and content as shall be prescribed by such authority.

SECTION 106.0 APPROVAL

106.1 Approved materials and equipment: All materials, equipment and devices approved by the code official shall be constructed and installed in accordance with such approval.

106.2 Modifications: When there are practical difficulties involved in carrying out provisions of this code, the code official shall have the right to modify such provisions upon application of the owner or the owner’s representative, provided that the spirit and intent of the law is observed and that the public health, safety and welfare is assured.

106.2.1 Records: The applications for modification and the final decision of the code official shall be in *writing* and shall be officially recorded with the application for the permit in the permanent records of the department of building inspection.

106.3 Used materials and equipment: Used materials, equipment and devices shall not be reused unless they have been reconditioned, tested and placed in good and proper working condition and approved by the code official.

106.4 Alternative materials and equipment: The provisions of this code are not intended to prevent the installation of any material or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material or method of construction shall be approved when the code official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method of work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fireresistance, durability and safety.

SECTION 107.0 APPLICATION FOR PERMIT

107.1. When permit is required. Written application shall be made to the building official when a construction permit is

107.3.1 Application by contractors: The code official shall require the applicant for a permit to furnish prior to the issuance

required. A permit shall be issued by the building official before any of the following actions subject to the USBC may be commenced:

1. Constructing, enlarging, altering, repairing, or demolishing a building or structure.

2. Changing the use of a building either within the same use group or to a different use group when the new use requires greater degrees of structural strength, fire protection, exit facilities, ventilation or sanitary provisions.

3. Installing or altering any equipment which is regulated by this code.

4. Removing or disturbing any asbestos containing materials during demolition, alteration, renovation of or additions to buildings or structures.

Exceptions: 1. Ordinary repairs which do not involve any violation of the USBC shall be exempt from this provision. Ordinary repairs shall not include the removal, addition or relocation of any wall or partition, or the removal or cutting of any structural beam or bearing support, or the removal, addition or relocation of any parts of a building affecting the means of egress or exit requirements. Ordinary repairs shall not include the removal, disturbance, encapsulation, or enclosure of any asbestos containing material. Ordinary repairs shall not include additions, alterations, replacement or relocation of the plumbing, mechanical, or electrical systems, or other work affecting public health or general safety. The term "ordinary repairs" shall mean the replacement of the following materials with like materials:

- a. Painting.
- b. Roofing when not exceeding 100 square feet of roof area.
- c. Glass when not located within specific hazardous locations as defined in Section 2405.2 of the BOCA Code and all glass repairs in Use Group R-3 and R-4 buildings.
- d. Doors, except those in fire-rated wall assemblies or exitways.
- e. Floor coverings and porch flooring.
- f. Repairs to plaster, interior tile work, and other wall coverings.
- g. Cabinets installed in residential occupancies.
- h. Wiring and equipment operating at less than 50 volts.

2. A permit is not required to install wiring and equipment which operates at less than 50 volts provided the installation is not located in a noncombustible plenum, or is not penetrating a fireresistance rated assembly.

3. Detached utility sheds 150 square feet or less in area and eight feet six inches or less in wall height when accessory to any Use Group building except Use Groups H and F.

4. Tents and air-support structures covering an area 900 square feet (84 m²), or less, including all connecting areas and spaces with a common means of egress, or entrance, and having an occupant load of 50 or less.

107.1.1. Authorization of work. The building official may authorize work to commence pending receipt of written application.

107.2 Form of application: The application for a permit shall be submitted in such *written* form as the code official prescribes and shall be accompanied by the required fee as prescribed in Section 112.0.

107.3 By whom application is made: Application for a permit shall be made by the owner or lessee of the building or structure, or agent of either, or by the registered design professional employed in connection with the proposed work. The full names and addresses of the owner, lessee, applicant and the responsible officers, if the owner or lessee is a corporate body, shall be stated in the application. The code official shall accept and process applications through the mail.

of the permit, that person's license or certification number issued pursuant to Chapter 11 (§ 54.1-1100 et seq.) of Title 54.1

of the Code of Virginia or evidence of being exempt from the provisions of that chapter.

107.4 Description of work: The application shall contain a general description of the proposed work, the location of the proposed work, the occupancy of all parts of the building or structure and of all portions of the site or lot not covered by the building or structure, provisions for *special inspections* required by Section 1705.0, and such additional information as required by the code official.

107.5 Construction documents: The application for permit shall be accompanied by not less than two sets of *construction documents*. The code official is permitted to waive the requirements for filing *construction documents* when the proposed work is of a minor nature. When the quality of the work is not in conformity to this code, the code official may require the applicant to establish such quality by means of a test or other method "legal" or its equivalent.

107.6 Site plan: An application for permit shall be accompanied by a site plan showing the scale and location of all new construction, including structures on the site, distances from lot lines, the existing street grades and the proposed finished grades; and the site plan shall be drawn in accordance with an accurate boundary line. In the case of demolition, the site plan shall show all construction to be demolished and the location and size of all existing structures and construction that are to remain on the site or plot.

Exception: The code official is permitted to waive or modify the requirements for a site plan when the application for permit is for alteration of an existing structure.

107.6.1: Deleted.

107.7 Engineering details: The code official shall require the applicant to file adequate details of structural, mechanical, plumbing and electrical work, which may include computations, stress diagrams and other essential technical data. All engineering plans and computations shall bear the signature and seal of the engineer or architect responsible for the design as required by Section 114.1.

107.8 Amendments to application: Subject to the limitations of Section 107.4, amendments to a plan, application or other records accompanying an application shall be filed at any time before completion of the work for which the permit is sought or issued. Such amendments shall be a part of the original application and shall be filed there.

107.9 Time for action: An application for a permit for any proposed work shall be deemed to have been abandoned six months after the date the code official has received the application has been diligently prosecuted by the applicant and the code official shall not be required to act on such application.

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official receives certification from the owner or his agent that the affected portions of the building have been inspected for the

presence of asbestos by an individual licensed to perform such inspections pursuant to § 54.1-503 of the Code of Virginia and that no asbestos-containing materials were found or that appropriate response actions will be undertaken in accordance with the requirements of the Clean Air Act National Emission Standard for the Hazardous Air Pollutant (NESHAPS 40 CFR 61, Subpart M), and the asbestos worker protection requirements established by the U.S. Occupational Safety and Health Administration for construction workers (29 CFR 1926.58). 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 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 asbestos and that asbestos installation, removal, or encapsulation will be accomplished by a licensed asbestos contractor.

The provisions of Section 108.10 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 Section 108.10 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 thirty-five cubic feet off facility components where the length or area could not be measured previously.

An abatement area shall not be reoccupied until the code official receives certification from the owner that the response actions will be completed and final clearances will be 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).

SECTION 109.0 TEMPORARY STRUCTURES

109.1 General: The code official may issue a permit for temporary construction. Such permit shall be limited as to time of service, but such temporary construction shall not be permitted for more than one year.

109.2 Special approval: All temporary construction shall conform to the structural strength, fire safety, *means of egress*, light, *ventilation* and sanitary requirements of this code as necessary to insure the public health, safety and general welfare.

109.3 Termination of approval: The code official is hereby authorized to terminate such special approval and to order the demolition of any such construction at his discretion.

SECTION 110.0 DEMOLITION OF STRUCTURES

110.1 Service connections: Before a structure is demolished or removed, the *owner* or agent shall notify all utilities having service connections within the structure such as water, electric, gas, sewer, and other connections. A permit to demolish or remove a structure shall not be issued until a release is obtained from the utilities, stating that their respective service connections and appurtenant equipment, such as meters and regulators, have been removed or sealed and plugged in a safe manner.

110.2 Notice to adjoining owners: Only when *written* notice has been given by the applicant to the *owners* of adjoining *lots* and to the *owners* of wired or other facilities, of which the temporary removal is necessitated by the proposed work, shall a permit be

113.1 Preliminary inspection: Before issuing a permit, the code

granted for the removal of a building or structure.

110.3 Lot regulation: Whenever a structure is demolished or removed, the premises shall be maintained free from all unsafe or hazardous conditions by the proper regulation of the *lot*, restoration of established grades and erection of the necessary retaining walls and fences in accordance with the provisions of Chapter 33.

SECTION 111.0 CONDITIONS OF PERMIT

111.1 Payment of fees: A permit shall not be issued until the fees prescribed in Section 112.0 have been paid.

111.2 Compliance with code: The permit shall be a license to proceed with the work and shall not be construed as authority to violate, cancel or set aside any of the provisions of this code, except as specifically stipulated by modification or legally granted variation as described in the application.

111.3 Compliance with permit: All work shall conform to the approved application and the approved *construction documents* for which the permit has been issued and any approved amendments to the approved application or the approved *construction documents*.

111.4 Compliance with site plan: All new work shall be located strictly in accordance with the approved site plan.

SECTION 112.0 FEES

112.1 General: A permit to begin work for new construction, *alteration*, removal, demolition or other building operation shall not be issued until the fees prescribed in this section shall have been paid to the department of building inspection or other authorized agency of the jurisdiction, nor shall an amendment to a permit necessitating an additional fee be approved until the additional fee has been paid.

Exception: The code official is permitted to authorize delayed payment of fees.

112.2 Special fees: The payment of the fee for the construction, *alteration*, removal or demolition for all work done in connection with or concurrently with the work contemplated by a building permit shall not relieve the applicant or holder of the permit from the payment of other fees that are prescribed by law or ordinance for water taps, sewer connections, electrical permits, erection of *signs* and display structures, marquees or other *appurtenant structures*, or fees of inspections, certificates of occupancy or other privileges or requirements, both within and without the jurisdiction of the department of building inspection.

112.3 Fee schedule: The code official shall establish a fee schedule for fees to be charged for enforcement activities under this code. The fee schedule shall be subject to approval of the local governing body and shall be based on square footage, cubic footage, cost of construction or other appropriate criteria.

112.3.1: Deleted.

112.4: Deleted.

112.5 Refunds: In the case of a revocation of a permit or abandonment or discontinuance of a building project, the portion of the work actually completed shall be computed and any excess fee for the incompleting work shall be returned to the permit holder upon *written* request. All plan examination and permit processing fees and all penalties that have been imposed on the permit holder under the requirements of this code shall first be collected.

SECTION 113.0 INSPECTION

official shall, if deemed necessary, examine or cause to be

examined all buildings, structures and sites for which an application has been

filed for a permit to construct, enlarge, *alter*, repair, remove, demolish or *change the occupancy* thereof.

113.2 Inspections: The permit holder shall assure that the following inspections have been conducted and approved by the code official when applicable to the construction:

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 and systems prior to concealment.
6. Inspection of energy conservation material prior to concealment.

The code official is permitted to designate additional inspections to be conducted during the construction of a structure and shall so notify the permit holder, person in charge of the work or other appropriate person. The code official shall be notified when the construction reaches the stage of completion for an inspection. The person requesting an inspection shall provide the code official with any ladder, scaffolding or test equipment necessary to conduct the requested inspection.

A record of all such examinations and inspections and of all violations of this code shall be maintained by the code official and shall be communicated promptly in writing to the permit holder, person in charge of the work or other appropriate person. The owner shall provide for special inspections in accordance with Section 1705.0.

Exception: Where the construction cost is less than \$2,500 the inspection shall be permitted, at the discretion of the code official, to be waived.

113.2.1 Approved inspection agencies: The code official shall accept reports of approved inspection agencies, provided such agencies satisfy the requirements as to qualifications and reliability.

113.2.2 Plant inspection: Where required by the provisions of this code or where determined necessary by the code official, materials or assemblies shall be inspected at the point of manufacture or fabrication in accordance with Section 1703.3.

113.3 Final inspection: Upon completion of the building or structure, and before issuance of the certificate of occupancy required by Section 118.0, a final inspection shall be made and approved. All violations of the approved *construction documents* and permit shall be noted and the holder of the permit shall be notified of the discrepancies.

113.4 Right of entry: The code official shall have the authority to enter at any reasonable time any structure or premises for which a permit has been issued but has not received a certificate of occupancy in accordance with Section 118.0.

For all other structures or premises, when the code official has reasonable cause to believe that a code violation exists, the code official is authorized to enter the structure or premises at reasonable times to inspect subject to constitutional restrictions on unreasonable searches and seizures. If entry is refused or not obtained, the code official is authorized to pursue recourse as provided by law.

113.5 Coordination of inspections: Whenever in the enforcement of this code or another code or ordinance, the responsibility of more than one code official of the jurisdiction is involved, it shall be the duty of the code officials involved to coordinate their inspections and administrative orders as fully as practicable so that the owners and occupants of the structure shall not be subjected to visits by

116.5 Abatement of violation: The imposition of the penalties herein prescribed shall not preclude the legal officer of the jurisdiction from instituting appropriate action to prevent unlawful

numerous inspectors or multiple or conflicting orders. Whenever an inspector from any agency or department observes an apparent or actual violation of some provision of some law, ordinance or code not within the inspector's authority to enforce, the inspector shall report the findings to the code official having jurisdiction.

SECTION 114.0 PROFESSIONAL, ARCHITECTURAL AND ENGINEERING SERVICES

114.1 General: Where required by law or where determined necessary by the code official, all construction documents required for a building permit application shall be prepared by a registered design professional licensed in this Commonwealth. The code official shall establish a procedure to ensure that construction documents are prepared by a registered design professional licensed in this Commonwealth where required by law. In the case where construction documents are not required under law or by the code official to be prepared by a registered design professional licensed in this Commonwealth, the construction documents shall bear the name, address and occupation of the author.

114.2 Special inspections: *Special inspections* shall be made in accordance with Section 1705.0.

114.2.1 Building permit requirement: This *special inspection* requirement shall be determined prior to the issuance of the building permit and shall be a requisite for the permit issuance as described in section 1705.0.

114.2.2 Fees and costs: All fees and costs related to the performance of special professional services shall be borne by the owner.

SECTION 115.0 WORKMANSHIP

115.1 General: All work shall be conducted, installed and completed in a workmanlike and acceptable manner so as to secure the results intended by this code.

SECTION 116.0 VIOLATIONS

116.1 Unlawful acts: It shall be unlawful for any person, firm or corporation to erect, construct, *alter*, extend, repair, remove, demolish or occupy any building, structure or equipment regulated by this code, or cause same to be done, in conflict with or in violation of any provisions of this code.

116.2 Notice of violation: The code official shall serve a notice of violation to the responsible party as determined by Section 116.1 if the violation has not been remedied within a reasonable time. The notice shall reference the code section that serves as the basis for the violation and direct the discontinuance and abatement of the violation. The notice shall be in writing and be served 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 at the entrance door or access way if the person in charge of the premises cannot be found. The notice of violation shall indicate the right of appeal by reference to Section 121.1.

116.2.1 Reserved

116.3 Prosecution of violation: If the notice of violation has not been complied with promptly, the code official shall request the legal counsel of the jurisdiction to institute the appropriate proceeding at law or in equity to restrain, correct or abate such violation, or to require the removal or termination of the unlawful occupancy of the building or structure in violation of the provisions of this code or of the order or direction made pursuant thereto.

116.4 Violation penalties: Penalties for violations of this code shall be as set out in § 36-106 of the Code of Virginia.

construction or to restrain, correct or abate a violation, or to prevent illegal occupancy of a building, structure or premises or to stop an illegal act, conduct, business or occupancy of a building or

structure on or about any premises.

SECTION 117.0 STOP WORK ORDER

117.1 Notice to owner: Upon notice from the code official that work on any building or structure is being prosecuted contrary to the provisions of this code or in an unsafe and dangerous manner, such work shall be immediately stopped. The stop work order shall be in *writing* and shall be given to the owner of the property involved, or to the owner's agent, or to the person doing the work; and shall state the conditions under which work will be permitted to resume.

117.2: Deleted.

SECTION 118.0 CERTIFICATE OF OCCUPANCY

118.1 General: A certificate of occupancy, indicating completion of the work for which a permit was issued, shall be obtained prior to any occupancy of a structure except as provided for in Section 118.2. Final inspection approval or approvals shall be permitted to serve as the certificate of occupancy for any addition or alteration to a structure for which a certificate of occupancy has already been issued.

118.2 Temporary occupancy: Upon the request of the holder of a permit, a temporary certificate of occupancy shall be permitted to be issued before the completion of the entire work covered by the permit provided that such portion or portions shall be occupied safely prior to full completion of the structure without endangering life or public welfare.

118.3 Existing structures: Upon written request from the owner or as otherwise determined necessary by the code official, a certificate of occupancy shall be issued for an existing structure provided the structure is in substantial compliance with applicable provisions of this code. The code official is not permitted to require the removal, alteration or abandonment of, or prevent the continuance of, the occupancy of an existing structure except under conditions provided for in this code.

118.4 Contents of certificate: When a structure is entitled thereto, the code official shall issue a certificate of occupancy within ten days after *written* application. Upon completion of the final inspection in accordance with Section 113.3 and correction of the violations and discrepancies, the certificate of occupancy shall be issued. The certificate of occupancy shall specify the following.

1. The edition of the code under which the permit is issued.
2. The use group 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, whether the *sprinkler system* is required.
5. Any special stipulations and conditions of the building permit.

118.5 Posting structures: Structures classified in Use Group B, F, H, M or S shall be posted with a sign approved by the code official stating the use group and occupancy, live load, occupant load and date of posting.

118.6 Street numbers: Each structure to which a street number has been assigned shall have the number displayed so as to be readable from the public way.

SECTION 119.0 UNSAFE STRUCTURES AND EQUIPMENT

119.1 Conditions: All structures or existing equipment which, during construction, are or hereafter become unsafe, unsanitary or deficient because of inadequate *means of egress* facilities, inadequate light and *ventilation*, or which constitute a fire hazard, or are otherwise dangerous to human life or the public welfare, or which involve illegal or improper occupancy or inadequate maintenance, shall be deemed an unsafe condition. All unsafe structures shall be taken down and removed or made safe, as the code official deems necessary and as provided for in this section. A

vacant structure that is not secured against entry shall be deemed unsafe.

119.2 Record: The code official shall cause a report to be filed on an unsafe condition. The report shall state the occupancy of the structure and the nature of the unsafe condition.

119.3 Notice: If an unsafe condition is found, the code official shall serve on the owner, agent or person in control of the structure, a *written* notice that describes the condition deemed unsafe and specifies the required repairs or improvements to be made to abate the unsafe condition, or that requires the unsafe structure to be demolished within a stipulated time. Such notice shall require the person thus notified to declare immediately to the code official acceptance or rejection of the terms of the order.

119.4 Methods of service: Such notice shall be deemed properly served if a copy thereof is (a) delivered to the owner personally; or (b) sent by certified or registered mail addressed to the owner at the last known address with the return receipt requested. If the certified or registered letter is returned showing that the letter was not delivered, a copy thereof shall be posted in a conspicuous place in or about the structure affected by such notice. Service of such notice in the foregoing manner upon the owner's agent or upon the person responsible for the structure shall constitute service of notice upon the owner.

119.5 Restoration: The structure or equipment determined to be unsafe by the code official is permitted to be restored to a safe condition. To the extent that repairs, *alterations* or *additions* are made or a *change of occupancy* occurs during the restoration of the structure, such repairs, *alterations*, *additions* or *change of occupancy* shall comply with the requirements of Section 107.1.1 and Chapter 34.

119.6 Disregard of notice: Upon refusal or neglect of the person served with an unsafe notice to comply with the requirements of the order to abate the unsafe condition, the legal counsel of the jurisdiction shall be advised of all the facts in order to pursue recourse provided by law.

SECTION 120.0 EMERGENCY MEASURES

120.1 Imminent danger: When, during construction, in the opinion of the code official, there is imminent danger of failure or collapse of a building or structure or any part thereof which endangers life, or when, during construction, any structure or part of a structure has fallen and life is endangered by the occupation of the building or structure, the code official is hereby authorized and empowered to order and require the occupants to vacate the same forthwith. The code official shall cause to be posted at each entrance to such structure a notice reading as follows: "This Structure is Unsafe and its Occupancy has been Prohibited by the Code Official." It shall be unlawful for any person to enter such structure except for the purpose of making the required repairs or of demolishing the same.

120.2 Temporary safeguards: When, in the opinion of the code official, there is imminent danger due to an unsafe condition, the code official shall cause the necessary work to be done to render such structure temporarily safe, whether or not the legal procedure herein described has been instituted.

120.3 Closing streets: When necessary for the public safety, the code official shall temporarily close structures and close, or order the authority having jurisdiction to close, sidewalks, streets, *public ways* and places adjacent to unsafe structures, and prohibit the same from being used.

120.4 Emergency repairs: For the purposes of this section, the code official shall employ the necessary labor and materials to perform the required work as expeditiously as possible.

120.5: Deleted.

120.6 Unsafe equipment: Equipment deemed unsafe by the code official shall not be operated after the date stated in the notice unless the required repairs or changes have been made and the equipment

has been approved, or unless an extension of time has been secured from the code official in *writing*.

120.6.1 Authority to seal equipment: In the case of an emergency, the code official shall have the authority to seal out of service immediately any unsafe device or equipment regulated by this code.

120.6.2 Unlawful to remove seal: Any device or equipment sealed out of service by the code official shall be plainly identified in an approved manner. The identification shall not be tampered with, defaced or removed except by the code official and shall indicate the reason for such sealing.

SECTION 121.0 MEANS OF APPEAL

121.1 Application for Appeal. The owner of a building or structure, the owner's agent or any other person involved in the design or construction of the building or structure may appeal a decision of the building official concerning the application of the USBC or his refusal to grant a modification to the provisions of the USBC covering the manner of construction or materials to be used in the erection, alteration or repair of that building or structure. The applicant shall submit a written request for appeal to the Local Board of Building Code Appeals (BBCA) within 90 calendar days from the receipt of the decision to be appealed. The application shall contain the name and address of the owner of the building or structure and the person appealing if not the owner. A copy of the written decision of the building official shall be submitted along with the application for appeal and maintained as part of the record. The application shall be stamped or otherwise marked by the BBCA to indicate the date received. Failure to submit an application for appeal within the time limit established by this section shall constitute acceptance of the building official's decision.

121.1.1. Appeal to the TRB. After final determination by the BBCA, any person who was a party to the local appeal may appeal to the TRB. Appeals by an involved state agency from the decision of the code official for state-owned buildings shall be made directly to the TRB. Application shall be made to the TRB within 21 calendar days of receipt of the decision to be appealed. Failure to submit an application for appeal within the time limit established by this section shall constitute an acceptance of the BBCA's resolution or code official's decision.

121.2 Board of Appeals: There shall be established within each

CHAPTER 2

DEFINITIONS

SECTION 201.0 GENERAL

201.1 Scope: Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings shown in this chapter.

201.2 Interchangeability: Words used in the present tense include the future; words used in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural the singular.

201.3 Terms defined in other codes: Where terms are not defined in this code and are defined in the plumbing, fire prevention or mechanical codes listed in chapter 35, such terms shall have the meanings ascribed to them as in those codes.

201.4 Terms not defined: Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies.

SECTION 202.0 GENERAL DEFINITIONS

Acceleration

Effective peak acceleration: See Section 1610.2.

Effective peak velocity-related acceleration: See Section 1610.2.

Accepted engineering practice: That which conforms to accepted principles, tests or standards of nationally recognized technical or scientific authorities.

Accessible: See Section 1102.0.

Accessible route: See Section 1102.0.

Accessory structure: A building, the occupancy of which is incidental to that of the main building, that is located on the same lot as the main building.

Addition: An increase in building area, aggregate floor area, height or number of stories of a structure (see Section 3403.0).

Admixture: See Section 1902.0.

Aerosol: See Section 307.2.

