**Florida Supplement to the 2015 IRC**

**ICC EDIT VERSION**

**Note 1**: Throughout the document, change International Building Code to Florida Building Code, Building; change the International Energy Conservation Code tothe Florida Building Code, Energy Conservation; change the International Existing Building Code to Florida Building Code, Existing Building; change the International Fire code to Florida Fire Prevention Code; change International Fuel Gas Code to Florida Building Code, Fuel Gas; change the International Mechanical Code to Florida Building Code, Mechanical; change the International Plumbing Code to Florida Building Code, Plumbing; change the International Residential Code to Florida Building Code, Residential.

**PREFACE**

**~~Introduction~~**

**~~Development~~**

**History**

The State of Florida first mandated statewide building codes during the 1970s at the beginning of the modern construction boom. The first law required all municipalities and counties to adopt and enforce one of the four state-recognized model codes known as the “state minimum building codes.” During the early 1990s a series of natural disasters, together with the increasing complexity of building construction regulation in vastly changed markets, led to a comprehensive review of the state building code system. The study revealed that building code adoption and enforcement was inconsistent throughout the state and those local codes thought to be the strongest proved inadequate when tested by major hurricane events. The consequences of the building codes system failure were devastation to lives and economies and a statewide property insurance crisis. The response was a reform of the state building construction regulatory system that placed emphasis on uniformity and accountability.

The 1998 Florida Legislature amended Chapter 553, *Florida Statutes* (FS), Building Construction Standards, to create a single state building code that is enforced by local governments. As of March 1, 2002, the *Florida Building Code*, which is developed and maintained by the Florida Building Commission, supersedes all local building codes. The *Florida Building Code* is updated every three years and may be amended annually to incorporate interpretations and clarifications.

**Scope**

The *Florida Building Code* is based on national model building codes and national consensus standards which are amended where necessary for Florida’s specific needs. However, code requirements that address snow loads and earthquake protection are pervasive; they are left in place but should not be utilized or enforced because Florida has no snow load or earthquake threat. The code incorporates all building construction-related regulations for public and private buildings in the State of Florida other than those specifically exempted by Section 553.73, *Florida Statutes*. It has been harmonized with the *Florida Fire Prevention Code*, which is developed and maintained by the Department of Financial Services, Office of the State Fire Marshal, to establish unified and consistent standards.

The base codes for the Sixth edition (2017) of the *Florida Building Code* include: the International Building Code®, 2015 edition; the International Plumbing Code®, 2015 edition; the International Mechanical Code®, 2015 edition; the International Fuel Gas Code®, 2015 edition; the International Residential Code®, 2015 edition; the International Existing Building Code®, 2015 edition; the International Energy Conservation Code, 2015; the National Electrical Code, 2014 edition; substantive criteria from the American Society of Heating, Refrigerating and Air-conditioning Engineers’ (ASHRAE) Standard 90.1-2013. State and local codes adopted and incorporated into the code include the *Florida Building Code, Accessibility,* and special hurricane protection standards for the High-Velocity Hurricane Zone.

The code is composed of nine main volumes: the *Florida Building Code, Building*, which also includes state regulations for licensed facilities; the *Florida Building Code, Plumbing*; the *Florida Building Code, Mechanical;* the *Florida Building Code, Fuel Gas*; the *Florida Building Code, Existing Building*; the *Florida Building Code, Residential;* the *Florida Building Code, Energy Conservation*; the *Florida Building Code, Accessibility* and the *Florida Building Code, Test Protocols for High-Velocity Hurricane Zones*. Chapter 27 of the *Florida Building Code, Building*, adopts the *National Electrical Code*, NFPA 70, by reference.

Under certain strictly defined conditions, local governments may amend requirements to be more stringent than the code. All local amendments to the *Florida Building Code* must be adopted by local ordinance and reported to the Florida Building Commission then posted on [www.floridabuilding.org](http://www.floridabuilding.org) in Legislative format for a month before being enforced. Local amendments to the *Florida Building Code* and the *Florida Fire Prevention Code* may be obtained from the Florida Building Commission web site, or from the Florida Department of Business and Professional Regulation or the Florida Department of Financial Services, Office of the State Fire Marshal, respectively.

**Adoption and Maintenance**

**[Note to editor: Replace ICC “Adoption” and “Maintenance” with the following text:]**

The *Florida Building Code* is adopted and updated with new editions triennially by the Florida Building Commission. It is amended annually to incorporate interpretations, clarifications and to update standards. Minimum requirements for permitting, plans review and inspections are established by the code, and local jurisdictions may adopt additional administrative requirements that are more stringent. Local technical amendments are subject to strict criteria established by Section 553.73, *F.S.* They are subject to Commission review and adoption into the code or repeal when the code is updated triennially and are subject to appeal to the Commission according to the procedures established by Section 553.73, *F.S*.

Eleven Technical Advisory Committees (TACs), which are constituted consistent with American National Standards Institute (ANSI) Guidelines, review proposed code changes and clarifications of the code and make recommendations to the Commission. These TACs whose membership is constituted consistent with American National Standards Institute (ANSI) Guidelines include: Accessibility; Joint Building Fire (a joint committee of the Commission and the State Fire Marshal); Building Structural; Code Administration/ Enforcement; Electrical; Energy; Mechanical; Plumbing and Fuel Gas; Roofing; Swimming Pool; and Special Occupancy (state agency construction and facility licensing regulations).

The Commission may only issue official code clarifications using procedures of Chapter 120, *Florida Statutes*. To obtain such a clarification, a request for a Declaratory Statement (DEC) must be made to the Florida Building Commission in a manner that establishes a clear set of facts and circumstances and identifies the section of the code in question. Requests are analyzed by staff, reviewed by the appropriate Technical Advisory Committee, and sent to the Florida Building Commission for action. These interpretations establish precedents for situations having similar facts and circumstances and are typically incorporated into the code in the next code amendment cycle. Non-binding opinions are available from the Building Officials Association of Florida’s web site (www.BOAF.net) and a Binding Opinion process is available online at www.floridabuilding.org.

**Code Development Committee Responsibilities (Letter Designations in Front of Section Numbers)**

**[Note to editor: Use paragraphs 1 specific to this code through the code committee descriptors. Delete the remaining text in this section.]**

**Marginal Markings**

Solid vertical lines in the margins within the body of the code indicate a technical change from the requirements of the 2009 edition. Deletion indicators in the form of an arrow (**→**) are provided in the margin where an entire section, paragraph, exception or table has been deleted or an item in a list of items or table has been deleted.

A single asterisk [\*] placed in the margin indicates that text or a table has been relocated within the code. A double asterisk [\*\*] placed in the margin indicates that the text or table immediately following it has been relocated there from elsewhere in the code. ~~The following table indicates such relocations in the 2015 Edition of the~~ *~~International Residential Code~~*. **[Delete table]**

Dotted vertical lines in the margins within the body of the code indicate a change from the requirements of the base codes to the *Florida Building Code, 6th Edition (2017)* effective ???.

Sections deleted from the base code are designated “Reserved” in order to maintain the structure of the base code.

**Italicized Terms**

**[No change to I Code text.]**

**Acknowledgments**

The *Florida Building Code* is produced through the efforts and contributions of building designers, contractors, product manufacturers, regulators and other interested parties who participate in the Florida Building Commission’s consensus processes, Commission staff and the participants in the national model code development processes.

**[Note to Editor: Delete the following ICC text in its entirety:]**

**~~Effective Use of the …~~**

**~~Legislation~~**

***CHAPTER 1, SCOPE AND ADMINISTRATION***

**R101.1 Title.** These provisions shall be known as the *~~Residential Code for One- and Two-family Dwellings~~* ~~of~~ **~~[NAME OF JURISDICTION]~~** *Florida Building* *Code, Residential*, and shall be cited as such and will be

referred to herein as “this code.”

***Section R101.2 Scope. Change to read as follows:***

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

**Exceptions:**

1.- 2. (No change)

3. Existing buildings undergoing repair, alteration, ~~or~~ additions, ~~and~~ orchange of occupancy shall comply with the *Florida Building Code, Existing Building..*

**R101.2.1** The provisions of Chapter 1, *Florida Building Code, Building,* shall govern the administration and enforcement of the *Florida Building Code, Residential.*

***Section R101.3 Intent. Change to read as follows:***

**R101.3 Intent.** ~~The purpose of this code is to establish minimum requirements to safeguard the public safety, health and general welfare through affordability, structural strength, means of egress facilities, stability, sanitation, light and ventilation, energy conservation and safety to life and property from fire and other hazards attributed to the built environment and to provide safety to fire fighters and emergency responders during emergency operations.~~ Reserved.

***Sections R102 through R114. Change to read as follows:***

**SECTION R102**

**APPLICABILITY**

 **RESERVED**

**~~R102.1 General.~~** ~~Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.~~

**~~R102.2 Other laws.~~** ~~The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law.~~

**~~R102.3 Application of references.~~** ~~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.~~

**~~R102.4 Referenced codes and standards.~~** ~~The codes and standards referenced in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections R102.4.1 and R102.4.2.~~  **~~Exception:~~** ~~Where enforcement of a code provision would violate the conditions of the~~ *~~listing~~* ~~of the~~ *~~equipment~~* ~~or~~ *~~appliance,~~* ~~the conditions of the~~ *~~listing~~* ~~and manufacturer’s instructions shall apply.~~

**~~R102.4.1 Differences.~~** ~~Where differences occur between provisions of this code and referenced codes and standards, the provisions of this code shall apply.~~

**~~R102.4.2 Provisions in referenced codes and standards.~~** ~~Where the extent of the reference to a referenced code or standard includes subject matter that is within the scope of this code, the provisions of this code, as applicable, shall take precedence over the provisions in the referenced code or standard.~~

**~~R102.5 Appendices.~~** ~~Provisions in the appendices shall not apply unless specifically referenced in the adopting ordinance.~~

**~~R102.6 Partial invalidity.~~** ~~In the event any part or provision of this code is held to be illegal or void, this shall not have the effect of making void or illegal any of the other parts or provisions.~~

**~~R102.7 Existing structures.~~** ~~The legal occupancy of any structure existing on the date of adoption of this code shall be permitted to continue without change, except as is specifically covered in this code, the~~ *~~International Property Maintenance Code~~* ~~or the~~ *~~International Fire Code,~~* ~~or as is deemed necessary by the~~ *~~building official~~* ~~for the general safety and welfare of the occupants and the public.~~

**~~R102.7.1 Additions, alterations or repairs.~~** *~~Additions,~~**~~alterations~~* ~~or repairs to any structure shall conform to the requirements for a new structure without requiring the existing structure to comply with all of the requirements of this code, unless otherwise stated.~~ *~~Additions,~~**~~alterations~~* ~~or repairs shall not cause an existing structure to become unsafe or adversely affect the performance of the building.~~

**SECTION R103**

**DEPARTMENT OF BUILDING SAFETY**

**RESERVED**

**~~R103.1 Creation of enforcement agency.~~** ~~The department of building safety is hereby created and the official in charge thereof shall be known as the~~ *~~building official.~~*

**~~R103.2 Appointment.~~** ~~The~~ *~~building official~~* ~~shall be appointed by the~~ *~~jurisdiction.~~*

**~~R103.3 Deputies.~~** ~~In accordance with the prescribed procedures of this~~ *~~jurisdiction~~* ~~and with the concurrence of the appointing authority, the~~ *~~building official~~* ~~shall have the authority to appoint a deputy~~ *~~building official,~~* ~~the related technical officers, inspectors, plan examiners and other employees. Such employees shall have powers as delegated by the~~ *~~building official.~~*

**SECTION R104**

**DUTIES AND POWERS OF THE BUILDING OFFICIAL**

**RESERVED**

**~~R104.1 General.~~** ~~The~~ *~~building official~~* ~~is hereby authorized and directed to enforce the provisions of this code. The~~ *~~building official~~* ~~shall have the authority to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies and procedures shall be in conformance with the intent and purpose of this code. Such policies and procedures shall not have the effect of waiving requirements specifically provided for in this code.~~

**~~R104.2 Applications and permits.~~** ~~The~~ *~~building official~~* ~~shall receive applications, review~~ *~~construction documents~~* ~~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.~~

**~~R104.3 Notices and orders.~~** ~~The~~ *~~building official~~* ~~shall issue all necessary notices or orders to ensure compliance with this code.~~

**~~R104.4 Inspections.~~** ~~The~~ *~~building official~~* ~~is authorized to make all of the required inspections, or the~~ *~~building official~~* ~~shall have the authority to accept reports of inspection by~~ *~~approved agencies~~* ~~or individuals. 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~~ *~~building 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.~~

**~~R104.5 Identification.~~** ~~The~~ *~~building official~~* ~~shall carry proper identification when inspecting structures or premises in the performance of duties under this code.~~

**~~R104.6 Right of entry.~~** ~~Where it is necessary to make an inspection to enforce the provisions of this code, or where the~~ *~~building official~~* ~~has reasonable cause to believe that there exists in a structure or upon a premises a condition which is contrary to or in violation of this code which makes the structure or premises unsafe, dangerous or hazardous, the~~ *~~building official~~* ~~or designee is authorized to enter the structure or premises at reasonable times to inspect or to perform the duties imposed by this code, provided that if such structure or premises be occupied that credentials be presented to the occupant and entry requested. If such structure or premises be unoccupied, the~~ *~~building official~~* ~~shall first make a reasonable effort to locate the owner or other person having charge or control of the structure or premises and request entry. If entry is refused, the~~ *~~building official~~* ~~shall have recourse to the remedies provided by law to secure entry.~~

**~~R104.7 Department records.~~** ~~The~~ *~~building official~~* ~~shall keep official records of applications received, permits and certificates issued, fees collected, reports of inspections, and notices and orders issued. Such records shall be retained in the official records for the period required for the retention of public records.~~

**~~R104.8 Liability.~~** ~~The~~ *~~building official,~~* ~~member of the board of appeals or employee charged with the enforcement of this code, while acting for the~~ *~~jurisdiction~~* ~~in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered liable personally and is hereby relieved from personal liability for any damage accruing to persons or property as a result of any act or by reason of an act or omission in the discharge of official duties. Any suit instituted against an officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code shall be defended by legal representative of the~~ *~~jurisdiction~~* ~~until the final termination of the proceedings. The~~ *~~building official~~* ~~or any subordinate shall not be liable for cost in any action, suit or proceeding that is instituted in pursuance of the provisions of this code.~~

**~~R104.9 Approved materials and equipment.~~** ~~Materials,~~ *~~equipment~~* ~~and devices~~ *~~approved~~* ~~by the~~ *~~building official~~* ~~shall be constructed and installed in accordance with such approval.~~

**~~R104.9.1 Used materials and equipment.~~** ~~Used materials,~~ *~~equipment~~* ~~and devices shall not be reused unless~~ *~~approved~~* ~~by the~~ *~~building official.~~*

**~~R104.10 Modifications.~~** ~~Wherever there are practical difficulties involved in carrying out the provisions of this code, the~~ *~~building official~~* ~~shall have the authority to grant modifications for individual cases, provided the~~ *~~building official~~* ~~shall first find that special individual reason makes the strict letter of this code impractical and the modification is in compliance with the intent and purpose of this code and that such modification does not lessen health, life and fire safety or structural requirements. The details of action granting modifications shall be recorded and entered in the files of the department of building safety.~~

**~~R104.10.1 Flood hazard areas.~~** ~~The~~ *~~building official~~* ~~shall not grant modifications to any provisions required in flood hazard areas as established by Table R301.2(1) unless a~~

~~determination has been made that:~~

~~1. There is good and sufficient cause showing that the unique characteristics of the size, configuration or topography of the site render the elevation standards of Section R322 inappropriate.~~

~~2. Failure to grant the modification would result in exceptional hardship by rendering the lot undevelopable.~~

~~3. The granting of modification will not result in increased flood heights, additional threats to public safety, extraordinary public expense, cause fraud on or victimization of the public, or conflict with existing laws or ordinances.~~

~~4. The modification is the minimum necessary to afford relief, considering the flood hazard.~~

~~5. Written notice specifying the difference between the design flood elevation and the elevation to which the building is to be built, stating that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced floor elevation and stating that construction below the design flood elevation increases risks to life and property, has been submitted to the applicant.~~

**~~R104.11 Alternative materials, design and methods of construction and equipment.~~**  ~~The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been~~ *~~approved.~~* ~~An alternative material, design or method of construction shall be~~ *~~approved~~* ~~where the~~ *~~building official~~* ~~finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code. Compliance with the specific performance-based provisions of the International Codes in lieu of specific requirements of this code shall also be permitted as an alternate.~~

 **~~R104.11 Alternative materials, design and methods of construction and equipment.~~** ~~The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been~~ *~~approved~~*~~. An alternative material, design or method of construction shall be~~ *~~approved~~* ~~where the~~ *~~building official~~* ~~finds that the proposed design is satisfactory and~~

~~complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, not less than the equivalent of that prescribed in this~~

~~code. Compliance with the specific performance-based provisions of the International Codes shall be an alternative to the specific requirements of this code. Where the alternative~~

~~material, design or method of construction is not~~ *~~approved~~*~~, the~~ *~~building official~~* ~~shall respond in writing, stating the reasons why the alternative was not~~ *~~approved~~*~~.~~

**SECTION R105**

**PERMITS**

**RESERVED**

**~~R105.1 Required.~~** ~~Any owner or owner’s authorized agent who intends to construct, enlarge, alter, repair, move, demolish or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert or replace any electrical, gas, mechanical or plumbing system, the installation of which is regulated by this code, or to cause any such work to be done, shall first make application to the~~ *~~building official~~* ~~and obtain the required~~ *~~permit.~~*

**~~R105.2 Work exempt from permit.~~** *~~Permits~~* ~~shall not be required for the following. Exemption from~~ *~~permit~~* ~~requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of this~~ *~~jurisdiction.~~*

**~~Building:~~**

~~1. One-story detached~~ *~~accessory structures~~*~~, provided that the floor area does not exceed 200 square feet (18.58 m~~~~2~~~~).~~

~~2. Fences not over 7 feet (2134 mm) high.~~

~~3. Retaining walls that are not over 4 feet (1219 mm) in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge.~~

~~4. Water tanks supported directly upon~~ *~~grade~~* ~~if the capacity does not exceed 5,000 gallons (18 927 L) and the ratio of height to diameter or width does not exceed 2 to 1.~~

~~5. Sidewalks and driveways.~~

~~6. Painting, papering, tiling, carpeting, cabinets, counter tops and similar finish work.~~

~~7. Prefabricated swimming pools that are less than 24 inches (610 mm) deep.~~

~~8. Swings and other playground equipment.~~

~~9. Window awnings supported by an exterior wall which do not project more than 54 inches (1372 mm) from the exterior wall and do not require additional support.~~

~~10. Decks not exceeding 200 square feet (18.58 m~~~~2~~~~) in area, that are not more than 30 inches (762 mm) above~~ *~~grade~~* ~~at any point, are not attached to a~~ *~~dwelling~~* ~~and do not serve the exit door required by~~ ~~Section R311.4.~~

**~~Electrical:~~**

~~1.~~ *~~Listed~~* ~~cord-and-plug connected temporary decorative lighting.~~

~~2. Reinstallation of attachment plug receptacles but not the outlets therefor.~~

~~3. Replacement of branch circuit overcurrent devices of the required capacity in the same location.~~

~~4. Electrical wiring, devices,~~ *~~appliances,~~* ~~apparatus or~~ *~~equipment~~* ~~operating at less than 25 volts and not capable of supplying more than 50 watts of energy.~~

~~5. Minor repair work, including the replacement of lamps or the connection of~~ *~~approved~~* ~~portable electrical~~ *~~equipment~~* ~~to~~ *~~approved~~* ~~permanently installed receptacles.~~  **~~Gas:~~**

~~1. Portable heating, cooking or clothes drying~~ *~~appliances.~~*

~~2. Replacement of any minor part that does not alter approval of~~ *~~equipment~~* ~~or make such~~ *~~equipment~~* ~~unsafe.~~

~~3. Portable-fuel-cell~~ *~~appliances~~* ~~that are not connected to a fixed piping system and are not interconnected to a power grid.~~  **~~Mechanical:~~**

~~1. Portable heating~~ *~~appliances.~~*

~~2. Portable ventilation~~ *~~appliances.~~*

~~3. Portable cooling units.~~

~~4. Steam, hot- or chilled-water piping within any heating or cooling~~ *~~equipment~~* ~~regulated by this code.~~

~~5. Replacement of any minor part that does not alter approval of~~ *~~equipment~~* ~~or make such~~ *~~equipment~~* ~~unsafe.~~

~~6. Portable evaporative coolers.~~

~~7. Self-contained refrigeration systems containing 10 pounds (4.54 kg) or less of refrigerant or that are actuated by motors of 1 horsepower (746 W) or less.~~

~~8. Portable-fuel-cell~~ *~~appliances~~* ~~that are not connected to a fixed piping system and are not interconnected to a power grid.

The stopping of leaks in drains, water, soil, waste or vent pipe; provided, however, that if any concealed trap, drainpipe, water, soil, waste or vent pipe becomes defective and it becomes necessary to remove and replace the same with new material, such work shall be considered as new work and a~~ *~~permit~~* ~~shall be obtained and inspection made as provided in this code.