Aerosol container: See Section 307.2.

Agricultural building: A structure utilized to store farm implements, hay, feed, grain or other agricultural or horticultural products or to house poultry, livestock or other farm animals. Such structure shall not include *habitable* or *occupiable spaces*, spaces in which agricultural products are processed,

Awning: See Section 3105.2.

treated or packaged, nor shall an agricultural building be a place of occupancy by the general public (see Section 512.0).

Aisle accessway: See Section 1002.0.

Alarm verification: See Section 902.0.

Alteration: Any construction or renovation to an existing structure other than repair or addition.

Alternating tread stairway: See Section 1002.0.

Anchor: See Section 2102.0.

Anchor store: See Section 402.2.

Annular space: See Section 702.0.

Approved: Approved by the code official or other authority having jurisdiction.

Approved agency: See Section 1702.0.

Approved material, equipment and methods: Material, equipment and methods evaluated and approved (see Section 106.0).

Approved rules: Deleted without substitution.

Appurtenant structure: A device or structure attached to the exterior or erected on the roof of a building designed to support service equipment or used in connection therewith, or for advertising or display purposes, or other similar occupancies.

Architectural terra cotta: See Section 2102.0.

Area, building: See Section 502.0.

Area, gross cross-sectional: See Section 2102.0.

Areaway (form of construction): See Section 3203.2.

Atrium: See Section 404.1.

Attic: See Section 1202.0.

Automatic: See Section 902.0.

Automatic fire suppression system: See Section 902.0.

Automotive service station: See Section 309.1.

Balcony (exterior): See Section 1602.0.

Barricade: See Section 307.2.

Base: See Section 1612.2.

Base shear: See Section 1612.2.

Basement: See Section 502.0.

Bay (part of a structure): See Section 1612.2.

Bay window: See Section 1406.5.

Bed joint: See Section 2102.0.

Bleachers: See Section 1002.0.

Blocked diaphragm: See Section 2306.2.

Boiling point: See Section 307.2.

Breezeway: See Section 1002.0

Brick

Calcium silicate brick (sand lime brick): See Section 2-102.0.

Clay or shale: See section 2102.0.

Concrete brick: See Section 2102.0.

Hollow brick: See Section 2102.0.

Building: A combination of any materials, whether portable or fixed, having a roof to form a structure for the use or occupancy by persons, or property; however, farm buildings not used for residential purposes and frequented generally by the owner, members of his family and farm employees shall be exempt from this code, but such buildings lying within a flood plain or in a mudslide-prone area shall be subject to flood proofing regulations or mudslide regulations, as applicable. 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. For application of this code, each portion of a building which is completely separated from other portions by fire walls complying with Section 707.0 shall be considered as a separate building.

Building, existing: Any structure occupied prior to the date of adoption of the appropriate code, or one for which a legal building permit has been issued.

Building line: The line established by law, beyond which a building shall not extend, except as specifically provided by law.

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.

Building service equipment: The mechanical, electrical and elevator equipment including piping, wiring, fixtures and other accessories, which provides sanitation, lighting, heating, ventilation, fire protection and transportation facilities essential for the habitable occupancy of the building or structure for its designated occupancy.

Building site: The area occupied by the building or structure, including the yards and courts required for light and ventilation, and such areas that are prescribed for access to the street.

Buttress: See Section 2102.0.

Canopy: See Section 3105.2.

Carbon dioxide extinguishing system: See Section 909.1.

Catchment area: See Section 1012.2.

Cementitious material: See Section 1902.0

Chimney: See Section 2102.0.

Chimney types

High-heat appliance type: See Section 2102.0.

Low-heat appliance type: See Section 2102.0.

Masonry type: See Section 2102.0.

Medium-heat appliance type: See Section 2102.0.

Clean agent: See Section 902.0.

Closed system: See Section 307.2.

Code official: The officer or other designated authority charged with the administration and enforcement of this code, or a duly authorized representative (see Section 104.1).

Collar joint: See Section 2102.0.

Combustible dusts: See Section 307.2.

Combustible fiber: See Section 307.2.

Combustible liquids: See Section 307.2.

Combustible material: A combustible material is a material which cannot be classified as noncombustible in accordance with Section 704.4.1.1.

Common path of travel: See Section 1002.0.

Components and cladding: See Section 1611.2.

Compressed gas: See Section 307.2.

Concrete:

Plain concrete: See Section 1902.0.

Reinforced concrete: See Section 1902.0.

Connector: See Section 2102.0.

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

Construction documents: All of the written, graphic and pictorial documents prepared or assembled for describing the design, location and physical characteristics of the elements of the project necessary for obtaining a building permit. The construction drawings shall be drawn to an appropriate scale.

Construction equipment: See Section 3312.1.

Construction, type of: See Section 602.0.

Type 1: See Section 603.0.

Type 2: See Section 603.0.

Type 3: See Section 604.0.

Type 4: See Section 605.0.

Type 5: See Section 606.0.

Control area: See Section 307.2.

Corridor: See Section 1002.0.

Corrosive: See Section 307.2.

Court: See Section 1202.0.

Inner: See Section 1202.0.

Outer: See Section 1202.0.

Court height: See Section 1202.0.

Court width: See Section 1202.0.

Cryogenic liquids (flammable or oxidizing): See Section 307.2.

Curb level: See Section 3203.2.

Building or wall heights: See Section 3203.2.

Damper, fire: See Section 702.0.

Day-night average sound level (Ldn): See Section 1202.0.

Deck: See Section 1602.0.

Deflagration: See Section 307.2.

Deluge system: See Section 902.0.

Design earthquake: See Section 1612.2.

Designated seismic systems: See Section 1612.2.

Detached storage building: See Section 307.2.

Detector, heat: See Section 902.0.

Detector, smoke: See Section 902.0.

Detonation: See Section 307.2.

DHCD: The Virginia Department of Housing and Community Development.

Diaphragm: See Sections 1612.2, 2102.0 and 2306.2.

Dimensions
Actual dimensions: See Section 2102.0.
Nominal dimensions: See Section 2102.0.

Dish antenna: See Section 3109.3.

Dispensing: See Section 307.2.

Door, assembly, fire: See Section 702.0.

Door, fire: See Section 702.0.

Draftstopping: See Section 702.0.

Dry-chemical extinguishing system: See Section 910.0.

Dumbwaiter: See Section 3002.0.

Dwellings
Boarding house: See Section 310.2.
Dormitory: See Section 310.2.
Dwelling unit: See Section 310.2.
Multiple-family dwelling: See Section 310.2.
Multiple single-family dwelling: See Section 310.2.
One-family dwelling: See Section 310.2.
Two-family dwelling: See Section 310.2.

Dwelling unit
Ground floor dwelling unit: See Section 1102.0.
Multistory dwelling unit: See Section 1102.0.
Type A dwelling unit: See Section 1102.0.
Type B dwelling unit: See Section 1102.0.

Effective height: See Section 2102.0.

Elevator: See Section 3002.0.
Freight elevator: See Section 3002.0.
Hand elevator: See Section 3002.0.
Hydraulic elevator: See Section 3002.0.
Passenger elevator: See Section 3002.0.
Power elevator: See Section 3002.0.
Sidewalk elevator: See Section 3002.0.

Elevator repairs: See Section 3002.0.

Emergency control station: See Section 416.2.

Emergency electrical system: See Section 2706.1.

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

Fire protection system: See Section 902.0.

Equipment, existing: Any equipment regulated by this code which was legally installed prior to the effective date of this code, or for which a permit to install has been issued.

Escalator: See section 3002.0.

Exit: See Section 1002.0.

Exit access: See Section 1002.0.

Exit discharge: See Section 1002.0.

Exit discharge, level of: See Section 1002.0.

Exit, horizontal: See Section 1002.0.

Explosive: See Section 307.2.

Exterior wall finish: See Section 1402.0.

Fabric awning: See Section 1609.2.

Fabric canopy: See Section 1609.2.

Fabricated item: See Section 1702.0.

Fabrication area: See section 416.2.

Facility: See Section 1102.0.

Farm structure: A structure located on a farm utilized for either the storage, handling or production of agricultural, horticultural or floricultural products or the sheltering, raising or processing of farm animals or farm animal products, which products or animals are normally intended for sale to domestic or foreign markets. The term shall include structures used for the maintenance, storage or use of farm equipment.

Fire alarm box, manual: See Section 902.0.

Fire alarm system: See Section 902.0.

Fire area: See Section 702.0.

Fire Command station: See Section 902.0.

Fire detector, automatic: See Section 902.0.

Fire hazard: The potential degree of fire severity based on the occupancy of a structure, classified as high, moderate or low.
High: All occupancies which involve the storage, sale, manufacture or processing of highly combustible, volatile flammable or explosive products which are capable of burning with extreme rapidity and produce explosions or large volumes of smoke, poisonous fumes or gases in the event of fire.
Moderate: All occupancies which involve the storage, sale, manufacture or processing of materials which are capable of burning with moderate rapidity and a considerable volume of smoke, but which do not produce either poisonous fumes or explosions, in the event of fire.
Low: All occupancies which involve the storage, sale, or manufacture of materials that do not ordinarily burn rapidly, nor produce excessive smoke, poisonous fumes or explosions in the event of fire.

Fire partition: See Section 702.0.

Fire protection: The provision of construction safeguards and exit facilities; and the installation of fire alarm, fire-detecting and fire-extinguishing service equipment to reduce the fire risk, including the risk involved in the spread of fire by exterior exposure to and from adjoining buildings and structures.

Fire protection rating: See Section 702.0.

Fire separation assembly: See Section 702.0.

Fire separation distance: See Section 702.0.

Fire window: See Section 702.0.

Fireblocking: See Section 702.0.

Fireplace throat: See Section 2102.0.

Fireresistance: See Section 702.0.

Fireresistance rating: See Section 702.0.

Fireresistive joint system: See Section 702.0.

Flame spread: See Section 802.0.

Flame spread rating: See Section 802.0.

Flameresistance: See Section 802.0.

Flammable: See Section 307.2.

Flammable compressed gas: See Section 307.2.

Flammable liquids: See Section 307.2.

Flammable solid: See Section 307.2.

Flash point: See Section 307.2.

Flood area, gross: See Section 1002.0.

Flood area, net: See Section 1002.0.

Floor finish: See Section 802.0.

Foam-extinguishing systems: See Section 911.1.

Foyer: See Section 1006.2.4.

Frame

- Braced:** See Section 1612.2.
- Centrically braced frame:** See Section 1612.2.
- Eccentrically braced frame:** See Section 1612.2.
- Diagonal brace:** See Section 1612.2.
- Lateral support members:** See Section 1612.2.
- Link beam:** See Section 1612.2.
- Link beam end web stiffeners:** See Section 1612.2.
- Link beam intermediate web stiffener:** See Section 1612.2.
- Link beam rotation angle:** See Section 1612.2.
- Intermediate moment frame:** See Section 1612.2.
- Ordinary moment frame:** See Section 1612.2.
- Space frame:** See Section 1612.2.
- Special moment frame:** See Section 1612.2.

Frame system

- Building:** See Section 1612.2.
- Dual:** See Section 1612.2.
- Moment resisting:** See Section 1612.2.

Garage, private: See Section 407.2.

Garage, public: See Section 408.2.

Grade hallway, grade lobby, grade passageway: See Section 1002.0.

Grade plane: See Section 502.0.

Grandstand: See Section 1002.0.

Greenhouse

- Continuously heated:** See Section 1608.2.
- Production:** See Section 1608.2.
- Retail:** See Section 1608.2.

Gross leasable area: See Section 402.2.

Guard system: See Section 1002.1.

Habitable space: See Section 1202.0.

Halogenated extinguishing system: See Section 912.1.

Handling: See Section 307.2.

Handrail: See Section 1002.1.

Hazardous materials: See Section 307.2.

Hazardous production material (HPM): See Section 416.2.

Head joint: See Section 2102.0.

Header (Bonder): See Section 2102.0.

Health hazard: See Section 307.2.

Height

- Building:** See Section 502.0.
- Court:** See Section 1202.0.
- Story:** See Section 502.0.
- Walls:** See Section 2102.0.

Hereafter: After the time that this code becomes effective.

Heretofore: Before the time that this code became effective.

High-temperature energy source: See Section 1612.2.

Highly toxic: See Section 307.2.

Hoist

- Material:** See Section 3002.0.
- Personnel:** See Section 3002.0.

Hoisting and conveying equipment, special: See Section 3002.0.

- Automotive Lift:** See Section 3002.0.
- Conveyors:** See Section 3002.0.
- Freight lift:** See Section 3002.0.
- Manlifts:** See Section 3002.0.

Hoisting and elevating equipment, miscellaneous: See Section 3002.2.

Industrialized building: A combination of one or more sections or modules industrialized buildings for the purpose of this code.

Incompatible materials: See Section 307.2.

Inspection certificate: See Section 1702.0.

Inspection, special: See Section 1702.0.

Inverted pendulum-type structures: See Section 1612.2.

Irritant: See Section 307.2.

Joint: See Section 702.0.

Jurisdiction: The governmental unit which has adopted this code under due legislative authority.

Label: See Section 1702.0.

Light-framed wall with shear panels: See Section 1612.2.

Load: See Section 1602.0.

Dead load: See Section 1602.0.
Duration of load: See Section 1602.0.
Earthquake load: See Section 1602.0.
Impact load: See Section 1602.0.
Lateral soil load: See Section 1602.0.
Live load: See Section 1602.0.
Wind load: See Section 1602.0.

Loadbearing wall system: See Section 1612.2.

Local building department: The agency or agencies of any local governing body charged with the administration, supervision or enforcement of this code, approval of plans, inspection of buildings or issuance of permits, licenses, certificates or similar documents. For application of this code the term "department of building inspection" shall mean the local building department.

Lot: A portion or parcel of land considered as a unit.

Lot, corner: A *lot* with two adjacent sides abutting upon streets or other public spaces.

Lot, interior: A *lot* which faces on one street or with opposite sides on two streets.

Lot line: A line dividing one *lot* from another, or from a street or any public place.

Lot line, interior: Any lot line other than one adjoining a street or public space.

Lot line, street: The lot line dividing a *lot* from a street or other public way.

Main windforce-resisting system: See Section 1611.2.

Mall: See Section 402.2.

Mall building, covered: See Section 402.2.

Mansard: See Section 1502.0.

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 forty 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.

Manufacturer's designation: See Section 1702.0.

Mark: See Section 1702.0.

Marquee: See Section 3203.11.

Masonry: See Section 2102.0.
Ashlar facing masonry: See Section 2102.0.
Ashlar masonry: See Section 2102.0.
Solid masonry: See Section 2102.0.

Masonry unit:
Clay: See Section 2102.0.
Concrete: See Section 2102.0.
Hollow: See Section 2102.0.
Solid: See Section 2102.0.

Mean roof height (h): See Section 1611.2.

Means of egress: See Section 1002.0.

Member

Permit: An official document or *certificate* issued by the authority having jurisdiction which authorizes performance of

Primary: See Section 1902.0.
Secondary: See Section 1902.0.

Membrane: See Section 3103.2.

Membrane structures:

Air-inflated structure: See Section 3103.2.
Air-supported structure: See Section 3103.2.
Double skin: See Section 3103.2.
Single skin: See Section 3103.2.
Cable-restrained, air-supported structure: See Section 3103.2.
Membrane-covered cable structure: See Section 3103.2.
Membrane-covered frame structure: See Section 3103.2.
Noncombustible membrane structure: See Section 3103.2.
Tent: See Section 3103.2.

Mezzanine: See Section 502.0.

Mobile unit: See Section 420.1.

Mortar: See Section 2102.0.

Mortar, surface-bonding: See Section 2102.0.

Moving walk: See Section 3002.0.

Nominal dimension

Lumber: See Section 2302.0.

Noncombustible: This is a general, relative term. Its precise meaning is defined in this code for specific applications.

Noncombustible building material: See Section 704.4.

Occupancy: The purpose for which a building or portion thereof is used.

Occupancy, change of: A change in the purpose or level of activity within a structure that involves a change in application of the requirements of this code.

Occupant load: See Section 1002.0.

Occupiable space: See Section 1202.0.

Occupied: As applied to a building, shall be construed as though followed by the words "or intended, arranged or designed to be occupied."

Open parking structures: See Section 406.1.

Open system: See Section 307.2.

Organic peroxide: See Section 307.2.

Oriel window: See Section 3203.2.

Other health-hazard material: See Section 307.2.

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.

Oxidizer: See Section 307.2.

P-Delta effect: See Section 1612.2.

Panel (part of a structure): See Section 1602.0.

Particleboard: See Section 2302.0.

Penthouse: See Section 1502.0.

a specified activity (see Section 108.0).

Person: Includes a corporation, firm, partnership, association, organization and any other group acting as a unit as well as individuals. It shall also include an executor, administrator, trustee, receiver or other representative appointed according to law. Whenever the word "person" is used in any section of this code prescribing a penalty or fine, as to partnerships or associations, the word shall include the partners or members thereof, and as to corporations, shall include the officer, agents or members thereof who are responsible for any violations of such section.

Physical hazard: See Section 307.2.

Physically disabled person: See Section 1102.0.

Plastic

Light-diffusing system: See Section 2602.0.

Plastic glazing: See Section 2602.0.

Plastic roof panels: See Section 2602.0.

Plastic wall panels: See Section 2602.0.

Reinforced plastic, glass fiber: See Section 2602.0.

Thermoplastic material: See Section 2602.0.

Thermosetting material: See Section 2602.0.

Platform: See Section 412.2.

Plenum: See Section 2805.1.

Pools, swimming, hot tubs and spas

Above-ground/on-ground pool: See Section 421.2.

Barrier: See Section 421.2.

Hot tub: See Section 421.2.

In-ground pool: See Section 421.2.

Power safety cover: See Section 421.2.

Private swimming pool: See Section 421.2.

Private swimming pool, indoor: See Section 421.2.

Private swimming pool, outdoor: See Section 421.2.

Public swimming pool: See Section 421.2.

Spa: See Section 421.2.

Preaction system: See Section 902.0.

Premises: A lot, plot or parcel of land, including any structure thereon.

Preservative treatment (treated material): See Section 2302.0.

Proscenium wall: See Section 412.2.

Protected construction: See Section 702.0.

Public way: See Section 1002.0.

Pyrophoric: See Section 307.2.

Radioactive material: See Section 307.2.

Registered design professional: An architect or engineer, registered or licensed to practice professional architecture or engineering, as defined by the statutory requirements of the professional registration laws of the state in which the project is to be constructed.

Repair: The reconstruction or renewal of any part of an existing structure for the purpose of its maintenance (see Section 107.1.1).

Required: Shall be construed to be mandatory by provisions of this code.

Resilient stable-mounting system: See Section 1612.2.

Restraining device: See Section 1612.2.

Elastic: See Section 1612.2.

Fixed: See Section 1612.2.

Seismic activated: See Section 1612.2.

Standby power system: See Section 2707.1.

Roof: See Section 1502.0.

Roof covering: See Section 1502.0.

Roof structure: See Section 1502.0.

Rubble masonry: See Section 2102.0.

Coursed rubble: See Section 2102.0.

Random rubble: See Section 2102.0.

Rough or ordinary rubble: See Section 2102.0.

Running bond: See Section 2102.0.

Sallyport: See Section 410.3.6.

Seismic-resisting system: See Section 1612.2.

Self-closing: See Section 702.0.

Sensitizer: See Section 307.2.

Service passage, HPM: See Section 416.2.

Shaft: See Section 702.0.

Shall: The term, where used in this code, shall be construed as mandatory.

Shear wall: See Section 1612.2.

Sign: See Section 3102.2.

Closed sign: See Section 3102.2.

Ground sign: See Section 3102.2.

Marquee sign: See Section 3102.2.

Open sign: See Section 3102.2.

Portable sign: See Section 3102.2.

Projecting sign: See Section 3102.2.

Roof sign: See Section 3102.2.

Temporary sign: See Section 3102.2.

Wall sign: See Section 3102.2.

Single membrane penetration: See Section 702.0.

Site: See Section 1102.0.

Slidescape: See Section 1002.0.

Smoke barrier: See Section 702.0.

Smoke compartment: See Section 702.0.

Smoke detector, multiple station: See Section 902.0.

Smoke detector, single station: See Section 902.0.

Smokeproof enclosure: See Section 1002.0.

Sound transmission class (STC) rating: See Section 1202.0.

Smoke-protected assembly seating: See Section 1013.2.

Special amusement building: See Section 413.2.

Splice: See Section 702.0.

Sprinkler: See Section 902.0.

Sprinkler system, automatic: See Section 902.0.

Sprinkler system, limited area: See Section 902.0.

Stack bond: See Section 2102.0.

Stage: See Section 412.2.

Stairway: See Section 1002.0.

Table 307.8(2)
EXEMPT AMOUNTS OF HAZARDOUS MATERIALS, LIQUIDS AND CHEMICALS PRESENTING A HEALTH HAZARD
MAXIMUM QUANTITIES PER CONTROL AREA^{a, b, i}

Material	Storage ^c			Closed systems ^c			Open systems ^c	
	Solid pounds ^{d,e}	Liquid gallons (pounds) ^{d,e}	Gas cubic feet	Solid pounds ^d	Liquid gallons (pounds) ^d	Gas cubic feet	Solid pounds ^d	Liquid gallons (pounds) ^d
Corrosive	5,000	500	810 ^{d,e,h}	5,000	500	810 ^{d,e,h}	1,000	100
Highly toxic	1	(1)	20 ^f	1	(1)	20 ^f	1/4	(1/4)
Irritant	Not limited	Not limited	810 ^{d,e}	Not limited	Not limited	810 ^{d,e}	Not limited	Not limited
Radioactive ^g	25 rem - unsealed source 100 rem - sealed source			100 rem - sealed source			25 rem - sealed source	
Sensitizer	Not limited	Not limited	810 ^{d,e}	Not limited	Not limited	810 ^{d,e}	Not limited	Not limited
Toxic	500	(500)	810 ^{d,e}	500	(500)	810 ^{d,e}	125	(125)
Other health hazards	Not limited	Not limited	810 ^{d,e}	Not limited	Not limited	810 ^{d,e}	Not limited	Not limited

Note a. For use of control areas, see Section 417.2.

Note b. In retail sales occupancies, the quantities of medicines, foodstuffs and cosmetics, containing not more than 50 percent by volume of water-miscible liquids and with the remainder of the solutions not being flammable, shall not be limited, provided that such materials are packaged in individual containers not exceeding 1 gallon.

Note c. The aggregate quantity in utilization and storage shall not exceed the quantity listed for storage.

Note d. Maximum quantities shall be increased 100 percent in buildings equipped throughout with an automatic sprinkler system in accordance with Section 906.2.1. Where Note e also applies, the increase for both notes shall be applied accumulatively.

Note e. Maximum quantities shall be increased 100 percent when stored in approved storage cabinets, gas cabinets, fume hoods, exhausted enclosures, or safety cans as specified in the fire prevention code listed in Chapter 35. Where Note d also applies, the increase for both notes shall be applied accumulatively.

Note f. Permitted only when stored in approved exhausted gas cabinets, exhausted enclosures or fume hoods.

Note g. Maximum dosage permitted in any single exposure.

Note h. A single cylinder containing 150 pounds or less of anhydrous ammonia in a single control area in a nonsprinklered building shall be considered an exempt quantity. Two cylinders, each containing 150 pounds or less in a single control area shall be considered an exempt quantity provided the building is equipped throughout with an automatic sprinkler system in accordance with Section 906.2.1.

Note i. Quantities in parenthesis indicate quantity units in parenthesis at the head of each column. 1 cubic foot = 0.028 m³; 1 pound = 0.454 kg; 1 gallon = 3.785 L.