The clearing of stoppages or the repairing of leaks in pipes, valves or fixtures, and the removal and reinstallation of water closets, provided such repairs do not involve or require the replacement or rearrangement of valves, pipes or fixtures.~~

**~~R105.2.1 Emergency repairs.~~** ~~Where~~ *~~equipment~~* ~~replacements and repairs must be performed in an emergency situation, the~~ *~~permit~~* ~~application shall be submitted within the next working business day to the~~ *~~building official.~~*

**~~R105.2.2 Repairs.~~** ~~Application or notice to the~~ *~~building official~~* ~~is not required for ordinary repairs to structures, replacement of lamps or the connection of~~ *~~approved~~* ~~portable electrical~~ *~~equipment~~* ~~to~~ *~~approved~~* ~~permanently installed receptacles. Such repairs shall not include the cutting away of any wall, partition or portion thereof, the removal or cutting of any structural beam or load-bearing support, or the removal or change of any required means of egress, or rearrangement of parts of a structure affecting the egress requirements; nor shall ordinary repairs include~~ *~~addition~~* ~~to,~~ *~~alteration~~* ~~of, replacement or relocation of any water supply, sewer, drainage, drain leader, gas, soil, waste, vent or similar piping, electric wiring or mechanical or other work affecting public health or general safety.~~

**~~R105.2.3 Public service agencies.~~** ~~A~~ *~~permit~~* ~~shall not be required for the installation, alteration or repair of generation, transmission, distribution, metering or other related~~ *~~equipment~~* ~~that is under the ownership and control of public service agencies by established right.~~

**~~R105.3 Application for permit.~~** ~~To obtain a~~ *~~permit,~~* ~~the applicant shall first file an application therefor in writing on a form furnished by the department of building safety for that purpose. Such application shall:~~

~~1. Identify and describe the work to be covered by the~~ *~~permit~~* ~~for which application is made.~~

~~2. Describe the land on which the proposed work is to be done by legal description, street address or similar description that will readily identify and definitely locate the proposed building or work.~~

~~3. Indicate the use and occupancy for which the proposed work is intended.~~

~~4. Be accompanied by~~ *~~construction documents~~* ~~and other information as required in Section R106.1.~~

~~5. State the valuation of the proposed work.~~

~~6. Be signed by the applicant or the applicant’s authorized agent.~~

~~7. Give such other data and information as required by the~~ *~~building official.~~*

**~~R105.3.1 Action on application.~~** ~~The~~ *~~building official~~* ~~shall examine or cause to be examined applications for permits and amendments thereto within a reasonable time after filing. If the application or the~~ *~~construction documents~~* ~~do not conform to the requirements of pertinent laws, the~~ *~~building official~~* ~~shall reject such application in writing stating the reasons therefor. If the~~ *~~building official~~* ~~is satisfied that the proposed work conforms to the requirements of this code and laws and ordinances applicable thereto, the~~ *~~building official~~* ~~shall issue a~~ *~~permit~~* ~~therefor as soon as practicable.~~

**~~R105.3.1.1 Determination of substantially improved or substantially damaged existing buildings in flood~~**

**~~hazard areas.~~** ~~For applications for reconstruction, rehabilitation,~~ *~~addition,~~* ~~alteration, repair or other~~

~~improvement of existing buildings or structures located in a flood hazard area as established by Table~~

~~R301.2(1), the~~ *~~building official~~* ~~shall examine or cause to be examined the~~ *~~construction documents~~* ~~and shall~~

~~make a determination with regard to the value of the proposed work. For buildings that have sustained damage~~

~~of any origin, the value of the proposed work shall include the cost to repair the building or structure to its~~

~~predamaged condition. If the~~ *~~building official~~* ~~finds that the value of proposed work equals or exceeds 50 percent~~

~~of the market value of the building or structure efore the damage has occurred or the improvement is~~

~~started, the proposed work is a substantial improvement or restoration of substantial damage and the building~~

~~official shall require existing portions of the entire building or structure to meet the requirements of Section R322.~~

~~For the purpose of this determination, a substantial improvement shall mean any repair, reconstruction,~~

~~rehabilitation, addition or improvement of a building or structure, the cost of which equals or exceeds 50 percent~~

~~of the market value of the building or structure before the improvement or repair is started. Where the~~

~~building or structure has sustained substantial damage, repairs necessary to restore the building or structure to~~

~~its predamaged condition shall be considered substantial improvements regardless of the actual repair work~~

~~performed. The term shall not include either of the following:~~

~~1. Improvements to a building or structure that are required to correct existing health, sanitary or safety code violations identified by the building official and that are the minimum necessary to ensure safe living conditions.~~

~~2. Any alteration of a historic building or structure, provided that the alteration will not preclude the~~

~~continued designation as a historic building or structure. For the purposes of this exclusion, a historic building shall be any of the following:~~

~~2.1. Listed or preliminarily determined to be eligible for listing in the National Register of Historic Places.~~

~~2.2. Determined by the Secretary of the U.S. Department of Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined to qualify as an historic district.~~

~~2.3. Designated as historic under a state or local historic preservation program that is approved by the Department of Interior.~~

**~~R105.3.2 Time limitation of application.~~** ~~An application for a~~ *~~permit~~* ~~for any proposed work shall be deemed to have been abandoned 180 days after the date of filing unless such application has been pursued in good faith or a~~ *~~permit~~* ~~has been issued; except that the~~ *~~building official~~* ~~is authorized to grant one or more extensions of time for additional periods not exceeding 180 days each. The extension shall be requested in writing and justifiable cause demonstrated.~~

**~~R105.4 Validity of permit.~~** ~~The issuance or granting of a~~ *~~permit~~* ~~shall not be construed to be a~~ *~~permit~~* ~~for, or an~~ *~~approval~~* ~~of, any violation of any of the provisions of this code or of any other ordinance of the~~ *~~jurisdiction.~~* ~~Permits presuming to give authority to violate or cancel the provisions of this code or other ordinances of the~~ *~~jurisdiction~~* ~~shall not be valid. The issuance of a~~ *~~permit~~* ~~based on~~ *~~construction documents~~* ~~and other data shall not prevent the~~ *~~building official~~* ~~from requiring the correction of errors in the~~ *~~construction documents~~* ~~and other data. The~~ *~~building official~~* ~~is also authorized to prevent occupancy or use of a structure where in violation of this code or of any other ordinances of this~~ *~~jurisdiction.~~*

**~~R105.5 Expiration.~~** ~~Every~~ *~~permit~~* ~~issued shall become invalid unless the work authorized by such~~ *~~permit~~* ~~is commenced within 180 days after its issuance, or if the work authorized by such~~ *~~permit~~* ~~is suspended or abandoned for a period of 180 days after the time the work is commenced. The~~ *~~building official~~* ~~is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each. The extension shall be requested in writing and justifiable cause demonstrated.~~

**~~R105.6 Suspension or revocation.~~** ~~The~~ *~~building official~~* ~~is authorized to suspend or revoke a~~ *~~permit~~* ~~issued under the provisions of this code wherever the~~ *~~permit~~* ~~is issued in error or on the basis of incorrect, inaccurate or incomplete information, or in violation of any ordinance or regulation or any of the provisions of this code.~~

**~~R105.7 Placement of permit.~~** ~~The building~~ *~~permit~~* ~~or copy thereof shall be kept on the site of the work until the completion of the project.~~

**~~R105.8 Responsibility.~~** ~~It shall be the duty of every person who performs work for the installation or repair of building, structure, electrical, gas, mechanical or plumbing systems, for which this code is applicable, to comply with this code.~~

**~~R105.9 Preliminary inspection.~~** ~~Before issuing a~~ *~~permit,~~* ~~the~~ *~~building official~~* ~~is authorized to examine or cause to be examined buildings, structures and sites for which an application has been filed.~~

**SECTION R106**

**CONSTRUCTION DOCUMENTS**

RESERVED

**~~R106.1 Submittal documents.~~** ~~Submittal documents consisting of~~ *~~construction documents,~~* ~~and other data shall be submitted in two or more sets with each application for a~~ *~~permit.~~* ~~The~~ *~~construction documents~~* ~~shall be prepared by a registered~~ *~~design professional~~* ~~where required by the statutes of the~~ *~~jurisdiction~~* ~~in which the project is to be constructed. Where special conditions exist, the~~ *~~building official~~* ~~is authorized to require additional~~ *~~construction documents~~* ~~to be prepared by a registered~~ *~~design professional.~~* **~~Exception:~~** ~~The~~ *~~building official~~* ~~is authorized to waive the submission of~~ *~~construction documents~~* ~~and other data not required to be prepared by a registered~~ *~~design professional~~* ~~if it is found that the nature of the work applied for is such that reviewing of~~ *~~construction documents~~* ~~is not necessary to obtain compliance with this code.~~

**~~R106.1.1 Information on construction documents.~~** *~~Construction documents~~* ~~shall be drawn upon suitable material. Electronic media documents are permitted to be submitted when~~ *~~approved~~* ~~by the~~ *~~building official.~~**~~Construction documents~~* ~~shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules and regulations, as determined by the~~ *~~building official.~~*

**~~R106.1.2 Manufacturer’s installation instructions.~~** ~~Manufacturer’s installation instructions, as required by this code, shall be available on the job site at the time of inspection.~~

**~~R106.1.3 Information on braced wall design.~~** ~~For buildings and structures utilizing braced wall design, and where required by the~~ *~~building official~~*~~, braced wall lines shall be identified on the~~ *~~construction documents.~~* ~~Pertinent information including, but not limited to, bracing methods,~~

~~location and length of~~ *~~braced wall panels~~* ~~and foundation requirements of braced wall panels at top and bottom shall be provided.~~

**~~R106.1.4 Information for construction in flood hazard areas.~~** ~~For buildings and structures located in whole or in~~

~~part in flood hazard areas as established by Table R301.2(1),~~ *~~construction documents~~* ~~shall include:~~

~~1. Delineation of flood hazard areas, floodway boundaries and flood zones and the design flood elevation,~~

~~as appropriate.~~

~~2. The elevation of the proposed lowest floor, including~~ *~~basement~~*~~; in areas of shallow flooding (AO~~

~~Zones), the height of the proposed lowest floor, including~~ *~~basement~~*~~, above the highest adjacent~~

*~~grade~~*~~.~~

~~3. The elevation of the bottom of the lowest horizontal structural member in coastal high hazard areas (V~~

~~Zone) and in Coastal A Zones where such zones are delineated on flood hazard maps identified in Table~~

~~R301.2(1) or otherwise delineated by the jurisdiction.~~

~~4. If design flood elevations are not included on the community’s Flood Insurance Rate Map (FIRM),~~

~~the~~ *~~building official~~* ~~and the applicant shall obtain and reasonably utilize any design flood elevation~~

~~and floodway data available from other sources.~~

**~~R106.2 Site plan or plot plan.~~** ~~The~~ *~~construction documents~~* ~~submitted with the application for~~ *~~permit~~* ~~shall be accompanied by a site plan showing the size and location of new construction and existing structures on the site and distances from~~ *~~lot lines.~~* ~~In the case of demolition, the site plan shall show construction to be demolished and the location and size of existing structures and construction that are to remain on the site or plot. The~~ *~~building official~~* ~~is authorized to waive or modify the requirement for a site plan when the application for permit is for alteration or repair or when otherwise warranted.~~

**~~R106.3 Examination of documents.~~** ~~The~~ *~~building official~~* ~~shall examine or cause to be examined~~ *~~construction documents~~* ~~for code compliance.~~

**~~R106.3.1 Approval of construction documents.~~** ~~When the~~ *~~building official~~* ~~issues a~~ *~~permit,~~* ~~the~~ *~~construction documents~~* ~~shall be~~ *~~approved~~* ~~in writing or by a stamp which states "REVIEWED FOR CODE COMPLIANCE.” One set of~~ *~~construction documents~~* ~~so reviewed shall be retained by the~~ *~~building official.~~* ~~The other set shall be returned to the applicant, shall be kept at the site of work and shall be open to inspection by the~~ *~~building official~~* ~~or his or her authorized representative.~~

**~~R106.3.2 Previous approvals.~~** ~~This code shall not require changes in the~~ *~~construction documents,~~* ~~construction or designated occupancy of a structure for which a lawful~~ *~~permit~~* ~~has been heretofore issued or otherwise lawfully authorized, and the construction of which has been pursued in good faith within 180 days after the effective date of this code and has not been abandoned.~~

**~~R106.3.3 Phased approval.~~** ~~The~~ *~~building official~~* ~~is authorized to issue a~~ *~~permit~~* ~~for the construction of foundations or any other part of a building or structure before the~~ *~~construction documents~~* ~~for the whole building or structure have been submitted, provided that adequate information and detailed statements have been filed complying with pertinent requirements of this code. The holder of such~~ *~~permit~~* ~~for the foundation or other parts of a building or structure shall proceed at the holder’s own risk with the building operation and without assurance that a~~ *~~permit~~* ~~for the entire structure will be granted.~~

**~~R106.4 Amended construction documents.~~** ~~Work shall be installed in accordance with the~~ *~~approved construction documents,~~* ~~and any changes made during construction that are not in compliance with the~~ *~~approved construction documents~~* ~~shall be resubmitted for approval as an amended set of~~ *~~construction documents.~~*

**~~R106.5 Retention of construction documents.~~** ~~One set of~~ *~~approved construction documents~~* ~~shall be retained by the~~ *~~building official~~* ~~for a period of not less than 180 days from date of completion of the permitted work, or as required by state or local laws.~~

**SECTION R107**

**TEMPORARY STRUCTURES AND USES**

RESERVED

**~~R107.1 General.~~** ~~The~~ *~~building official~~* ~~is authorized to issue a~~ *~~permit~~* ~~for temporary structures and temporary uses. Such permits shall be limited as to time of service, but shall not be permitted for more than 180 days. The~~ *~~building official~~* ~~is authorized to grant extensions for demonstrated cause.~~

**~~R107.2 Conformance.~~** ~~Temporary structures and uses shall conform to the structural strength, fire safety, means of egress, light, ventilation and sanitary requirements of this code as necessary to ensure the public health, safety and general welfare.~~

**~~R107.3 Temporary power.~~** ~~The~~ *~~building official~~* ~~is authorized to give permission to temporarily supply and use power in part of an electric installation before such installation has been fully completed and the final certificate of completion has been issued. The part covered by the temporary certificate shall comply with the requirements specified for temporary lighting, heat or power in NFPA 70.~~

**~~R107.4 Termination of approval.~~** ~~The~~ *~~building official~~* ~~is authorized to terminate such~~ *~~permit~~* ~~for a temporary structure or use and to order the temporary structure or use to be discontinued.~~

**SECTION R108**

**FEES**

**RESERVED**

**~~R108.1 Payment of fees.~~** ~~A~~ *~~permit~~* ~~shall not be valid until the fees prescribed by law have been paid. Nor shall an amendment to a~~ *~~permit~~* ~~be released until the additional fee, if any, has been paid.~~

**~~R108.2 Schedule of permit fees.~~** ~~On buildings, structures, electrical, gas, mechanical and plumbing systems or~~ *~~alterations~~* ~~requiring a~~ *~~permit,~~* ~~a fee for each~~ *~~permit~~* ~~shall be paid as required, in accordance with the schedule as established by the applicable governing authority.~~

**~~R108.3 Building permit valuations.~~** ~~Building~~ *~~permit~~* ~~valuation shall include total value of the work for which a~~ *~~permit~~* ~~is being issued, such as electrical, gas, mechanical, plumbing equipment and other permanent systems, including materials and labor.~~

**~~R108.4 Related fees.~~** ~~The payment of the fee for the construction, alteration, removal or demolition for work done in connection with or concurrently with the work authorized 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.~~

**~~R108.5 Refunds.~~** ~~The~~ *~~building official~~* ~~is authorized to establish a refund policy.~~

**~~R108.6 Work commencing before permit issuance.~~** ~~Any person who commences work requiring a~~ *~~permit~~* ~~on a building, structure, electrical, gas, mechanical or plumbing system before obtaining the necessary permits shall be subject to a fee established by the applicable governing authority that shall be in addition to the required~~ *~~permit~~* ~~fees.~~

**SECTION R109**

 **INSPECTIONS**

 RESERVED

**~~R109.1 Types of inspections.~~** ~~For onsite construction, from time to time the~~ *~~building official~~*~~, upon notification from the~~ *~~permit~~* ~~holder or his agent, shall make or cause to be made any necessary inspections and shall either approve that portion of the construction as completed or shall notify the~~ *~~permit~~* ~~holder or his or her agent wherein the same fails to comply with this code.~~

**~~R109.1.1 Foundation inspection.~~** ~~Inspection of the foundation shall be made after poles or piers are set or trenches or~~ *~~basement~~* ~~areas are excavated and any required forms erected and any required reinforcing steel is in place and supported prior to the placing of concrete. The foundation inspection shall include excavations for thickened slabs intended for the support of bearing walls, partitions, structural supports, or~~ *~~equipment~~* ~~and special requirements for wood foundations.~~

**~~R109.1.2 Plumbing, mechanical, gas and electrical systems inspection.~~** ~~Rough inspection of plumbing, mechanical, gas and electrical systems shall be made prior to covering or concealment, before fixtures or~~ *~~appliances~~* ~~are set or installed, and prior to framing inspection.~~  **~~Exception:~~** ~~Backfilling of ground-source heat pump loop systems tested in accordance with~~ ~~Section M2105.1~~ ~~prior to inspection shall be permitted.~~

**~~R109.1.3 Floodplain inspections.~~** ~~For construction in flood hazard areas as established by Table R301.2(1), upon placement of the lowest floor, including~~ *~~basement,~~* ~~and prior to further vertical construction, the~~ *~~building official~~* ~~shall require submission of documentation, prepared and sealed by a registered~~ *~~design professional,~~* ~~of the elevation of the lowest floor, including~~ *~~basement,~~* ~~required in~~ ~~Section R322~~~~.~~

**~~R109.1.4 Frame and masonry inspection.~~** ~~Inspection of framing and masonry construction shall be made after the roof, masonry, all framing, firestopping, draftstopping and bracing are in place and after the plumbing, mechanical and electrical rough inspections are~~ *~~approved.~~*

**~~R109.1.5 Other inspections.~~** ~~In addition to the called inspections above, the~~ *~~building official~~* ~~may make or require any other inspections to ascertain compliance with this code and other laws enforced by the~~ *~~building official.~~*

**~~R109.1.5.1 Fire-resistance-rated construction inspection.~~** ~~Where fire-resistance-rated construction is required between~~ *~~dwelling units~~* ~~or due to location on property, the~~ *~~building official~~* ~~shall require an inspection of such construction after lathing or gypsum board or~~

~~gypsum panel products are in place, but before any plaster is applied, or before board or panel joints and fasteners are taped and finished.~~

**~~R109.1.6 Final inspection.~~** ~~Final inspection shall be made after the permitted work is complete and prior to occupancy.~~

**~~R109.1.6.1 Elevation documentation.~~** ~~If located in a flood hazard area, the documentation of elevations required in~~ ~~Section R322.1.10~~ ~~shall be submitted to the~~ *~~building official~~* ~~prior to the final inspection.~~

**~~R109.2 Inspection agencies.~~** ~~The~~ *~~building official~~* ~~is authorized to accept reports of~~ *~~approved~~* ~~agencies, provided such agencies satisfy the requirements as to qualifications and reliability.~~

**~~R109.3 Inspection requests.~~** ~~It shall be the duty of the~~ *~~permit~~* ~~holder or their agent to notify the~~ *~~building official~~* ~~that such work is ready for inspection. It shall be the duty of the person requesting any inspections required by this code to provide access to and means for inspection of such work.~~

**~~R109.4 Approval required.~~** ~~Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the~~ *~~building official.~~* ~~The~~ *~~building official~~* ~~upon notification, shall make the requested inspections and shall either indicate the portion of the construction that is satisfactory as completed, or shall notify the~~ *~~permit~~* ~~holder or an agent of the~~ *~~permit~~* ~~holder wherein the same fails to comply with this code. Any portions that do not comply shall be corrected and such portion shall not be covered or concealed until authorized by the~~ *~~building official.~~*

**SECTION R110**

**CERTIFICATE OF OCCUPANCY**

RESERVED

**~~R110.1 Use and occupancy. A~~** ~~Building or structure shall not be used or occupied, and a change in the existing use or occupancy classification of a building or structure or portion thereof shall be made until the~~ *~~building official~~* ~~has issued a certificate of occupancy therefor as provided herein. Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of this code or of other ordinances of the~~ *~~jurisdiction.~~* ~~Certificates presuming to give authority to violate or cancel the provisions of this code or other ordinances of the~~ *~~jurisdiction~~* ~~shall not be valid.~~  **~~Exceptions:~~**

~~1. Certificates of occupancy are not required for work exempt from permits under Section R105.2.~~

~~2. Accessory buildings or structures.~~

**~~R110.2 Change in use.~~** ~~Changes in the character or use of an existing structure shall not be made except as specified in Sections 3408 and 3409 of the~~ *~~International Building Code~~*~~.~~

**~~R110.3 Certificate issued.~~** ~~After the~~ *~~building official~~* ~~inspects the building or structure and finds no violations of the provisions of this code or other laws that are enforced by the department of building safety, the~~ *~~building official~~* ~~shall issue a certificate of occupancy which shall contain the following:~~

~~1. The building~~ *~~permit~~* ~~number.~~

~~2. The address of the structure.~~

~~3. The name and address of the owner or the owner’s authorized agent.~~

~~4. A description of that portion of the structure for which the certificate is issued.~~

~~5. A statement that the described portion of the structure has been inspected for compliance with the requirements of this code.~~

~~6. The name of the~~ *~~building official.~~*

~~7. The edition of the code under which the~~ *~~permit~~* ~~was issued.~~

~~8. If an automatic sprinkler system is provided and whether the sprinkler system is required.~~

~~9. Any special stipulations and conditions of the building~~ *~~permit.~~*

**~~R110.4 Temporary occupancy.~~** ~~The~~ *~~building official~~* ~~is authorized to issue a temporary certificate of occupancy before the completion of the entire work covered by the~~ *~~permit~~*~~, provided that such portion or portions shall be occupied safely. The~~ *~~building official~~* ~~shall set a time period during which the temporary certificate of occupancy is valid.~~

**~~R110.5 Revocation.~~** ~~The~~ *~~building official~~* ~~shall, in writing, suspend or revoke a certificate of occupancy issued under the provisions of this code wherever the certificate is issued in error, or on the basis of incorrect information supplied, or where it is determined that the building or structure or portion thereof is in violation of any ordinance or regulation or any of the provisions of this code.~~

**SECTION R111**

**SERVICE UTILITIES**

**RESERVED**

**~~R111.1 Connection of service utilities.~~** ~~No person shall make connections from a utility, source of energy, fuel or power to any building or system that is regulated by this code for which a~~ *~~permit~~* ~~is required, until~~ *~~approved~~* ~~by the~~ *~~building official.~~*

**~~R111.2 Temporary connection.~~** ~~The~~ *~~building official~~* ~~shall have the authority to authorize and approve the temporary connection of the building or system to the utility, source of energy, fuel or power.~~

**~~R111.3 Authority to disconnect service utilities.~~** ~~The~~ *~~buildingofficial~~* ~~shall have the authority to authorize disconnection of utility service to the building, structure or system regulated by this code and the referenced codes and standards set forth in Section R102.4 in case of emergency where necessary to eliminate an immediate hazard to life or property or where such utility connection has been made without the approval required by Section R111.1 or R111.2. The~~ *~~building official~~* ~~shall notify the serving utility and where possible the owner or the owner’s authorized agent and occupant of the building, structure or service system of the decision to disconnect prior to taking such action. If not notified prior to disconnection, the owner, the owner’s authorized agent or occupant of the building, structure or service system shall be notified in writing as soon as practical thereafter~~.

**SECTION R112**

**BOARD OF APPEALS**

**RESERVED**

**~~R112.1 General.~~** ~~In order to hear and decide appeals of orders, decisions or determinations made by the~~ *~~building official~~* ~~relative to the application and interpretation of this code, there shall be and is hereby created a board of appeals. The~~ *~~building official~~* ~~shall be an ex officio member of said board but shall have no vote on any matter before the board. The board of appeals shall be appointed by the governing body and shall hold office at its pleasure. The board shall adopt rules of procedure for conducting its business, and shall render all decisions and findings in writing to the appellant with a duplicate copy to the~~ *~~building official.~~*

**~~R112.2 Limitations on authority.~~** ~~An application for appeal shall be based on a claim that the true intent of this code or the rules legally adopted thereunder have been incorrectly interpreted, the provisions of this code. do not fully apply, or an equally good or better form of construction is proposed. The board shall not have authority to waive requirements of this code.~~

**~~R112.3 Qualifications.~~** ~~The board of appeals shall consist of members who are qualified by experience and training to pass on matters pertaining to building construction and are not employees of the~~ *~~jurisdiction.~~*

**~~R112.4 Administration.~~** ~~The~~ *~~building official~~* ~~shall take immediate action in accordance with the decision of the board.~~

**SECTION R113**

**VIOLATIONS**

 **RESERVED**

**~~R113.1 Unlawful acts.~~** ~~It shall be unlawful for any person, firm or corporation to erect, construct, alter, extend, repair, move, 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 of the provisions of this code.~~

**~~R113.2 Notice of violation.~~** ~~The~~ *~~building official~~* ~~is authorized to serve a notice of violation or order on the person responsible for the erection, construction, alteration, extension, repair, moving, removal, demolition or occupancy of a building or structure in violation of the provisions of this code, or in violation of a detail statement or a plan~~ *~~approved~~* ~~thereunder, or in violation of a~~ *~~permit~~* ~~or certificate issued under the provisions of this code. Such order shall direct the discontinuance of the illegal action or condition and the abatement of the violation.~~

**~~R113.3 Prosecution of violation.~~** ~~If the notice of violation is not complied with in the time prescribed by such notice, the~~ *~~building official~~* ~~is authorized to 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.~~

**~~R113.4 Violation penalties.~~** ~~Any person who violates a provision of this code or fails to comply with any of the requirements thereof or who erects, constructs, alters or repairs a building or structure in violation of the~~ *~~approved construction documents~~* ~~or directive of the~~ *~~building official,~~* ~~or of a~~ *~~permit~~* ~~or certificate issued under the provisions of this code, shall be subject to penalties as prescribed by law.~~

**SECTION R114**

**STOP WORK ORDER**

 **RESERVED**

**~~R114.1 Notice to owner or the owner’s authorized agent.~~** ~~Upon notice from the~~ *~~building official~~* ~~that work on any building or structure is being executed 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 authorized agent or to the person performing the work and shall state the conditions under which work will be permitted to resume.~~

**~~R114.2 Unlawful continuance.~~** ~~Any person who shall continue any work in or about the structure after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be subject to penalties as prescribed by law.~~

***CHAPTER 2, DEFINITIONS***

***Add or revise the following definitions as shown:***

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

**APPLICABLE GOVERNING BODY.** A city, county, state, state agency or other political government subdivision or entity authorized to administer and enforce the provisions of this code, as adopted or amended. Also applies to administrative authority.

**ARCHITECT.** A Florida-registered architect.

**CARBON MONOXIDE ALARM.** A device for the purpose of detecting carbon monoxide, that produces a distinct audible alarm, and is listed or labeled with the appropriate standard, either ANSI/UL 2034 ~~- 96,~~ *Standard for Single and Multiple Station CO Alarms*, or UL 2075 ~~- 04~~, *Gas and Vapor Detector Sensor*, in accordance with its application.

**COMMISSION**. Means the Florida Building Commission created as per Section 553.74, Florida Statutes.

**ENFORCEMENT AGENCY.**

**Local enforcement agency.** An agency of local government, a local school board, a community college board of trustees, or a university board of trustees in the State University System with jurisdiction to make inspections of buildings and to enforce the codes which establish standards for design, construction, erection, alteration, repair, modification, or demolition of public or private buildings, structures, or facilities.

**State Enforcement Agency.** Means the agency of state government with authority to make inspections of buildings and to enforce the codes, as required by Chapter 553, Florida Statutes which establish standards for design, construction, erection, alteration, repair, modification or demolition of public or private buildings, structures or facilities.

**ENGINEER**. A Florida-registered engineer.

**FOSSIL FUEL.** Coal, kerosene, oil, fuel gases, or other petroleum or hydrocarbon product that emits carbon monoxide as a by-product of combustion.

**GRAY WATER.** As defined by Sections 381.0065(2)(b) and (d) *Florida Statutes*, “Graywater” means that part of domestic sewage that is not blackwater, including waste from the bath, lavatory, laundry, and sink, except kitchen sink waste. “Blackwater” means that part of domestic sewage carried off by toilets, urinals, and kitchen drains.

**HIGH VELOCITY HURRICANE ZONE (HVHZ)**. This zone consists of Broward and Dade counties.

**LANDSCAPE ARCHITECT.** A Florida registered Landscape Architect.

**LOCAL FLOODPLAIN MANAGEMENT ORDINANCE.**An ordinance or regulation adopted pursuant to the authority granted to local governments by Title 44 Code of Federal Regulations, Sections 59 and 60 for participation in the National Flood Insurance Program.

**MATERIAL CODE VIOLATION.** A material code violation is a violation that exists within a completed building, structure or facility which may reasonably result, or has resulted, in physical harm to a person or significant damage to the performance of a building or its systems.

**MATERIAL VIOLATION.** As defined in Florida Statutes.

**MODULAR HOME.** Any residential unit, constructed to standards promulgated by the Florida Building Commission, away from the installation site, and which bears a Department of Business and Professional Regulation Insignia.

**REGISTERED TERMITICIDE**. Product listed as registered for use as a preventative treatment for termites for new construction by the Florida Department of Agriculture and Consumer Services under authority of Chapter 487, *Florida Statutes*.

|  |
| --- |
| **ROOF SECTION.** A separation or division of a roof area by existing expansion joints, parapet walls, flashing (excluding valley), difference of elevation (excluding hips and ridges), roof type or legal description; not including the roof area required for a proper tie-off with an existing system.  |
|  |

**SEPARATE ATMOSPHERE.** The atmosphere that exists between rooms, spaces or areas that are separated by an approved smoke barrier.

**SITE BUILT SINGLE-FAMILY RESIDENTIAL STRUCTURES.** This term shall mean site built single family detached residential structures.

**SCREEN ENCLOSURE.** A building or part thereof, in whole or in part self-supporting, and having walls of insect screening with or without removable vinyl or acrylic wind break panels and a roof of insect screening, plastic, aluminum or similar lightweight material, or other materials and assemblies such as a patio, deck, or roof of a structure.

**TOWNHOUSE**. A single-family dwelling unit constructed in a group of three or more attached units with property lines separating each unit in which each unit extends from foundation to roof and with a yard or public way on at least two sides.

***CHAPTER 3, BUILDING PLANNING***

***Section R301.1 Application. Change to read as follows:***

**R301.1 Application.** Buildings and structures, and all parts thereof, shall be constructed to safely support all loads, including dead loads, live loads, roof loads, flood loads, and wind loads as prescribed by this code. The construction of buildings and structures in accordance with the provisions of this code shall result in a system that provides a complete load path that meets all requirements for the transfer of all loads from their point of origin through the load-resisting elements to the foundation. Buildings and structures constructed as prescribed by this code are deemed to comply with the requirements of this section.

**Exception**: Buildings and structures located within the High Velocity Hurricane Zone shall comply with Sections R302 to R324, inclusive and the provisions of Chapter R44 and section R406. In addition, buildings and structures located in flood hazard areas established in Table R301.2(1) shall comply with Sections R301.2.4 and R322.

***Table R301.2(1). Change to read as shown:***

**TABLE R301.2(1)** **CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **GROUNDSNOWLOAD** | **WIND** **DESIGN** | **SEISMICDESIGNCATEGORYf** | **SUBJECT TO DAMAGE FROM** | **WINTERDESIGNTEMPe** | **ICE BARRIERUNDERLAYMENTREQUIREDh** | **FLOODHAZARDSg** | **AIRFREEZINGINDEXi** | **MEANANNUALTEMPj** |
| **Speedd** **(mph)** | **Topographiceffectsk** **(NA)****Special wind regionl****Wind-born debris zonem** | **Weatheringa** | **Frost line depthb** | **Termitec** |
| NA | See Fig. R301.2(4) | NA | Negligible | NA | VeryHeavy |  | NA |  | NA | NA |

For SI: 1 pound per square foot = 0.0479 kN/m2, 1 mile per hour =1.609 km/h.

a. Weathering is “negligible” for concrete as determined from the Weathering Probability Map [Figure 301.2(3)]. The grade of masonry units shall be determined from ASTM C 34, C 55, C 62, C 73, C 90, C 129, C 145, C 216 or C 652.

b. ~~The frost line depth may require deeper footings than indicated in Figure R403.1(1). The jurisdiction shall fill in the frost line depth column with the minimum depth of footing below finish grade.~~ Reserved.

c. Termite infestation per Figure R301.2(6) is “very heavy.”

d. Wind speed shall be from the basic wind speed map [Figure R301.2(4). Wind exposure category shall be determined on a site-specific basis in accordance with Section R301.2.1.4.

e. The outdoor design dry-bulb temperature shall be selected from the columns of 971/2-

percent values for winter from Appendix D of the *Florida Building Code, Plumbing*. Deviations from the Appendix D. temperatures shall be permitted to reflect local climates or local weather experience as determined by the building official.

f. ~~The jurisdiction shall fill in this part of the table with the seismic design category determined from Section R301.2.2.1.~~ Reserved.

g. The applicable governing **body** shall, by local floodplain management ordinance, specify ~~jurisdiction shall fill in this part of the table with~~ (a) the date of the jurisdiction’s entry into the National Flood Insurance Program (date of adoption of the first code or ordinance for management of flood hazard areas), (b) the date(s) of the Flood Insurance Study and (c) the panel numbers and dates of all currently effective FIRM and FBFM, or other flood hazard map adopted by the authority having jurisdiction, as amended.

h. ~~In accordance with Sections R905.2.7.1, R905.4.3.1, R905.5.3.1, R905.6.3.1, R905.7.3.1 and R905.8.3.1, where there has been a history of local damage from the effects of ice damming, the jurisdiction shall fill in this part of the table with “YES.” Otherwise, the jurisdiction shall fill in this part of the table with “NO.”~~ Reserved.

i. ~~The jurisdiction shall fill in this part of the table with the 100-year return period air freezing index (BF-days) from Figure R403.3(2) or from the 100-year (99 percent) value on the National Climatic Data Center data table “Air Freezing Index-USA Method (Base 32°F)” at~~ [~~www.ncdc.noaa.gov/fpsf.html.~~](http://www.ncdc.noaa.gov/fpsf.html) Reserved.

j. ~~The jurisdiction shall fill in this part of the table with the mean annual temperature from the National Climatic Data Center data table “Air Freezing Index- USA Method (Base 32°F)” at~~ [~~www.ncdc.noaa.gov/fpsf.html.~~](http://www.ncdc.noaa.gov/fpsf.html) Reserved.

k. ~~In accordance with Section R301.2.1.5, where there is local historical data documenting structural damage to buildings due to topographic wind speed-up effects, the jurisdiction shall fill in this part of the table with “YES.” Otherwise, the jurisdiction shall indicate “NO” in this part of the table.~~ Reserved.

~~l. In accordance with Figure R301.2(4)A, where there is local historical data documenting unusual wind conditions, the~~ *~~jurisdiction~~* ~~shall fill in this part of the table with “YES” and identify any specific requirements. Otherwise, the~~ *~~jurisdiction~~* ~~shall indicate “NO” in this part of the table.~~

~~m. In accordance with Section R301.2.1.2.1, the~~ *~~jurisdiction~~* ~~shall indicate the wind-borne debris wind zone(s). Otherwise, the~~ *~~jurisdiction~~* ~~shall indicate “NO” in this part of the table.~~

***Add Section R301.2.1.1.2 to read as follows:***

**R301.2.1.1.2 Alternative design method for screen enclosure.**

(1) The purpose of this Section is to provide an alternate method for designing aluminum screen enclosures as defined by the Florida Building Code, permitting the loads of the structural frame to be based on portions of the screen in the screen walls removed, retracted, moved to the open position, or cut. The use of framing materials other than aluminum is allowed in accordance with Section 104.11 of the *Florida Building Code, Building*. The method applies only to walls and roofs with 100% screen.

(a) Screen enclosure frames designed in accordance with the screen removal alternates of this Section, shall be designed using signed and sealed site-specific engineering and shall be designed in accordance with the wind load provisions of the *Florida Building Code, Building*, Section 1609.1.1,

(b) Designs that consider these screen alternates shall comply with *Florida Building Code, Building,* Section 2002.4 and Table 2002.4, using the 110 mph column as modified by Table 2002.4A with all screen panels in place.

(c) Designs using strength design or load and resistance factor design in accordance with the *Florida Building Code, Building*, Section 1605.2 or allowable stress design methods of the *Florida Building Code, Building*, Section 1605.3.1 shall be permitted.

(d) The design shall be by rational analysis or by 3D Finite Element Analysis. Either method will be acceptable.

(2) Where screen enclosures are designed in accordance with the screen removal alternates of this Section, removable screen may consist of removable panels, retractable panels, or by designating specific screen panels in the design in which the screen is to be removed by cutting the screen. Removable panels shall be removed; retractable panels shall be placed in the retracted position without increasing the load on the affected area. Screen designated in the design to be cut shall be completely cut when wind speeds are forecast to exceed 75 mph.

(3) Where screen enclosures designed in accordance with the screen removal alternates of this Section serve as the barrier required by R4501.17.1, the required minimum height of the barrier shall be maintained when screen panels are retracted, removed, moved to the open position, or cut.

(4) Where screen enclosures are designed in accordance with the screen removal alternates of this Section, retractable screen panels, removable screen panels, and screen panels identified to be cut shall be clearly identified on adjacent structural members with highly visible permanent labels, at each panel, or by other means approved by the local building department.

(5) Where screen enclosures are designed in accordance with the screen removal alternates of this Section, the retraction of screen panels, removal of screen panels, or cutting of screen panels shall not require the use of ladders or scaffolding.

(6) Engineering documents submitted with building permit applications shall identify the panels to be removed, retracted, opened, or cut.

(7) Where screen enclosures are designed in accordance with the screen removal alternates of this Section based on removing screen panels by cutting the screen, the contractor shall provide replacement screen for a one-time replacement of all screen and spline designated by the design to be cut.

(8) Where screen enclosures are designed in accordance with the screen removal alternates of this Section, the contractor shall provide written notice to the owner and the local building code enforcement department that the owner must retract, remove, or cut a panel or panels of the screen enclosure in accordance with the project engineering design or the manufacturer’s instructions when wind speeds are expected to exceed 75 mph.

***Section R301.2.1.2 Protection of openings. Change to read as follows:***

**R301.2.1.2 Protection of openings.** Exterior glazing in buildings located in windborne debris regions shall be protected from windborne debris. Glazed opening protection for windborne debris shall meet the requirements of the Large Missile Test of ASTM E 1996 and ASTM

E 1886 as modified in Section 301.2.1.2.1. Garage door glazed opening protection for windborne debris shall meet the requirements of an *approved* impact-resisting standard or ANSI/DASMA 115.

1. Opening in sunrooms, balconies or enclosed porches constructed under existing roofs or decks are not required to be protected provided the spaces are separated from the building interior by a wall and all openings in the separating wall are protected in accordance with this section. Such space shall be permitted to be designed as either partially enclosed or enclosed structures.

2. Storage sheds that are not designed for human habitation and that have a floor area of 720 square feet (67 m2) or less are not required to comply with the mandatory wind-borne debris impact standard of this code.

**Exception:** no change.

***R301.2.5 Add to read as follows:***

**R301.2.5 Structures seaward of a coastal construction control line.** Structures located seaward of the coastal construction control line shall be designed to resist the predicted forces of a 100-year storm event in accordance with Section 3109 of the *Florida Building Code, Building*.

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***Section R306.3 Sewage disposal. Change to read as shown:***

**R306.3 Sewage disposal.** Plumbing fixtures shall be connected to a sanitary sewer or to an approved private sewage disposal system in accordance with Chapter 64E-6, Florida Administrative Code, Standards for Onsite Sewage Treatment and Disposal Systems.

***R310.1 Emergency escape and rescue required. Change to read as follows:***

**R310.1 Emergency escape and rescue required. [No change to text; exceptions only]**

**Exceptions:**

**1.** Storm shelters and *basements* used only to house mechanical *equipment* not exceeding a total floor area of 200 square feet (18.58 m2).

**2.** The emergency escape and rescue opening shall be permitted to open into a screen enclosure, open to the atmosphere, where a screen door is provided leading away from the residence.

***Section R311.2 Egress door. Add exception to read as follows:***

**R311.2 Egress door.** At least one egress door shall be provided for each dwelling unit. The egress door shall be side-hinged, and shall provide a minimum clear width of 32 inches (813 mm) when measured between the face of the door and the stop, with the door open 90 degrees (1.57 rad). The minimum clear height of the door opening shall not be less than 78 inches (1981 mm) in height measured from the top of the threshold to the bottom of the stop. Other doors shall not be required to comply with these minimum dimensions. Egress doors shall be readily openable from inside the dwelling without the use of a key or special knowledge or effort.

**Exception:** Buildings that are 400 square feet or less and that are intended for use in conjunction with one- and two-family residences are not subject to the door height and width requirements of this code.

***Section R313 Automatic Fire Sprinkler. Change to read as follows:***

**SECTION R313**

**AUTOMATIC FIRE SPRINKLER**

**RESERVED**

**~~R313.1 Townhouse automatic fire sprinkler systems.~~** ~~An automatic residential fire sprinkler system shall be installed in~~ *~~townhouses~~*~~.~~

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

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

**~~R313.2 One- and two-family dwellings automatic fire systems.~~** ~~An automatic residential fire sprinkler system shall be installed in one- and two-family~~ *~~dwellings~~*~~.~~

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

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

**Section R314 Smoke Alarms**

**Add Exception 3 to Section R314.6**

One-family and two-family dwellings and townhomes undergoing a repair, or a level 1 alteration as defined in the Florida Building Code, may use smoke alarms powered by 10-year nonremovable, nonreplaceable batteries in lieu of retrofitting such dwelling with smoke alarms powered by the dwelling's electrical system.

***R315. Carbon monoxide alarms. Replace Section R315 to read as shown:***

**SECTION R315**

**CARBON MONOXIDE ALARMS**

**R315.1 Carbon monoxide protection.**  Every separate building or an addition to an existing building for which a permit for new construction is issued and having a fossil-fuel-burning heater or appliance, a fireplace, an attached garage, or other feature, fixture, or element that emits carbon monoxide as byproduct of combustion shall have an operational carbon monoxide alarm installed within 10 feet of each room used for sleeping purposes.