SECTION 308.0 INSTITUTIONAL USE GROUPS

308.1 General: All structures in which people suffering from physical limitations because of health or age are harbored for medical or other care or treatment, or in which people are detained for penal or correction purposes, or in which the liberty of the inmates is restricted, shall be classified as Use Group I-1, I-2 or I-3. The term "Use Group I" shall include Use Groups I-1, I-2 and I-3.

308.2 Use Group I-1: This use group shall include buildings and structures which house six or more individuals who, because of age, mental disability or other reasons, must live in a supervised environment but who are physically capable of responding to an emergency situation without personal assistance. Where accommodating persons of the above description, the following types of facilities shall be classified as I-1 facilities: board and care facilities, half-way houses, group homes, social rehabilitation facilities, alcohol and drug centers and convalescent facilities. A facility such as the above with five or less occupants shall be classified as a residential use group.

Exception: Group homes licensed by the Virginia Department of Mental Health, Mental Retardation and Substance Abuse Services or the Virginia Department of Social Services which house no more than eight mentally ill, mentally retarded or

developmentally disabled persons with one or more resident counselors shall be classified as Use Group R-3 or R-4.

308.3 Use Group I-2: This use group shall include buildings and structures used for medical, surgical, psychiatric, nursing or custodial care on a 24-hour basis of six or more persons who are not

capable of self-preservation. Where accommodating persons of the above description, the following types of facilities shall be classified as I-2 facilities: hospitals, nursing homes (both intermediate care facilities and skilled nursing facilities), mental hospitals and detoxification facilities. A facility such as the above with five or less occupants shall be classified as a residential use group.

308.3.1 Child care facility: A child care facility which accommodates more than five children 2 1/2 years of age or less for any length of time shall be classified as Use Group I-2.

308.4 Use Group I-3: This use group shall include buildings and structures which are inhabited by six or more persons who are under some restraint or security. An I-3 facility is occupied by persons who are generally incapable of self-preservation due to security measures not under the occupants' control. Where accommodating persons of the above description, the following types of facilities shall be classified as I-3 facilities: prisons, jails, reformatories,

detention centers, correctional centers and prerelease centers. Buildings of Use Group I-3 shall be classified as one of the occupancy conditions indicated in Section 308.4.1 through 308.4.5 (see Section 410.0).

308.4.1 Occupancy Condition I: This occupancy condition shall include all buildings in which free

308.4.2 Occupancy Condition II: This occupancy condition shall include all buildings in which free movement is allowed from sleeping areas and any other occupied *smoke compartment* to one or more other *smoke compartments*. Egress to the exterior is impeded by locked *exits*.

308.4.3 Occupancy Condition III: This occupancy condition shall include all buildings in which free movement is allowed within individual *smoke compartments*, such as within a residential unit comprised of individual sleeping rooms and group activity spaces, where egress is impeded by remote-controlled release of *means of egress* from such *smoke compartment* to another *smoke compartment*.

308.4.4 Occupancy Condition IV: This occupancy condition shall include all buildings in which free movement is restricted from an occupied space. Remote-controlled release is provided to permit movement from all sleeping rooms, activity spaces and other occupied areas within the smoke compartment to other smoke compartments.

308.4.5 Occupancy Condition V: This occupancy condition shall include all buildings in which free movement is restricted from an occupied space. Staff-controlled release is provided to permit movement from all sleeping rooms, activity spaces and other occupied areas within the smoke compartment to other smoke compartments.

SECTION 309.0 MERCANTILE USE GROUP

309.1 General: All buildings and structures which are occupied for display and sales purposes involving stocks of goods, wares or merchandise incidental to such purposes and open to the public, shall be classified as Use Group M. This includes, among others, retail stores, automotive service stations, shops, salesrooms and markets. An automotive service station is that portion of a property where motor fuels are stored and dispensed from fixed equipment into the fuel tanks of motor vehicles or approved containers, including any building used for the sale of automotive accessories, or for minor automotive repair work. Minor repairs include the exchange of parts, oil changes, engine tune-ups and similar routine maintenance work. Retail sales of hazardous materials shall comply with Section 307.8.

SECTION 310.0 RESIDENTIAL USE GROUPS

310.1 General: All structures in which sleeping accommodations are provided, excluding those that are classified as institutional occupancies, shall be classified as Use Group R-1, R-2, R-3 or R-4. The term "Use Group R" shall include Use Groups R-1, R-2 and R-3. Family day homes licensed or certified by the Virginia Department of Social Services shall be permitted to accommodate the numbers of children permitted under the licensing restrictions and shall be classified as a residential use group.

310.2 Definitions: The following words and terms shall, for the purposes of this section and as used elsewhere in this code, have the meanings shown herein.

Dwellings

Boarding house: A building arranged or used for lodging for

movement is allowed from sleeping areas, and other spaces where access or occupancy is permitted, to the exterior via *means of egress* without restraint. An occupancy Condition I facility shall be reclassified as Use Group R.

compensation, with or without meals, and not occupied as a single-family unit.

Dormitory: A space in a building where group sleeping accommodations are provided in one room, or in a series of closely associated rooms, for persons not members of the same family group.

Dwelling unit: A single unit providing complete, independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation.

* **Multiple-family dwelling:** A building or portion thereof containing more than two dwelling units and not meeting the requirements for a multiple single-family dwelling.

Multiple single-family dwelling: A building or portion thereof containing more than two dwelling units (see Section 310.5).

One-family dwelling: A building containing one dwelling unit with not more than five lodgers or boarders.

Two-family dwelling: A building containing two dwelling units with not more than five lodgers or boarders per family.

310.3 Use Group R-1 structures: This use group shall include all hotels, motels, *boarding houses* and similar buildings arranged for shelter and sleeping accommodations for more than five occupants who are primarily transient in nature, occupying the facilities for a period of less than 30 days.

310.4 Use Group R-2 structures: This use group shall include all *multiple-family dwellings* having more than two *dwelling units*, except as provided for in Section 310.5 for *multiple single-family dwelling units*, and shall also include all *boarding houses* and similar buildings arranged for shelter and sleeping accommodations in which the occupants are primarily not transient in nature.

310.4.1 Dormitories: A *dormitory* facility which accommodates more than five persons more than 2 1/2 years of age shall be classified as Use Group R-2.

310.5 Use Group R-3 structures: This use group shall include all buildings arranged for occupancy as *one- or two-family dwelling units*, including not more than five lodgers or boarders per family and *multiple single-family dwellings* where each unit has an independent *means of egress* and is separated by a 2-hour *fire separation assembly* (see Section 709.0).

Exceptions

1. In *multiple single-family dwellings* that are equipped throughout with an approved *automatic sprinkler system* installed in accordance with Section 906.2.1 or 906.2.2, the fire-resistance rating of the *dwelling unit* separation shall not be less than 1 hour. *Dwelling unit* separation walls shall be constructed as *fire partitions* (see Section 711.0).
2. In *multiple single-family dwellings* that are equipped throughout with an approved *automatic sprinkler system* installed in accordance with Section 906.2.3, the fire-resistance rating between each *dwelling unit* shall not be less than 1 hour and shall be constructed as a *fire partition*.

310.5.1 Child care facilities: A child care facility which accommodates five or less children of any age shall be classified as Use Group R-3.

310.6 Use Group R-4 structures: This use group shall include all

detached one- or two-family dwellings and one-family townhouses not more than three stories in height, and the accessory structures as indicated in the CABO One and Two Family Dwelling Code listed in Chapter 35. All such structures shall be designed in accordance with the CABO One and Two Family Dwelling Code listed in Chapter 35 or in accordance with the requirements of this code applicable to Use Group R-3.

Exceptions

1. Delete the note in CABO subsection 114.1.
2. Change CABO subsection 115.1 to read:

115.1 General. Swimming pools, spas and hot tubs shall comply with the provisions in Appendix D.

3. Change CABO subsection 119.1 read:

119.1 General. The provisions for energy conservation contained in Appendix E shall be part of this code.

4. Add exception to CABO subsection 301.2 read:

Exception: Heating facilities shall be required in accordance with Section 303.6. The winter design temperature for heating facilities required or provided shall be established by the jurisdiction in accordance with this section.

5. Change CABO subsection 303.6 to read:

303.6 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 heating facilities capable of maintaining the room temperatures at 65 degrees F. (18 degrees C.) during the period from October 1 to May 15 during the hours between 6:30 a.m. and 10:30 p.m. of each day and not less than 60 degrees F. (16 degrees C.) during other hours when measured at a point 3 feet (914 mm) above the floor and 3 feet (914 mm) from the exterior walls. The capability of the heating system shall be based on the winter design temperature for heating facilities established by the jurisdiction.

6. Add CABO subsection 303.7 to read:

303.7 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 and every swinging door shall have a self-closing device.

7. Add CABO subsection 306.5 to read:

306.5 Approval. Water supply sources and sewage disposal systems are regulated and approved by the Virginia Department of Health.

8. Change CABO subsection 310.4 to read:

310.4 Type of lock or latch. All egress doors shall be readily openable from the inside without the use of a key unless the key cannot be removed from the lock when the door is locked from the inside.

9. Change CABO subsection 314.2 to read:

314.2 Treads and risers. The maximum riser height shall be 8¹/₄ inches (210 mm) and the minimum tread depth shall be 9 inches (229 mm). The riser height shall be measured vertically between leading edges of the adjacent treads. The tread

1. Structures classified as Use Group R-4 shall comply with applicable requirements of Section 3107.0 of this code.
2. Structures classified as Use Group R-4 shall comply with the requirements of Section 1214.4 of this code, when applicable.

310.6.1 Amendments to the CABO Code: The following changes shall be made to the CABO One and Two Family Dwelling Code listed in Chapter 35:

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 walking surface of treads and landings of a stairway shall be sloped no steeper than one unit vertical in 48 units horizontal (2.0% slope). The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm). The greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm).

10. Change CABO subsection 314.4 to read:

314.4 Winders.

has moderate or high shrink/swell potential.

SECTION 311.0 STORAGE USE GROUPS

311.1 General: All structures which are primarily used for the storage of goods, wares or merchandise shall be classified as Use Group S-1 or S-2. This includes, among others, warehouses, storehouses and freight depots. The quantity of hazardous mate-

418.2.1 Construction: Occupancies in Use Group H-1 shall not be located in buildings that are more than one story in *height*, have *basements* or other spaces below grade, or which are attached to other buildings. The minimum *fire separation distance* for all exterior walls of occupancies in Use Group H-1 shall be in accordance with the fire prevention code listed in Chapter 35. All floor surfaces shall be spark resistant.

418.2.2 Number of exits: There shall not be less than two *exits* from any area or space wherein Use Group H-1 materials are utilized or stored. All required *exits* shall discharge directly to the exterior of the building or structure.

418.3 Use Group H-2: Occupancies in Use Group H-2 shall be constructed in accordance with Section 418.3.1 through 418.3.4 and the fire prevention code listed in Chapter 35.

418.3.1 Combustible dusts, grain processing and storage: The provisions of Sections 418.3.1.1 through 418.3.1.6 shall apply to all buildings in which materials that produce *combustible dusts* are stored or handled. Buildings which store or handle *combustible dusts* shall comply with the applicable provisions of NFPA 61A, 61B, 61C, 61D, 65, 120, 651, 654, 655, 664, and 8503 and the fire prevention code listed in Chapter 35.

418.3.1.1 Type of construction and height exceptions: All buildings shall be of Type 1, Type 2 or Type 4 construction, within the height and area limitations of Table 503 for Use Group H-2; except that where erected of Type 1 or Type 2 construction, the heights and areas of grain elevators and similar structures shall be unlimited, and where of Type 4 construction, the maximum height shall be 65 feet (19812 mm) and except further that, in isolated areas, the maximum height of Type 4 structures shall be increased to 85 feet (25908 mm).

418.3.1.2 Grinding rooms: Every room or space occupied for grinding or other operations that produce *combustible dusts* shall be enclosed with floors and walls that have not less than a 2-hour fire-resistance rating where the area is not more than 3,000 square feet (279 m²), and not less than a 4-hour fire-resistance rating where the area is greater than 3,000 square feet (279 m²).

418.3.1.3 Conveyors: All *conveyors*, chutes, piping and similar equipment passing through the enclosures of rooms or spaces shall be constructed dirt tight and vapor tight, and be of approved noncombustible materials complying with Section 3010.0.

418.3.1.4 Explosion relief: Means for explosion relief shall be provided as specified in Section 417.5.1, or spaces shall be equipped with the equivalent mechanical *ventilation* complying with the mechanical code listed in Chapter 35.

418.3.1.5 Grain elevators: Grain elevators, malt houses and buildings for similar occupancies shall not be located within 30 feet (9144 mm) of *interior lot lines* or structures on the same *lot*, except where erected along a railroad right-of-way.

418.3.1.6 Coal pockets: Coal pockets located less than 30 feet (9144 mm) from *interior lot lines* or from structures on the same *lot* shall be constructed of not less than Type 2A

418.3.2.5 Leakage containment: A liquid-tight containment area compatible with the stored liquid shall be

construction. Where more than 30 feet (9144 mm) from *interior lot lines*, or where erected along a railroad right-of-way, the minimum type of construction of such structures not more than 65 feet (19812 mm) in height shall be Type 4.

418.3.2 Flammable and combustible liquids: The storage, handling, processing and transporting of flammable and combustible liquids shall be in accordance with the mechanical code and the fire prevention code listed in Chapter 35. Regulations governing the installation, repair, upgrade and closure of underground and aboveground storage tanks under the Virginia State Water Control Board regulations 9 VAC 25-580-10 et seq., 9 VAC 25-130-10 et seq. and 9 VAC 25-140-10 et seq. are adopted and 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. Where a Class I, II or IIIA flammable or combustible liquid is stored in tanks inside the building, the installation shall conform to Sections 418.3.2.1 through 418.3.2.10 and NFPA 30 listed in Chapter 35. The requirements shall only apply where tanks have an individual storage capacity that exceeds the exempt amounts specified in Tables 307.8(1) and 307.8(2). The fire area containing the tank(s) shall be classified as Use Group H-2.

418.3.2.1 Mixed use groups: Where the storage tank area is located in a building of two or more use groups, the Use Group H-2 *fire area* shall be completely separated from adjacent *fire areas* in accordance with the requirements of Section 313.1.2.

418.3.2.1.1 Height exception: Where storage tanks are located within only a single story, the *height* limitation of Section 503.3 shall not apply for the Use Group H-2 *fire area*.

418.3.2.2 Tank protection: All storage tanks shall be noncombustible and protected from physical damage. A *fire separation assembly* around the storage tank(s) shall be permitted to be classified as the method of protection from physical damage.

418.3.2.3 Tanks for Class I flammable liquid: All storage tanks for Class I *flammable liquids* shall be double-wall tanks. A double-wall tank shall consist of an approved tank conforming to the requirements of the mechanical code listed in Chapter 35, installed within a completely enclosed noncombustible containment structure. The containment structure shall prevent the stored liquid from escaping into the room or area in which the tank is located. A leak detection alarm shall be provided to identify a leak of the primary wall of the tank. The alarm shall conform to Section 418.3.2.6.

418.3.2.4 Suppression: The Use Group H-2 *fire area* shall be equipped throughout with an approved *automatic fire sprinkler system*, installed in accordance with Section 906.2.1, or with a foam-extinguishing system. The *automatic fire suppression system* shall be supervised by method 1 or 2 of Section 923.1.

provided to retain 110 percent of the entire capacity of all the storage liquid in the event of a leak in a tank plus the

capacity of the *automatic fire suppression system* activated for a period of 30 minutes. The storage tanks and the leakage containment area shall be provided with an ap-

the attached perimeter exceeds 50 percent, such facilities shall comply with Section 418.3.3.5.

418.3.3.4.1 Fire separation assemblies: Separation of the attached structures shall be provided by *fire separation assemblies* having a fire-resistance rating of not less than 1 hour and shall not have openings. *Fire separation assemblies* between attached structures occupied only for the storage of LP-gas are permitted to have *fire doors* that comply with Section 716.0. Such *fire separation assemblies* shall be designed to withstand a static pressure of at least 100 pounds per square foot (psf) (488.2 kg/m²), except where the building to which the structure is attached is occupied by operations or processes having a similar hazard.

418.3.3.5 Rooms within buildings: Where liquefied petroleum gas distribution facilities are located in rooms within buildings, such rooms shall be located in the first story and shall have at least one exterior wall with sufficient exposed area to permit explosion venting as provided for Section 418.3.3.5.1. The building in which the room is located shall not have a *basement* or unventilated crawl space and the room shall comply with Section 418.3.3.5.1 and 418.3.3.5.2.

418.3.3.5.1 Materials: Walls, floors, ceilings and roofs of such rooms shall be constructed of approved non-combustible materials. Exterior walls and ceilings shall be either of lightweight materials designed for explosion venting or, if of heavy construction such as solid brick masonry, concrete block or reinforced concrete, explosion-venting windows or panels in walls or roofs shall be provided having an explosion-venting area of at least 1 square foot (0.093 m²) for each 50 cubic feet (1.40 m³) of enclosed volume.

418.3.3.5.2 Common construction: Walls and floor/ceiling assemblies common to the room and to the building within which the room is located shall have a fire-resistance rating of not less than 1 hour and without openings. Common walls for rooms occupied only for storage of LP-gas are permitted to have openings which shall be equipped with 3/4-hour approved opening protectives complying with Section 716.0 or 718.0. Such walls and ceiling shall be designed to withstand a static pressure of at least 100 psf (488.2 kg/m²). Where approved, these provisions shall not apply where the building, within which the room is located, is occupied by operations or processes having a similar hazard.

418.3.4 Dry cleaning plants: The construction and installation of dry cleaning plants shall be in accordance with the requirements of this code, the mechanical code, the plumbing code and NFPA 32 listed in Chapter 35.

418.4 Use Group H-3: Occupancies in Use Group H-3 shall be constructed in accordance with the applicable provisions of this code and the fire prevention code listed in Chapter 35.

418.5 Use Group H-4: Occupancies in Use Group H-4 shall be constructed in accordance with the applicable provisions of this code.

420.2.2 Skirting requirements for manufactured homes: Manufactured homes installed or relocated shall have skirting installed within sixty days of occupancy of the home. Skirting

code and the fire prevention code listed in Chapter 35.

SECTION 419.0 APPLICATION OF FLAMMABLE FINISHES

419.1 General: The provisions of this section shall apply to the construction, installation and use of buildings and structures, or parts thereof, for the spraying of *flammable* paints, varnishes, and lacquers or other *flammable* materials or mixtures or compounds used for painting, varnishing, staining or similar purposes. All such construction and equipment shall comply with NFPA 33 and 34 listed in Chapter 35.

419.2 Spray spaces: All spray spaces shall be *ventilated* with an exhaust system to prevent the accumulation of *flammable* mist or vapors in accordance with the mechanical code listed in Chapter 35. Where such spaces are not separately enclosed, noncombustible spray curtains shall be provided to restrict the spread of *flammable* vapors.

419.2.1 Spray booth: All spray booths shall be constructed of approved noncombustible materials and equipped with mechanical ventilating systems in accordance with the mechanical code listed in Chapter 35.

419.2.2 Spray rooms: All spray rooms shall be enclosed in *fire separation assemblies* with not less than a 1-hour fire-resistance rating. Floors shall be waterproofed and drained in an approved manner.

419.2.3 Spray storage rooms: Rooms used for the storage of spraying materials essential to the *flammable* finish operation shall comply with NFPA 30 and the fire prevention code listed in Chapter 35.

419.3 Fire protection: An *automatic fire suppression system* shall be provided in all spray, dip and immersing spaces and storage rooms, and shall be installed in accordance with Chapter 9.

SECTION 420.0 SITE WORK FOR MANUFACTURED HOMES AND INDUSTRIALIZED BUILDINGS

420.1 General: The provisions of this section shall apply to the installation of manufactured homes and industrialized buildings.

420.2 Construction: Construction work associated with the installation of a manufactured home or industrialized buildings shall comply with the manufacturer's installation instructions and to the extent not provided for in the manufacturer's installation instructions, applicable requirements of this code. Where the manufacturer's installation instructions for manufactured homes are not available, the NCSBCS/ANSI A225.1 standard, 1994 edition, may be substituted for the manufacturer's installation instructions. Appendix A of the one-and two-family dwelling code listed in Chapter 35 shall be an acceptable alternative to this code for construction work associated with the installation of a manufactured home and for additions, alterations or repairs to such homes.

420.2.1 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.

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 eighteen 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.

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.

420.3: Deleted.

420.3.1: Deleted.

SECTION 421.0 SWIMMING POOLS

421.1 General: Swimming and bathing pools shall conform to the requirements of this section provided that these regulations shall not be applicable to any such pool less than 24 inches (610 mm) deep or having a surface area less than 250 square feet (23.25 m²), except where such pools are permanently equipped with a water-recirculating system or involve structural materials. For the purposes of this code, pools are classified as private swimming pools or public swimming pools, as defined in Section 421.2. Materials and constructions used in swimming pools shall comply with the applicable requirements of this code.

421.2 Definitions: The following words and terms shall, for the purposes of this section and as used elsewhere in this code, have the meanings shown herein.

Pools, swimming, hot tubs and spas

Above-ground/on-ground pool: See definition of private swimming pool.

Barrier: A fence, a wall a building wall, the wall of an above-ground swimming pool or a combination thereof, which completely surrounds the swimming pool and obstructs access to the swimming pool.

Hot tub: See definition of private swimming pool.

In-ground pool: See definition of private swimming pool.

Power safety cover: A pool cover which is placed over the water area, and is opened and closed with a motorized mechanism activated by a control switch.

Private swimming pool: Any structure that contains water over 24 inches (610 mm) in depth and which is used, or intended to be used, for swimming or recreational bathing in connection with an occupancy in Use Group R-3 and which is available only to the family and guests of the householder. This includes in-ground, above-ground and on-ground swimming pools, hot tubs and spas.

Private swimming pool, indoor: Any private swimming pool that is totally contained within a private structure and surrounded on all four sides by walls of said structure.

Private swimming pool, outdoor: Any private swimming pool that is not an indoor pool.

Public swimming pool: Any swimming pool other than a private swimming pool.

Spa: See definition of private swimming pool.

421.5.5 Steps and ladders: At least one *means of egress* shall be provided from private pools. Public pools shall provide

421.3 Permits and construction documents: A swimming pool or appurtenances thereto shall not be constructed, installed enlarged or altered until *construction documents* have been submitted and a permit has been obtained from the code official. The approval of all city, county and state authorities having jurisdiction over swimming pools shall be obtained before applying to the code official for a permit. Certified copies of these approvals shall be filed as part of the permit application.

421.3.1 Construction documents: *Construction documents* shall accurately show dimensions and construction of the pool and appurtenances and properly establish distances to *lot lines*, buildings, walks and fences, as well as details of the water supply system, drainage and water disposal systems, and all appurtenances pertaining to the swimming pool. Detailed *construction documents* of structures, vertical elevations and sections through the pool showing depth shall be included.

421.4 Locations: Private swimming pools shall not encroach on any front or side yard required by this code or by the governing *zoning* law, unless in accordance with specific rules of the jurisdiction in which the pool is located. A wall of a swimming pool shall not be located less than 6 feet (1829 mm) from any rear or side property line or 10 feet (3048) from any street property line, unless in accordance with specific rules of the jurisdiction in which the pool is located.

421.5 Structural design: The pool structure shall be engineered and designed to withstand the expected forces to the pool will be subjected.

421.5.1 Wall slopes: To a depth up to 2 feet 9 inches (838 mm) from the top, the wall slope shall not be more than one unit horizontal in five units vertical (1:5).

421.5.2 Floor slopes: The slope of the floor on the shallow side of the transition point shall not exceed one unit vertical to seven units horizontal (1:7). For public pools greater than 1,200 square feet (111.6 m²), the slope of the floor on the shallow side of the transition point shall not exceed one unit vertical to ten units horizontal (1:10). The transition point between shallow and deep water shall not be more than 5 feet (1524 mm) deep.

421.5.3 Surface cleaning: All swimming pools shall be provided with a recirculating skimming device or overflow gutters to remove scum and foreign matter from the surface of the water. Where skimmers are used for private pools, there shall be at least one skimming device for each 1,000 square feet (93 m²) of surface area or fraction thereof. For public pools where water skimmers are used, there shall be at least one skimming device for each 600 square feet (55.8 m²) of surface area or fraction thereof. Overflow gutters shall not be less than 3 inches (76 mm) deep and shall be pitched to a slope of one unit vertical to 48 units horizontal (1:48) toward drains, and constructed so that such gutters will not be washed out by a sudden surge or entering water.

421.5.4 Walkways: All public swimming pools shall have walkways not less than 4 feet (1219 mm) in width and extending entirely around the pool. Curbs or sidewalks around any swimming pool shall have a slip-resistant surface for a width of not less than 1 foot (305 mm) at the edge of the pool, and shall be so arranged as to prevent return of surface water to the pool.

distribution equipment, batteries and standby engines, provided that those spaces or areas are equipped throughout with an automatic fire detection system in accordance with Section 919.0 and are separated from the remainder of the building with *fire separation assemblies* consisting of 1-hour fire-resistance rated walls and 2-hour fire-resistance rated floor/ceiling assemblies.

904.2 Use Groups A-1, A-3 and A-4: Where a Use Group A-1, A-3 or A-4 *fire area* exceeds 12,000 square feet (1116 m²) in area, an *automatic fire suppression system* shall be provided as follows:

1. Throughout the entire story or floor level where the A-1, A-3 or A-4 Use Group is located;
2. Throughout all stories and floor levels below the A-1, A-3 or A-4 Use Group; and
3. Throughout all intervening stories and floor levels between the A-1, A-3 or A-4 Use Group and the highest *level of exit discharge* that serves Use Group A-1, A-3 or A-4 *fire areas*, including the highest *level of exit discharge*.

Exceptions

1. Auditorium areas of Use Group A-1 or A-3 where the main auditorium floor is at the *level of exit discharge* of the main entrance.
2. Naves and chancels of Use Group A-4 where the main floor of the nave or chancel is at the *level of exit discharge* of the main entrance.
3. Participant sport areas of Use Group A-3 where the main floor of the participant sport area is at the *level of exit discharge* of the main entrance.

904.3 Use Group A-2: Where a Use Group A-2 *fire area* is more than 5,000 square feet (465 m²) in area or is located either above or below the *level of exit discharge* of *exits* that serve the Use Group A-2 *fire area*, an *automatic fire suppression system* shall be provided as follows:

1. Throughout the entire story or floor level where the A-2 Use Group is located;
2. Throughout all stories and floor levels below the A-2 Use Group; and
3. Throughout all intervening stories and floor levels between the A-2 Use Group and the *level of exit discharge* of *exits* that serve the Use Group A-2 *fire area*, including the *level of exit discharge*.

904.4 Use Group E: An *automatic fire suppression system* shall be provided throughout all buildings having a Use Group E *fire area* which exceeds 20,000 square feet (1860 m²) in area.

904.5 Use Group H: An *automatic fire suppression system* shall be provided throughout all Use Group H *fire areas*. An *automatic fire suppression system* shall not be required for magazines used for the storage of Use Group H-1 materials and which are constructed and located in accordance with NFPA 495 and the fire prevention code listed in Chapter 35.

904.6 Use Group I: An *automatic fire suppression system* shall be provided throughout all buildings with a Use Group I *fire area*. An *automatic fire suppression system* shall not be required for Use Group I-2 child care facilities located at the *level of exit discharge*, which accommodate 100 children or less and in which each child care room has an *exit* door directly to the exterior.

904.7 Use Groups M, S-1 and F-1: Throughout all buildings with a Use Group M, S-1 or F-1 *fire area*, an *automatic fire suppression system* shall be provided as follows:

1. Where any Use Group M, S-1 or F-1 *fire area* exceeds 12,000 square feet (1116 m²) in area;
2. Where the total combined area of all Use Group M, S-1 and

F-1 *fire areas* on all floors exceeds 24,000 square feet (2232 m²); or

3. Where any Use Group M, S-1 or F-1 *fire area* is more than three *stories above grade*.

Exception: *Public garages* shall conform to Section 408.0.

904.8 Use Group R-1: An *automatic fire suppression system* shall be provided throughout all buildings with a Use Group R-1 *fire area* in accordance with Section 906.2.1 or 906.2.2.

Exception: Where all guestrooms are not more than three stories above the lowest *level of exit discharge* of the *exits* serving the guestrooms. Each guestroom shall have at least one door opening directly to an exterior *exit access* which leads directly to the *exits*.

904.9 Use Group R-2: An *automatic fire suppression system* shall be provided throughout all buildings with an occupancy in Use Group R-2 in accordance with Sections 906.2.1 or 906.2.2. The following exceptions are permitted when the necessary water pressure or volume, or both, for the *automatic fire suppression system* is not available.

Exceptions

1. Buildings which do not exceed two stories, including basements which are not considered as a story above grade, and with a maximum of 12 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. Buildings where all dwelling units are not more than three 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 2-hour fire separation assembly 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.

904.10 Windowless story: An *automatic fire suppression system* shall be provided throughout every story or *basement* of all buildings where there is not provided at least one of the following types of openings:

1. An exterior *stairway* that conforms to the requirements of Section 1014.0, or an outside ramp that conforms to the requirements of Section 1016.0, leading directly to grade in each 50 lineal feet (15240 mm) or fraction thereof of exterior wall in the 7 story or *basement*, on at least one side of the building.
2. Openings entirely above the adjoining ground level totaling 20 square feet (1.9 m²) in each 50 lineal feet (15240 mm) or fraction thereof of exterior wall in the story or *basement*, on at least one side of the building. Openings shall have a least dimension of not less than 22 inches (559 mm), and shall have a minimum net clear opening of 5 square feet (0.5 m²). Access to such openings from the exterior shall be provided to the fire department and such openings shall be unobstructed to allow fire-fighting and rescue operations from the exterior. Where openings in a story are provided on only one side and the opposite wall of such story is more than 75 feet (22860 mm) from such openings, the story shall be equipped throughout with an *automatic sprinkler system* or openings as specified herein shall be provided on at least two sides of the exterior walls of the story. If any portion of a *basement* is located more than 75 feet

SECTION 917.0 YARD HYDRANTS

917.1 Fire hydrants: Fire hydrants installed on private property shall be located and installed as directed by the fire department. Hydrants shall conform to the standards of the administrative authority of the jurisdiction and the fire department. Hydrants shall not be installed on a water main less than 6 inches (152 mm) in diameter.

SECTION 918.0 FIRE ALARM SYSTEMS

918.1 General: Fire alarm systems shall be of an approved type and shall be installed in accordance with the provisions of this code and NFPA 72 listed in Chapter 35.

918.2 Construction documents: Where a fire alarm system is required by this code, the *construction documents* shall show the location and number of all alarm-initiating devices and alarm-notification appliances, and shall provide a description of all equipment to be used, proposed zoning, a list of auxiliary control functions (i.e., elevator capture), location of the control panel(s) and annunciator(s), and a complete sequence of operation for the system.

918.3 Approval: All devices, combinations of devices, appliances and equipment shall be approved for the fire alarm purpose for which such equipment is used.

918.4 Where required: A fire alarm system shall be installed and maintained in full operating condition in the locations described in Sections 918.4.1 through 918.4.6.

918.4.1 Use Group A-4 or E: A fire alarm system shall be installed and maintained in all occupancies in Use Group A-4 or E. A fire alarm system shall not be required for sanctuary and nave areas of churches and similar religious buildings.

918.4.2 Use Group B: A fire alarm system shall be installed and maintained in all occupancies in Use Group B where such buildings have occupied floors which are two or more stories above the lowest *level of exit discharge* or which have floors two or more stories below the highest *level of exit discharge*.

918.4.3 Use Group H: A fire alarm system shall be installed and maintained in all occupancies in Use Groups H-2, H-3 and H-4.

918.4.4 Use Group I: A fire alarm system shall be installed and maintained in all occupancies in Use Group I.

918.4.5 Use Group R-1: A fire alarm system shall be installed and maintained in all occupancies in Use Group R-1.

918.4.6 Use Group R-2: A fire alarm system shall be installed and maintained in all occupancies in Use Group R-2 where any *dwelling unit* or bedroom is located three or more stories above the lowest *level of exit discharge* or more than one story below the highest *level of exit discharge* of *exits* serving the *dwelling unit or bedroom*.

918.5 Location: Manual fire alarm boxes shall be located not more than 5 feet (1524 mm) from the entrance to each *exit*.

2. *Sprinkler* water-flow devices;

Exception: Manual fire alarm boxes are not required in an occupancy in Use Group B where the highest occupied floor is 75 feet (22860 mm) or less above the lowest level of fire department vehicle access and the building is equipped throughout with an *automatic sprinkler system* in accordance with Section 906.0.

918.5.1 Manual fire alarm boxes: The height of the manual fire alarm boxes shall be a minimum of 42 inches (1067 mm) and a maximum of 54 inches (1372 mm) measured vertically, from the floor level to the activating handle or lever of the box. Manual fire alarm boxes shall be red in color. In all occupancies in Use Group I-3, the manual fire alarm boxes shall be permitted to be locked in areas where staff is present whenever such areas are occupied and keys are readily available to unlock the boxes, or the boxes shall be located in a manned staff location which has direct supervision of the sleeping area.

918.6 Power supply: The primary and secondary power supply for the fire alarm system shall be provided in accordance with NFPA 72 listed in Chapter 35.

918.7 Wiring: All wiring shall conform to the requirements of NFPA 72 listed in Chapter 35. Wireless systems utilizing radio-frequency transmitting devices shall comply with the special requirements for supervision of low-power wireless systems in NFPA 72 listed in Chapter 35.

918.7.1 Activation: The alarm-notification appliances shall be automatically activated by all of the following where provided:

1. Smoke detectors, other than single- and multiple-station smoke detectors, as required by Section 920.0;
2. *Sprinkler* water-flow devices;
3. Manual fire alarm boxes; and
4. Other approved types of automatic fire detection devices or *suppression systems*.

Exception: Smoke detectors in an occupancy in Use Group I-3 are permitted to actuate an audible alarm-notification appliance at a constantly attended location and are not required to activate a general alarm.

918.7.2 Presignal system: Presignal systems shall not be installed unless approved by the code official and by the fire department. Where a presignal system is installed, 24-hour personnel supervision shall be provided at a location approved by the fire department, in order that the alarm signal can be actuated in the event of fire or other emergency.

918.7.3 Zones: Each floor shall be zoned separately and a zone shall not exceed 20,000 square feet (1860 m²). The length of any zone shall not exceed 300 feet (91440 mm) in any direction. A zoning indicator panel and the associated controls shall be provided in an approved location. The visual zone indication shall lock in until the system is reset and shall not be cancelled by the operation of an audible alarm-silencing switch. In buildings that have floors located more than 75 feet (22860 mm) above the lowest level of fire department vehicle access which are occupied for human occupancy, a separate zone by floor shall be provided for the following types of alarm-notification devices where provided:

1. Smoke detectors;

MEANS OF EGRESS

SECTION 1001.0 GENERAL

1001.1 Scope: The provisions of this chapter shall control the design, construction and arrangement of building elements required to provide a reasonably safe *means of egress* from all structures.

1001.2 Modification of egress requirements: Where strict compliance with the provisions of this code is not practical, the code official shall approve alternative *means of egress* which will accomplish the same purpose, by the procedure established in Chapter 1 for modification of this code, or by adoption of *approved rules*.

1001.3 Minimum requirements: It shall be unlawful to *alter* any building or structure in any manner that will reduce the number of *exits* or the capacity of *exits* below the requirements of this code for new buildings of the proposed occupancy.

SECTION 1002.0 DEFINITIONS

1002.1 General: The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

Aisle accessway: That portion of an *exit access* which provides a path of travel to an aisle (see Section 1012.0).

Alternating tread stairway: A stair that has a series of steps between 50 and 70 degrees (0.87 and 1.22 rad) from horizontal, usually attached to a center support rail in an alternating manner so that the user of the stairs never has both feet on the same level at the same time (see Section 1014.6.6).

Bleachers: A *grandstand* where the seats are not provided with backrests (see Section 1013.0).

Breezeway: A covered walkway that is open to the atmosphere and traverses through a building (see Section 1011.6).

Common path of travel: That portion of *exit access* which the occupants are required to traverse before two separate and distinct paths of travel to two *exits* are available. Paths that merge are common paths of travel. A common path of travel is measured the same as travel distance but terminates at that point where two separate and distinct routes become available (see Section 1011.2.1).

Corridor: An enclosed passageway which limits the *means of egress* to a single path of travel (see Section 1011.0).

Exit: That portion of a *means of egress* which is separated from all other spaces of a building or structure by construction and opening protectives as required for exits to provide a protected way of travel to the *exit discharge* (see Section 1006.0). Exits

include exterior exit doors, exit *stairways* (see Sections 1014.0 and 1015.0), exit passageways (see Section 1020.0) and *horizontal exits* (see Section 1019.0).

Exit access: That portion of a *means of egress* which leads to an entrance to an *exit* (see Section 1011.0).

Exit discharge: That portion of a *means of egress* between the termination of an *exit* and a *public way* (see Section 1006.3).

Exit discharge, level of: The horizontal plane located by the point at which an *exit* terminates and an *exit discharge* begins (see Section 1006.3.1).

Exit, horizontal: A way of passage from one building to an area of refuge in another building on approximately the same level, or a way of passage through or around a *wall* or partition to an area of refuge on approximately the same level in the same building, which affords safety from fire or smoke from the area of incidence and areas communicating therewith (see Section 1019.0).

Floor area, gross: The floor area within the perimeter of the outside walls of the building under consideration, without deduction for hallways, stairs, closets, thickness of walls, columns or other features (see Section 1008.0).

Floor area, net: To determine the number of persons for whom *exits* are to be provided, the net floor area shall be the actual occupied area and shall not include unoccupied accessory areas or thickness of walls (see Section 1008.0).

Grade hallway, grade lobby, grade passageway: An enclosed hallway or *corridor* that is an element of an *exit*, and terminates at a street or an open space or *court* communicating with a street (see Section 1020.0).

Grandstand: A structure providing tiered or stepped seating (see Section 1013.0).

Guard system: A system of building components located near the open sides of elevated walking surfaces for the purpose of minimizing the possibility of an accidental fall from the walking surface to the lower level (see Section 1021.0).

Handrail: A horizontal or sloping rail intended for grasping by the hand for guidance or support, for arresting falls on the adjacent walking surface and for providing a visual cue for change in elevations (see Section 1022.0).

Means of egress: A continuous and unobstructed path of travel from any point in a building or structure to a *public way*. A

ridor walls shall comply with this section and the requirements of Table 602.

Exception: Tenant, *dwelling unit* and guestroom separation walls which are also *corridor* walls shall not be required to have a fire-resistance rating greater than that required by Table 1011.4 where the building is equipped throughout with an *automatic sprinkler system* in accordance with Section 906.2.1 or 906.2.2.

1011.4.2 Opening protectives: All door assemblies from rooms opening onto a *corridor* that is required to be of fire-resistance rated construction shall be *fire doors* complying with Section 717.0.

1011.5 Exterior balconies: Exterior *exit access* balconies shall conform to the requirements of this section for *corridors* and shall be protected to prevent the accumulation of snow and ice in climates subject to those elements.

1011.5.1 Wall separation: Exterior *exit access* balconies shall be separated from the interior of the building by walls and opening protectives as required by Section 1011.4. A fire-resistance rating for the wall is not required where the balcony is provided with not less than two approved *stairways* or other approved *means of egress* elements and a dead end does not require travel past an unprotected opening for access to the *stairway* or *means of egress* element.

1011.6 Exit access breezeways: A breezeway shall be permitted to serve as a means of egress element in Use Group R-2 buildings up to four stories above grade when meeting all of the following criteria:

1. Every level of a building containing an exit from a dwelling unit shall have a breezeway that is connected to and open to a stairway at each end. The breezeway shall not exceed 100 feet (30480 mm) in length between stairways. The stairways shall be considered interior stairways. The breezeway shall not contain dead-end passageways or corridors, shall be a minimum of six feet (1829 mm) in width and shall be separated from any other breezeway on that floor level. Beams or soffits shall be permitted to project below the ceiling level at the connecting point of a breezeway and stairway provided a clear height from the finished floor to the lowest projection of seven feet six inches (2286 mm) is maintained.
2. The building, including any breezeways and connecting stairways, shall be sprinklered in accordance with Section 906.2.1 or 906.2.2 and the sprinkler system shall be supervised in accordance with Section 924.1, method 1.
3. The breezeway shall conform to the requirements of this section for corridors except that walls separating the breezeway and any connecting stairways from adjacent parts of the building shall have fire-resistance ratings of not less than one hour and be rated for exposure to fire from both sides. Openings in such walls shall be protected with an assembly having a fire protection rating of not less than 3/4 hour.
4. At least one of the exterior walls of each stairway shall be open to and facing an outer court, yard or public way. The exterior wall opening may be reduced by 12 inches (305 mm) at each side, by 42 inches (1067 mm) above adjacent floors or landings, and by 12 inches (305 mm) below adjacent ceilings or landings such that no less than 35 square feet (3.25 m²) of opening is provided at any adjacent floor level or landing.
5. Where the floor of a breezeway changes direction more than 10 degrees, an opening facing a court, yard or public way
 3. Where a *means of egress* requires stair descent, at least

shall be provided in a wall of the breezeway at the change in direction. The opening shall be a minimum of 35 square feet (3.25 m²) with the top of the opening not more than 12 inches (305 mm) below the ceiling level.

6. The breezeway construction in buildings of Type 3, 4 or 5 construction shall be permitted to be of Type 5, unprotected construction provided, the floor and ceiling are designed to limit the passage of smoke.
7. The breezeway shall be protected to prevent the accumulation of snow and ice in climates subject to those elements.

SECTION 1012.0 ASSEMBLY AISLES AND AISLE ACCESSWAYS

1012.1 Where required: In occupancies in Use Group A which contain seats, tables, displays, equipment or other material shall be provided with *aisle accessways* and aisles in accordance with this section. These provisions shall also apply to tiered or stepped seating facilities except as modified by Section 1013.0.

1012.2 Aisle and aisle accessway width: The width of *aisle accessways* and aisles shall provide sufficient *means of egress* capacity for the number of persons accommodated by the catchment area served by the *aisle accessway* or aisle (see Section 1012.2.5). The catchment area served by an *aisle accessway* or aisle is the portion of the total space which is naturally served by that section of the *aisle accessway* or aisle. In establishing catchment areas the assumption shall be made that there is a balanced use of all *means of egress*, with the number of persons in proportion to *means of egress* capacity.

1012.2.1 Measurement of required minimum width of aisles and aisle accessways: Where seating is located at a table or counter and is adjacent to an aisle or *aisle accessway*, the measurement of required clear width of the aisle or *aisle accessway* shall be made to a line 19 inches (483 mm) away from the edge of the table or counter. The 19-inch (483 mm) distance shall be measured perpendicular to the side of the table or counter. In the case of other side boundaries for aisles or *aisle accessways*, the clear width shall be measured to walls, edges of seating and tread edges, except that handrail projections are permitted.

1012.2.2 Converging aisles and aisle accessways: Where *aisle accessways* or aisles converge to form a single path of *means of egress* travel, the required *means of egress* capacity of such path shall not be less than the combined required capacity of the converging *aisle accessways* or aisles.

1012.2.3 Uniform width of aisles: Those portions of aisles where *means of egress* is possible in either of two directions shall be uniform in required width.

1012.2.4 Uniform width of aisle accessways: Those portions of *aisle accessways* having a required width exceeding 12 inches (305 mm), where *means of egress* is possible in more than one direction, shall be uniform in required width.

1012.2.5 Capacity of aisles and aisle accessways: The width of aisles and *aisle accessways* shall provide sufficient capacity in accordance with the following criteria where clear width is measured in accordance with Section 1012.2.1.

1. At least 0.3 inch (7.5 mm) of width for each person served shall be provided on stairs having riser heights of 7 inches (178 mm) or less and tread depths of 11 inches (279 mm) or greater, measured horizontally between tread nosings.
2. At least 0.005 inch (0.1 mm) of additional stair width for each person shall be provided for each 0.10 inch (2.5 mm) of riser height above 7 inches (178 mm).

0.075 inch (2 mm) of additional width for each person shall

be provided on those portions of stair width not having handrails within a horizontal distance of 30 inches (762 mm).

4. Level or ramped *means of egress* with slopes less than one unit vertical in eight units horizontal (1:8), shall have at least 0.2 inch (5 mm) of clear width for each person served.

1012.2.6 Minimum width of aisles: The minimum clear width of aisles shall be: 48 inches (1219 mm) for stairs having seating on each side; 36 inches (914 mm) for stairs having seating on only one side; 23 inches (584 mm) between a stair handrail or guardrail and seating where the aisle is subdivided by a handrail (see Section 1012.5); 42 inches (1067 mm) for level or ramped aisles having theater-style seating on both sides; 36 inches (914 mm) for all other level or ramped aisles; and 23 inches (584 mm) between a stair handrail and seating where an aisle does not serve more than five rows on one side.

1012.2.7 Minimum width of aisle accessways: *Aisle accessways* shall conform to the requirements of Section 1012.6 in the case of theater-type seating and to the requirements of Section 1012.7 in the case of all seating at tables or counters.

1012.3 Termination: Each end of a cross aisle shall terminate at an aisle, foyer, doorway or vomitory giving access to an *exit*. Dead-end aisles which terminate only at one end with a cross aisle, foyer, doorway or vomitory giving access to an *exit* shall not be greater than 20 feet (6096 mm) in length.

Exception: A longer dead-end aisle is permitted where seats served by the dead-end aisle are not more than 24 seats from another aisle, measured along a row of seats having a minimum clear width of 12 inches (305 mm) plus 0.6 inch (15 mm) for each additional seat above seven in the row.

1012.4 Walking surfaces: Aisles with a gradient of one unit vertical in eight units horizontal (1:8) or less shall consist of a

2. Aisle stairs provided with a center handrail or serving seating on one side shall be equipped with a minimum of one handrail.
3. *Stairways* within a *dwelling unit* shall be equipped with a minimum of one handrail.
4. Spiral *stairways* shall be equipped with a minimum of one handrail.

1014.8 Egress doors: *Means of egress stairway* doors shall provide an egress capacity of not less than the required capacity of the *stairway* which serves the floor or area from which the egress door leads.

1014.8.1 Width: The minimum required width of every door to or from a *means of egress stairway* shall be determined by the most restrictive of the following criteria:

1. 29 3/4-inch (756 mm) clear width within a *dwelling unit* that is not required to be accessible.
2. 32-inch (813 mm) clear width in all other cases.

1014.8.2 Direction of swing: All *means of egress* doors shall swing on a landing in the direction of egress travel. When opening, egress doors shall not reduce the width of landings to less than one-half of the required width. When fully open, *means of egress* doors shall not project more than 7 inches (178 mm) into the required width.