**Exception:** This section shall not apply to existing buildings that are undergoing alterations or repair unless the alteration is an addition as defined in Section R315.1.3.

**R315.1.1 Carbon monoxide alarm.** The requirements of Section R315.1 shall be satisfied by providing for one of the following alarm installations:

(1) A hard-wired carbon monoxide alarm.

(2) A battery-powered carbon monoxide alarm.

(3) A hard-wired combination carbon monoxide and smoke alarm.

(4) A battery-powered combination carbon monoxide and smoke alarm.

**R315.1.2 Combination alarms.** Combination smoke/carbon monoxide alarms shall be listed and labeled by a Nationally Recognized Testing Laboratory.

**R315.1.3** **Addition shall mean**: An extension or increase in floor area, number of stories or height of a building or structure.

**~~R315.1 General.~~** ~~Carbon monoxide alarms shall comply with Section R315.~~

**~~R315.1.1 Listings.~~** ~~Carbon monoxide alarms shall be~~ *~~listed~~* ~~in accordance with UL 2034. Combination carbon monoxide and smoke alarms shall be~~ *~~listed~~* ~~in accordance with UL 2034 and UL 217.~~

**~~R315.2 Where required.~~** ~~Carbon monoxide alarms shall be provided in accordance with Sections R315.2.1 and R315.2.2.~~

**~~R315.2.1 New construction.~~** ~~For new construction, carbon monoxide alarms shall be provided in dwelling units where either or both of the following conditions exist.~~

~~1. The~~ *~~dwelling unit~~* ~~contains a fuel-fired~~ *~~appliance.~~*

~~2. The~~ *~~dwelling unit~~* ~~has an attached garage with an opening that communicates with the dwelling unit.~~

**~~R315.2.2 Alterations, repairs and additions.~~** ~~Where~~ *~~alterations~~*~~, repairs or~~ *~~additions~~* ~~requiring a permit occur, or where one or more sleeping rooms are added or created in existing~~ *~~dwellings~~*~~, the individual~~ *~~dwelling unit~~* ~~shall be equipped with carbon monoxide alarms located as~~

~~required for new~~ *~~dwellings~~*~~.~~

**~~Exceptions:~~**

~~1. Work involving the exterior surfaces of~~ *~~dwellings~~*~~, such as the replacement of roofing or siding, or the addition or replacement of windows or doors, or the addition of a porch or deck, is~~

~~exempt from the requirements of this section.~~

~~2. Installation, alteration or repairs of plumbing or mechanical systems are exempt from the requirements of this section.~~

**~~R315.3 Location.~~** ~~Carbon monoxide alarms in~~ *~~dwelling units~~* ~~shall be installed outside of each separate sleeping area in the immediate vicinity of the bedrooms. Where a fuel-burning~~

*~~appliance~~* ~~is located within a bedroom or its attached bathroom, a carbon monoxide alarm shall be installed within the bedroom.~~

**~~R315.4 Combination alarms.~~** ~~Combination carbon monoxide and smoke alarms shall be permitted to be used in lieu of carbon monoxide alarms.~~

**~~R315.5 Power source.~~** ~~Carbon monoxide alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source and, where primary power is interrupted, shall receive power from a battery. Wiring shall be permanent and without a disconnecting switch other than those required for overcurrent protection.~~

**~~Exceptions:~~**

~~1. Carbon monoxide alarms shall be permitted to be battery operated where installed in buildings without commercial power.~~

~~2. Carbon monoxide alarms installed in accordance with Section R315.2.2 shall be permitted to be battery powered.~~

**~~R315.6 Carbon monoxide detection systems.~~** ~~Carbon monoxide detection systems shall be permitted to be used in lieu of carbon monoxide alarms and shall comply with Sections~~

~~R315.6.1 through R315.6.4.~~

**~~R315.6.1 General.~~** ~~Household carbon monoxide detection systems shall comply with NFPA 720. Carbon monoxide detectors shall be~~ *~~listed~~* ~~in accordance with UL 2075.~~

**~~R315.6.2 Location.~~** ~~Carbon monoxide detectors shall be installed in the locations specified in Section R315.3. These locations supersede the locations specified in NFPA 720.~~

**~~R315.6.3 Permanent fixture.~~** ~~Where a household carbon monoxide detection system is installed, it shall become a permanent fixture of the occupancy and owned by the homeowner.~~

**~~R315.6.4 Combination detectors.~~** ~~Combination carbon monoxide and smoke detectors shall be permitted to be installed in carbon monoxide detection systems in lieu of carbon monoxide detectors, provided that they are~~ *~~listed~~* ~~in accordance with UL 2075 and UL 268.~~

***Section R318 Protection against subterrannean termites . Replace with Florida specific criteria to read as shown:***

**SECTION R318**

**PROTECTION AGAINST TERMITES**

**R318.1** **Termite Protection.** Termite protection shall be provided by registered termiticides, including soil applied pesticides, baiting systems, and pesticides applied to wood, or other approved methods of termite protection labeled for use as a preventative treatment to new construction. See §202, REGISTERED TERMITICIDE. Upon completion of the application of the termite protective treatment, a Certificate of Compliance shall be issued to the building department by the licensed pest control company that contains the following statement: "The building has received a complete treatment for the prevention of subterranean termites. Treatment is in accordance with rules and laws established by the Florida Department of Agriculture and Consumer Services."

**R318.1.1** If soil treatment used for subterranean termite prevention, the initial chemical soil treatment inside the foundation perimeter shall be done after all excavation, backfilling and compaction is complete.

**R318.1.2**If soil treatment is used for subterranean termite prevention, soil area disturbed after initial chemical soil treatment shall be retreated with a chemical soil treatment, including spaces boxed or formed.

**R318.1.3** If soil treatment is used for subterranean termite prevention, space in concrete floors boxed out or formed for the subsequent installation of plumbing traps, drains or any other purpose shall be created by using plastic or metal permanently placed forms of sufficient depth to eliminate any planned soil disturbance after initial chemical soil treatment.

**R318.1.4** If soil treatment is used for subterranean termite prevention, chemically treated soil shall be protected with a minimum 6 mil vapor retarder to protect against rainfall dilution. If rainfall occurs before vapor retarder placement, retreatment is required. Any work, including placement of reinforcing steel, done after chemical treatment until the concrete floor is poured, shall be done in such manner as to avoid penetrating or disturbing treated soil.

**R318.1.5** If soil treatment is used for subterranean termite prevention, concrete overpour or mortar accumulated along the exterior foundation perimeter shall be removed prior to exterior chemical soil treatment, to enhance vertical penetration of the chemicals.

**R318.1.6** If soil treatment is used for subterranean termite prevention, chemical soil treatments shall also be applied under all exterior concrete or grade within 1 foot (305 mm) of the primary structure sidewalls. Also, a vertical chemical barrier shall be applied promptly after construction is completed, including initial landscaping and irrigation/sprinkler installation. Any soil disturbed after the chemical vertical barrier is applied shall be promptly retreated.

**R318.1.7** If a registered termiticide formulated and registered as a bait system is used for subterranean termite prevention, §R318.1.1 through §R318.1.6 do not apply; however, a signed contract assuring the installation, maintenance and monitoring of the baiting system that is in compliance with the requirements of Chapter 482, F.S. shall be provided to the building official prior to the pouring of the slab, and the system must be installed prior to final building approval.

 If the baiting system directions for use require a monitoring phase prior to installation of the pesticide active ingredient, the installation of the monitoring phase components shall be deemed to constitute installation of the system.

**R318.1.8** If a registered termiticide formulated and registered as a wood treatment is used for subterranean termite prevention, Sections R318.1.1 through R318.1.6 do not apply. Application of the wood treatment termiticide shall be as required by label directions for use, and must be completed prior to final building approval.

**R318.2 Penetration.** Protective sleeves around piping penetrating concrete slab-on-grade floors shall not be of cellulose-containing materials. If soil treatment is used for subterranean termite protection, the sleeve shall have a maximum wall thickness of 0.010 inch (0.25 mm), and be sealed within the slab using a non-corrosive clamping device to eliminate the annular space between the pipe and the sleeve. No termiticides shall be applied inside the sleeve.

**R318.3 Cleaning.** Cells and cavities in masonry units and air gaps between brick, stone or masonry veneers and the structure shall be cleaned of all non-preservative treated or non-naturally durable wood, or other cellulose-containing material prior to concrete placement.

**Exception:**  Inorganic material manufactured for closing cells in foundation concrete masonry unit construction or clean earth fill placed in concrete masonry unit voids below slab level before termite treatment is performed.

**R318.4 Concrete bearing ledge.** Brick, stone or other veneer shall be supported by a concrete bearing ledge at least equal to the total thickness of the brick, stone or other veneer which is poured integrally with the concrete foundation. No supplemental concrete foundation pours which will create a hidden cold joint shall be used without supplemental treatment in the foundation unless there is an approved physical barrier. An approved physical barrier shall also be installed from below the wall sill plate or first block course horizontally to embed in a mortar joint. If masonry veneer extends below grade, a termite protective treatment must be applied to the cavity created between the veneer and the foundation, in lieu of a physical barrier.

**Exception:** Veneer supported by a structural member secured to the foundation sidewall in accordance with ACI 530/ASCE 5/TMS 402, provided at least a 6 inch (152 mm) clear inspection space of the foundation sidewall exterior exist between the veneer and the top of any soil, sod, mulch or other organic landscaping component, deck, apron, porch, walk or any other work immediately adjacent to or adjoining the structure.

**R318.5 Protection against decay and termites.** Condensate Lines, irrigation/sprinkler system risers for spray heads, and roof downspouts shall discharge at least 1 foot (305 mm) away from the structure sidewall, whether by underground piping, tail extensions or splash blocks. Gutters with downspouts are required on all buildings with eaves of less than 6 inches (152 mm) horizontal projection except for gable end rakes or on a roof above another roof.

**R318.6 Preparation of building site and removal of debris.**

**R318.6.1** All building sites shall be graded to provide drainage under all portions of the building not occupied by basements.

**R318.6.2** The foundation and the area encompassed within 1 foot (305 mm) therein shall have all vegetation, stumps, dead roots, cardboard, trash and foreign material removed and the fill material shall be free of vegetation and foreign material. The fill shall be compacted to assure adequate support of the foundation.

**R318.6.3** After all work is completed, loose wood and debris shall be completely removed from under the building and within 1 foot (305 mm) thereof. All wood forms and supports shall be completely removed. This includes, but is not limited to: wooden grade stakes, forms, contraction spacers, tub trap boxes, plumbing supports, bracing, shoring, forms or other cellulose-containing material placed in any location where such materials are not clearly visible and readily removable prior to completion of the work. Wood shall not be stored in contact with the ground under any building.

**R318.7 Inspection for termites.** In order to provide for inspection for termite infestation, clearance between exterior wall coverings and final earth grade on the exterior of a building shall not be less than 6 inches (152 mm).

**Exceptions:**

l. Paint or *decorative cementitious finish* less than 5/8 inch (17.1 mm) thick adhered directly to the masonry foundation sidewall.

2. Access or vehicle ramps which rise to the interior finish floor elevation for the width of such ramps only.

3. A 4-inch (102 mm) inspection space above patio and garage slabs and entry areas.

4. If the patio has been soil treated for termites, the finish elevation may match the building interior finish floor elevations on masonry construction only.

5. Masonry veneers constructed in accordance with Section R318.4.

**R318.8 Foam plastic protection.**
In areas where the probability of termite infestation is "very heavy” as indicated in Figure R301.2(6), extruded and expanded polystyrene, polyisocyanurate and other foam plastics shall not be installed on the exterior face or under interior or exterior foundation walls or slab foundations located below grade. The clearance between foam plastics installed above grade and exposed earth shall be at least 6 inches (152 mm).

**Exceptions:**

1. Buildings where the structural members of walls, floors, ceilings and roofs are entirely of noncombustible materials or pressure-preservative-treated wood.

2. When in addition to the requirements of Section R318.1, an approved method of protecting the foam plastic and structure from subterranean termite damage is used.

3. On the interior side of basement walls.

**SECTION R320**

**ACCESSIBILITY**

***Section R320.1 Scope. Revise to read as shown:***

**R320.1 Scope.** Shall be in accordance with the provisions of the *Florida Building Code, Accessibility.*~~Where there are four or more~~ *~~dwelling~~* ~~units or sleeping units in a single structure, the provisions of Chapter 11 of the~~ *~~International Building Code~~* ~~for Group R-3 shall apply.~~

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| **R320.1.1** All new single-family houses, duplexes, triplexes, condominiums and townhouses shall provide at least one bathroom, located with maximum possible privacy, where bathrooms are provided on habitable grade levels, with a door that has a 29-inch (737 mm) clear opening. However, if only a toilet room is provided at grade level, such toilet rooms shall have a clear opening of not less than 29 inches (737 mm).  **~~Guestrooms.~~** ~~A~~ *~~dwelling~~* ~~with guestrooms shall comply with the provisions of Chapter 11 of the~~ *~~International Building Code~~* ~~for Group R-3. For the purpose of applying the requirements of Chapter 11 of the~~ *~~International Building Code~~*~~, guestrooms shall be considered to be sleeping units.~~**~~Exception:~~** ~~Owner-occupied lodging houses with five or fewer guestrooms constructed in accordance with the~~ *~~International Residential Code~~* ~~are not required to be accessible.~~ |
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***Section R322.1.7 Protection of water supply and sanitary sewage systems. Revise to read as shown:***

**R322.1.7 Protection of water supply and sanitary sewage systems.** New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the systems in accordance with the plumbing provisions of this code. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into systems and discharges from systems into floodwaters in accordance with the plumbing provisions of this code and in accordance with Chapter 64E-6, Florida Administrative Code, Standards for Onsite Sewage Treatment and Disposal Systems. ~~and Chapter 3 of the~~ *~~International Private Sewage Disposal Code~~*~~.~~

***Section R322.1.9 Manufactures homes. Revise to read as shown:***

**R322.1.9 Manufactured homes.**  In addition to the applicable requirements of the state agency with jurisdiction over installation of manufactured homes, installation of manufactured homes in flood hazard areas is subject to the applicable provisions of the local floodplain management ordinance.

***Section R322.1.11 Structural seaward of a coastal construction line. Add section to read as shown:***

**R322.1.11 Structures seaward of a coastal control construction line.** In addition to the requirements of this section, structures located in flood hazard areas and seaward of the coastal construction line shall be designed to resist the predicted forces of a 100-year storm event in accordance with Section R3109 of the *Florida Building Code, Building,* and the more restrictive provisions shall govern.

***Section R322.2.5 Pools in flood hazard areas. Add to read as shown:***

**R322.2.5 Pools in flood hazard areas.** Pools that are located in flood hazard areas established by Table R301.2(1), including above-ground pools, on-ground pools, and in-ground pools that involve placement of fill, shall comply with Sections R322.2.5.1 or R322.2.5.2.

**Exception:** Pools located in riverine flood hazard areas which are outside of designated floodways.

**R322.2.5.1 Pools located in designated floodways.** Where pools are located in designated floodways, documentation shall be submitted to the building official, which demonstrates that the construction of the pool will not increase the design flood elevation at any point within the jurisdiction.

**R322.2.5.2 Pools located where floodways have not been designated.** Where pools are located in riverine flood hazard areas where design flood elevations are specified but floodways have not been designated, the applicant shall provide a floodway analysis that demonstrates that the proposed pool will not increase the design flood elevation more than 1 foot (305 mm) at any point within the jurisdiction.

***Section R322.3 Location and site preparation. Change to read as follows:***

**R322.3.1 Location and site preparation.**

1. New buildings and buildings that are determined to be substantially improved pursuant to Section ~~R105.3.1.1~~ Florida Building Code, Existing Building shall be located landward of the reach of mean high tide.

2. For any alteration of sand dunes and mangrove stands, the *building official* shall require submission of an engineering analysis that demonstrates that the proposed *alteration* will not increase the potential for flood damage.

***Section R322.3.3.1 Pools. Add new section to read as shown:***

**R322.3.3.1 Pools.** Pools in coastal high-hazard areas shall be designed and constructed in conformance with ASCE 24.

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| **Section R326 Swimming pools, spas and hot tubs. Change to read as follows:****SECTION R326 SWIMMING POOLS, SPAS AND HOT TUBS****R326.1 General.** The design and construction of pools and spas shall comply with the *~~International Swimming Pool and Spa Code~~* Chapter 45 of this Code.***Section R324. Add a new section to read as shown:*****SECTION R327****AIRPORT NOISE** **R327.1 Airport noise study guidelines**. The Aviation Safety and Noise Abatement Act of 1979 14 CFR Part 150 (US Department of Transportation) including revisions through January 2005 and hereby adopted as a guideline for establishing airport noise control. When required by a local government by local ordinance to provide noise attenuation in a new structure or addition to an existing structure near an airport in the area of the local government, the applicant must provide either: 1.  A testing certificate from an accredited noise testing lab that a new structure or addition to existing structure built to the submitted engineering plans will achieve an average minimum dBA reduction equal to or greater than the reduction required, 2.  An engineering judgment signed and sealed by an engineer licensed in the State of Florida that the structure or addition built to the submitted engineering plans will achieve an average minimum dBA reduction equal to or greater than the reduction required, or3.  Plans using the standards contained in "Guidelines for Sound Insulation of Residences Exposed to Aircraft Operations" prepared for the Department of the Navy by Wyle Research and Consulting, Arlington, Virginia, April 2005 on file with the Florida Building Commission.  |
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***CHAPTER 4, FOUNDATIONS***

***Section R401.1 Application. Revise text to add exception 3 to read as shown:***

**R401.1 Application**. The provisions of this chapter shall control the design and construction of the foundation and foundation spaces for all buildings. In addition to the provisions of this chapter, the design and construction of foundations in flood hazard areas as established by Table R301.2(1) shall meet the provisions of Section R322. Wood foundations shall be designed and installed in accordance with AF&PA PWF.

**Exception:** The provisions of this chapter shall be permitted to be used for wood foundations only in the following situations:

1. – 2. [No change]

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| 3. Buildings and structures located within the High-Velocity Hurricane Zone shall comply with the provisions of Chapter 44 and, as applicable, Section R322 in flood hazard areas.  |
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***CHAPTER 5, FLOORS***

***R501.1 Application. Change to read as follows:***

**R501.1 Application.** The provisions of this chapter shall control the design and construction of the floors for all buildings including the floors of attic spaces used to house mechanical and/or plumbing fixtures and equipment.

**Exception:** Buildings and structures located within the High-Velocity Hurricane Zone shall comply with the provisions of Chapter 44.

***CHAPTER 6, WALL CONSTRUCTION***

***Section R601.1 Application. Revise to read as shown:***

**R601.1 Application.** The provisions of this chapter shall control the design and construction of all walls and partitions for all buildings.

**Exception:** Buildings and structures located within the High-Velocity Hurricane Zone shall comply with the provisions of Chapter 44.

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**CHAPTER 7**

**WALL COVERINGS**

***Section R701.1 Application. Revise to add exception as shown:***

**R701.1 Application.** The provisions of this chapter shall control the design and construction of the interior and exterior wall covering for all buildings.

**Exception:** Buildings and structures located within the High-Velocity Hurricane Zone shall comply with the provisions of Chapter 44.

**CHAPTER 8**

**ROOF-CEILING CONSTRUCTION**

***Add an exception to R801.1 as shown:***

**R801.1 Application.** The provisions of this chapter shall control the design and construction of the roof-ceiling system for all buildings (see Section R301.2.1.1).

**Exception:** Buildings and structures located within the High-Velocity Hurricane Zone shall comply with the provisions of Chapter 44.

**CHAPTER 9**

**ROOF ASSEMBLIES**

***R901.1 Scope. Add exception as shown:***

**R901.1 Scope.** The provisions of this chapter shall govern the design, materials, construction and quality of roof assemblies.

**Exception:** Buildings and structures located within the High-Velocity Hurricane Zone shall comply with the provisions of Chapter 44.

**CHAPTER 10. CHIMNEYS AND FIREPLACES.**  [No change]

**CHAPTER 11 ENERGY EFFICIENCY**

***Section N101 Energy efficiency. Revise to read as shown:***

**N1101 Energy efficiency.** The provisions of the *Florida Building Code, Energy Conservation,* shall govern the energy efficiency of residential construction.

***[The remaining text of this Chapter is deleted and reserved]***

**CHAPTER 12 MECHANICAL ADMINISTRATION. [No change]**

**CHAPTER 13 GENERAL MECHANICAL SYSTEM REQUIREMENTS [No change]**

**CHAPTER 14, HEATING AND COOLING EQUIPMENT AND APPLIANCES [No change]**

**CHAPTER 15, EXHAUST SYSTEMS.**

**Revise M1503.4 to add “Exception” as follows:**

**M1503.4 Makeup air required.** Exhaust hood systems capable of exhausting in excess of 400 cubic feet per minute (0.19 m3/s) shall be mechanically or naturally provided with makeup air at a rate approximately equal to the exhaust air rate. Such makeup air systems shall be equipped with not less than one damper. Each damper shall be a gravity damper or an electrically operated damper that automatically opens when the exhaust system operates. Dampers shall be accessible

for inspection, service, repair and replacement without removing permanent construction or any other ducts not connected to the damper being inspected, serviced, repaired or replaced.