Exception: Doors leading from a room or tenant space to a *stairway* in buildings in which only one *exit* is required are not required to swing in the direction of egress travel.

1014.8.3 Door construction: All doorway opening protectives shall be *fire doors* complying with Section 717.0.

1014.8.4 Maximum transmitted temperature: *Labeled means of egress fire doors* shall have a maximum transmitted temperature end point of not more than 450 degrees F. (232 degrees C.) above ambient at the end of 30 minutes of standard fire test exposure.

Exception: The maximum transmitted temperature end point is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 906.2.1 or 906.2.2.

1014.9 Stairway construction: All *stairways* shall be built of materials consistent with the types of materials permitted for the type of construction of the building; except that wood handrails shall be permitted for all types of construction. Such *stairways* shall have solid treads and landing *platforms*, and all finish floor surfaces shall be of securely attached, slip-resistant materials.

Exception: In Use Group F, H and S occupancies, other than areas of parking structures accessible to the public, openings in treads and landing *platforms* shall not be prohibited provided a sphere with a diameter of 1.125 inches (28 mm) cannot pass through any opening.

1014.9.1 Strength: All *stairways*, *platforms* and landings shall be adequate to support a *live load* of 100 pounds per square foot (4788 Pa) and a concentrated *load* of 300 pounds (1334 N).

1014.11.3 Door locks: All interior *stairway means of egress*

1014.10 Discharge identification: *Exit stairways* which continue beyond the *level of exit discharge* shall be interrupted at the *level of exit discharge* by partitions, doors or other effective means of preventing persons from continuing past the floor of discharge while egressing.

1014.11 Interior stairway enclosures: Interior *exit stairways* shall be enclosed with *fire separation assemblies* having a fire-resistance rating of not less than 2 hours except that such *stairways* in occupancies in Use Group A, B, E, F, H-4, I, M, R or S which connect less than four stories shall be enclosed with *fire separation assemblies* having a fire-resistance rating of not less than 1 hour. An *exit stairway* enclosure shall not be used for any purpose other than *means of egress*. Openings in *exit* enclosures, other than unexposed exterior openings, shall be limited to those necessary for *exit access* to the enclosure from normally occupied spaces and for egress from the enclosure.

Exceptions

1. *Stairways* are not required to be enclosed in occupancies in Use Group A-5 in which all portions of the *means of egress* are essentially open to the outside.
2. *Stairways* serving and contained within a single residential *dwelling unit* in occupancies in Use Group R-2 or R-3 are not required to be enclosed.
3. *Stairways* that are not a required *means of egress* element are not required to be enclosed where such *stairways* comply with Section 713.3.
4. *Stairways* in open parking structures which serve only the parking structure are not required to be enclosed.
5. *Stairways* in occupancies in Use Group I-3 as provided for in Section 410.3.7.
6. *Means of egress stairways* as required by Section 412.5.4 are not required to be enclosed.
7. *Stairways* connected to exit access breezeways complying with Section 1011.6 are not required to be enclosed.

1014.11.1 Exterior walls: Exterior walls of an enclosed *exit stairway* shall comply with the requirements of Section 705.0 for exterior walls. Where nonrated walls or unprotected openings enclose the exterior of the *stairway* and the walls or openings are exposed by other parts of the building at an angle of less than 180 degrees (3.14 rad), the building exterior walls within 10 feet (3048 mm) horizontally of a nonrated wall or unprotected opening shall be constructed as required for *stairway* enclosures, including opening protectives, but are not required to exceed a 1-hour fire-resistance rating with 3/4-hour opening protectives. This construction shall extend vertically from a point 10 feet (3048 mm) above the topmost landing of the *stairway* or to the roof line, whichever is lower, and down to the ground.

1014.11.2 Penetrations: Penetrations into and openings through an *exit* enclosure assembly are prohibited except for required *exit* doors, ductwork and equipment necessary for independent stair pressurization, required *ventilation*, *sprinkler* piping, *standpipes* and electrical conduit serving the *stairway* and terminating at a steel box that does not exceed 16 square inches (10323 mm²) in area. There shall not be any penetrations or communicating openings, whether protected or not, between adjacent *stairway* enclosures.

doors

shall be openable from both sides without the use of a key or special knowledge or effort.

Exceptions

1. Stairway discharge doors shall be openable from the egress side and shall only be locked from the opposite side.
2. This section shall not apply to doors arranged in accordance with Sections 403.10 and 1017.4.

1014.11.4 Exit signs: Each door to an enclosed *exit stairway* shall be equipped with tactile signage reading "Exit" complying with CABO A117.1 listed in Chapter 35 and installed on the side of the door from which *egress* is to be made.

1014.11.5 Stairway floor number signs: A sign shall be provided at each floor landing in all interior *exit stairways* connecting more than three stories designating the floor level above and below the *level of exit discharge*, the identification of the *stairway* and the availability of roof access from that *stairway*. The sign shall be located approximately 5 feet (1524 mm) above the floor landing in a position which is readily visible when the doors are in the open and closed positions.

1014.12 Exterior stairways: Exterior *stairways* shall have openings on at least one side facing an *outer court*, yard or *public way*. The openings shall have an aggregate width of not less than 20 percent of the *stairway* perimeter and an aggregate area on each level of not less than 12 percent of the total perimeter wall area of each level. In other than occupancies in Use Group R-3, and occupancies in Use Group U that are accessory to an occupancy in Use Group R-3, treads, *platforms* and landings which are part of exterior *stairways* in climates subject to snow or ice shall be protected to prevent accumulation of same. Exterior *stairways* shall not be accepted as an *exit* in the following cases:

1. Occupancies in Use Groups I-2 and I-3 in buildings that exceed four stories or 50 feet (15240 mm) in *height*.
2. Floors that exceed five stories or 65 feet (19812 mm) in *height* above the *level of exit discharge*.

1014.12.1 Location: Exterior *exit stairways* shall not project beyond the *street lot line*. Exterior *exit stairways* shall be located at least 10 feet (3048 mm) from adjacent *lot lines* and from other buildings on the same *lot* unless openings in such buildings are protected by 3/4-hour opening protectives.

Exception: Noncombustible exterior *stairways* constituting not more than 50 percent of the required *means of egress* shall be exempt from the 10-foot (3048 mm) *fire separation distance* requirement.

1014.12.2 Protection: Exterior *exit* stairs shall be separated from the interior of the building by walls with a fire-resistance rating of not less than 1 hour, with fixed or self-closing opening protectives as required in Section 1014.11. This protection shall extend vertically from a point 10 feet (3048 mm) above the topmost landing or the roof line, whichever is lower, down to the ground, and shall extend horizontally 10 feet (3048 mm) from each side of the *stairway*. Openings within the horizontal 10-foot (3048 mm) extension of the protected walls beyond the *stairway* shall be equipped with fixed 3/4-hour opening protective assemblies.

Exceptions

1. Occupancies, other than those in Use Group R-1 or

R-2, in buildings that are two *stories* or less *above grade* where the *level of exit discharge* is the first *story above grade*.

2. Separation from the interior of the building is not required where the exterior *stairway* is served by an exterior *exit access* balcony that connects two remote exterior *stairways* or other approved *exits*, with a perimeter which is not less than 50 percent open. To be considered open, the opening shall be a minimum of 50 percent of the height of the enclosing wall, with the top of the openings not less than 7 feet (2134 mm) above the top of the balcony.
3. Separation from the interior of the building is not required for an exterior *stairway* located in a building or structure that is permitted to have unenclosed interior *exit stairways* in accordance with Section 1014.11.
4. When the open exterior side or sides of the stairs are at an angle of, or greater than 180 degrees from an exterior wall of the building, protection shall not be required for the exterior wall.

SECTION 1015.0 SMOKEPROOF ENCLOSURES

1015.1 General: A *smokeproof enclosure* shall consist of an enclosed interior *exit stairway* that conforms to Section 1014.0 and an outside balcony or a *ventilated* vestibule meeting the requirements of this section. Where access to the roof is required by Section 1027.0, such access shall be from the *smokeproof enclosure* where a *smokeproof enclosure* is required.

1015.2 Where required: All *exit stairways* serving occupants of a floor level located more than 75 feet (22860 mm) above the *level of exit discharge*, or located more than 30 feet (9144 mm) below the *level of exit discharge* serving such floor levels, shall be protected by a *smokeproof enclosure*.

Exception: Occupancies in Use Group I-2.

1015.3 Access: Access to the stair shall be from every story and shall be by way of a vestibule or by way of an open exterior balcony, except that a vestibule or balcony is not required for a *smokeproof enclosure* that consists of a pressurized *stairway* complying with Section 1015.7. The minimum dimension of the vestibule shall not be less than the required width of the *corridor* leading to the vestibule but shall not have a width of less than 44 inches (1118 mm) and shall not have a length of less than 72 inches (1829 mm) in the direction of egress travel.

1015.4 Construction: The *smokeproof enclosure* shall be separated from the remainder of the building by not less than a 2-hour fire-resistance rated *fire separation assembly* without openings other than the required *means of egress* doors. The vestibule shall be separated from the *stairway* by not less than a 2-hour fire-resistance rated *fire separation assembly*. The open exterior balcony shall be constructed in accordance with the fire-resistance rating requirements for floor construction.

1015.4.1 Door closers: All doors in a *smokeproof enclosure* shall be self-closing or shall be automatic-closing by actuation of a smoke detector installed at the floor side entrance to

8. Horizontal sliding doors shall not be prohibited within a single *dwelling unit* serving an occupant load of less than 10.

1017.4.1 Locks and latches: All *means of egress* doors shall be readily openable from the side from which egress is to be made without the use of a key or special knowledge or effort.

Exceptions

1. Key operation shall be permitted from a *dwelling unit* provided that the key cannot be removed from the lock when the door is locked from the side from which egress is to be made.
2. Locking devices conforming to Section 409.3.2 shall be permitted in occupancies in Use Group I-2.
3. Locks conforming to Section 410.4 shall be permitted in occupancies in Use Group I-3.
4. *Means of egress* doors from individual *dwelling units* and guestrooms of occupancies in Use Group R having an occupant load of 10 or less shall be permitted to be equipped with a night latch, dead bolt or security chain, provided that such devices are openable from the inside without the use of a key or tool and are mounted at a height not to exceed 48 inches (1219mm) above the finished floor.
5. Special locking arrangements conforming to Section 1017.4.1.2 or Section 1017.4.1.3.
6. In occupancies in Use Groups B, F, M and S, the main exterior *means of egress* door is permitted to be equipped with a key-operated locking device from the egress side where in compliance with the following three conditions:
 - 6.1. The locking device is of a type that is readily distinguishable as locked.
 - 6.2. 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 Building Is Occupied." The sign shall be in letters not less than 1 inch (25mm) high on a contrasting background.
 - 6.3. The main exterior door is a single door or a pair of doors which, when unlocked, the door or both leafs of a pair of doors swing free.
7. Locking arrangements conforming to Section 1017.4.5.

1017.4.1.1 Flush and surface bolts: Manually operated edge or surface-mounted flush bolts and surface bolts are prohibited. Where *means of egress* doors are used in pairs and approved automatic flush bolts are used, the door leafs having the automatic flush bolts shall not have a door knob or surface-mounted hardware. The unlatching of any leaf shall not require more than one operation.

1017.4.1.2 Special locking arrangements: In buildings that are equipped throughout with an *automatic sprinkler system* installed in accordance with Section 906.2.1 or with an automatic fire detection system, doors in a *means of egress* serving occupancies in Use Group B, E, F, I, M, S or R, shall be unlocked or shall be equipped with approved egress control devices which shall unlock in accordance with items 1 through 7

1017.4.2 Panic hardware: All doors equipped with latching devices in occupancies in Use Groups A and E or portions of buildings occupied for assembly or educational purposes and serving rooms or spaces with an occupant load greater than 100, shall be equipped with approved panic hardware. Acceptable panic hardware shall be a door latching assembly incorporating a

below. A building occupant shall not be required to pass through more than one door equipped with a special locking device before entering an exit.

1. Actuation of the *automatic sprinkler system* or automatic fire detection system.
2. Loss of power to the egress control device.
3. Loss of power to the building.
4. Capability of being unlocked manually by a signal from an *emergency control station*.
5. The initiation of an irreversible and automatic process that will release the latch within 15 seconds when a force of not more than 15 pounds (66N) is applied for 1 second to the release device and not relock until the door has been opened and returned to the closed position for not less than 30 seconds. Any reopening of the door shall restart the 30-second relocking cycle. Any attempt to *exit* which exceeds 1 second shall render the door openable. The time delay and the minimum relocking cycle time shall not be field adjustable.

Exceptions

1. An increase in the time delay to 30 seconds shall not be permitted except as approved by the code official.
2. An increase in the relocking cycle time to 45 seconds shall not be permitted except as approved by the code official.
6. Initiation of the irreversible process shall activate an audible alarm in the vicinity of the door.
7. A sign having block letters of 1 inch (25 mm) in height shall be provided on the door above and within 12 inches (305 mm) of the release device stating "Push until alarm sounds. Door can be opened in 15 seconds."

1017.4.1.3. Security locking arrangements in penal facilities:

In occupancies in Use Groups A-3, A-4, B, E, F, I, M and S within penal facilities, doors in *means of egress* serving rooms or spaces occupied by persons whose movements must be controlled for security reasons shall be permitted to be locked if equipped with egress control devices which shall unlock manually and by at least one of the following means.

1. Actuation of an *automatic fire suppression system* required by Section 904.1.
2. Actuation of a key-operated manual alarm station required by Section 918.4.
3. A signal from a central control station.

1017.4.1.4 Exterior sliding doors: In *dwelling units* of Use 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 its being disengaged by movement of the door.

Exception:

Exterior sliding doors which are equipped with removable metal pins or charlie bars.

device which causes the door latch to release and the leaf to open when a force of 15 pounds (66N) is applied in the direction of egress to a bar or panel, the activating portion of which extends not less than one-half the width of the door leaf, and is applied at a height greater than 30 inches (762mm) but less than 44 inches (1118mm) above the floor. The force shall be applied at the lock

side of the door or 30 inches (762mm) from the hinged side, whichever is farther from the hinge. Where *fire door* assemblies are required to have panic hardware, approved fire *exit* hardware shall be used.

1017.4.3 Power-operated doors: Where *means of egress* doors are operated by power, such as doors with a photoelectric-actuated mechanism to open the door upon the approach of a person, or doors with power-assisted manual operation, the design shall be such that in the event of power failure, the door is capable of being opened manually to permit *means of egress* travel or closed where necessary to safeguard *means of egress*. The forces required to open these doors manually shall not exceed those specified in Section 1017.4, except that the force to set the door in motion shall not exceed 50 pounds (222 N). The door shall be capable of swinging from any position to the full width of the opening in which such door is installed when a force is applied to the door on the side from which egress is made.

Exceptions

1. Occupancies in Use Group I-3.
2. Horizontal sliding doors complying with Section 1017.4.4.

1017.4.4 Horizontal sliding doors: In other than occupancies in Use Group H, horizontal sliding doors that are considered a component of a *means of egress* shall comply with all of the following criteria:

1. The door shall be power operated and be capable of being operated manually in the event of power failure;
2. The door shall be openable from both sides without special knowledge or effort;
3. The force required to operate the door shall not exceed 30 pounds (132 N) to set the door in motion and 15 pounds (66 N) to close the door or to open such door to the minimum required width;
4. The door shall be openable with a force not to exceed 15 pounds (66 N) when a force of 250 pounds (1112 N) is applied perpendicular to the door adjacent to the operating device;
5. The door assembly shall comply with the applicable *fire protection rating* and, where rated, shall be self-closing or automatic-closing by smoke detection, shall be installed in accordance with NFPA 80 listed in Chapter 35, and shall comply with Section 717.0;
6. The door assembly shall have a standby power supply;
7. The door shall open to the minimum required width within 10 seconds after activation of the operating device; and
8. The door assembly power supply shall be electrically supervised at a constantly attended location.

1017.4.5 Access-controlled egress doors: The entrance doors in a *means of egress* in buildings with an occupancy in Use Group A, B, E, M, R-1 or R-2 and entrance doors to tenant spaces in occupancies in Use Groups A, B, E, M, R-1 and R-2 are permitted to be equipped with an approved entrance and egress access control system which shall be installed in accordance with items 1 through 6 below.

1018.1 General: All revolving doors shall comply with Sections 1018.2 through 1018.5. In other than occupancies in Use Group H, revolving doors that are considered a component of the *means of egress* shall comply with Sections 1018.2 through 1018.6.

1018.2 Collapse: Each revolving door shall be capable of collapsing into a book-fold position with parallel egress paths having an aggregate width of not less than 36 inches (914 mm).

1. A sensor shall be provided on the egress side arranged to detect an occupant approaching the doors. The doors shall be arranged to unlock by a signal from or loss of power to the sensor.
2. Loss of power to that part of the access control system which locks the doors shall automatically unlock the doors.
3. The doors shall be arranged to unlock from a manual unlocking device located 40 inches (1016 mm) to 48 inches (1219 mm) vertically above the floor and within 5 feet (1524 mm) of the secured doors. Ready access shall be provided to the manual unlocking device and the device shall be clearly identified by a sign. When operated, the manual unlocking device shall result in direct interruption of power to the lock independent of the access control system electronics and the doors shall remain unlocked for a minimum of 30 seconds.
4. Activation of the building fire alarm system, if provided, shall automatically unlock the doors, and the doors shall remain unlocked until the fire alarm system has been reset.
5. Activation of the building *automatic sprinkler* or fire detection system, if provided, shall automatically unlock the doors. The doors shall remain unlocked until the fire protective signaling system has been reset.
6. Entrance doors in buildings with an occupancy in Use Group A, B, E or M shall not be secured from the egress side during periods that the building is open to the general public.

1017.5 Security grilles: Horizontal sliding or vertical security grilles which are part of a required *means of egress* shall be openable from the inside without the use of a key or special knowledge or effort during periods that the space is occupied. The grilles shall remain secured in the full-open position during the period of occupancy by the general public. Grilles shall not be brought to the closed position when there are more than ten persons occupying spaces served by a single *exit* or 50 persons occupying spaces served by more than one *exit*. Where two or more *exits* are required, not more than one-half of the *exits* shall be equipped with horizontal sliding or vertical security grilles.

1017.6 Level of exit discharge doors: Where glazed, doors at the *level of exit discharge* shall be glazed with approved safety glazing. Approved doors having one or more unframed edges shall be constructed of safety glazing not less than ½ inch thick.

1017.7 Entrance doors: Entrance doors to *dwelling units* of Use 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.

SECTION 1018.0 REVOLVING DOORS

The revolving door shall collapse when a force of not more than

5. Temporary structures, sites and equipment directly associated with the construction process, such as construction site trailers, scaffolding, bridging or material hoists.
6. Pulpit, choir, baptismal and similar areas in Use Group A-4 structures are not required to be accessible.

1103.1.1 Identification of accessible parking spaces by above grade signs: 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 4 feet (1219 mm) nor higher than 7 feet (2133 mm) above the parking surface.

1103.2 Standard: Details, dimensions and construction specifications for items required by this section shall comply with CABO A117.1 listed in Chapter 35.

SECTION 1104.0 ACCESSIBLE ROUTE

1104.1 Where required: Accessible routes within the site shall be provided from public transportation stops, accessible parking and accessible passenger loading zones, and public streets or sidewalks to the accessible building entrance served.

1104.2 Connected spaces: At least one accessible route shall connect accessible spaces, elements, facilities and buildings that are on the same site. Where only one accessible route is provided, the accessible route shall not pass through kitchens, storage rooms, restrooms, closets or similar spaces.

Exceptions

1. A single accessible route shall be permitted to pass through a kitchen or storage room in an accessible dwelling unit.
2. In other than the offices of health care providers (Use Group B), passenger transportation facilities and airports (Use Group A-3) and multitenant facilities of Use Group M, floors that: are above and below accessible levels, and that have an aggregate area of not more than 3,000 square feet, and an aggregate occupant load of not more than 50, are not required to be served by an accessible route from an accessible level.

1104.3 Interior accessible route: Where floor levels are required to be connected by an accessible route, and an interior path of travel is provided between the levels, the accessible route between the levels shall also be interior.

SECTION 1105.0 PARKING FACILITIES

1105.1 Required: Where parking is provided, accessible parking spaces complying with CABO A117.1 listed in Chapter 35 shall be provided in compliance with Table 1105.1 except as required by Sections 1105.2 and 1105.3.

1105.2 Use Group R-2: Two percent of parking spaces provided for occupancies in Use Group R-2 which are required to have accessible dwelling units shall be accessible. Where parking is provided within or beneath a building, accessible parking spaces shall also be provided within or beneath the building.

1105.3 Medical facilities: Ten percent of parking spaces provided for medical outpatient facilities shall be accessible. Twenty percent of parking spaces provided for medical facilities that specialize in treatment or services for persons with mobility impairments shall be accessible.

1105.4 Van spaces: For every eight or fraction of eight accessible parking spaces, at least one shall be a van-accessible parking space.

Table 1105.1 ACCESSIBLE PARKING SPACES	
Total parking spaces provided	Required minimum number of accessible spaces
1 to 5	1a
6 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	2
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1,000	2% of total
more than 1,000	20 plus one for each 100 over 1,000

Note a. The accessible space shall be provided but is not required to be designated as reserved for physically disabled (see Section 1109.2).

1105.5 Location: Accessible parking spaces shall be located on the shortest accessible route of travel from adjacent parking to an accessible building entrance. In parking facilities that do not serve a particular building, accessible parking spaces shall be located on the shortest route to an accessible pedestrian entrance to the parking facility. Where buildings have multiple accessible entrances with adjacent parking, accessible parking spaces shall be dispersed and located near the accessible entrances.

Exception: In multilevel parking structures, van-accessible parking spaces shall be permitted on one level.

SECTION 1106.0 ACCESSIBLE ENTRANCES

1106.1 Required: At least 50 percent but not less than one entrance to each building and structure, and each separate tenant space within the building or structure, shall comply with the accessible route provisions of CABO A117.1 listed in Chapter 35.

Exceptions

1. Entrances to spaces not required to be accessible as provided for in Section 1107.0.
2. Loading and service entrances.

1106.2 Multiple accessible entrances: Where a building or facility has entrances which normally serve accessible parking facilities, transportation facilities, passenger loading zones, taxi stands, public streets and sidewalks, or accessible interior vertical access, then at least one of the entrances serving each such function shall comply with the accessible route provisions of CABO A117.1 listed in Chapter 35.

SECTION 1107.0 USE GROUP REQUIREMENTS

1107.1 General: In addition to the other requirements of this section, the requirements of Sections 1107.2 through 1107.4 shall apply to specific occupancies.

1107.2 Use Group A: Occupancies in Use Group A shall provide for accessible features in accordance with Sections 1107.2.1 through 1107.2.4.

1107.2.1 Services: Services and facilities provided in areas not required to be accessible shall be provided on an accessible level and shall be accessible.

CHAPTER 12

INTERIOR ENVIRONMENT

SECTION 1201.0 GENERAL

1201.1 Scope: The provisions of this chapter shall govern the means of light, *ventilation*, sound transmission control and ratproofing required in all buildings.

1201.2 Buildings on same lot: Where more than one building is hereafter placed on a *lot*, or where a building is placed on the same *lot* with existing buildings and the several buildings are treated as a single structure for the purposes of this chapter, equivalent uncovered *lot* area or other adequate sources of light and *ventilation* shall be provided for all occupied buildings.