Exception:

In a single-family dwelling, make-up air is not required for range hood exhaust systems capable of exhausting:

 (a) Four hundred cubic feet per minute or less; or

 (b) More than 400 cubic feet per minute but no more than 800 cubic feet per minute if there are no gravity vent appliances within the conditioned living space of the structure.

**CHAPTER 16, DUCT SYSTEMS [No change]**

**CHAPTER 17, COMBUSTION AIR [No change]**

**CHAPTER 18, CHIMNEYS AND VENTS [No change]**

**CHAPTER 19, SPECIAL APPLIANCES, EQUIPMENT AND SYSTEMS [No change]**

**CHAPTE 20, BOILERS AND WATER HEATERS [No change]**

**CHAPTER 21, HYDRONIC PIPING [No change]**

**CHAPTER 22, SPECIAL PIPING AND STORAGE SYSTEMS [No change]**

**CHAPTER 23, SOLAR ENERGY SYSTEMS**

***Section M2301.2.2.1 Roof mounted collectors. Revise section to read as shown:***

**M2301.2.2.1 Roof-mounted collectors.** The roof shall be constructed to support the loads imposed by roof-mounted solar collectors. Roof-mounted solar collectors that serve as a roof covering shall conform to the requirements for roof coverings in Chapter 9 **(**the HVHZ shall comply with Chapter 44) of this code. Where mounted on or above the roof coverings, the collectors and supporting structure shall be constructed of noncombustible materials or fire-retardant-treated wood equivalent to that required for the roof construction.

***Section M2301.2.9 Roof and wall penetrations. Revise section to read as shown:***

**M2301.2.9 Roof and wall penetrations.** Roof and wall penetrations shall be flashed and sealed in accordance with Chapter 9 (the HVHZ shall comply with Chapter 44) of this code to prevent entry of water, rodents and insects.

**CHAPTER 24, FUEL GAS [No change]**

**CHAPTER 25, PLUMBING ADMINISTRATION**

***Section P2503.8.2 Testing. Change to read as shown:***

**P2503.8.2 Testing.** Reduced pressure principle, double check, double check detector and pressure vacuum breaker backflow preventer assemblies shall be tested at the time of installation~~,~~ and immediately after repairs or relocation ~~and every year thereafter~~.

**CHAPTER 26, GENERAL PLUMBING REQUIREMENTS**

***Section P2603.3 Breakage and corrosion. Revise to read as shown:***

**P2603.3 Protection against corrosion.** Metallic piping, except for cast iron, ductile iron and galvanized steel, shall not be placed in direct contact with steel framing members, concrete

or masonry. Metallic piping shall not be placed in direct contact with corrosive soil. Where sheathing is used to prevent direct contact, the sheathing material thickness shall be ~~not~~

~~less than~~ ~~0.008~~ 0.010inch ~~(8 mil)~~ (0.2~~03~~ 54mm) and shall be made of plastic. Where sheathing protects piping that penetrates concrete or masonry walls or floors, the sheathing shall be installed in a manner that allows movement of the piping within the sheathing.

**Exception:** Sleeving is not required for installation of CPVC into concrete or similar material.

***P2603.3.1 Penetration. Add text to read as shown:***

**P2603.3.1 Penetration.** Protective sleeves around piping penetrating concrete slab-on-grade floors shall not be of cellulose-containing materials. If soil treatment is used for subterranean termite protection, the sleeve shall have a maximum wall thickness of 0.010 inch, and be sealed within the slab using a non-corrosive clamping device to eliminate the annular space between the pipe and the sleeve. No termiticides shall be applied inside the sleeve.

**CHAPTER 27, PLUMBING FIXTURES. [No change]**

**CHAPTER 28, WATER HEATERS [No change]**

**CHAPTER 29, WATER SUPPLY AND DISTRIBUTION [No change]**

**CHAPTER 30, SANITARY DRAINAGE [No change]**

**CHAPTER 31, VENTS [No change]**

**CHAPTER 32, TRAPS [No change]**

**CHAPTER 33, STORAGE DRAINAGE [No change]**

**CHAPTER 34, GENERAL REQUIREMENTS [No change]**

**CHAPTER 35, ELECTRICAL DEFINITIONS [No change]**

**CHAPTER 36, SERVICES [No change]**

**CHAPTER 37, BRANCH CIRCUIT AND FEEDER REQUIREMENTS [No change]**

**CHAPTER 38, WIRING METHODS [No change]**

**CHAPTER 39, POWER AND LIGHTING DISTRIBUTION [No change]**

**CHAPTER 40, DEVICES AND LUMINAIRES [No change]**

**CHAPTER 41, APPLIANCE INSTALLATION [No change]**

**CHAPTER 42, SWIMMING POOLS [Electrical Provisions]**

 **CHAPTER 43 CLASS 2 REMOTE-CONTROL, SIGNALING AND POWER-LIMITED CIRCUITS [No change]**

**CHAPTER 44 HIGH-VELOCITY HURRICANE ZONES ~~REFERENCED STANDARDS~~**

***Section R4401. Change to read as follows:***

**SECTION R4401**

**HIGH-VELOCITY HURRICANE ZONES —**

**EXTERIOR WALL COVERING**

**R4401.1** Refer to Chapter 14 of the *Florida Building Code, Building.*

***Section R4402. Change to read as follows:***

**SECTION R4402**

**HIGH-VELOCITY HURRICANE ZONES —**

**ROOF ASSEMBLIES AND ROOFTOP STRUCTURES**

**R4402.1.** Refer to Chapter 15 of the *Florida Building Code, Building*.

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***Section R4403. Change to read as follows:***

**SECTION R4403**

**HIGH-VELOCITY HURRICANE ZONES—**

**GENERAL**

**R4403.1** Refer to Chapter 16 of the *Florida Building Code, Building.*

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***Section R4404. Change to read as follows:***

**SECTION R4404**

**HIGH-VELOCITY HURRICANE ZONES —**

**FOUNDATIONS AND RETAINING WALLS**

**R4404.1** Refer to Chapter 18 of the *Florida Building Code, Building*.

***Section R4405. Change to read as follows:***

**SECTION R4405**

**HIGH-VELOCITY HURRICANE ZONES —**

**CONCRETE**

**R4405.1** Refer to Chapter 19 of the *Florida Building Code, Building***.**

***Section R4406. Change to read as follows:***

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| **SECTION 4406****HIGH-VELOCITY HURRICANE ZONES —** **LIGHT METAL ALLOYS** **R4406.1** Aluminum. Refer to Chapter 20 of the *Florida Building Code, Building*. |
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| ***Section R4407. Change to read as follows:*****SECTION 4407****HIGH-VELOCITY HURRICANE ZONES — MASONRY** **R4407.1** Refer to Chapter 21 of the *Florida Building Code, Building*. |

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| ***Section R4408. Change to read as follows:*****SECTION 4408****HIGH-VELOCITY HURRICANE ZONES — STEEL** **R4408.1** Refer to Chapter 22 of the *Florida Building Code, Building*. |

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| ***Section R4409. Change to read as follows:*****SECTION 4409****HIGH-VELOCITY HURRICANE ZONES — WOOD****R4409.1** Refer to Chapter 23 of the *Florida Building Code, Building*.***Section R4410. Change to read as follows:*****SECTION R4410****HIGH-VELOCITY HURRICANE ZONES —** **GLASS AND GLAZING** **R4410.1** Refer to Chapter 24 of the *Florida Building Code, Building*.***Section R4411. Change to read as follows:*****SECTION R4411****HIGH-VELOCITY HURRICANE ZONES —** **GYPSUM BOARD AND PLASTER****R4411.1** Refer to Chapter 25 of the *Florida Building Code, Building.****Section R4412. Change to read as follows:*****SECTION R4412****HIGH-VELOCITY HURRICANE ZONES —** **PLASTICS** **R4412.1** Refer to Chapter 26 of the *Florida Building Code, Building*. |

***Add Chapter 45 to read as follows:*****CHAPTER 45, PRIVATE SWIMMING POOLS** **R4501.1 Definitions, general.** **R4501.1.1 Tense, gender and number.** For the purpose of this code, certain abbreviations, terms, phrases, words, and their derivatives shall be construed as set forth in this section. Words used in the present tense include the future. Words in the masculine gender include the feminine and neuter. Words in the feminine and neuter gender include the masculine. The singular number includes the plural and the plural number includes the singular. **R4501.1.2 Words not defined.** Words not defined herein shall have the meanings stated in the *Florida Building Code, Building; Florida Building Code, Mechanical; Florida Building Code, Plumbing; Florida Building Code, Fuel Gas*; or *Florida Fire Prevention Code*. Words not defined in the *Florida Building Code* shall have the meanings stated in the W*ebster's Third New International Dictionary of the English Language Unabridged*. **R4501.2 Definitions.** **ABOVEGROUND/ONGROUND POOL.** See "Swimming Pool." **ADMINISTRATIVE AUTHORITY.** The individual official, board, department or agency established and authorized by a state, county, city or other political subdivision created by law to administer and enforce the provisions of the swimming pool code as adopted or amended. **APPROVED.** Accepted or acceptable under an applicable specification stated or cited in this code, or accepted as suitable for the proposed use under procedures and power of the administrative authority. **APPROVED SAFETY COVER.** A manually or power-applied safety pool cover that meets all of the performance standards of the ASTM International in compliance with ASTM F 1346. **APPROVED TESTING AGENCY.** An organization primarily established for the purpose of testing to approved standards and approved by the administrative authority. **BACKWASH PIPING.** See "Filter waste discharge piping." **BARRIER.** A fence, dwelling wall or nondwelling wall or any combination thereof which completely surrounds the swimming pool and obstructs access to the swimming pool, especially access from the residence or from the yard outside the barrier. **BODY FEED.** Filter aid fed into a diatomite-type filter throughout the filtering cycle. **CARTRIDGE FILTER.** A filter using cartridge type filter elements. **CHEMICAL PIPING.** Piping which conveys concentrated chemical solutions from a feeding apparatus to the circulation piping. **CIRCULATION PIPING SYSTEM.** Piping between the pool structure and the mechanical equipment. Usually includes suction piping, face piping and return piping. **COMBINATION VALVE.** A multipart valve intended to perform more than one function. **DESIGN HEAD.** Total head requirement of the circulation system at the design rate of flow. **DIATOMITE (DIATOMACEOUS EARTH).** A type of filter aid. **DIATOMITE TYPE FILTER.** A filter designed to be used with filter aid. **DIRECT ACCESS FROM THE HOME.** Means any opening which discharges into the "perimeter" of the pool or any opening in an exterior dwelling wall, or interior wall (for indoor pools) which faces the pool. **EXIT ALARM.** A device that makes audible, continuous alarm sounds when any door or window which permits access from the residence to any pool that is without an intervening enclosure is opened or left ajar. **FACE PIPING.** Piping, with all valves and fittings, which is used to connect the filter system together as a unit. **FILTER.** Any apparatus by which water is clarified. **FILTER AID.** A nonpermanent type of filter medium or aid such as diatomite, alum, etc. **FILTER CARTRIDGE.** A disposable or renewable filter element which generally employs no filter aid. **FILTER ELEMENT.** That part of a filter which retains the filter medium. **FILTER MEDIUM.** Fine material which entraps the suspended particles and removes them from the water. **FILTER RATE.** Average rate of flow per square foot of filter area. **FILTER ROCK.** Specially graded rock and gravel used to support filter sand. **FILTER SAND.** A specially graded type of permanent filter medium. **FILTER SEPTUM.** That part of the filter element in a diatomite type filter upon which a cake of diatomite or other nonpermanent filter aid may be deposited. **FILTER WASTE DISCHARGE PIPING.** Piping that conducts waste water from a filter to a drainage system. Connection to drainage system is made through an air gap or other approved methods. **FRESH WATER.** Those waters having a specific conductivity less than a solution containing 6,000 ppm of sodium chloride. **HIGH RATE SAND FILTER.** A sand filter designed for flows in excess of 5 gpm per square feet. **HOT TUB.** See "Swimming pool." **INGROUND POOL.** See "Swimming pool." **INLET FITTING.** Fitting or fixture through which circulated water enters the pool. **MAIN SUCTION OUTLET.** Outlet at the deep portion of the pool through which the main flow of water leaves the pool when being drained or circulated. **MEDICALLY FRAIL ELDERLY PERSON.** Means any person who is at least 65 years of age and has a medical problem that affects balance, vision, or judgment, including but not limited to a heart condition, diabetes, or Alzheimer's disease or any related disorder. **MESH SAFETY BARRIER.** A combination of materials, including fabric, posts, and other hardware to form a barrier around a swimming pool. **POOL.** See "Swimming pool." **POOL DEPTHS.** The distance between the floor of pool and the maximum operating water level. **POOL PERIMETER.** A pool perimeter is defined by the limits of the pool deck, its surrounding area including yard area on same property, and any dwelling or nondwelling wall or any combination thereof which completely surrounds the pool. **POOL PLUMBING.** All chemical, circulation, filter waste discharge piping, deck drainage and water filling system. **PORTABLE POOL.** A prefabricated pool which may be erected at the point of intended use and which may be subsequently disassembled and reerected at a new location. Generally installed on the surface of the ground and without excavation. **PRECOAT.** In a diatomite-type filter, the initial coating or filter aid placed on the filter septum at the start of the filter cycle. **RAPID SAND FILTER.** A filter designed to be used with sand as the filter medium and for flows not to exceed 5 gpm per square feet. **RECEPTOR.** An approved plumbing fixture or device of such material, shape and capacity as to adequately receive the discharge from indirect waste piping, so constructed and located as to be readily cleaned. **RESIDENTIAL.** Means situated on the premises of a detached one-family or two-family dwelling or a one-family townhouse not more than three stories high. **RETURN PIPING.** That portion of the circulation piping which extends from the outlet side of the filters to the pool. **SALINE WATER.** Those waters having a specific conductivity in excess of a solution containing 6,000 ppm of sodium chloride. **SEPARATION TANK.** A device used to clarify filter rinse or waste water. Sometimes called a reclamation tank. **SKIM FILTER.** A surface skimmer combined with a vacuum diatomite filter. **SPA, NONPORTABLE.** See "Swimming pool." **SPA, PORTABLE.** Nonpermanent structure intended for recreational bathing, in which all controls and water heating and water circulating equipment are an integral part of the product and which is cord-connected and not permanently electrically wired. **SUCTION PIPING.** That portion of the circulation piping located between the pool structure and the inlet side of the pump and usually includes main outlet piping, skimmer piping, vacuum piping and surge tank piping. **SURFACE SKIMMER.** A device generally located in the pool wall which skims the pool surface by drawing pool water over a self adjusting weir. **SWIMMING POOL, PRIVATE.** Any structure, located in a residential area, that is intended for swimming or recreational bathing and contains water over 24 inches (610 mm) deep including but not limited to inground, aboveground, and onground swimming pools, hot tubs, and nonportable spas. **SWIMMING POOL, INDOOR.** A swimming pool which is totally contained within a structure and surrounded on all four sides by walls of said structure. **SWIMMING POOL, OUTDOOR.** Any swimming pool which is not an indoor pool. **SWIMMING POOL, PUBLIC.** A water-tight structure of concrete, masonry, fiberglass, stainless steel or plastic which is located either indoors or outdoors, used for bathing or swimming by humans, and filled with a filtered and disinfected water supply, together with buildings, appurtenances and equipment used in connection therewith. A public swimming pool or public pool shall mean a conventional pool, spa-type pool, wading pool, special purpose pool or water recreation attraction, to which admission may be gained with or without payment of a fee and includes, pools operated by or serving camps, churches, cities, counties, day care centers, group home facilities for eight or more clients, health spas, institutions, parks, state agencies, schools, subdivisions; or the cooperative living-type projects of five or more living units, such as apartments, boarding houses, hotels, mobile home parks, motels, recreational vehicle parks and townhouses. **SWIMMING POOL, RESIDENTIAL.** See "Swimming pool, private." **TURNOVER TIME.** The time in hours required for the circulation system to filter and recirculate a volume of water equal to the pool volume. **VACUUM FITTING.** A fitting in the pool which is used as a convenient outlet for connecting the underwater suction cleaning equipment. **VACUUM PIPING.** The piping from the suction side of a pump connected to a vacuum fitting located at the pool and below the water level. **WASTE PIPING.** See "Filter waste discharge piping." **WIDTH AND/OR LENGTH.** Actual water dimension taken from wall to wall at the maximum operating water level. **YOUNG CHILD.** Means any person under the age of six years. **R4501.3 Mechanical requirements.** Unless otherwise specified in this code, all piping, equipment and materials used in the process piping system of swimming pools that are built in place shall conform to the *Florida Building Code, Plumbing*. **R4501.4 Approvals.** **R4501.4.1 Compliance.** All materials, piping, valves, equipment or appliances entering into the construction of swimming pools or portions thereof shall be of a type complying with this code or of a type recommended and approved by a nationally recognized testing agency or conforming to other recognized standards acceptable to the administrative authority. **R4501.4.2 Items not covered.** For any items not specifically covered in these requirements, the administrative authority is hereby authorized to require that all equipment, materials, methods of construction and design features shall be proven to function adequately, effectively and without excessive maintenance and operational difficulties.**R4501.4.2.1. Flood hazard areas.**  Pools installed in flood hazard areas established in Section R322 shall comply with Section R322.2.4 (A Zones) or R322.3.3.1 in coastal high-hazard areas (V Zones). **R4501.4.3 Applicant responsibility.** It shall be the responsibility of the applicant to provide such data, tests or other adequate proof that the device, material or product will satisfactorily perform the function for which it is intended, before such item shall be approved or accepted for tests. **R4501.5 Alternate materials and methods of construction.** **R4501.5.1 Approval and authorization.** The provisions of this code are not intended to prevent the use of any alternate material, method of construction, appliance or equipment, provided any such alternate has been first approved and its use authorized by the administrative authority. **R4501.5.2 Required tests.** When there is insufficient evidence to substantiate claims for alternates, the administrative authority may require tests, as proof of compliance, to be made by an approved agency at the expense of the applicant. **R4501.6 Engineering design.** ***Section R4501.6.1 Conformance standard. Change to read as shown:*****R4501.6.1 Conformance standard.** Design, construction and workmanship shall be in conformity with the requirements of ANSI/NSPI 3; ANSI/APSP/ICC~~NSPI~~ 4; ANSI/ APSP/ICC~~NSPA~~ 5; ANSI/ APSP/ICC~~NSPI~~ 6; and ANSI/APSP 7. **R4501.6.2 Required equipment.** Every swimming pool shall be equipped complete with approved mechanical equipment consisting of filter, pump, piping valves and component parts. **Exception:** Pools with a supply of fresh water equivalent to the volume of the pool in the specified turnover time will be allowed. **R4501.6.3 Water velocity.** Pool piping shall be designed so the water velocity will not exceed 10 feet per second (3048 mm/s) for pressure piping and 8 feet per second (2438 mm/s) for suction piping, except that the water velocity shall not exceed 8 feet per second (2438 mm/s) in copper tubing. Main suction outlet velocity must comply with ANSI/APSP 7. **Exception:** Jet inlet fittings shall not be deemed subject to this requirement. **R4501.6.4 Piping to heater.** Water flow through the heater, any bypass plumbing installed, any back-siphoning protection, and the use of heat sinks shall be done in accordance with the manufacturer's recommendations. **R4501.6.5 Piping installation**. All piping materials shall be installed in strict accordance with the manufacturer's installation standards. **Exception:** Primer and glue on exposed aboveground piping not required to be colored. **R4501.6.6 Entrapment protection.** Entrapment protection for suction outlets shall be installed in accordance with requirements of ANSI/APSP 7. **R4501.7 Pumps.** **R4501.7.1 Strainer.** Pool circulating pumps shall be equipped on the inlet side with an approved type hair and lint strainer when used with a pressure filter. **R4501.7.2 Installation.** Pumps shall be installed in accordance with manufacturer recommendations. **R4501.7.3 Capacity.** Pumps shall have design capacity at the following heads:1. Pressure Diatomaceous Earth-At least 60 feet (18 288 mm).2. Vacuum Diatomaceous Earth-20-inch (508 mm) vacuum on the suction side and 40-foot (12 192 mm) total head.3. Rapid Sand-At least 45 feet (13 716 mm).4. High Rate Sand-At least 60-feet (18 288 mm).**R4501.7.4 Materials.** Pump impellers, shafts, wear rings and other working parts shall be of corrosion-resistant materials. **R4501.8 Valves.** **R4501.8.1 General.** Valves shall be made of materials that are approved in the *Florida Building Code, Plumbing*. Valves located under concrete slabs shall be set in a pit having a least dimension of five pipe diameters with a minimum of at least 10 inches (254 mm) and fitted with a suitable cover. All valves shall be located where they will be readily accessible for maintenance and removal. **R4501.8.2 Full-way (gate) valves.** Full-way valves shall be installed to insure proper functioning of the filtration and piping system. When the pump is located below the overflow rim of the pool, a valve shall be installed on the discharge outlet and the suction line. **R4501.8.3 Check valves.** Where check valves are installed they shall be of the swing, spring or vertical check patterns. **R4501.8.4 Combination valves.** Combination valves shall be installed per manufacturer's installation instructions. **R4501.9 Water supply.** Unless an approved type of filling system is installed, any water supply which in the judgment of the administrative authority may be used to fill the pool, shall be equipped with backflow protection. No over the rim fill spout shall be accepted unless located under a diving board, or properly guarded. **R4501.10 Waste water disposal.** **R4501.10.1 Connection limitations.** Direct or indirect connections shall not be made between any storm drain, sewer, drainage system, seepage pit underground leaching pit, or subsoil drainage line, and any line connected to a swimming pool unless approved by the administrative authority. **R4501.10.2 Disposal through public sewer.** When the waste water from a swimming pool is to be disposed of through a public sewer, a 3-inch (76 mm) P-trap shall be installed on the lower terminus of the building drain and the tall piece from the trap shall extend a minimum of 3-inches (76 mm) above finished grade and below finished floor grade. This trap need not be vented. The connection between the filter waste discharge piping and the P-trap shall be made by means of an indirect connection. **R4501.10.3 Deviations.** Plans and specifications for any deviation from the above manner of installation shall first be approved by the administrative authority before any portion of any such system is installed. When waste water disposal is to seepage pit installation, it shall be installed in accordance with the approval granted by the administrative authority. **R4501.11 Separation tank.** A separation tank of an approved type may be used in lieu of the aforementioned means of waste water disposal when connected as a reclamation system. **R4501.12 Tests.** **R4501.12.1 Pressure test.** All pool piping shall be tested and proved tight to the satisfaction of the administrative authority, under a static water or air pressure test of not less than 35 pounds per square inch (psi) (241 kPa) for 15 minutes. **Exception:** Circulating pumps need not be tested as required in this section. **R4501.12.2 Drain and waste piping.** All drain and waste piping shall be tested by filling with water to the point of overflow and all joints shall be tight. **R4501.13 Drain piping.** **R4501.13.1 Slope to discharge.** Drain piping serving gravity overflow gutter drains and deck drains shall be installed to provide continuous grade to point of discharge. **R4501.13.2 Joints and connections.** Joints and connections shall be made as required by the *Florida Building Code, Plumbing*. **R4501.14 Water heating equipment.** **R4501.14.1 Labels.** Swimming pool water heating equipment shall conform to the design, construction and installation requirements in accordance with accepted engineering practices and shall bear the label of a recognized testing agency, and shall include a consideration of combustion air, venting and gas supply requirements for water heaters. **R4501.14.2 Water retention.** If a heater is not equipped or designed for an approved permanent bypass or antisiphon device, an approved permanent bypass or antisiphon device shall be installed to provide a positive means of retaining water in the heater when the pump is not in operation. **R4501.14.3 Pit drainage.** When the heater is installed in a pit, the pit shall be provided with approved drainage facilities. **R4501.14.4 Connections.** All water heating equipment shall be installed with flanges or union connection adjacent to the heater. **R4501.14.5 Relief valve.** When water heating equipment which is installed in a closed system has a valve between the appliance and the pool, a pressure relief valve shall be installed on the discharge side of the water heating equipment. For units up to and including 200,000 Btu/hour input, the relief valve shall be rated by the American Gas Association. **R4501.15 Gas piping.** Gas piping shall comply with the *Florida Building Code, Fuel Gas*. **R4501.16 Electrical.** Electrical wiring and equipment shall comply with ~~Chapter 27 of~~ the *Florida Building Code*. **R4501.17 Residential swimming barrier requirement.** Residential swimming pools shall comply with Sections R4501.17.1 through R4501.17.3. **Exception:** A swimming pool with an approved safety pool cover complying with ASTM F 1346. **R4502.17.1 Outdoor swimming pools.** Outdoor swimming pools shall be provided with a barrier complying with R4501.17.1.1 through R4501.17.1.14. **R4501.17.1.1** The top of the barrier shall be at least 48 inches (1219 mm) above grade measured on the side of the barrier which faces away from the swimming pool. The maximum vertical clearance between grade and the bottom of the barrier shall be 2 inches (51 mm) measured on the side of the barrier which faces away from the swimming pool. Where the top of the pool structure is above grade the barrier may be at ground level or mounted on top of the pool structure. Where the barrier is mounted on top of the pool structure, the maximum vertical clearance between the top of the pool structure and the bottom of the barrier shall be 4 inches (102 mm). **R4501.17.1.2** The barrier may not have any gaps, openings, indentations, protrusions, or structural components that could allow a young child to crawl under, squeeze through, or climb over the barrier as herein described below. One end of a removable child barrier shall not be removable without the aid of tools. Openings in any barrier shall not allow passage of a 4-inch-diameter (102 mm) sphere. **R4501.17.1.3** Solid barriers which do not have openings shall not contain indentations or protrusions except for normal construction tolerances and tooled masonry joints. **R4501.17.1.4** Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is less than 45 inches (1143 mm), the horizontal members shall be located on the swimming pool side of the fence. Spacing between vertical members shall not exceed 1 ¾ inches (44 mm) in width. Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 1 ¾ inches (44 mm) in width. **R4501.17.1.5** Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is 45 inches (1143 mm) or more, spacing between vertical members shall not exceed 4 inches (102 mm). Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 1¾ inches (44 mm) in width. **R4501.17.1.6** Maximum mesh size for chain link fences shall be a 2 ¼ inch square (57 mm) unless the fence is provided with slats fastened at the top or bottom which reduce the openings to no more than 1¾inches (44 mm). **R4501.17.1.7** Where the barrier is composed of diagonal members, the maximum opening formed by the diagonal members shall be no more than 1¾inches (44 mm). **R4501.17.1.8** Access gates, when provided, shall be self-closing and shall comply with the requirements of Sections R4501.17.1.1 through R4501.17.1.7 and shall be equipped with a self-latching locking device located on the pool side of the gate. Where the device release is located no less than 54 inches (1372 mm) from the bottom of the gate, the device release mechanism may be located on either side of the gate and so placed that it cannot be reached by a young child over the top or through any opening or gap from the outside. Gates that provide access to the swimming pool must open outward away from the pool. The gates and barrier shall have no opening greater than ½ inch (12.7 mm) within 18 inches (457 mm) of the release mechanism. **R4501.17.1.9** Where a wall of a dwelling serves as part of the barrier, one of the following shall apply: 1. All doors and windows providing direct access from the home to the pool shall be equipped with an exit alarm complying with UL 2017 that has a minimum sound pressure rating of 85 dB A at 10 feet (3048 mm). Any deactivation switch shall be located at least 54 inches (1372 mm) above the threshold of the access. Separate alarms are not required for each door or window if sensors wired to a central alarm sound when contact is broken at any opening**.** **Exceptions:** a. Screened or protected windows having a bottom sill height of 48 inches (1219 mm) or more measured from the interior finished floor at the pool access level. b. Windows facing the pool on floor above the first story. c. Screened or protected pass-through kitchen windows 42 inches (1067 mm) or higher with a counter beneath. 2. All doors providing direct access from the home to the pool must be equipped with a self-closing, self-latching device with positive mechanical latching/locking installed a minimum of 54 inches (1372 mm) above the threshold, which is approved by the authority having jurisdiction.**R4501.17.1.10** Where an aboveground pool structure is used as a barrier or where the barrier is mounted on top of the pool structure, and the means of access is a ladder or steps, the ladder or steps either shall be capable of being secured, locked or removed to prevent access, or the ladder or steps shall be surrounded by a barrier which meets the requirements of Sections R4501.17.1.1 through R4501.17.1.9 and Sections R4501.17.1.12 through R4501.17.1.14. When the ladder or steps are secured, locked or removed, any opening created shall not allow the passage of a 4-inch-diameter (102 mm) sphere. **R4501.17.1.11** Standard screen enclosures which meet the requirements of Section R4501.17 may be utilized as part of or all of the "barrier" and shall be considered a "nondwelling" wall. Removable child barriers shall have one end of the barrier nonremovable without the aid of tools. **R4501.17.1.12** The barrier must be placed around the perimeter of the pool and must be separate from any fence, wall, or other enclosure surrounding the yard unless the fence, wall, or other enclosure or portion thereof is situated on the perimeter of the pool, is being used as part of the barrier, and meets the barrier requirements of this section. **R4501.17.1.13** Removable child barriers must be placed sufficiently away from the water's edge to prevent a young child or medically frail elderly person who may manage to penetrate the barrier from immediately falling into the water. Sufficiently away from the water's edge shall mean no less than 20 inches (508 mm) from the barrier to the water's edge. Dwelling or nondwelling walls including screen enclosures, when used as part or all of the "barrier" and meeting the other barrier requirements, may be as close to the water's edge as permitted by this code. **R4501.17.1.14** A wall of a dwelling may serve as part of the barrier if it does not contain any door or window that opens to provide direct access from the home to the swimming pool. **R4501.17.1.14.1 Adjacent waterways.** Permanent natural or permanent man-made features such as bulkheads, canals, lakes, navigable waterways, etc., adjacent to a public or private swimming pool or spa may be permitted as a barrier when approved by the authority having jurisdiction. When evaluating such barrier features, the authority may perform on-site inspections and review evidence such as surveys, aerial photographs, water management agency standards and specifications, and any other similar documentation to verify, at a minimum, the following: 1. The barrier feature is not subject to natural changes, deviations, or alterations and is capable of providing an equivalent level of protection as that provided by the code. 2. The barrier feature clearly impedes, prohibits or restricts access to the swimming pool or spa. **R4501.17.1.15** A mesh safety barrier meeting the requirements of Section R4501.17 and the following minimum requirements shall be considered a barrier as defined in this section: 1. Individual component vertical support posts shall be capable of resisting a minimum of 52 pounds (229 N) of horizontal force prior to breakage when measured at a 36-inch (914 mm) height above grade. Vertical posts of the child mesh safety barrier shall extend a minimum of 3 inches (76 mm) below deck level and shall be spaced no greater than 36 inches (914 mm) apart. 2. The mesh utilized in the barrier shall have a minimum tensile strength according to ASTM D 5034 of 100 lbf., and a minimum ball burst strength according to ASTM D 3787 of 150 lbf. The mesh shall not be capable of deformation such that a ¼ -inch (6.4 mm) round object could pass through the mesh.  The mesh shall receive a descriptive performance rating of no less than "trace discoloration" or "slight discoloration" when tested according to ASTM G 53 (Weatherability, 1,200 hours). 3. When using a molding strip to attach the mesh to the vertical posts, this strip shall contain, at a minimum, #8 by ½-inch (12.7 mm) screws with a minimum of two screws at the top and two at the bottom with the remaining screws spaced a maximum of 6 inches (152 mm) apart on center. 4. Patio deck sleeves (vertical post receptacles) placed inside the patio surface shall be of a nonconductive material. 5. A latching device shall attach each barrier section at a height no lower than 45 inches (11 613 mm) above grade. Common latching devices that include, but are not limited to, devices that provide the security equal to or greater than that of a hook and eye type latch incorporating a spring actuated retaining lever (commonly referred to as a safety gate hook). 6. The bottom of the child mesh safety barrier shall not be more than 1 inch (25 mm) above the deck or installed surface (grade). **R4501.17.2 Indoor swimming pools.** All walls surrounding indoor swimming pools shall comply with Section R4501.17.1.9. **R4501.17.3 Prohibited locations.** A barrier may not be located in a way that allows any permanent structure, equipment, or window that opens to provide access from the home to the swimming pool. **R4501.18 Ladders and steps.** All pools whether public or private shall be provided with a ladder or steps in the shallow end where water depth exceeds 24 inches (610 mm). In private pools where water depth exceeds 5 feet (1524 mm), there shall be ladders, stairs or underwater benches/swimouts in the deep end. Where manufactured diving equipment is to be used, benches or swimouts shall be recessed or located in a corner. **Exception:** In private pools having more than one shallow end, only one set of steps are required. A bench, swim-out or ladder may be used at all additional shallow ends in lieu of an additional set of steps. **R4501.19 Final inspection.** Final electrical, and barrier code, inspection shall be completed prior to filling the pool with water. **Exception:** Vinyl liner and fiberglass pools are required to be filled with water upon installation. **R4501.20 Filters.** Components shall have sufficient capacity to provide a complete turnover of pool water in 12 hours or less. **R4501.20.1 Sand filters.** **R4501.20.1.1 Approved types.** Rapid sand filters (flow up to 5 gpm per square foot) shall be constructed in accordance with approved standards. Where high rate sand filters (flow in excess of 5 gpm per square foot) are used, they shall be of an approved type. The circulation system and backwash piping shall be adequate for proper backwashing of said filter and shall provide backwash flow rates of at least 12 gpm per square foot or rapid sand filters or 15 gpm per square foot or high rate sand filters. **R4501.20.1.2 Instructions.** Every filter system shall be provided with written operating instructions. **R4501.20.1.3 Filter system equipment.** On pressure type filters, a means shall be provided to permit the release of internal pressure. A filter incorporating an automatic internal air release as its principal means of air release shall have lids which provide a slow and safe release of pressure as part of its design. A separation tank used in conjunction with a filter tank shall have as part of its design a manual means of air release or a lid which provides a slow and safe release of pressure as it is opened. **R4501.20.2 Diatomite type filters.** **R4501.20.2.1 Design.** Diatomite-type filters shall be designed for operation under either pressure or vacuum. The design capacity for both pressure and vacuum filters shall not exceed 2 gpm per square foot of effective filter area. **R4501.20.2.2 Filter aid.** Provision shall be made to introduce filter aid into the filter in such a way as to evenly precoat the filter septum. **R4501.21 Pool fittings.** **R4501.21.1 Approved type.** Pool fittings shall be of an approved type and design as to be appropriate for the specific application. **R4501.21.2 Skimmers.** Approved surface skimmers are required and shall be installed in strict accordance with the manufacturer's installation instructions. Skimmers shall be installed on the basis of one per 800 square feet (74 m2) of surface area or fraction thereof, and shall be designed for a flow rate of at least 25 gallons per minute (gpm) (1.6 L/s) per skimmer. **R4501.21.3 Main outlet.** An approved main outlet, when provided, shall be located on a wall or floor at or near the deepest point in the pool for emptying or circulation, or both, of the water in the pool. **R4501.21.4 Hydrostatic relief device.** In areas of anticipated water table an approved hydrostatic relief device shall be installed. **Exception:** Plastic liner pools (where there is no structural bottom to the pool). **R4501.21.5 Inlet fittings.** Approved manufactured inlet fittings for the return of recirculated pool water shall be provided on the basis of at least one per 300 square feet (28 m2) of surface area. Such inlet fittings shall be designed and constructed to insure an adequate seal to the pool structure and shall incorporate a convenient means of sealing for pressure testing of the pool circulation piping. Where more than one inlet is required, the shortest distance between any two required inlets shall be at least 10 feet (3048 mm). **R4501.22 Equipment foundations and enclosures.** All pool motors and equipment shall be installed in compliance with the manufacturer’s recommendations. All heating and electrical equipment, unless approved for outdoor installation, shall be adequately protected against the weather or installed within a building. **R4501.23 Accessibility and clearances.** Equipment shall be so installed as to provide ready accessibility for cleaning, operating, maintenance and servicing.***CHAPTER 46. Change Chapter 44, Referenced Standards, to Chapter 46 as follows:*** **Chapter 46 ~~44~~, REFERENCED STANDARDS** |
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|  |  | ***Add or update the following standards:*** |
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**APSP Association of Pool and Spa Professionals**

2111 Eisenhower Avenue

Alexandria, VA 22314

Standard                                                                                                               Referenced in code

reference number    Title                                                                                           section number

 ANSI/NSPI 3—99               American National Standard for Permanently Installed

Residential  Spas………………………………………..…..~~AG104~~  R4501.6.1

ANSI/APSP/ICC~~NSPI~~ 4—12~~99~~     American National Standard for Aboveground**/**On ground                       ~~AG103.2~~

                                                        Residential Swimming Pools. . . . ............................................................R4501.6.1

ANSI/APSP/ICC ~~NSPI~~ 5-~~03~~11        American National Standard for Residential In ground Swimming        ~~AG103.1~~

Pools………………………………………………………………….  R4501.6.1

ANSI/APSP/ICC~~NSPI~~ 6—13~~99~~      American National Standard for Portable Spas. . . . . . .. . . . ~~AG104.2,~~ R4501.6.1

ANSI/APSP 7—06     American National Standard for Suction Entrapment Avoidance

                                        In Swimming Pools, Wading Pools, Spas, Hot Tubs, and Catch              ~~AG106.1~~

                                         Basins…………….…………………………  R4501.6.1, R4501.6.3, R4501.6.6

**Florida Codes Florida Building Commission**

Building Codes and Standards

Department of Business and Professional Regulation

1940 N. Monroe Street, Suite 90A

Tallahassee, Fl. 32399-0772

Standard Referenced in code

reference number Title section number

FBC-A-Sixth Edition (2017)Florida Building Code, Accessibility R320.1

FBC-B- Fifth Edition (2014) Florida Building Code, Building R101.2.1, R301.2.1.1, R301.2.1.1.3, R301.2.1.6,

R301.2.5, R322.1.11, R403.1.1, R403.1.2, R404.5.1,

R606.13.8, R615.1, R802.1.3.4, R905.3.1, R905.10.3,

Table R907.7.1.2, R907.7.2, R907.8, M1904.1,

R4201.1.2, R4201.16, R4401.1, R4402.1, R4403.1, R4404.1, R4405.1, R4406.1, R4407.1, R4408.1,

R4409.1, R4410.1, R4411.1, R4412.1

FBC-EC- Sixth Edition (2017) Florida Building Code, Energy Conservation R302.13, R408.3, R806.5, N1101~~.2~~,

FBC-EB- Sixth Edition (2017) Florida Building Code, Existing Building R101.2, R907.1, M1202.1, P2502, Table E3403

FFPC- Sixth Edition (2017) Florida Fire Prevention Code M1904.1, M2201.7, G2412.2

FBC-FG- Sixth Edition (2017) Florida Building Code, Fuel Gas M1301.1, M1904.1, G2401.1, G2423.1,

 R4501.1.2, R4501.15

FBC-M- Sixth Edition (2017) Florida Building Code, Mechanical M1301.1, M1304.7.2, G2402.3, Table E3403,

 R4501.1.2, R4501.15

FBC-P- Sixth Edition (2017) Florida Building Code, Plumbing Table R301.2(1), R903.4.1,G2402.3, P2601.1, P2902.5.5,

 R4501.1.2, R4501.3, R4501.8.1, R4501.13.2

64E Rule 64E, Florida Administrative Code (Sewage Disposal) R306.3, R322.1.7

FS Florida Statutes R202, R318.1.7, R502.1.10.1, R802.1.7.2

FBC-TPHVHZ- Fifth Edition (2014) Florida Building Code, Test Protocols for High Velocity Hurricane Zones

RAS 118 R905.3, R905.3.2, R905.3.3, R905.3.3.1, R905.3.6, R905.3.8

RAS 119 R905.3, R905.3.2, R905.3.3, R905.3.3.1, R905.3.6, R905.3.8

RAS120 R905.3, R905.3.2, R905.3.3, R905.3.3.1, R905.3.6, R905.3.8

TAS 107 R905.2.6.1, R905.16.3

TAS 114 R904.4.2, R904.4.3

TAS 201 R301.2.1.2, R612.3.1

TAS 202 R301.2.1.2, R612.3, R612.4

TAS 203 R301.2.1.2, R612.3.1

**UL**

2034-08 Standard for Single- and Multiple-station Carbon Monoxide Alarms R202, RR315.4

2075-04 Standard for Gas and Vapor Detectors and Sensors—with revisions

 Through September 28, 2007 R202, R315.2

***Appendix E: Manufactured housing used as dwellings. Replace to read as follows:***

APPENDIX E:

**FLORIDA STANDARD FOR MITIGATION OF RADON**

**IN EXISTING BUILDINGS**

#### Effective: June 1, 1994

#### INTRODUCTION Radon is a radioactive gas which occurs naturally in soils. It has been found in high concentrations in some areas of many states including Florida. Radon can enter buildings through floor cracks and openings driven by pressure differences which result from space conditioning and ventilation systems, temperatures and wind. Its radioactive decay products can cause lung cancer when breathed. The following building standards have been developed in accordance with [Section 553.98](http://ecodes.cyberregs.com/cgi-exe/cpage.dll?pg=x&rp=/pseudo.htm&sid=2013071508545885133&aph=0&cid=iccf&uid=iccf0002&clrA=005596&clrV=005596&clrX=005596&ref=/indx/ST/fl/st/b400v10/st_fl_st_b400v10_appe.htm&pseudo=UN1%2C%2CST%2CSTF2012021013350715555%2Cb=553%2C(98)#b=553~(98)), *Florida Statues* to protect the public by setting standards for mitigation of radon concentrations in existing buildings. PRINCIPAL APPROACHES FOR RADON MITIGATION IN EXISTING BUILDINGS This building standard addresses five principal approaches to mitigating radon accumulation in buildings:

#### 1. Radon control using the building structure as a gas barrier. This is a passive approach which requires no fans (see [Chapter 4](http://ecodes.cyberregs.com/cgi-exe/cpage.dll?pg=x&rp=/pseudo.htm&sid=2013071508545885133&aph=0&cid=iccf&uid=iccf0002&clrA=005596&clrV=005596&clrX=005596&ref=/indx/ST/fl/st/b400v10/st_fl_st_b400v10_appe.htm&pseudo=UN1%2C%2CST%2CSTF2012021013345115537%2C%2C)).

#### 2. Radon control by lowering the air pressure in the soil beneath the building relative to the indoor air pressure of the building. This is an active approach which requires one or more electrically driven fans (see [Chapter 6](http://ecodes.cyberregs.com/cgi-exe/cpage.dll?pg=x&rp=/pseudo.htm&sid=2013071508545885133&aph=0&cid=iccf&uid=iccf0002&clrA=005596&clrV=005596&clrX=005596&ref=/indx/ST/fl/st/b400v10/st_fl_st_b400v10_appe.htm&pseudo=UN1%2C%2CST%2CSTF2012021013351215558%2C%2C)).