SECTION 1202.0 DEFINITIONS

1202.1 General: The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

Attic: The space between the ceiling beams of the top story and the roof rafters.

Court: An open, uncovered and unoccupied space on the same *lot* as a building where such space is enclosed wholly or partly by buildings, walls or other enclosing devices (see Section 1212.0).

Inner: Any *court* enclosed wholly by buildings, walls or other enclosing devices.

Outer: A *court* extending to and opening upon a street, public alley or other approved open space that is not less than 15 feet (4572 mm) wide, or upon a required yard.

Court height: The vertical distance from the lowest level of the *court* to the mean height of the top of the enclosing walls.

Court width: As applied to an *inner court*, means the least horizontal dimension. As applied to an *outer court*, means the shortest horizontal dimension measured in a direction substantially parallel with the principal open end of such *court*.

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

Habitable space: Space in a structure for living, sleeping, eating or cooking. Bathrooms, toilet compartments, closets, halls, storage or utility spaces and similar areas are not considered

1204.1.1 Use Groups A, B, E and M: A clear height from the finished floor to the finished ceiling or lowest projection of not

habitable spaces.

Occupiable space: A room or enclosed space designed for human occupancy in which individuals congregate for amusement, educational or similar purposes, or in which occupants are engaged at labor; and which is equipped with *means of egress* and light and *ventilation* facilities meeting the requirements of this code.

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

Vapor retarder: A material having a perm rating of 1.0 or less, such as foil, plastic sheeting, or insulation facing, installed to retard the passage of water vapor or moisture through the exterior envelope.

Ventilation: The natural or mechanical process of supplying conditioned or unconditioned air to, or removing such air from, any space.

Yard: An unoccupied open space other than a *court* (see Sections 1212.0 and 1213.0).

SECTION 1203.0 CONSTRUCTION DOCUMENTS

1203.1 General: *Construction documents* for all buildings and structures that are designed for human occupancy, other than buildings with occupancies in Use Groups I-1, R-2 and R-3, shall designate the number of occupants to be accommodated in the various rooms and spaces; where means of artificial lighting and *ventilation* are required, the application shall include sufficient details and description of the mechanical system to be installed as herein required or as specified in the mechanical code listed in Chapter 35.

SECTION 1204.0 ROOM DIMENSIONS

1204.1 Ceiling heights: *Habitable (spaces)* rooms, hallways, *corridors*, bathrooms, toilet rooms, laundry rooms and *habitable basements* shall have a ceiling height of not less than 7 feet (2134 mm) measured to the lowest projection from the ceiling.

Exception: In occupancies in Use Group R-3, the maximum projection below the required ceiling height of beams and girders spaced not less than 4 feet (1219 mm) on center shall be 6 inches (152 mm).

less than 7 feet 6 inches (2286 mm) shall be provided in all *exit access* and *occupiable rooms* of structures of Use Groups A, B, E

and M.

1204.1.2 Sloping ceilings: If any room in a building has a sloping ceiling, the prescribed ceiling height for the room is required in one-half the area thereof. Any portion of the room measuring less than 5 feet (1524 mm) from the finished floor to the finished ceiling shall not be included in any computation of the minimum area thereof.

1204.1.3 Furred ceilings: If any room has a furred ceiling, the prescribed ceiling height is required in two-thirds of the area thereof, but the height of the furred ceiling shall not be less than 7 feet (2134 mm).

1204.2 Floor area: Every *dwelling unit* shall have at least one room which shall have not less than 150 square feet (13.95 m²) of floor area. Other *habitable* rooms, except kitchens, shall have an area of not less than 70 square feet (6.51 m²).

1204.3 Width: A *habitable* room other than a kitchen shall not be less than 7 feet (2134 mm) in any dimension.

SECTION 1205.0 LIGHT AND VENTILATION REQUIRED

1205.1 Light required: Every room or space intended for human occupancy shall be provided with natural or artificial light.

1205.1.1 Bathroom and toilet room lighting: Every bathroom and toilet room shall be provided with artificial light. The illumination shall have an average intensity of 3 footcandles (32.29 lux) measured at a level of 30 inches (762 mm) above the floor.

1205.2 Ventilation required: Every room or space intended for human occupancy shall be provided with natural or mechanical *ventilation*.

SECTION 1206.0 NATURAL LIGHT

1206.1 General: In the application of the provisions of this chapter, the standard of natural light for all *habitable* and *occupiable rooms*, unless otherwise specifically required by the provisions of Chapter 4 for special occupancies, shall be based on 250 footcandles (2691 lux) of illumination on the vertical plane adjacent to the exterior of the light-transmitting device in the enclosure wall and shall be adequate to provide an average illumination of 6 footcandles (64.58 lux) over the area of the room at a height of 30 inches (762 mm) above the floor level.

1206.2 Minimum glazing area: Every room or space intended for human occupancy shall have an exterior glazing area of not less than 8 percent of the floor area. Natural light shall be provided by glazing areas that open onto *courts* or yards which comply with the requirements of Section 1212.0, or by other approved means.

1206.2.1 Adjoining spaces: Where natural light for rooms or spaces without exterior glazing areas is provided through an adjoining room, the unobstructed opening to the adjoining room shall be at least 8 percent of the floor area of the interior room or space, but not less than 25 square feet (2.33 m²). The exterior glazing area shall be based on the total floor area being served.

1206.3 Hallways: Natural light shall be capable of penetrating the full length of the hallway.

SECTION 1207.0 ARTIFICIAL LIGHT

1207.1 General: Artificial light shall be capable of providing the minimum illumination specified for natural light.

1207.2 Stairway illumination: All *stairways* within *dwelling units* shall be provided with a minimum illumination level of 10 foot candles (107 lux) measured at every tread nosing. Exterior *stairways* serving a *dwelling unit* shall have an illumination level on tread runs of 1 footcandle.

1207.2.1 Controls: The control for activation of the required *stairway* lighting within a *dwelling unit* shall be operable from the top and bottom of each *stairway* without traversing any step of the *stair*. All switches that control interior *stairway* lights shall be illuminated switches. The illumination of an exterior *stairway* serving a *dwelling unit*, unless continuously illuminated or automatically activated.

SECTION 1208.0 NATURAL VENTILATION

1208.1 General: Natural *ventilation* of an occupied space shall be through windows, doors, louvers or other natural openings to the outdoor air.

1208.2 Ventilation area required: The minimum openable area to the outdoors shall be 4 percent of the floor area being ventilated.

1208.2.1 Adjoining spaces: Where rooms and spaces without openings to the outdoors are *ventilated* through an adjoining room, the unobstructed opening to the adjoining room shall be at least 8 percent of the floor area of the interior room or space, but not less than 25 square feet (2.33 m²). The *ventilation* openings to the outdoors shall be based on the total floor area being *ventilated*.

1208.2.2 Openings below grade: Openings below grade shall be acceptable for natural *ventilation* provided that the outside horizontal clear space measured perpendicular to the opening is one and one-half times the depth below the average adjoining grade.

1208.3 Contaminants exhausted: Contaminants in the breathing atmosphere shall be exhausted to the outdoor air in accordance with the mechanical code listed in Chapter 35.

1208.4 Openings onto yards or courts: Natural *ventilation* shall be provided by openings onto yards or *courts* which comply with the requirements of Section 1212.0, or by other approved means.

1208.5 Insect screens: Every door, window and other outside opening for natural ventilation serving structures classified as other than a residential use 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 and every swinging door 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.

1208.5.1 Insect screens serving structures classified as a residential use group: Every door, window and other outside opening required for natural ventilation purposes which serves a structure classified as a residential use group shall be supplied with approved tightly fitted screens of not less than 16 mesh per inch and every swinging door shall have a self-closing device.

SECTION 1209.0 MECHANICAL VENTILATION

1209.1 General: Mechanical *ventilation* shall conform to the requirements of the mechanical code listed in Chapter 35.

SECTION 1210.0 VENTILATION OF SPECIAL SPACES

1210.1 Roof spaces: Enclosed *attics* and enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters, shall have cross *ventilation* for each separate space by *ventilation* openings. The *ventilation* openings shall be tested for rain and snow infiltration in a manner representative of the intended installation and shall not permit the entrance of rain and snow when so tested. *Ventilation* opening shall not be provided in roof areas, or portions thereof, which are subject to snow drift as determined by Section 1608.0.

The minimum required not free ventilating area shall be 1/150 of the area of the space ventilated. Where ridge or gable vents are utilized, one-half of the *ventilation* openings shall be provided by ridge or gable vents, with the balance of the *ventilation* openings shall be provided by ridge or gable vents, with the balance of the *ventilation* openings provided by eave or cornice vents. The openings shall be covered with corrosion-resistant mesh or other approved materials with openings not more than 1/2 inch (13 mm) in any direction.

Exception: The minimum required area is permitted to be reduced to 1/300, provided that a *vapor retarder* having a permeance not exceeding 1 perm is installed on the warm side of the ceiling; or the ridge or gable *ventilation* openings are located in the upper third of the space to be ventilated with the balance of the required *ventilation* provided by eave or cornice vents.

1210.2 Crawl spaces: Crawl space areas, other than those used as an underfloor plenum, shall be *ventilated* by an approved mechanical means or by openings in exterior foundation walls. Openings shall be located as close to corners as practicable and shall provide cross *ventilation* on at least two approximately opposite sides. The openings shall be covered with corrosion-resistant mesh not less than 1/4 inch (6 mm) nor more than 1/2 inch (13 mm) in any direction.

1210.2.1 Opening size: Openings shall have a net area of not less than 1 square foot (0.093 m²) for each 150 square feet (13.95 m²) of foundation space. Where an approved *vapor retarder* is installed over the ground surface, the required net area of openings shall be reduced to 0.1 square foot (0.093 m²) for each 150 square feet (13.95 m²) and vents shall have manually operable louvers.

1210.3 Alternative mechanical ventilation: Enclosed *attic*, rafter and crawl spaces which are not *ventilated* as herein required shall be equipped with a mechanical *ventilation* system conforming to the requirements of the mechanical code listed in Chapter 35.

SECTION 1211.0 ACCESS TO CRAWL SPACES AND ATTICS

1211.1 Access to crawl spaces: Access shall be provided to crawl spaces by an opening not less than 18 inches by 24 inches (457 mm by 610 mm).

1211.2 Access to attics: An opening not less than 22 inches by 30 inches (559 mm by 762 mm) with ready access thereto shall be provided to any *attic* area having a clear height of over 30 inches (762 mm). Where doors or other openings are installed in the *draftstopping*, such doors shall be self-closing and be of approved materials as specified in this section, and the construction shall be tightly fitted around all pipes, ducts or other assemblies piercing the *draftstopping*.

SECTION 1212.0 COURTS AND YARDS

1212.1 General: All *courts* and yards required to serve rooms for natural light or *ventilation* purposes shall comply with the requirements of this section.

1212.2 Minimum width: Every such *court* or yard shall have a minimum width of 3 inches (76 mm) for each 1 foot (305 mm) of height or fraction thereof, but not less than 5 feet (1524 mm) for *outer courts* and twice these values for *inner courts*.

1212.2.1 Irregular court or yard width: In the case of irregular or gore-shaped *courts* or yards, the average width shall not be less than the required width of a *court* in accordance with Section 1212.2, but shall not be less than 5 feet (1524 mm) at any point.

1212.3 Area of court: The cross-sectional area of a required *court* shall not be less than one and one-half times the square of its width, nor shall the length of any *court* be more than twice its width.

1212.4 Access to court: A door or other means of access shall be provided at the bottom of every *court* that is not otherwise provided with convenient access for purposes of cleaning.

1212.5 Air intakes: Every *court* which serves one or more *habitable* rooms and which does not open for its full height on one or more sides to a street or legal yard, shall be connected at or near the bottom with a street or yard by a horizontal intake or passage of fireresistance rated construction. Such intake or passage shall have a cross-sectional area of not less than 21 square feet (1.95 m²) and shall remain fully open at both ends and unobstructed for its full size and length, except that grilles of noncombustible construction are permitted at the ends of the intake.

1212.5.1 Fireresistance rating: The walls, floors and ceilings of such intakes or passages shall have a fireresistance rating of not less than 2 hours in buildings of Type 1, 2, 3 or 4 construction and not less than a 1-hour fireresistance rating in buildings of Type 5 construction.

1212.6 Court walls: Where, in the opinion of the code official, windows facing on *courts* do not receive adequate direct light by reason of peculiar arrangement or orientation, the code official shall require the walls to be constructed of light-colored concrete or masonry, or to be painted and maintained a light color to furnish additional reflected light, or shall require other approved means of providing additional light.

1212.7 Court drainage: The bottom of every *court* shall be properly graded and drained to a public sewer or other approved disposal system complying with the plumbing code listed in Chapter 35, and shall be paved with concrete or other non-absorbent material where required by the code official.

SECTION 1213.0 OBSTRUCTION OF COURTS AND YARDS

1213.1 Permissible projections: Every required *court* and yard shall remain unobstructed for its required area and full height, except for the projections permitted in Sections 1213.2 through 1213.7.

1213.2 Maximum encroachment: A part of any building or structure shall not extend into side *courts*, *inner courts* or yards required for light and *ventilation* of habitable and *occupiable rooms* by the *zoning* law or other statutes controlling building construction. The encroachment shall not exceed 20 percent of the legal area of the yard or *court* which is required for light and *ventilation* purposes.

1213.3 Accessories: In Use Groups R and I, clothes poles, arbors, garden trellises and other such accessories shall not be prohibited in the open spaces at ground level.

1213.4 Roof eaves: Roof eaves shall not project more than 3 feet (914 mm) beyond the face of the wall.

1213.5 Steps and architectural features: Steps, window sills, belt courses and similar architectural features, as well as rain leaders and chimneys, shall not project more than 2 feet (610 mm) beyond the face of the wall.

1213.6 Exterior stairways and fire escapes: Outside *stairways*, smokeproof tower balconies, fire escapes or other required elements of a *means of egress* shall not project more than 4 feet (1219 mm) beyond the face of the wall.

1213.7 Motor vehicle parking: Where approved, required *court* and yard areas for automobile parking spaces or *private garages* not exceeding one story in *height* where accessory to and only for the occupants of a Use Group R occupancy are permitted, provided that required windows for light and *ventilation* are not obstructed thereby.

SECTION 1214.0 SOUND TRANSMISSION CONTROL
IN RESIDENTIAL BUILDINGS

1214.1 Scope: This section shall apply to all 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 in all occupancies in Use Group R.

Exception: Section 1214.4 applies to the construction of the exterior of residential structures and shall be enforced only after action by the governing body of any county, city or town pursuant to § 15.1-491.03 of the Code of Virginia.

1214.2 Air-borne noise: Walls, partitions and floor/ceiling assemblies separating *dwelling units* from each other or from public or service areas shall have a sound transmission class (STC) of not less than 45 for air-borne noise when tested in accordance with ASTM E90 listed in Chapter 35. This require-

ment shall not apply to *dwelling unit* entrance doors; however, such doors shall be tight fitting to the frame and sill.

1214.3 Structure-borne sound: Floor/ceiling assemblies between *dwelling units* or between a *dwelling unit* and a public or service area within the structure shall have an impact insulation class (IIC) rating of not less than 45 when tested in accordance with ASTM E492 listed in Chapter 35.

1214.4 Airport noise attenuation standards: Where the Ldn is determined to be 65 dBA or greater, the STC rating of structure components shall be provided in compliance with Table 1214.4. As an alternative to compliance with Table 1214.4, 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 a registered design professional.

Table 1214.4
AIRPORT NOISE ATTENUATION STANDARDS

Ldn	STC of exterior walls and roof/ceiling assemblies	STC of door and windows
65-69	39	25
70-74	44	33
75 or greater	49	38

SECTION 1215.0 RATPROOFING

1215.1 Ratproofing: All buildings or structures and the walls enclosing *habitable* or *occupiable rooms* and spaces in which persons live, sleep or work, or in which feed, food or foodstuffs are stored, prepared, processed, served or sold, shall be constructed in accordance with the provisions of this section.

1215.2 Grade protection: Buildings not provided with a continuous foundation shall be provided with protection against rodents at grade in accordance with either Section 1215.2.1 or 1215.2.2.

1215.2.1 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. In all cases the apron shall not terminate below the lower edge of the siding material. The apron shall be constructed of an approved nondecayable, water-resistant and ratproofing 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.

1215.2.2 Grade floors: Where continuous concrete grade floor slabs are provided, open spaces shall not be left between the slab and walls, and all openings in the slab shall be protected.

1215.3 Opening protection: Openings shall be protected in accordance with Sections 1215.3.1 through 1215.3.3.

1215.3.1 Wall openings: Openings in the wall or apron required for *ventilation* or other purposes shall be guarded with corrosion-resistant ratproof shields of not less than nominal 0.034-inch perforated steel sheets, or No. 20 B&S Gage

aluminum (0.032 inch) or nominal 0.064-inch expanded steel or wire mesh screens, with not more than 1/2-inch (13 mm) mesh openings.

1215.3.2 Slab openings: Access openings in grade floor slabs
1215.3.3 Pipe and conduit openings: All openings for pipe, conduit, cable and similar purposes at or near grade shall have snugly fitted collars to eliminate all open spaces.

shall be protected with concrete, masonry, metal or other corrosion-resistant noncombustible cover of adequate strength to support the floor *loads*.

Exceptions

1. Detached *one- and two-family dwellings* that are located in seismic map areas having an effective peak velocity-related acceleration (A_v) value less than 0.15, in accordance with Section 1610.1.3, are exempt from the requirements of this section.
2. Agricultural storage buildings which are intended only for incidental human occupancy are exempt from the requirements of this section.
3. Buildings or structures located where the seismic coefficient representing the effective peak velocity-related acceleration (A_v) is less than 0.05, are only required to comply with Section 1610.3.6.1.
4. The seismic force-resisting system of wood frame buildings that conform to the provisions of Section 2305.8 and are constructed in accordance with Section 2305.0 and Section 1610.3.6.1 are not required to be analyzed as specified in Sections 1610.3 through 1610.5.
5. Buildings assigned to Seismic Performance Category B and Seismic Hazard Exposure Group I are only required to comply with Section 1610.3.6.1 provided the following requirements are met:
 1. The height of the building does not exceed 4 stories or 40 feet (12192 mm);
 2. A_v is less than 0.10 and the soil profile type has been verified; and
 3. If the building is more than one story in height, it does not have a vertical irregularity of Type 5 in Table 1610.3.4.2.

1610.1.1 Additions to existing buildings: An *addition* that is structurally independent from an existing building shall be designed and constructed in accordance with the seismic requirements for new buildings. An *addition* that is not structurally independent from an existing building shall be designed and constructed such that the entire building conforms to the seismic requirements for new buildings unless the following three provisions are complied with:

1. The *addition* complies with the seismic requirements for new buildings;
2. The *addition* shall not increase the seismic forces in any structural element of the existing building by more than 5 percent unless the increased forces on the element are still in compliance with these provisions; and
3. The *addition* shall not decrease the seismic resistance of any structural element of the existing building below that required for new buildings.

1610.1.2 Change of occupancy: Where a *change of occupancy* results in an existing building being reclassified to a higher Seismic Hazard Exposure Group, the building shall conform to the seismic requirements for new buildings.

Exception: Upgrading the building for the seismic requirements of this section is not required for buildings located in seismic map areas having an effective peak velocity related acceleration (A_v) value of less than 0.15 where the *change of occupancy* results in a building being reclassified from Seismic Hazard Exposure Group I to Seismic Hazard Exposure Group II.

1610.1.3 Seismic ground acceleration maps: The effective peak velocity-related acceleration (A_v) and the effective peak acceleration (A_a) shall be determined from Figures 1610.1.3(1) and 1610.1.3(2), respectively. Interpolation shall be permitted in the determination of the effective peak velocity-related acceleration (A_v) and the effective peak acceleration (A_a). For the application of the formulas in Sections 1610.4 and 1610.5 which incorporate the effective peak acceleration coefficient (A_a), the value of A_a shall be determined from Figure 1610.1.3(2) or shall be 0.05, whichever is greater.

1610.1.4 Site-specific response spectra: Where site-specific response spectra are required for buildings assigned to Seismic

Performance Categories D and E in accordance with Table 1610.3.5.3, the site-specific response spectra shall be developed

based on ground motions which have a 90-percent probability of not being exceeded in 50 years.

1610.1.5 Seismic Hazard Exposure Groups: All buildings shall be assigned to one of the Seismic Hazard Exposure Groups in accordance with Table 1610.1.5.

1610.1.5.1 Multiple occupancies: Where a building is occupied for two or more occupancies not included in the same Seismic Hazard Exposure Group, the building shall be assigned the classification of the highest Seismic Hazard Exposure Group occupancy

**Table 1610.1.5
SEISMIC HAZARD EXPOSURE GROUP**

Seismic Hazard Exposure Group type and description	Nature of occupancy
Group I	All occupancies except those listed below
<p>Group II Seismic Hazard Exposure Group II buildings are those which have a substantial public hazard due to occupancy or use, including buildings containing any one or more of the indicated occupancies.</p>	<ol style="list-style-type: none"> 1. Use Group A in which more than 300 people congregate in one area. 2. Use Group E with an occupant load greater than 250. 3. Use Group B used for college or adult education with an occupant load greater than 500. 4. Use Group I-2 with an occupant load greater than 50, not having surgery or emergency treatment facilities. 5. Use Group I-3 6. Power-generating stations and other public utility facilities not included in Seismic Hazard Exposure Group III. 7. Any other occupancy with an occupant load greater than 5,000.
<p>Group III Seismic Hazard Exposure Group III buildings are those having essential facilities which are required for post-earthquake recovery, including buildings containing any one or more of the indicated occupancies.</p>	<ol style="list-style-type: none"> 1. Fire, rescue and police stations. 2. Use Group I-2 having surgery or emergency treatment facilities. 3. Emergency preparedness centers. 4. Post-earthquake recovery vehicle garages. 5. Power-generating stations and other utilities required as emergency backup facilities. 6. Primary communication facilities. 7. Highly toxic materials as defined by Section 307.0 where the quantity of the material exceeds the exempt amounts of Section 307.8.

1610.3.5.1 Seismic Performance Category A: Regular or irregular buildings assigned to Category A are not required to be analyzed for seismic forces for the building as a whole. The requirements of Sections 1610.3.6.1 apply.

1610.3.5.2 Seismic Performance Categories B and C: Regular or irregular buildings assigned to Category B or C shall be analyzed in accordance with the procedures in Section 1610.4.

Exception: Regular or irregular buildings assigned to Category B and Seismic Hazard Exposure Group I are not required to be analyzed for seismic forces for the building as a whole provided the following requirements are met:

1. The height of the building does not exceed 4 stories or 40 feet (12192 mm);
2. $A_v S$ is less than 0.10 and the soil profile type has been verified; and
3. If the building is more than one story in height, it does not have a vertical irregularity of Type 5 in Table 1610.3.4.2.

1612.3.5.3 Seismic Performance Categories D and E: Buildings assigned to Category D or E shall be analyzed in accordance with the referenced sections in Table 1610.3.5.3.

Table 1610.3.5.3
ANALYSIS PROCEDURES FOR SEISMIC PERFORMANCE CATEGORIES D and E

Building description	Referenced section and procedures
1. Buildings designated as regular which do not exceed 240 feet in height	Section 1610.4
2. Building that have only vertical irregularities of Type 1, 2 or 3 in Table 1610.3.4.2 and have a height exceeding five stories or 65 feet and all buildings exceeding 240 feet in height	Section 1610.5
3. All other buildings designated as having plan or vertical irregularities in accordance with Tables 1610.3.4.1 and 1610.3.4.2.	Section 1610.4 or 1610.5
4. Building in Seismic Hazard Exposure Groups II and III in areas with A_a greater than 0.40 within 10 kilometers of faults having the capability of generating magnitude 7 or greater earthquakes.	A site-specific response spectrum shall be utilized but the design base shear shall not be less than that determined from Section 1610.4.
5. Buildings in areas with A_v of 0.2 and greater with a building period of 0.7 seconds or greater, located on type S_4 soils,	A site-specific response spectrum shall be utilized but the design base shear shall not be less than determined from Section 1610.4. The modal seismic design coefficient (C_{sm}) shall not be limited in accordance with Section

1610.3.6.2.4 Discontinuities in vertical system: Buildings with a discontinuity in lateral capacity, vertical irregularity Type 5 as defined in Table 1610.3.4.2, shall not be more than two stories or 30 feet (9144 mm)

1610.5.5.

1610.3.6 Design, detailing requirements and structural component load effects: The design and detailing of structural components of the seismic-resisting system shall comply with the requirements of this section. Foundation design shall conform to the applicable requirements of Chapter 18.

1610.3.6.1 Seismic Performance Category A: The design and detailing of buildings assigned to Seismic Performance Category A shall comply with the requirements of this section.

1610.3.6.1.1 Ties and continuity: Except for connections exempted by Section 1610.6, all parts of the building that transmit seismic force shall be interconnected acceleration (A_v) times the weight of the smaller portion (W_c) or 5 percent of the portion's weight, whichever is greater. For a building which is exempt from a full seismic analysis by Section 1610.1 and is only required to comply with Section 1610.3.6.1, the building's main windforce-resisting system in accordance with Section 1611.0 shall be deemed to be the seismic-resisting system.

A positive connection for resisting a horizontal force acting parallel to the member shall be provided for each beam, girder or truss to its support. The connection shall have a minimum strength of 5 percent of the *dead plus live load* reaction.

1610.3.6.1.2 Concrete or masonry wall anchorage: Concrete and masonry walls shall be anchored to the roof and all floors that provide lateral support for the wall. The anchorage shall provide a direct connection between the walls and the roof or floor construction. Toe nailing or nails subject to withdrawal forces is not permitted. Wood ledgers shall not be subjected to cross-grain bending or cross-grain tension. The connections shall be capable of resisting a lateral seismic force (F_p) in accordance with either Section 1610.3.6.2.8 or Section 1610.6, for loadbearing and nonloadbearing walls respectively, but not less than 1,000 times the effective peak velocity-related acceleration (A_v) (pounds) per lineal foot of wall. Walls shall be designed to resist bending between anchors where the anchor spacing exceeds 4 feet (1219 mm).

1610.3.6.2 Seismic Performance Category B: Buildings assigned to Category B shall conform to the requirements of Section 1610.3.6.1 for Category A and the requirements of this section.

Exception: Buildings meeting the exception to Section 1610.3.5.2 shall conform to the requirements of Section 1610.3.6.1 for Category A.

1610.3.6.2.1 Materials: The materials and the systems composed of those materials shall conform to the requirements of this code.

1610.3.6.2.2 Openings: Where openings occur in shear walls, diaphragms or other plate-type elements, the edges of the openings shall be designed to transfer the stresses into the structure. The edge chord shall extend into the body of the wall or diaphragm a distance sufficient to develop the stress of the chord member.

1610.3.6.2.3 Orthogonal effects: The design seismic forces shall be applied separately in each of two orthogonal directions.

investigations required under these provisions shall be paid by the permit applicant.

1703.2.1 Research reports: Supporting data, where necessary to assist in the approval of all materials or assemblies not specifically provided for in this code, shall consist of valid research reports from approved sources.

1703.3 Evaluation and follow-up inspection services: Prior to the approval of a closed prefabricated assembly, the permit applicant shall submit an evaluation report of each prefabricated assembly. The report shall indicate the complete details of the assembly, including a description of the assembly and the assembly's components, the basis upon which the assembly is being evaluated, test results and similar information, and other data as necessary for the code official to determine conformance to this code.

1703.3.1 Evaluation service: The code official shall review evaluation reports from approved sources for adequacy and conformance to the code.

1703.3.2 Follow-up inspection: The owner shall provide for *special inspections* of *fabricated items* in accordance with Section 1705.2.

1703.3.3 Test and inspection records: Copies of all necessary test and inspection records shall be filed with the code official.

SECTION 1704.0 APPROVALS

1704.1 Written approval: Any material, appliance, equipment, system or method of construction meeting the requirements of this code shall be approved in *writing* within a reasonable time after satisfactory completion of all the required tests and submission of required test reports.

1704.2 Approved record: For any material, appliance, equipment, system or method of construction that has been approved, a record of such approval, including all of the conditions and limitations of the approval, shall be kept on file in the code official's office and shall be open to public inspection at all appropriate times.

1704.3 Labeling: Products and materials required to be *labeled* shall be *labeled* in accordance with the procedures set forth in Sections 1704.3.1 through 1704.3.3.

1704.3.1 Testing: An *approved agency* shall test a representative sample of the product or material being *labeled* to the relevant standard or standards. The *approved agency* shall maintain a record of all of the tests performed. The record shall provide sufficient detail to verify compliance with the test standard.

1704.3.2 Inspection and identification: The *approved agency* shall periodically perform an inspection, which shall be in-plant if necessary, of the product or material that is to be *labeled*. The inspection shall verify that the *labeled* product or material is representative of the product or material tested.

1705.1.2 Report requirement: Special inspectors shall keep records of all *inspections*. The special inspector shall furnish *inspection* reports to the code official, and to the *registered design professional* in responsible charge. All discrepancies shall be brought to the immediate attention of the contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the code official and to

1704.3.2.1 Independent: The *agency* to be approved shall be objective and competent. The *agency* shall also disclose all possible conflicts of interest so that objectivity can be confirmed.

1704.3.2.2 Equipment: An *approved agency* shall have adequate equipment to perform all required tests. The equipment shall be periodically calibrated.

1704.3.2.3 Personnel: An *approved agency* shall employ experienced personnel educated in conducting, supervising and evaluating tests.

1704.3.3 Label information: The *label* shall contain the manufacturer's or distributor's identification, model number, serial number, or definitive information describing the product or material's performance characteristics and *approved agency's* identification.

1704.4 Heretofore-approved materials: The use of any material already *fabricated* or of any construction already erected, which conformed to requirements or approvals heretofore in effect, shall be permitted to continue, if not detrimental to life, health or safety of the public.

SECTION 1705.0 SPECIAL INSPECTIONS

1705.1 General: The permit applicant shall provide *special inspections* where application is made for construction as described in this section. The special inspectors shall be provided by the owner and shall be qualified and approved for the inspection of the work described herein.

Exceptions

1. *Special inspections* are not required for work of a minor nature or where warranted by conditions in the jurisdiction.
2. *Special inspections* are not required for building components unless the design involves the practice of professional engineering or architecture as defined by applicable state statutes and regulations governing the professional registration and certification of engineers and architects.
3. *Special inspections* are not required for occupancies in Use Group R-3 and occupancies in Use Group U that are accessory to a residential occupancy including, but not limited to, those listed in Table 312.1.

1705.1.1 Building permit requirement: The permit applicant shall submit a statement of *special inspections* prepared by the registered design professional in responsible charge in accordance with Section 114.2.1 as a condition for permit issuance. This statement shall include a complete list of materials and work requiring *special inspection* by this section, the *inspections* to be performed and a list of the individuals, *approved agencies* and firms intended to be retained for conducting such inspections.

the *registered design professional* in responsible charge prior to the completion of that phase of the work. A final report of *inspections* documenting completion of all required *special inspections* and correction of any discrepan-

CHAPTER 21

USBC AMENDMENT

MASONRY

SECTION 2101.0 GENERAL

2101.1 Scope: The provisions of this chapter shall govern the materials, design, construction and quality of masonry. Masonry shall comply with the engineered masonry design provisions of Section 2101.1.1 or shall comply with the empirical masonry design provisions of Section 2101.1.2.

2101.1.1 Engineered masonry design: Engineered masonry shall conform to the requirements of Chapters 1 through 8 of ACI 530/ASCE 5/TMS 402 listed in Chapter 35.

2101.1.2 Empirical masonry design: Empirically designed masonry shall conform to this chapter or Chapters 1 through 4 and Chapter 9 of ACI 530/ASCE 5/TMS 402 listed in Chapter 35.

Exception: Masonry veneer designed and constructed in accordance with Section 1405.5 or 1405.6.

2101.1.2.1 Limitations: Empirical masonry design shall not be utilized for any of the following conditions:

1. The design or construction of masonry in buildings assigned to Seismic Performance Category D or E as specified in Section 1610.1.7, and the design of the lateral force-resisting system for buildings assigned to Seismic Performance Category B or C;
2. The design or construction of masonry structures located in areas where the velocity pressure q_z at height z exceeds 25 psf (1197 Pa) as determined in accordance with the following equation:

$$0.00256 K_z IV^2$$

where:

K_z = Velocity pressure exposure coefficient in Table 1609.7(4).

I = Wind load importance factor in Table 1609.5.

V = Basic wind speed (miles per hour) determined in accordance with Section 1609.3; or

3. Buildings more than 35 feet (10670 mm) in *height* which have masonry wall lateral force-resisting systems.

In buildings that comply with one or more of the above criteria, masonry shall be designed in accordance with the engineered design provisions of Section 2101.1.1.

2101.2 Seismic requirements: Masonry shall comply with the **Hollow brick:** A masonry unit made of clay or shale whose net cross-sectional area in any plane parallel to the loadbearing

following requirements of Sections 2101.2.1 and 2101.2.2 based on the Seismic Performance Category assigned in Section 1610.1.7.

2101.2.1 Seismic Performance Category A: Masonry in buildings assigned to Seismic Performance Category A shall

comply with the requirements of Section 1610.3.6.1.2 and either Section 2101.1.1 or 2101.1.2.

2101.2.2 Seismic Performance Category B, C, D or E: Masonry in buildings assigned to Seismic Performance Category B, C, D or E shall comply with the requirements of Section 2101.2.1 and Chapter 10 of ACI 530/ASCE 5/TMS 402 listed in Chapter 35.

Exception: Building meeting the exception to Section 1610.3.5.2 shall comply with the requirements of Section 2101.2.1.

SECTION 2102.0 DEFINITIONS

2102.1 General: The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

Anchor: Metal rod, wire or strap that secures masonry to its structural support.

Architectural terra cotta: Plain or ornamental hard-burned plastic clay units, larger in size than brick, with glazed or unglazed ceramic finish. ¶

Area, gross cross-sectional: The areas delineated by the out-to-out dimensions of masonry in the plane under consideration.

Bed joint: The horizontal layer of mortar on which a masonry unit is laid.

Brick

Calcium silicate brick (sand lime brick): A building unit made of sand and lime.

Clay or shale: A solid masonry unit made of clay or shale, usually formed into a rectangular prism while in the plastic state and burned or fired in a kiln.

Concrete brick: A solid masonry unit having the approximate shape of a rectangular prism and composed of inert aggregate particles embedded in a hardened cementitious matrix.

surface is less than 75 percent of its gross cross-sectional area measured in the same plane.

Buttress: A projecting part of a masonry wall built integrally therewith to furnish lateral stability which is supported on proper foundations.

shall not be utilized in loadbearing walls or in assemblies with a required fire-resistance rating of more than 1 hour.

2310.2 General: Fireretardant-treated wood shall be any wood product which, when impregnated with chemicals by a pressure process in accordance with AWPA C20 or AWPA C27 listed in Chapter 35, or other means during manufacture, shall have, when tested in accordance with ASTM E84 listed in Chapter 35, a flame spread rating not greater than 25 when the test is continued for a period of 30 minutes, without evidence of significant progressive combustion; and the flame front shall not progress more than 10 1/2 feet (3048 mm) beyond the centerline of the burner at any time during the test.

Fireretardant-treated wood shall be dried to a moisture content of 19 percent or less for lumber and 15 percent or less for plywood before use.

2310.2.1 Strength modifications: Design values for untreated lumber, as specified in Section 2303.1, shall be adjusted for lumber that is pressure impregnated with fireretardant chemicals. Adjustments to the design values shall be based upon an approved method of investigation which takes into consideration the effects of the anticipated temperature and humidity to which the fireretardant-treated wood will be subjected, the type of treatment and redrying procedures.

2310.2.2 Labeling: Fireretardant-treated lumber and plywood shall bear the *label* of *approved agencies* in accordance with Section 1704.3.3. Such labels shall indicate compliance with the appropriate treating standard in accordance with Section 2310.2 and indicate compliance with Section 2310.2.1.

2310.2.3 Durability of roof sheathing: Documentation shall be submitted to the code official prior to the use of fireretardant-treated plywood as roof sheathing which provides reasonable assurance of satisfactory performance of the material. Documentation may include test results from an approved agency, proof of satisfactory past product performance or equivalent indicators of future product performance which address longevity of service under conditions of the proposed installation.

2310.3 Exposure to weather: Where fireretardant-treated wood is to be exposed to the weather, the material shall be further identified to indicate that there is not an increase in the listed flame spread classification after being weathered in accordance with ASTM D2898 listed in Chapter 35. Fireretardant-treated wood subjected to high-humidity conditions shall be identified by a label of an approved agency to indicate that the treated wood has a moisture content of not over 28 percent when tested at 92-percent relative humidity in accordance with ASTM D3201 listed in Chapter 35.

SECTION 2311.0 NATURALLY DURABLE AND PRESERVATIVE-TREATED WOOD

2311.1 Required: Where protection of wood members is required because of exposure to soil or weather, protection shall be provided by using naturally durable or *preservative-treated* wood as required by this section.

2311.2 Naturally durable wood: The term "naturally durable wood" refers to the heartwood of the following species with the exception that an occasional piece with corner sapwood is permitted if 90 percent or more of the width of each side on which it occurs is heartwood.

Decay resistant: Redwood, cedar, black locust and black walnut. Termite resistant: Redwood and Eastern red cedar.

2311.3 Preservative-treated wood: The term "preservative-treated wood" refers to wood (including plywood) pressure

2311.3.1 Labeling: All piles, poles, lumber and plywood which are required to be *preservative treated* shall bear the label of an *approved agency* that maintains continuing supervision, testing and inspection over the quality of the product. Quality-control inspection agencies for *preservative-treated* wood shall be certified as to competency and performance by an approved organization. Said label shall include the following information in a legible format: identifying mark of the inspection agency; the standard to which the product is treated; the identifying mark of the treating plant; and the purpose for which the product has been treated. The label shall be permanently affixed to each piece unless specifically waived by the code official.

2311.3.2 Moisture content: Where wood that is pressure treated with a water-borne *preservative* is used in enclosed locations where drying in service cannot readily occur, such wood shall be at a moisture content of 19 percent or less before being covered with insulation, interior wall finish, floor covering or other material.

2311.3.3 Fasteners: Fasteners for *preservative-treated* wood shall be of hot-dipped zinc-coated galvanized, stainless steel, silicon bronze, copper or other corrosion-resistant materials. Fasteners for wood foundations shall be as required in AFPA TR7 listed in Chapter 35.

2311.4 Wood used above ground: Wood installed above ground in the locations specified in Sections 2311.4.1 through 2311.4.6 shall be naturally durable wood or *preservative-treated* wood that uses water-borne *preservatives*, and shall be treated in accordance with AWPA C2 or C9 listed in Chapter 35 for above-ground use.

2311.4.1 Joists and girders: Where wood joists or the bottom of a wood structural floor without joists are closer than 18 inches (457 mm), or wood girders are closer than 12 inches (305 mm), to the exposed ground in crawl spaces or unexcavated areas located within the perimeter of the building foundation, the floor assembly (including posts, girders, joists and subfloor) shall be of approved naturally durable or *preservative-treated* wood.

2311.4.2 Framing: All wood framing members, including wood sheathing, which rest on exterior foundation walls and are less than 8 inches (203 mm) from exposed earth shall be of approved naturally durable or *preservative-treated* wood.

2311.4.3 Sleepers and sills: Sleepers and sills on a concrete or masonry slab which is in direct contact with earth shall be of approved naturally durable or *preservative-treated* wood.

2311.4.4 Girder ends: The ends of wood girders entering exterior masonry or concrete walls shall be provided with a 1/2-inch (13 mm) air space on top, sides and end, unless approved naturally durable or *preservative-treated* wood is used.

ELECTRIC WIRING, EQUIPMENT AND SYSTEMS

SECTION 2701.0 GENERAL

2701.1 Scope: The provisions of this chapter shall control the design and construction of all new installations of electrical conductors, equipment and systems in buildings or structures; and all *alterations* to existing wiring systems therein to ensure safety. All such installations shall conform to the provisions of NFPA 70 listed in Chapter 35.

2701.1.1 Amendments to NFPA 70: The following change shall be made to NFPA 70 listed in chapter 35 of this code.

Change subsection 336-5 (a) (1) to read:

(1) In any dwelling or structure exceeding four floors above grade.

2701.2 Exceptions: Electrical wiring shall not be installed in a building or structure, nor shall an *alteration* of an existing electric wiring system be made, until a permit has been issued therefor as required in Section 2703.0, except as provided for in Sections 2701.2.1 through 2701.2.3.

2701.2.1 Public service agencies: The provisions of this code shall not apply to installations for electric supply or communication agencies in the generation, transmission or distribution of electricity, or the operation of signals, or the transmission of intelligence, or to installations located within or on buildings or premises occupied exclusively by such agency, or on public thoroughfares.

2701.2.2 Railway utilities: The provisions of this code shall not apply to installations or equipment which are employed by a railway utility in the exercise of said railway utility's function as a public carrier, and which are located outdoors or in buildings occupied exclusively for that purpose.

2701.2.3 Radio and television transmitting stations: The provisions of this code shall not apply to electrical equipment used for radio and television transmissions, except equipment and wiring for power supply and the installations of towers and antennas, whether erected on buildings or on the ground.

2701.3 Electric installation standards: Conformance of installation of electric conductors and equipment to NFPA 70 listed in Chapter 35 shall be the prima facie evidence that such installations are reasonably safe for use in the service intended and in compliance with the provisions of this code.

2701.4 Electric equipment standards: The materials, appliances and other equipment that have been tested and listed in published reports of inspected electrical equipment by an *approved agency*, and installed in accordance with all instructions included as part of such listing, shall be approved as meeting the requirements of this code.

SECTION 2702.0 CONSTRUCTION DOCUMENTS

2702.1 General: *Construction documents* in sufficient detail shall be filed with the code official showing the location and capacity of all lighting facilities, electrically operated equipment and electrical circuits required for all service equipment of the building or structure except as modified by the code official.

2702.2 Items covered: All electrically controlled devices, including signal, communicating and lighting systems and associated wiring, wherever required under the provisions of this code, shall be shown on the *construction documents* for the building or structure for the following occupancies:

1. Places of public assembly and education and control of emergency lighting systems in accordance with Section 1024.0 and hazardous occupancies in Chapter 4.
2. *Stairway* and *exit* illumination in accordance with Chapter 12 and Section 1024.0; "Exit" sign lighting circuits in accordance with Section 1023.0; elevator car illumination in accordance with Section 3013.0.
3. Electrical equipment and control of heating, refrigerating and *ventilating* machinery and devices in accordance with the mechanical code listed in Chapter 35.
4. Fire alarm systems, *automatic fire detection* systems, fire department communications and supervisory services in accordance with Sections 918.0, 919.0 and 924.0.
5. Temporary construction lighting requirements equivalent to 3 footcandles (32 lux) in accordance with Section 3315.0.
6. Wiring of display *signs* in accordance with Section 3102.0; and radio and television towers and antennas in accordance with Sections 3108.0 and 3109.0.
7. Power control electric operation and circuit wiring of elevators and *escalators* in accordance with Chapter 30.
8. Illumination of toilets and bathrooms equivalent to 3 footcandles (32 lux) in accordance with Section 1205.1.1.

2702.3 Other authorities: Where required by local law or ordinance, the *construction documents* for electric wiring shall be approved by all authorities having jurisdiction.

SECTION 2703.0 PERMIT AND CERTIFICATE OF INSPECTION

2703.1 General: Electrical wiring or equipment shall not be installed within or on any building, structure or premises, nor shall any *alteration* be made in any such existing installation, without first securing approval and a permit from the code official except as provided for in Section 2703.2. It shall be

CHAPTER 28

MECHANICAL SYSTEMS

SECTION 2801.0 GENERAL

2801.1 Scope: The provisions of this chapter shall control the construction, inspection and maintenance of all mechanical equipment and systems in respect to structural strength, fire safety and operation.

Exception: This code shall not govern the installation, alteration and repair of water heaters, boilers and pressure vessels to the extent which they are regulated by the Virginia Boiler and Pressure Vessel Regulations (16 VAC 25-50-10 et seq.). However, the code official may require the owner of a structure to submit documentation to substantiate compliance with those regulations.

2801.1.1 Heating facilities: Heating facilities shall be provided in structures as follows:

1. 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 heating facilities capable of maintaining the room temperature at 65 degrees F. (18 degrees C.) during the period from October 1 to May 15 during the hours between 6:30 a.m. and 10:30 p.m. of each day and not less than 60 degrees F. (16 degrees C.) during other hours when measured at a point 3 feet (914 mm) above the floor and 3 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.
2. Every enclosed occupied work space in nonresidential structures shall be provided with heating facilities capable of producing sufficient heat during the period from October 1 to May 15 to maintain a temperature of not less than 65 degrees F. (18 degrees C.) during all working hours. The required room temperature shall be measured at a point 3 feet (914 mm) above the floor and 3 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.

2801.2 Mechanical code: All mechanical equipment and systems shall be constructed, installed and maintained in accordance with the mechanical code listed in Chapter 35.

SECTION 2802.0 CONSTRUCTION DOCUMENTS

2802.1 General: The *construction documents* for the installation, repair, extension or removal of any mechanical equipment or system shall be submitted in accordance with the mechanical code listed in Chapter 35, and a permit shall be secured prior to the commencement of any work.

2802.2 Matter covered: The *construction documents* shall show in sufficient detail all applicable features and clearances of the appliances and systems, including: size and type of apparatus; construction of flue, stack or chimney; stack connections; type of fuel; method of operation; and the method of compliance with all regulations for the class and type of equipment installed.

2802.3 Details: An application for permit shall be accompanied by *construction documents* complying with the provisions of the mechanical code listed in Chapter 35 before a permit shall be issued for the mechanical equipment or system. The *construction documents* shall be drawn to a scale of not less than 1/8 inch to the foot (1:100), and shall show the location and arrangement of all equipment and distribution elements including safeties and pressure-controlling devices.

SECTION 2803.0 FEES

2803.1 General: A permit to begin work for new construction or *alteration* shall not be issued until the prescribed application and permit fees have been paid, nor shall an amendment to a permit necessitating an additional fee because of the additional work involved be issued until the additional fee has been paid.

SECTION 2804.0 INSPECTIONS AND TESTS

2804.1 Inspection: All mechanical equipment and systems requiring a permit shall be inspected in accordance with the mechanical code listed in Chapter 35 and shall not be placed in operation until having been tested and approved.

2804.2 Concealment: It shall be unlawful for owners, contractors or workers to lath over or in any way conceal any piping, outlet boxes or other parts of the mechanical equipment or system requiring a permit until an inspection has been made thereof and due notice has been given that the work has been approved.

2804.3 Defects and repairs: Upon inspection or reinspection of a mechanical system, any defects or deficiencies which require repair to insure safe operation shall be rectified before the system is placed in service.