#### 3. Radon control by raising the indoor air pressure in the building relative to the air pressure in the soil beneath the building. This is an active approach which may either use an existing heating and air-conditioning system blower or an additional electrically driven fan. This approach may have significant negative impact on the annual energy consumption of the building due to heating and cooling of additional outdoor air in addition to fan power consumption (see [Chapter 5](http://ecodes.cyberregs.com/cgi-exe/cpage.dll?pg=x&rp=/pseudo.htm&sid=2013071508545885133&aph=0&cid=iccf&uid=iccf0002&clrA=005596&clrV=005596&clrX=005596&ref=/indx/ST/fl/st/b400v10/st_fl_st_b400v10_appe.htm&pseudo=UN1%2C%2CST%2CSTF2012021013350715555%2C%2C)).

#### 4. Radon control by ventilating the building with outdoor air. This is an active approach which may either use an existing heating and air-conditioning system blower or an additional electrically driven fan. This approach may have significant negative impact on the annual energy consumption of the building due to heating and cooling of additional outdoor air and to increased fan power consumption (see [Chapter 5](http://ecodes.cyberregs.com/cgi-exe/cpage.dll?pg=x&rp=/pseudo.htm&sid=2013071508545885133&aph=0&cid=iccf&uid=iccf0002&clrA=005596&clrV=005596&clrX=005596&ref=/indx/ST/fl/st/b400v10/st_fl_st_b400v10_appe.htm&pseudo=UN1%2C%2CST%2CSTF2012021013350715555%2C%2C)).

#### 5. Radon control by separating the building and source with a ventilated region of outside air. This approach is generally applicable to buildings with a crawl space, and may be either active or passive (see [Chapter 6](http://ecodes.cyberregs.com/cgi-exe/cpage.dll?pg=x&rp=/pseudo.htm&sid=2013071508545885133&aph=0&cid=iccf&uid=iccf0002&clrA=005596&clrV=005596&clrX=005596&ref=/indx/ST/fl/st/b400v10/st_fl_st_b400v10_appe.htm&pseudo=UN1%2C%2CST%2CSTF2012021013351215558%2C%2C)).

#### The standard does not mandate the implementation of any of the principal approaches listed above. It establishes minimum standard practices for each of the principal approaches. Implementation of these minimum standard practices does not guarantee successful mitigation. A post-mitigation indoor radon concentration test must be conducted to demonstrate successful mitigation in compliance with the rules of the Department of Health and Chapter 3 of this standard. FOREWORD The practices incorporated in the standard are based on experience, testing and in certain cases expectations founded on interpretation of fundamental physical principles. The demonstration at successful mitigation utilizing the different approaches incorporated in this standard varies. Subslab depressurization, crawlspace ventilation, and submembrane depressurization have the highest demonstrated success rates. Success with these approaches has in many cases required modification and enhancement of systems based on post mitigation indoor radon tests. Effective sealing of accessible entry points has been demonstrated to make a significant impact on indoor radon concentrations. However, mitigation by sealing entry points alone has not had a demonstrated level of success equivalent to the aforementioned active mitigation systems. This is understood to be principally because of the difficulty in locating and treating enough entry points to resist the driving forces which cause radon laden soil gas and crawlspace air entry. The significance of entry points and their treatment can be ranked based on their size, location and the degree of depressurization of the building space surrounding them. Design and construction of successful sub-slab depressurization systems also depends on entry point size, location and the magnitude of coincident building depressurization. Attention to limiting entry at points of high depressurization such as space conditioning system return plenums, mechanical closets, etc., is critical to the success of both passive mitigation and minimally designed active mitigation systems. Building pressurization is expected, based on fundamental principles, to provide a potentially effective mitigation strategy. The effectiveness for individual cases may rely on occupant behavior as well as building leakage characteristics. Pressurization systems also have potentially major impacts on occupant comfort, humidity control and energy use. Building ventilation has potential application where low indoor radon concentrations exist initially. This approach can have significant impacts on the ability of a building’s climate control systems to perform adequately in the hot and humid climate and on energy consumption for comfort conditioning. None of the techniques in this standard are guaranteed to provide adequate mitigation. The complexities of existing buildings and the inherent limitations in the ability to determine the building’s construction characteristics result in conditions too diverse for a standard to anticipate. Successful mitigation depends on the experience of the mitigator to make an effective selection of mitigation options. A post mitigation indoor radon test is essential for determining if initial mitigation has been successful. Proper maintenance and operation of mechanical systems implemented as part of active mitigation approaches are critical to the long term effectiveness of mitigation where such systems are used. Periodic retests of indoor radon concentrations at least every two years, and when the building undergoes significant structural alterations, are advised for all mitigation approaches to provide continued assurance of safe indoor radon levels.

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#### CHAPTER E1 ADMINISTRATION E101 General.

#### E101.1 Title. Provisions in the following chapters and sections shall constitute and be known as, and may be cited as, the *Florida* *Standard For* *Mitigation of* *Radon* *in* *Existing Buildings*, hereinafter referred to as "this standard.”

#### E101.2 Intent.

#### E101.2.1 General. This standard applies to those alterations to existing buildings that are implemented to reduce indoor radon concentrations, in order to enable control of human exposure to indoor radon and its progeny.

#### E101.2.2 Limits. This standard is intended to improve indoor air quality with respect to radon. These standards are based on the principle of limiting radon concentrations to levels as low as reasonably achievable, within the limitations at current technology and economic feasibility. Use of this standard does not guarantee radon will be limited to any specific concentrations in a building; however, experience indicates a reduction in radon and its progeny can be realized by using the mitigation strategies described in this standard.

#### E101.2.3 Durability. Experience with the radon-resistant construction details contained herein has been limited to a fraction of the average life of a building. Implementation of radon mitigation measures described herein does not guarantee that mitigation effects will be permanent. Periodic inspection and maintenance of the radon mitigation measures and retesting of indoor radon levels is the responsibility of the building owner.

#### E101.3 Scope.

#### E101.3.1 Applicability. The provisions of this standard shall apply to the construction or alteration associated with the mitigation of indoor radon in every building or structure not specifically exempted. Exempted occupancies shall include structures not intended for human occupancy.

#### E102 Alternate materials and methods. The provisions of this standard are not intended to prevent the use of any material or method of construction not specifically prescribed by this standard, provided any such alternate is demonstrated according to the provisions of Chapter E3 of this standard, to be effective at the control of radon.

#### E103 Compliance. All mitigation shall be deemed to be in compliance with this standard when: (a) the techniques utilized in mitigation meet the minimum standard practices established herein; and (b) the building is determined to meet the "not to exceed” exposure standard established by the Department of Health (DOH) or the level specified in any warranty or guarantee provided to the client. The Department of Health (DOH) has set an exposure standard for radon decay products in buildings at an annual average of 0.02 working levels. Under conditions often encountered in homes, this is equivalent to an annual average radon level of 4.0 picocuries per liter. Radon levels in most buildings can be reduced to 4.0 picocuries per liter or below. Testing must be conducted in accordance with all applicable sections of the DOH *Florida* *Administrative* *Code* Chapter 64E-[5](http://ecodes.cyberregs.com/cgi-exe/cpage.dll?pg=x&rp=/pseudo.htm&sid=2013071508545885133&aph=0&cid=iccf&uid=iccf0002&clrA=005596&clrV=005596&clrX=005596&ref=/indx/ST/fl/st/b400v10/st_fl_st_b400v10_appe.htm&pseudo=UN1%2C%2CST%2CSTF2012021013350715555%2C%2C) and in accordance with Chapter E3 of this standard.

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| CHAPTER E2 DEFINITIONS E201 General. For the purposes of this standard, certain abbreviations, terms, phrases, words and their derivatives shall be set forth in this chapter. Where terms are not defined therein, they shall have the meaning as noted in the applicable locally adopted code. Words not defined in any locally adopted code shall have the meanings in *Webster’s* *Ninth New Collegiate Dictionary,* as revised. E202 Definitions. AUTOMATIC. Self-acting, operating by its own mechanism when activated by some personal influence, as for example, a change in current, pressure, temperature or mechanical configuration. CAULKS AND SEALANTS. Those materials which will significantly reduce the flow of gases through small openings in the building shell. Among those used are: CONDITIONED SPACE. All spaces which are provided with heated and/or cooled air or which are maintained at temperatures over 50°F (10°C) during the heating season, including adjacent connected spaces separated by an uninsulated component (e.g. basements, utility rooms, garages, corridors). CONTRACTOR. A building trades professional licensed by the state, including certified mitigation business. CRAWLSPACE. An area beneath the living space in some houses, where the floor of the lowest living area is elevated above grade level. This space (which generally provides only enough head room for a person to crawl in), is not living space, but often contains utilities. DEPRESSURIZATION. A condition that exists when the measured air pressure is lower than the reference air pressure. ELASTOMERIC. That property of macromolecular material of returning rapidly to approximately the initial dimensions and shape, after substantial deformation by a weak stress and release of stress. MIL. 1 mil = 1/1000 of an inch MITIGATION. The act of making less severe, reducing or relieving. For the purposes of this standard, a building shall not be considered as mitigated until it has been demonstrated to meet the standards of compliance specified in [Section 103](http://ecodes.cyberregs.com/cgi-exe/cpage.dll?pg=x&rp=/pseudo.htm&sid=2013071508545885133&aph=0&cid=iccf&uid=iccf0002&clrA=005596&clrV=005596&clrX=005596&ref=/indx/ST/fl/st/b400v10/st_fl_st_b400v10_appe.htm&pseudo=UN1%2C%2CST%2CSTF2012021013342515525%2Cb=103%2C#b=103). OUTSIDE AIR. Air taken from the outdoors and, therefore, not previously circulated through the system. PICOCURIE (pCi). A unit of measurement of radioactivity. A curie is the amount of any radionuclide that undergoes exactly 3.7 x 1010 radioactive disintegrations per second. A picocurie is one trillionth (10-12) of a curie, or 0.037 disintegrations per second. PICOCURIES PER LITER (pCi/l). A common unit of measurement of the concentration of radioactivity in a gas. A picocurie per liter corresponds to 0.037 radioactive disintegrations per second in every liter of air. RADIUM (Ra). A naturally occurring radioactive element resulting from the decay of uranium. It is the parent of radon. RADON (Rn). A naturally occurring, chemically inert, radioactive gas. It is part of the uranium-238 decay series, it is the direct decay product of radium-226. SOIL DEPRESSURIZATION SYSTEM. A system designed to withdraw air below the slab through means of a vent pipe and fan arrangement (active). SOIL GAS. Gas which is always present underground, in the small spaces between particles of the soil or in crevices in rock. Major constituents of soil gas include nitrogen, water vapor, carbon dioxide, and (near the surface) oxygen. Since radium-226 is essentially always present in the soil or rock, varying levels of radon-222 will exist in the soil gas. SOIL GAS RETARDER. A concrete slab; polyvinylchloride (PVC) ethylenepropylene dieneterpolymer (EPDM), neoprene or other flexible sheet material; or other system of materials placed between the soil and the building for the purpose of reducing the flow of soil gas into the building. URETHANE. A crystalline ester-amide used as a gelatinizing agent for cellulose acetate or cellulose nitrate. A component of polyurethane used in making flexible and rigid foams, elastomers, and resins for coatings and adhesives. VENTILATION. The process of supplying or removing air, by natural or mechanical means, to or from any space. Such air may or may not have been conditioned.  |  |  |

#### CHAPTER E3 TESTING E301 General. Where mitigation projects are performed by commercial mitigation contractors, all tests performed to demonstrate compliance with this standard must be performed by a certified radon measurement business certified by the Florida Department of Health and Rehabilitative Services. Compliance tests must be performed by a measurement business independent of the mitigation contractor.

#### E301.1 Test procedures. Testing shall be conducted according to the procedures in the appropriate sections of EPA 402-R-92-004, *Indoor* *Radon* *and* *Radon* *Decay* *Product Measurement* *Device Protocols* (US EPA, July, 1992) and EPA 402-R-92-003, *Protocols* *for* *Radon* *and* *Radon* *Decay Product Measurements in Homes* (US EPA, June 1993).

#### E301.2 Acceptable devices and test periods. Selection of devices, operational devices, and test periods shall be in accordance with EPA 402-R-92-004.

#### E301.2.1 Acceptance criteria. The building will be deemed to comply with the standard if post mitigation test results performed in accordance with this chapter and all applicable sections of Chapter 64E-[5](http://ecodes.cyberregs.com/cgi-exe/cpage.dll?pg=x&rp=/pseudo.htm&sid=2013071508545885133&aph=0&cid=iccf&uid=iccf0002&clrA=005596&clrV=005596&clrX=005596&ref=/indx/ST/fl/st/b400v10/st_fl_st_b400v10_appe.htm&pseudo=UN1%2C%2CST%2CSTF2012021013350715555%2C%2C), *Florida Administrative* *Code*, Part XII, Subpart A, meet the "not to exceed” exposure standard established by the DOH or the level specified in any warranty or guarantee to the client.

#### CHAPTER E4 STRUCTURAL SEALING AND HVAC SYSTEM BALANCING E401 General. When accessible cracks, penetrations, and joints in floors and walls in contact with the soil, or separating conditioned space from a crawl space, are sealed to reduce radon entry, they shall as a minimum be sealed in accordance with the provisions of this chapter. In addition, when acceptable indoor radon concentrations are attained by the sealing of ducts and plenums, they shall be done in accordance with the provisions of this chapter. E402 Sealing cracks and joints in concrete floors and walls.

#### E402.1 Small cracks and joints. Cracks and joints with widths less than 1/16 inch (1.6 mm) shall be repaired by the application of an elastomeric material capable of withstanding at least 25 percent extension and extending at least 4 inches (102 mm) beyond the length and width of the crack, or by the method described in Section E402.2.

#### E402.2 Large cracks and joints. Cracks with widths larger than 1/16 inch (1.6 mm) shall be enlarged to a recess with minimum dimensions of 1/4 inch by 1/4 inch (6 mm by 6 mm) and sealed with an approved caulk or sealant applied over a sealant backer in accordance with the manufacturer’s recommendations. Cracks and joints with widths less than 1/16 inch (1.6 mm) may also be sealed in this manner if traffic, floor covering material or other conditions are inconsistent with the provisions of Section E402.1.

#### E402.3 Utility penetrations, work spaces and large slab openings. Where large openings through the slab exist, such as at a bath tub drain or a toilet flange, an acceptable method for sealing the exposed soil shall include fully covering the exposed soil with a solvent based plastic roof cement or other approved material as per Section E405.1 to a minimum depth of 1 inch (25 mm). Where voids between masonry foundation walls and the slab edge are accessible, and are sealed in order to reduce radon entry, nonshrinking cementitious material may be used.

#### E402.4 Utility penetrations in crawlspace walls. Utility penetrations or other openings through hollow cavity walls that separate conditioned space from soil, or conditioned space from a crawl space, shall be sealed with an approved material on both the interior and exterior faces of the wall. Penetrations and openings through solid concrete floors or walls may be sealed on only the interior face.

#### E402.5 Hollow masonry walls. All openings for electrical boxes or plumbing or other wall penetrations in hollow masonry walls, that are sealed in order to reduce radon entry, shall be sealed with an approved caulk and/or gasket on the interior face of the wall.

#### E402.6 Sumps. Any sump located in a conditioned portion of a building, or in an enclosed space directly attached to a conditioned portion of a building, shall be covered by a lid. An air tight seal shall be formed between the sump and lid and at any wire or pipe penetrations.

#### E403 Floors over crawlspace.

#### E403.1 Reinforced concrete floors. Cracks and penetrations through concrete floors constructed over crawlspaces, and that are sealed in order to reduce radon entry, shall be sealed in conformance with all applicable provisions of Section E402.

#### E403.2 Wood-framed floors. All penetrations through the subfloor, including but not limited to plumbing pipes, wiring and ductwork, that are sealed in order to reduce radon entry, shall be sealed with an approved caulk in accordance with the manufacturer’s recommendations. Where large openings are created by plumbing, such as at bath tub drains, sheet metal or other rigid and durable materials shall be used in conjunction with sealants to close and seal the opening.

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#### E404 Combined construction types.

#### E404.1 Structural chases. Openings which connect a crawlspace and the space between floor or ceiling joists, wall studs, or any other hollow chase adjoining conditioned space, that are sealed in order to reduce radon entry concentrations, shall be closed and sealed in accordance with the appropriate portions of this chapter.

#### E404.2 Wall penetrations. Openings for electrical or plumbing connections in a wall between a crawlspace and a conditioned space, that are sealed in order to reduce radon entry, shall be closed and sealed with an approved caulk and/or gasket.

#### E404.3 Doors. When a door is located in a wall between a crawlspace and the conditioned space, it shall be fully weatherstripped or gasketed.

#### E405 Approved sealant materials.

#### E405.1 Sealants. Acceptable caulks and sealants shall conform with ASTM C 920, *Standard* *Specifications for Elastomeric Joint* *Sealants,* and ASTM C 962*,* *Standard Guide* *for* *Use* *of* *Elastomeric Joint* *Sealants*. All sealant materials and methods of application shall be compatible with the location, function and material of the surface or surfaces being sealed.

#### E406 Space conditioning and ventilation systems.

#### E406.1 Mechanical system connections. Condensate drains and pipe chases for freon lines that provide a direct connection between the indoor air and the soil shall be sealed in accordance with the provisions of this section.

#### E406.1.1 Condensate drains. Condensate drains shall connect to air outside the building perimeter at a height of at least 6 inches (172 mm) above the finished grade ground level. Chases through which the condensate and refrigerant lines run shall not terminate in the air return plenum or duct. If a portion of the condensate pipe does not drop below the height of the condensate outlet, then a trap should be installed to prevent suction of outdoor air into the air handler.

#### E406.1.2 Freon chases. Freon chases that terminate within the house or garage shall be sealed with closed cell expanding foam material. Pipe insulation shall be removed from the freon lines at the point of the seal to provide for complete bond between the freon line and the foam.

#### E406.2 Air distribution systems.

#### E406.2.1 Sealing. All ducts and plenums that are modified or sealed in order to achieve acceptable indoor radon concentrations, shall be made airtight in accordance with the current edition Chapter 13 of the *Florida* *Building Code, Building*. If ductboard is used, the seal must be on the foil side of the ductboard. Mastic sealing systems designed specifically for the conditions of use shall be used in accordance with the manufacturer’s recommendations to close and seal leaks in ducts or plenums. Modifications to ducts located in crawlspaces or service areas of attics shall incorporate support, cover or other protection from accidental damage.

#### E406.2.2 Return plenums. If acceptable indoor radon concentrations are achieved in part by construction or modification of a return plenum, it shall be constructed with materials and closures which produce a continuous air barrier for the life of the building. Construction of the return plenum shall be done such that a continuous air barrier completely separates the plenum from adjacent building structures. If duct board is the primary air barrier, then the joints shall be sealed by fabric and mastic on the foil side of the board.

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#### CHAPTER E5 ENGINEERED SYSTEMS E501 General. Design of radon mitigation systems must be signed by a certified radon mitigation specialist. Additionally, for radon mitigation systems that rely upon ventilation or pressurization of the conditioned space for radon control, the plans and specifications for the ventilation or pressurization system shall be signed and where appropriate sealed according to the provisions of Section [471.003, *Florida Statutes*](http://ecodes.cyberregs.com/cgi-exe/cpage.dll?pg=x&rp=/pseudo.htm&sid=2013071508545885133&aph=0&cid=iccf&uid=iccf0002&clrA=005596&clrV=005596&clrX=005596&ref=/indx/ST/fl/st/b400v10/st_fl_st_b400v10_appe.htm&pseudo=UN1%2C%2CST%2CSTF2002042311463351406%2Cd=003%2C#d=003) and Section [553.79, *Florida Statutes*](http://ecodes.cyberregs.com/cgi-exe/cpage.dll?pg=x&rp=/pseudo.htm&sid=2013071508545885133&aph=0&cid=iccf&uid=iccf0002&clrA=005596&clrV=005596&clrX=005596&ref=/indx/ST/fl/st/b400v10/st_fl_st_b400v10_appe.htm&pseudo=UN1%2C%2CST%2CSTF2002042311463150000%2Cd=79%2C#d=79). Such systems may include, but are not limited to, one of the following:

#### E501.1 Air pressure control. Indoor pressure may be elevated relative to subslab levels.

#### E501.2 Ventilation. An indoor air exchange rate may be maintained in a sufficient quantity to satisfy Section E502.1.

#### E502 Design criteria.

#### E502.1 Compliance. Any engineered radon mitigation system in compliance with this standard must maintain an indoor radon concentration equal to or less than the "not to exceed” radon exposure standard established by the Florida DOH during the primary hours of occupancy. The interior surfaces of buildings pressurized as the primary means of radon control, must be sealed to [Section 606](http://ecodes.cyberregs.com/cgi-exe/cpage.dll?pg=x&rp=/pseudo.htm&sid=2013071508545885133&aph=0&cid=iccf&uid=iccf0002&clrA=005596&clrV=005596&clrX=005596&ref=/indx/ST/fl/st/b400v10/st_fl_st_b400v10_appe.htm&pseudo=UN1%2C%2CST%2CSTF2012021013351215558%2Cb=606%2C#b=606), Air infiltration, Chapter 13, Energy Efficiency, of the *Florida* *Building Code, Building*. The design values for total ventilation and air exchange rates for each space occupancy shall not exceed the minimums provided for each space occupancy classification in Chapter M4, Ventilation, of the *Florida Building* *Code,* *Mechanical* or the ASHRAE 62 Alternative. When these air quantities are not sufficient to maintain indoor concentrations below the acceptable level, other mitigation options shall be used.