2804.4 Power to deem unsafe: A system or any part thereof that is found to be unsafe to life or property, shall be deemed unsafe and shall not be restored to service until such system has been made safe and approved.

SECTION 2805.0 PLENUMS

2805.1 General: The term "plenum" shall mean an enclosed portion of the building structure which forms part of an air distribution system and is designed to allow the movement of air. Supply, return, exhaust, relief and *ventilation* air plenums shall be limited to uninhabited crawl spaces, areas above a ceiling or below the floor, or *attic* spaces and mechanical equipment rooms. The location of supply and return air plenums shall also comply with Section 1005.7. Plenums shall be limited to one *fire area*. Fuel-fired equipment shall not be installed within a plenum. In buildings of Type 1 or 2 construction, all plenums shall be noncombustible and shall comply with Section 2805.2. In buildings of Type 3, 4 or 5 construction, noncombustible plenums in accordance with Section 2805.2, combustible plenums in accordance with Section 2805.3, and stud and joist space plenums in accordance with Section 2805.4, shall be permitted.

2805.2 Noncombustible plenums: Plenums shall be constructed with noncombustible material. Combustible material shall not be exposed within a plenum except as permitted in Sections 2805.2.1 through 2805.2.6.

2805.2.1 Pipe: Pipe shall be noncombustible except that plastic fire *sprinkler* piping in wet pipe systems shall be permitted where the piping has a peak optical density not greater than 0.50, an average optical density not greater than 0.15 and a flame spread not greater than 5.0 feet (1524 mm) when tested in accordance with UL 1887 listed in Chapter 35. Piping shall bear the *label* of an *approved agency*.

USBC AMENDMENT

CHAPTER 29

PLUMBING SYSTEMS

SECTION 2901.0 GENERAL

2901.1 Scope: The design and installation of plumbing systems, including sanitary and storm drainage, sanitary facilities, water supplies and storm water and sewage disposal in buildings, shall comply with the requirements of this chapter and the plumbing code listed in Chapter 35. Water supply sources and sewage disposal systems are regulated and approved by the Virginia Department of Health. Plumbing fixtures shall be connected to an approved water supply source and to an approved sanitary sewer or private sewage disposal system. Approval of pumping and electrical equipment shall be the responsibility of the code official.

SECTION 2902.0 CONSTRUCTION DOCUMENTS

2902.1 Required: Prior to the issuance of any permit, *construction documents* for the installation, *alteration* or *addition* to the plumbing system of any building, structure or premises shall be submitted to the code official for approval. The *construction documents* shall show in sufficient detail: the layout and spacing of fixtures; the size, material and location of all building and storm sewers and drains; and the soil, waste, vent and water supply piping.

2902.2 Construction documents: *Construction documents* drawn to a scale of not less than 1/8 inch to the foot (1:100) of each floor and of a typical floor shall be filed in triplicate indicating the complete plumbing system, all plumbing fixtures and all water supply piping, together with building sections showing vertical and diagrammatic elevations of the soil, waste, vent and water supply lines with traps and valves, and the location and size of the public sewer or other disposal system.

2902.3 Exemptions: The filing of *construction documents* shall not be required for minor repairs as defined in the plumbing code listed in Chapter 35, or for the installation or *alteration* of plumbing and drainage systems in buildings or structures herein specifically exempted, such as open sheds for storage purposes, isolated *private garages* without sanitary fixtures, temporary sanitary installations

required under the provisions of Chapter 33 for construction operations, and temporary installations for exhibition purposes where not designed for sanitary utilization and not directly connected to a sewage system.

SECTION 2903.0 SEWER AND WATER SUPPLY DATA

2903.1 Public sewer: The *construction documents* for new plumbing systems or *alterations* to existing plumbing systems shall be accompanied by a diagram showing the relative elevation of the lowest fixture and the top of the public sewer referred to in the established datum of the jurisdiction where such public sewer is available. The *construction documents* shall show the size, number and location of all new sewer connections.

2903.2 Public water main: Where the installation of a water distribution system or the replacement or *alteration* of an existing water supply system is contemplated, the plumbing *construction documents* shall show the location and size of all water lines and branches involved, all fixtures or other devices to be supplied, and the minimum water pressure in the main in front of the building or structure.

2903.3 Identical structures: Where the same set of plumbing or water supply piping *construction documents* is utilized for two or more buildings or structures which are similar and which are located on adjoining lots under the same ownership, the applications for permission to construct or alter shall be filed simultaneously.

SECTION 2904.0 PERMITS AND CERTIFICATES OF APPROVAL

2904.1 Approved construction documents: Before any work is commenced on plumbing installations which require the submission of *construction documents*, a permit shall be secured from the code official and such permit, together with a stamped and approved copy of the *construction documents*, shall be available at the construction site at all times.

2904.2 Amended construction documents: All plumbing installations shall be installed in accordance with the approved *construction documents*, and any changes made during construction which are not in compliance with the approved *construction documents* shall be resubmitted for approval on an amended set of *construction documents*.

2904.4 Notice of commencement and completion: The code official shall be notified of the commencement of any plumbing work and when such work is completed or ready for inspection. All such notices shall be confirmed in *writing* and shall be part of the official record of the application and permit.

2904.5 Violations: If work is installed contrary to the approved *construction documents* in any essential details, the owner, general contractor and the master plumber shall jointly and separately be deemed to be in violation of this code and subject to the penalties provided in Section 117.0 until amended *construction documents* are filed and approved.

2904.3 Certificate of approval: After the prescribed tests and final inspection indicate that the work complies in all respects with the provisions of the plumbing code listed in Chapter 35, a *certificate* of approval and acceptance shall be issued by the code official.

3107.5.2 Enclosures below base flood elevation: All spaces below the base flood elevation in a high-hazard zone shall not be used for human occupancy and shall be free of obstruction except as permitted herein:

1. Mat or raft foundations, piling, pile caps, bracing, grade beams and columns which provide structural support for the building.
2. Entrances and *exits* which are necessary for required ingress and *means of egress*.
3. Incidental storage of portable or mobile items readily moved in the event of a storm.
4. Walls and partitions are permitted to enclose all or part of the space below the elevated floor, provided that such walls and partitions are not part of the structural support of the building and are constructed with insect screening, open wood lattice, or nonsupporting walls designed to break away or collapse with causing collapse, displacement or other structural damage to the elevated portion of the building or supporting foundation system due to the effect of *wind loads* as specified in Section 1609.0 and *water loads* as specified in Section 1612.0 acting simultaneously. Any such nonsupporting solid wall shall be certified as specified in Section 3107.12.3.

3107.5.3 Foundations: All buildings or structures erected in high-hazard zones shall be supported on pilings or columns and shall be adequately anchored to such pilings or columns. The piling shall have adequate soil penetrations to resist the combined wave and *wind loads* (lateral and uplift) to which such piles are likely to be subjected during a flood to the base flood elevation. Pile embedment shall include consideration of decreased resistance capacity caused by scour of soil strata surrounding the piling. Pile system design and installation shall also be made in accordance with the provisions of Sections 1816.0 and 1817.0. Mat or raft foundations which support columns shall not be permitted where soil investigations required in accordance with Section 1802.1 indicate that soil material under the mat or raft is subject to scour or erosion from wave-velocity flow conditions.

3107.6 Protection of mechanical and electrical systems: New and replacement electrical equipment and heating, *ventilating*, air conditioning and other service equipment shall be either placed above the base flood elevation or protected so as to prevent water from entering or accumulating within the system components during floods up to the base flood elevation in accordance with the mechanical code listed in Chapter 35. Installation of electrical wiring and outlets, switches, junction boxes and panels below the base flood elevation shall conform to the provisions of NFPA 70 listed in Chapter 35 for location of such items in wet locations. Duct insulation subject to water damage shall not be installed below the base flood elevation.

3107.7 Construction materials, methods and practices: All buildings or structures erected in flood-hazard zones (A Zones) or in high-hazard zones (V Zones) shall be constructed with materials resistant to flood damage and be constructed by methods and practices that minimize flood damage. Construction materials shall

3107.12.3 High-hazard construction: Where buildings or structures are to be constructed in accordance with Section 3107.5, the code official shall require that a *registered design professional* provide *construction documents* showing details of foundation support and connection components which are used in meeting the requirements of Section 3107.5.3. Where d structures are 55.4(m)11solieeting tort seting tTDpa.73l technr3107. of cobe-0(n

be resistant to water damage in accordance with the provisions of Sections 1808.0, 1810.2, 1813.4, 2307.2, 2309.1, 2311.4, 2311.6 and 2503.4.

3107.8 Manufactured homes: New or replacement manufactured homes to be located in any hazard zone shall be placed in accordance with the applicable elevation requirements of Sections 3107.4.1 and 3107.5.1.

Exception: Manufactured homes installed on sites in an existing manufactured home park or subdivision shall be permitted to be placed 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.

3107.9 Water supply and sanitary sewage systems: New and replacement water supply systems shall be designed to minimize infiltration of floodwaters into the systems in accordance with the provisions of the plumbing code listed in Chapter 35. New and replacement sanitary sewage systems shall be designed to minimize infiltration of floodwaters into the systems and discharges from the systems into floodwaters in accordance with the provisions of the plumbing code listed in Chapter 35.

3107.10 Alterations and repairs: *Alterations* and repairs to buildings located in any hazard zone shall require code compliance with Sections 118.0 and 3404.0 except that in the case of damages or cost of reconstruction or restoration in excess of 50 percent of the replacement cost of the building, exclusive of foundations, such structure shall comply in all respects with the requirements of this section.

3107.11 Increases in building height and floor area: Any increases in *height* or *floor area* of a building in any hazard zone shall be in accordance with Section 3403.0.

3107.12 Certifications: Certifications shall be submitted in accordance with Sections 3107.12.1 through 3107.12.3.

3107.12.1 As-built elevation certifications: A licensed land surveyor or *registered design professional* shall certify the actual elevation (in relation to mean sea level) of the lowest structural member required to be elevated by the provisions of this section.

3107.12.2 Water-resistant construction: Where buildings or structures are to be constructed in accordance with Section 3107.4.4, the code official shall require that a *registered design professional* provide *construction documents* showing details of floor, wall and foundation support components, *loading* computations and other essential technical data used in meeting the conditions of Section 3107.4.4. The *construction documents* shall be accompanied by a statement bearing the signature of the *registered design professional* indicating that the design and proposed methods of construction are in accordance with all applicable provisions of Section 3107.4.4.

registered design professional indicating that the design and

CHAPTER 34**EXISTING STRUCTURES****SECTION 3401.0 GENERAL**

3401.1 Scope: The provisions of this chapter shall control the *alteration*, repair, *addition* and *change of occupancy* of existing structures. *Alterations*, repairs, *additions* and *changes of occupancy* to existing structures shall comply with Sections 3403.0 through 3407.0 or with the requirements for compliance alternatives in accordance with Section 3408.0.

3401.2 Maintenance and repairs: The owner shall be responsible for the maintenance and repair of structures in accordance with the maintenance requirements of this code, the property maintenance code and the fire prevention code listed in Chapter 35 of this code. Equipment, systems, devices, and safeguards relating to the construction of the structure and equipment therein, which were provided when constructed shall be maintained. Such structures, if subject to the state fire and public building regulations in effect prior to March 31, 1986, shall also be maintained in accordance with those regulations. The provisions in the property maintenance code listed in chapter 35 of this code for unsafe structures (Sections PM-108.0, PM-109.0 and PM-110.0) shall be considered part of the provisions of this code for the maintenance of existing structures.

3401.2.1 Amendments of the property maintenance code:

The following changes shall be made to the property maintenance code listed in Chapter 35:

1. Change subsection PM-101.1 to read as follows:

PM-101.1 Title and use: These regulations shall be known as the Property Maintenance Code hereinafter referred to as "this code." Any provisions of this code which are in conflict with, or exceed the scope of, the Virginia Uniform Statewide Building Code shall be invalid.

2. Add the date "April 1," to the first bracketed [DATE] area and "December 1" to the second bracketed [DATE] area in subsection PM-304.15.
3. Add the date "October 1" to the first bracketed [DATE] area and May 15" to the second bracketed [DATE] area in subsection PM-602.2.1.
4. Add the date "October 1" to the first bracketed [DATE] area and "May 15" to the second bracketed [DATE] area in subsection PM-602.3.
5. Add subsection PM-606.3 to read as follows:

PM-606.3 Inspection standard: Routine and periodic inspections shall be performed in accordance with Part X of ASME A-17.1 listed in Chapter 8. The code official may also provide for such inspection by an approved agency or through agreement with other local certified elevator inspectors. An approved agency includes any individual, partnership or corporation who has met the certification requirements established by the Virginia Certification Standards.)13 VAC 5-21-10 et seq.).

3401.3 Compliance with other codes: Alterations, repair,

additions and changes of occupancy to existing structures shall comply with the provisions for alterations, repair, *additions* and changes of occupancy in the plumbing and mechanical codes listed in Chapter 35.

3401.4 Periodic testing: The owner shall be responsible for periodic tests and inspections of all equipment where required by this code, the property maintenance code and the fire prevention code listed in Chapter 35.

SECTION 3402.0 GENERAL REQUIREMENTS

3402.1 Application: In addition to the other requirements of this chapter, this section shall apply to all existing structures.

3402.2 Replacement glass: Any replacement glass installed in buildings constructed prior to the initial effective date of this code shall meet the quality and installation standards for glass installed in new buildings as are in effect at the time of installation.

3402.3 Smoke detectors in college and universities: College and university buildings containing dormitories for sleeping purposes shall be provided with battery-powered or AC- powered smoke detector devices installed therein in accordance with code in effect on July 1, 1982. After January 1, 1984, all college and university dormitories shall have installed and use due diligence in maintaining in good working order such detectors regardless of when the building was constructed.

The chief administrative officer of the college or university shall obtain a certificate of compliance from the building official of the locality in which the college or university is located or in the case of state-owned buildings, from the Director of the Virginia Department of General Services.

The provisions of this section shall not apply to any dormitory at a state-supported military college or university which is patrolled twenty-four hours a day by military guards.

3402.4 Smoke detectors in certain juvenile care facilities: Battery-powered or AC-powered smoke detectors shall be installed and maintained in all local and regional detention homes, group homes, and other residential care facilities for children and juveniles which are operated by or under the auspices of the Virginia Department of Juvenile Justice, regardless of when the building was constructed, by July 1, 1986, in accordance with the provisions of this code that were in effect on July 1, 1984. Administrators of such homes and facilities shall be responsible for the installation and maintenance of the smoke detector devices.

3402.5 Smoke detectors for the deaf and hearing-impaired: Smoke detectors providing in effective intensity of not less than 100 candela to warn a deaf or hearing-impaired individual shall be provided, upon request by the occupant to the landlord or proprietor, to any deaf or hearing-impaired occupant of any of the following occupancies, regardless of when constructed:

1. All dormitory buildings arranged for the shelter and sleeping accommodation of more than twenty individuals;
2. All multiple-family dwellings have more than two dwelling

units, including all dormitories, boarding and lodging

houses arranged for shelter and sleeping accommodations or more than five individuals; or

3. All buildings arranged for use of one-family or two-family dwelling units.

A tenant shall be responsible for the maintenance and operation of the smoke detector in the tenant's unit.

A hotel or motel shall have available no fewer than one such smoke detector for each seventy unit or portion thereof, except that this requirement shall not apply to any hotel or motel with fewer than thirty-five units. The proprietor of the hotel or motel shall post in a conspicuous place at the registration desk or counter a permanent sign stating the availability of smoke detectors for the hearing-impaired. Visual detectors shall be provided for all meeting rooms for which an advance request has been made.

3402.6 Smoke detectors in adult care residences, adult day care centers and nursing homes and facilities: Battery-powered or AC-powered smoke detector devices shall be installed in all adult care residence and adult day care centers licensed by the Virginia Department of Social Services, regardless of when the building was constructed. The location and installation of the smoke detectors shall be determined by the provisions of this code in effect on October 1, 1990.

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

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

Fire alarm or fire detector systems, or both, as required by the edition of this code in effect on October 1, 1990 shall be installed in all nursing homes and nursing facilities licensed by the Virginia Department of Health by August 1, 1994 and shall be maintained in good working order.

3402.7 Fire suppression system in nursing home and facilities: Fire suppression systems as required by the edition of this code in effect on October 1, 1990 shall be installed in all nursing home and nursing facilities licensed by the Virginia Department of Health by January 1, 1993, regardless of when such facilities or institutions were constructed, and shall be maintained in good working order. Units consisting of certified long-term care beds located on the ground floor of general hospitals shall be exempt from the requirements of this section.

3402.8 Lead-based paint: Interior and exterior painted surfaces of dwellings and child and day care facilities, including fences and outbuildings, which contain lead levels equal to or greater than 1.0 milligram per square centimeter or in excess of 0.50-percent lead by weight shall be maintained in a condition free from peeling, chipping and flaking paint or removed or covered in an approved manner. Any surface to be covered shall first be marked with warnings as to the lead content of such surface.

3402.9: Deleted.

3402.10 Fire suppression systems in hospitals: Fire suppression systems shall be installed in all hospitals licensed by the Virginia Department of Health as required by the edition of this code in effect on October 1, 1995, regardless of when such facilities were constructed, and shall be maintained in good working order.

3402.11 Identification of handicapped parking spaces by above grade signs: All parking spaces reserved for the use of handicapped persons shall be identified by above grade signs,

regardless of whether identification of such spaces by above grade signs was required when any particular space was reserved for the use of handicapped persons. A sign or symbol painted or otherwise displayed on the pavement of a parking spaces shall not constitute an above grade sign. Any parking space not identified by an above grade sign shall not be a parking space reserved for the handicapped within the meaning of this section.

All above grade handicapped parking space signs shall have the bottom edge of the sign no lower than 4 feet (1219 mm) nor higher than 7 feet (2133 mm) above the parking surface. Such signs shall be designed and constructed in accordance with the provisions of chapter 11 of this code.

3402.12 Sprinkler systems and smoke detectors in hotels and motels: An automatic sprinkler system and smoke detectors shall be installed in hotels and motels as required by the edition of this code in effect on March 1, 1990 by the dates indicated, regardless of when constructed, and shall be maintained in good working order.

SECTION 3403.0 ADDITIONS

3403.1 Compliance: An *addition* to a structure shall conform to the requirements for a new structure without requiring the existing structure to comply with the requirements of this code for new construction and shall not result in an increase in hazard to the occupants. Any existing structure plus *additions* shall comply with the height and area requirements of Section 503.0. Existing *fire areas* increased by the *addition* shall comply with Chapter 9. Any *alterations* made to the existing structure shall comply with the requirements of this chapter and Chapter 1.

SECTION 3404.0 ALTERATIONS

3404.1 Approval: The provisions of this chapter shall not be deemed to prohibit *alterations* within the limitations of Section 102.2, provided that an unlawful *change of occupancy* is not involved.

3404.2 Requirements: An *alteration* to any structure shall conform to the code requirements for a new structure and shall not result in an increase in hazard to the occupants. Portions of the structure not altered and not affected by the *alteration* are not required to comply with the code requirements for a new structure. The installation of material and equipment that is neither required nor prohibited need only comply with the USBC requirements that regulate a safe installation. Material and equipment may be replaced with material and equipment of a similar kind or with greater capacity in the same location.

3404.2.1 HPM facilities: *Alterations* to HPM facilities shall comply with Section 416.0.

3404.2.2 Means of egress: The *means of egress* shall comply with Section 1001.2.

3404.2.3 Structural loads: The structural *loads* shall comply with Sections 1614.4 and 1614.5.

3404.2.4 Electrical: The design and construction of *alterations* to existing wiring systems shall comply with Section 2701.1.

3404.2.5 Sewer and water supply: The design and construction of *alterations* to existing plumbing systems shall comply with Section 2903.0.

3404.2.6 Signs: Alterations to signs shall comply with Section 3102.4.2.

SECTION 3405.0 CHANGE OF OCCUPANCY

3405.1 Approval: A *change of occupancy* shall not be made to any structure which will subject the structure to any special provisions of this code without approval of the code official. The code official shall certify that such structure meets the intent of the provisions of law governing building construction for the proposed new occupancy, and that such *change of occupancy* does not result in any greater hazard to the public safety or welfare.

SECTION 3406.0 HISTORIC STRUCTURES

3406.1 Compliance: The provisions of this code relating to the construction, repair, *alteration*, *addition*, restoration and movement of structures shall not be mandatory for existing buildings and structures identified and classified by the federal, state or local government authority as historic buildings where such buildings are judged by the code official to be safe and in the interest of public health, safety and welfare regarding any proposed construction, *alteration*, repair, *addition* and relocation.

SECTION 3407.0 MOVED STRUCTURES

3407.1 Compliance: Structures moved into or within the jurisdiction shall comply with the provisions of this code for new structures or shall comply with Section 3408.0 provided that the siting and *fire separation distance* comply with the requirements for new structures.

SECTION 3408.0 COMPLIANCE ALTERNATIVES

3408.1 Compliance: The provisions of this Section are intended to maintain or increase the current degree of public safety, health and general welfare in existing buildings while permitting repair, *alteration*, *addition* and *change of occupancy* without requiring full compliance with Chapter 2 through 33, or Sections 3403.0 through 3407.0, except where compliance with other provisions of this code in specifically required in this section.

3408.2 Applicability: The provisions in Sections 3408.2.1 through 3408.2.5 shall apply to existing occupancies that will continue to be, or are proposed to be in Use Groups A, B, E, F, M, R and S. These provisions shall not apply to buildings with occupancies in Use Group H or I.

3408.2.1 Change in use group: Where an existing building is changed to a new use group classification and this section is applicable, the provisions of this section for the new use group shall be used to determine compliance with this code.

3408.2.2 Part change in use group: Where a portion of the building is changed to a new use group classification, and that portion is separated from the remainder of the building with *fire separation assemblies* having a fire resistance rating as required by Table 313.1.2 for the separate use groups, or with approved compliance alternatives, the portion changed shall

be made to conform to the provisions of this section.

Where a portion of the building is changed to a new use group classification, and that portion is not separated from the remainder of the building with *fire separation assemblies* having a fire resistance rating as required by Table 313.1.2 for the separate use groups, or with approved compliance alternatives, the provisions of this section which apply to each use group shall apply to the entire building. Where there are conflicting provisions, those requirements which secure the greater public safety shall apply to the entire building or structure.

3408.2.3 Additions: *Additions* to existing buildings shall comply with all of the requirements of this code for new construction. The combined *height* and *area* of the existing building and the new *addition* shall not exceed the *height* and *area* allowed by Section 503.0. Where a *fire wall* that complies with Section 707.0 is provided between the *addition* and the existing building, the *addition* shall not be considered a separate building.

3408.2.4 Alterations and repairs: An existing building or portion thereof which does not comply with the requirements of this code for new construction shall not be *altered* or repaired in such a manner that results in the building being less safe or sanitary than such building is currently. If, in the *alteration* or repair, the current level of safety or sanitation is to be reduced, the portion *altered* or repaired shall conform to the requirements of Chapters 2 through 12 and Chapters 14 through 33.

3408.2.5 Accessibility requirements: All portions of the building proposed for *change of occupancy* shall conform to the accessibility provision of Section 1110.0.

3408.3 Acceptance: For repairs, *alterations*, *additions* and *changes of occupancy* to existing buildings that are evaluated in accordance with this section, compliance with this section shall be accepted by the code official.

3408.3.1 Hazards: Where the code official determines that an unsafe condition exists, as provided for in Section 119.0, such unsafe conditions shall be abated in accordance with Section 119.0.

3408.3.2 Compliance with other codes: All buildings that are evaluated in accordance with this section shall comply