#### E502.2 Tests. The indoor radon concentration must be measured in accordance with [Chapter 3](http://ecodes.cyberregs.com/cgi-exe/cpage.dll?pg=x&rp=/pseudo.htm&sid=2013071508545885133&aph=0&cid=iccf&uid=iccf0002&clrA=005596&clrV=005596&clrX=005596&ref=/indx/ST/fl/st/b400v10/st_fl_st_b400v10_appe.htm&pseudo=UN1%2C%2CST%2CSTF2012021013343615529%2C%2C) and certified as acceptable according to current Florida DOH rules.

#### E502.3 System monitoring device. Any engineered system must have a mechanism installed to automatically indicate failure of the system to building occupants, which shall be either a visual device conveniently visible to building occupants, or a device that produces a minimum 60 db audible signal.

#### CHAPTER E6 SOIL DEPRESSURIZATION SYSTEMS E601 General. This chapter provides minimum design and construction criteria for active soil depressurization systems. The operating soil depressurization system shall maintain under the building a pressure less than the indoor air pressure. Systems for buildings with slab on grade floors shall as a minimum comply with Section E603.1. Systems for buildings with off grade floors shall as minimum comply with Section E603.2 or E604. E602 Soil depressurization system installation criteria.

#### E602.1 Suction fans.

#### E602.1.1 Fan. Suction shall be provided by a fan, rated for continuous operation and having thermal overload with automatic reset features.

#### E602.1.2 Seal. The suction fan shall be designed and manufactured to provide an air-tight seal between the inlet and outlet ducts and the fan housing. The fan housing must remain air-tight at air pressure equal to the rated maximum operating pressure.

#### E602.1.3 Rating. The rating specific to system type shall apply (see Sections E603.1 and E603.2).

#### E602.1.4 Location. The suction fan shall be located where any leakage of air from the exhaust portion of the fan or vent system shall be into outside air. No pressurized portion of the vent system shall pass through conditioned space.

#### E602.1.5 Power supply. Electrical power shall be supplied to the fan in compliance with the provisions of Chapter 27 of the *Florida Building Code, Building* and any additional local regulations.

#### E602.2 System monitoring device. The soil depressurization system shall include a system monitoring device which shall be either a visual device, conveniently visible to building occupants, or a device that produces a minimum 60 db audible signal, activated by the loss of pressure or flow in the vent pipe.

#### E602.3 Vents.

#### E602.3.1 Material. Piping material shall be of any type approved by locally adopted codes for plumbing vents.

#### E602.3.2 Slope. The vent piping shall have a minimum slope of 1/8 inch (3.2 mm) per foot in order to drain any condensation back to soil beneath the soil gas retarder. The system shall be designed and installed so that no portion will allow the excess accumulation of condensation.

#### E602.3.3 Terminals. Vent pipes shall be terminated in locations that will minimize human exposure to their exhaust air. Locations shall be above the eave of the roof. To prevent reentrainment of radon, the point of discharge from vents of fan-powered soil depressurization shall meet all of the following requirements:

####  (1) be 10 feet (3048 mm) or more above ground level,

####  (2) be 10 feet (3048 mm) or more from any window, door, or other opening (e.g., operable skylight, or air intake) into conditioned spaces of the structure, and

####  (3) be 10 feet (3048 mm) or more from any opening into an adjacent building. The total required distance [10 feet (3048 mm)] from the point of discharge to openings in the structure shall be measured either directly between the two points or be the sum of measurements made around intervening obstacles. If the point of discharge is at or below any window, door, or other opening into conditioned spaces of the structure the total required distance [10 feet (3048 mm)] shall be measured horizontally between the two points.

#### E602.3.4 Labeling. All exposed components of the soil depressurization system shall be labeled "Soil Gas System” to prevent accidental damage or misuse. Labels shall be on a yellow band, 2 inches (51 mm) wide and spaced three feet apart on all components.

#### E602.3.5 Clearance. All vent piping shall be located in compliance with existing and applicable codes, with regards to clearances from mechanical equipment and flues and notching of structural members. No vent shall penetrate a fire wall or party wall.

#### E603 Soil depressurization system design criteria.

#### E603.1 Subslab depressurization systems. Depressurization systems in sands or other granular soils shall as a minimum and within the practical limits posed by the building, meet the following requirements:

#### E603.1.1 Arrangement. Within the practical limits posed by the building, suction points shall be distributed as nearly equally as possible, and as follows:

####  (1) A maximum of 1,300 square feet (121 m2) per suction point, and

####  (2) Each required suction point shall be located not less than 6 feet (1829 mm) nor more than 18 feet (5486 mm) from the perimeter; and

####  (3) Multiple suction points shall be located within 36 feet (10 973 mm) of each other.

#### E603.1.2 Pipe size. Suction pipe should be of a size appropriate to the air-flows of the system, a minimum of 1/2 inches (38 mm) in diameter at the fan, and shall not be reduced between the fan outlet and the final termination point.

#### E603.1.3 Pits. Suction point pits excavated below the slab shall be sized to provide adequate pressure distribution beneath the slab. Dimensions of 22 inches (559 mm) in diameter and 11 inches (279 mm) deep, or excavation of 1 cubic foot (.02832 m3) of soil, shall be presumed to meet this requirement. Further the pit shall be filled with 1 inch (25 mm) size gravel.

#### E603.1.4 Rating. Suction fans must be capable of developing minimum flows appropriate to the system at 1 inch water column pressure. Fans producing 100 cubic foot per minute (cfm) (.047 m3/s) at 1 inch water column pressure are presumed to meet this requirement.

#### E603.2 Submembrane depressurization systems.

#### E603.2.1 General. Submembrane soil depressurization systems are essentially the same as subslab depressurization systems, but without the cover of a concrete slab. The membrane shall be protected from wind uplift in accordance with locally adopted codes. Systems may be of suction pit or continuous ventilation mat design.

#### E603.2.2 Membrane soil-gas retarder. A membrane soil-gas retarder shall consist of a 8 mil or thicker single ply polyethylene sheet or other sheeting material of equal or lower permeability and equal or greater strength. Place sheeting to minimize seams and to cover all of the soil below the building floor. Retarders must provide excellent environmental stress crack resistance, impact strength and high tensile strength including additives to retard polymer oxidation and UV degradation. Where pipes, columns or other objects penetrate the soil-gas retarder, it shall be cut and sealed to the pipe, column or penetration. All seams of the membrane shall be lapped at least 12 inches (305 mm). Punctures or tears in the membrane shall be repaired with the same or compatible material.

#### E603.2.3 Depressurization systems in sands or granular soils with suction pit design. Submembrane soil depressurization systems covering sand or other granular soils shall meet the requirements of Section E602.1, with the suction pits filled with 1 inch (25 mm) size gravel which shall be covered by 1/8 inch (3.2 mm) thick steel plate, 16 gage corrugated sheet metal, or equivalent sheets of other termite resistant structural materials, in compliance with existing and applicable codes.

#### E603.2.4 Depressurization systems in sands or granular soils with continuous ventilation mat(s) design. Depressurization systems in sands or other granular soils and utilizing a continuous ventilation mat shall have at least 216 square inches (.14 m2) of suction area per lineal foot and shall meet the following requirements:

#### E603.2.4.1 Arrangement. Suction points shall be equally distributed as follows:

####  (1) The suction point should be centrally located along the length of each unconnected strip of mat; and

####  (2) Mat strips should be oriented along the central axis of the longest dimension of the crawlspace; and

####  (3) A minimum of one strip shall be used for crawlspaces having widths up to 50 feet (15 240 mm) [additional strips should be added for each additional crawlspace width of up to 50 feet (15 240 mm) width]; and

####  (4) The mat strip shall extend to not closer than 6 feet (1828 mm) of the inner stemwall at both ends of the building; and

####  (5) A separate suction point and fan shall be installed for each 100 feet (30 480 mm) linear length of ventilation mat.

#### E603.2.4.2 Pipe size. Suction pipe shall be a minimum 3 inch (76 mm) diameter and shall be carried full size to the final termination point.

#### E603.2.4.3 Rating. Suction fans must be capable of developing minimum flows of at least 100 cfm (.047 m3/s), at 1-inch water column (.2488 kPa) pressure.

#### E604 Crawlspace ventilation.

#### E604.1 Active ventilation of the crawlspace. Structures that rely upon active (fan-driven) ventilation of the crawlspace for radon control, shall utilize fans rated for continuous operation, and shall be equipped with a fan failure warning device as specified in [Section 603.2](http://ecodes.cyberregs.com/cgi-exe/cpage.dll?pg=x&rp=/pseudo.htm&sid=2013071508545885133&aph=0&cid=iccf&uid=iccf0002&clrA=005596&clrV=005596&clrX=005596&ref=/indx/ST/fl/st/b400v10/st_fl_st_b400v10_appe.htm&pseudo=UN1%2C%2CST%2CSTF2012021013351215558%2Cb=603%2C(2)#b=603~(2)), and shall have a thermal overload with automatic reset feature.

#### E604.1.1 Vents. Vents connecting the crawlspace with outside air shall be sized and located as required to provide mitigation of the indoor radon concentration as demonstrated by post-mitigation test, and shall not be equipped with operable louvers or other means for adjustment by building occupants. Where adjustable vents are used, they shall be permanently fixed in the proper adjustment by the mitigation contractor.

#### E604.1.2 Plumbing. Plumbing located in the crawlspace shall be adequately protected from freezing by insulation or means other than restriction of ventilation air.

#### *Appendix F: Radon control methods. Replace to read as follows:*

#### Appendix F:

#### Florida Standard for Passive Radon-Resistant

#### New Residential Building Construction.

**CHAPTER F1 GENERAL

F101** **General.** Provisions in the following chapters and sections shall constitute and be known as and may be cited as the *Florida* *Standard For Passive Radon-Resistant* *New Residential* *Building* *Construction*, hereinafter referred to as "this standard.”

**F102 Intent.**

**F102.1** **General.** This standard shall apply to the design and construction of new residential buildings as determined in Section F103, Scope, to enable control of human exposure to indoor radon and its progeny.

**F102.2** **Compliance.** This passive standard wll provide radon protection beyond that provided by standard building code provisions. Compliance with existing local building codes and with the Energy Efficiency, Chapter 13 of the *Florida Building Code, Building,*  current edition, is assumed.

**F103 Scope.**

**F103.1 Applicability.** The provisions of this standard shall apply to the construction of new residential buildings and additions to existing residential buildings. Residential buildings are defined for the purposes of this standard as one- or two-family detached houses and town house apartments with no more than three stories (distinguished from condominiums, apartments and commercial buildings that employ different construction practices).

**F103.2** **Additions.** When the cost of an addition exceeds a cumulative total of 50 percent of the assessed value of the existing building, only the addition to the building must meet the requirements for new buildings in Section F104.1.

**F104 Compliance.**

**F104.1** **New buildings** **and** **additions.** All new residential buildings and additions to existing residential buildings shall use passive radon protection measures, as determined in Chapter F3 of this standard.

**F104.2** **Exemptions.** Exempt buildings are as follows:

 (1) Buildings of classifications not listed in Section F103.1, Applicability, and

 (2) Residential buildings built on piers or pilings that elevate the bottom of the floor joists a minimum of 18 inches (457 mm) above grade, which do not have skirting or stem walls that restrict air ventilation, and which comply with the following additional provisions:

 (a) The perimeter of the building from the ground plane to the lower surface of the floor shall be totally open for ventilation, except for the occurrence of enclosures complying with item (c) below.

 (b) All pilings, posts or other supports shall be solid, or if hollow, shall be capped by an 8-inch (203 mm) solid masonry unit or sealed by a permanent barrier that is impermeable to air flow.

 (c) Enclosures of any kind, including chases, storage rooms, elevator shafts and stairwells, etc., that connect between the soil and the structure shall be sealed at the surface of the soil to comply with the sealing provisions of Chapter F3 and shall have a soil contact area of less than 5 percent of the total building floor area.

**CHAPTER F2 DEFINITIONS

F201** **General.** For the purposes of this standard, certain abbreviations, terms, phrases, words and their derivatives shall be set forth in this chapter. Words not defined herein shall have the meanings stated in the *Standard* *Building* *Code, Standard Mechanical Code*, *Standard Plumbing* *Code, Standard Gas Code, or the Standard Fire* *Prevention* *Code* or the current *Florida Building Code, Building*. Words not defined in these codes shall have the meanings in *Webster’s* *Ninth Collegiate Dictionary*, as revised.  **F202 Definitions.**  **ADDITION.** A building extension or increase in floor area that can be occupied or that exchanges air with the conditioned space of the building.  **AIR** **DISTRIBUTION** **SYSTEM.** For the purposes of this standard, the air distribution system components which include ducts, plenums, air handlers, furnaces, single-package air conditioners, etc.  **CAULKS** **AND** **SEALANTS.** Those materials which will significantly reduce the flow of gases through small openings in the building shell. Among those used are:

**Urethane.** A crystalline ester-amide used as a gelatinizing agent for cellulose acetate or cellulose nitrate. A component of polyurethane used in making flexible and rigid foams, elastomers, and resins for coatings and adhesives.

**Epoxy.** A thermosetting resin characterized by adhesiveness, flexibility and resistance to chemicals and used chiefly as a coating or adhesive.

**Polysulfide rubber.** A synthetic rubber characterized by impermeability to gases and used in adhesives, binders and sealing compositions and in coatings.

**CONDITIONED** **FLOOR** **AREA.** The horizontal projection (outside measurements) of that portion of space which is conditioned directly or indirectly by an energy-using system.  **CONDITIONED** **SPACE.** All spaces which are provided with heated and/or cooled air or which are maintained at temperatures over 50°F (10°C) during the heating season, including adjacent connected spaces separated by an uninsulated component (e.g., basements, utility rooms, garages, corridors).  **CONTRACTION JOINT.** A formed, sawed, or tooled groove in a concrete slab to create a weakened plane and control the location of cracking resulting from drying and thermal shrinkage (also sometimes called control joint).  **CRAWL** **SPACE.** The unconditioned space between the lowest structural member of the floor and the earth. The crawl space is created when the floor spans between structural supports rather than being directly supported by the earth beneath the floor.  **ELASTOMERIC.** That property of macromolecular material of returning rapidly to approximately the initial dimensions and shape, after substantial deformation by a weak stress and release of stress.  **HIGH** **RANGE WATER** **REDUCER.** A chemical admixture added to the concrete capable of reducing the water content at least 12 percent. This admixture shall conform to ASTM C 494 Type F or G.  **HVAC.** Heating, ventilating and air conditioning.  **INFILTRATION BARRIER.** A product or system designed to limit the free passage of air through a building envelope component (wall, ceiling or floor). Such products and systems may be continuous or noncontinuous discrete elements which are sealed together to form a continuous barrier against air infiltration.  **MANUFACTURED** **SANDS.** Sands resulting from the crushing of rock, gravel or slag.  **MASTIC.** A sealant with putty-like properties.  **MIDRANGE WATER REDUCER.** A water reducing admixture capable of reducing water content from 6 to 15 percent. This admixture shall conform to ASTM C 494 Type A and or F.  **MITIGATE.** Make less severe, reduce, relieve.  **NATURAL** **SANDS.** Sands resulting from the natural disintegration and abrasion of rock.  **OCCUPANCY.** The purpose for which a building or part thereof is used or intended to be used. For the purposes of determining changes of occupancy for this code, the occupancy shall be considered the major occupancy group designations established by the locally adopted building code.  **OUTSIDE AIR.** Air taken from the outdoors and, therefore, not previously circulated through the system.  **PASSIVE** **RADON** **PROTECTION** **SYSTEM.** Indoor radon reducing building design, material, or construction features that increase the barriers to radon entry and require no mechanical operation, operating costs, or user attention beyond normal home maintenance (such as recaulking floor cracks, etc.)  **PERM.** Unit of measurement of the water vapor permeance of materials. Value of one perm is equal to one grain of water vapor per square foot hour per inch of mercury vapor pressure difference.  **PICOCURIE** **(pCi).** A unit of measurement of radioactivity. A curie is the amount of any radionuclide that undergoes exactly 3.7 x 1010 radioactive disintegrations per second. A picocurie is one trillionth (10-12) of a curie, or 0.037 disintegrations per second.  **PlCOCURIE** **PER** **LITER** **(pCi/L).** A common unit of measurement of the concentration of radioactivity in a gas. A picocurie per liter corresponds to 0.037 radioactive disintegrations per second in every liter of air.  **RADIUM** **(Ra).** A naturally occurring radioactive element resulting from the decay of uranium. For the purposes of this standard, radium applies to radium-226. It is the parent of radon gas.  **RADON.** A naturally occurring, chemically inert, radioactive gas. It is part of the uranium-238 decay series. For the purposes of this standard, radon applies to radon-222; thus, it is the direct decay product of radium-226.  **REMOTE** **SPACE.** A space isolated from the main conditioned area of a building by intermediate nonconditioned spaces.  **RESIDENTIAL BUILDING.** Residential occupancies which include single- and multiple-family buildings that are three or fewer stories above grade. Hotels, motels and other transient occupancies are considered nonresidential buildings for the purpose of this standard.  **SLUMP.** A measure of the relative consistency or stiffness of fresh concrete mix, as defined by ASTM C 143.  **SOIL** **GAS.** Gas which is always present underground, in the small spaces between particles of the soil or in crevices of rock. Major constituents of soil gas include air and water vapor. Since radium-226 is essentially always present in the soil or rock, trace levels of radon-222 also will exist in the soil gas.  **SUBSTRUCTURE** **MEMBRANE.** Flexible, nondegrading material sheet placed between the soil and the building for the purpose of reducing the flow of soil gas and moisture into the building. Examples are: polyethylene, ethylenepropylene diene terpolymer (EPDM), neoprene, and cross laminated HDPE.  **VENTILATION.** The process of supplying or removing air, by natural or mechanical means, to or from any space. Such air may or may not have been conditioned.  **WATER-REDUCING** **ADMIXTURE.** A chemical additive to concrete capable of increasing its flow ability without increased mixing water, without set retardation, and without increased air entrainment.

**CHAPTER F3 CONSTRUCTION REQUIREMENTS FOR PASSIVE RADON CONTROL

F301** **General.** This chapter provides minimum design and construction criteria for passive control of radon entry into residential buildings. Construction to these standards will limit radon entry points through building floors and foundations and will limit mechanical depressurization of buildings which can enhance radon entry.

**F302 Sub-slab and soil cover membranes.**

**F302.1** **Membrane material.** A sub-slab or soil-cover membrane shall consist of a minimum 0.006 inch (0.152 mm) (6 mil) thick single layer of polyethylene. Polyvinylchloride (PVC), ethylene propylene diene terpolymer (EPDM), neoprene or other nondeteriorating nonporous material may be used instead of polyethylene, provided the installed thickness has greater or equal resistance to air flow, puncturing, cutting and tearing, and a permeance of less than 0.3 perm as determined in accordance with ASTM E 96. The membrane shall be placed to minimize seams and to cover all of the soil below the building floor.

**F302.2 Tape.** Tape used to install the membrane shall have a minimum width of 2 inches (51 mm) and shall be pressure sensitive vinyl or other nondeteriorating pressure sensitive tape compatible with the surfaces being joined. Paper tape and/or cloth shall not be used for these purposes.

**F302.3** **Mastic.** Mastic used to install the membrane shall be compatible with the surfaces being joined, and shall be installed in accordance with the manufacturer’s recommendations for the materials, surface conditions and temperatures involved. Mastic may be used to join sections of membrane to one another or to elements of the building foundation, or to seal penetrations in the membrane.

**F302.4** **Installation.** The membrane shall be placed under the entire soil-contact area of the floor in a manner that minimizes the required number of joints and seams. Care shall be taken to prevent damage to the membrane during the construction process.

**F302.5** **Seams.** Seams between portions of the membrane shall be lapped a minimum of 12 inches (305 mm) and shall be secured in place with a continuous band of tape or mastic centered over the edge of the top membrane.

**F302.6** **Slab** **edges** **and** **joints.** The membrane shall fully cover the soil beneath the building floor. Where the slab edge is cast against a foundation wall or grade beam, the membrane shall contact the foundation element, and shall not extend vertically into the slab more than one inch.

**F302.7 Penetrations,** **punctures, cuts** **and** **tears.** At all points where pipes, conduits, stakes, reinforcing bars or other objects pass through the membrane, the membrane shall be fitted to within 1/2 inch (12.7 mm) of the penetration and sealed to the penetration. Penetrations may be sealed with either mastic or tape. When necessary to meet this requirement, a second layer of the membrane, cut so as to provide a minimum 12 inches (305 mm) lap on all sides, shall be placed over the object and shall be sealed to the membrane with a continuous band of tape.

**F302.8** **Repairs.** Where portions of an existing slab have been removed and are about to be replaced, a membrane shall be carefully fined to the opening and all openings between the membrane and the soil closed with tape or mastic.

**F303 Floor slab-on-grade buildings.**

**F303.1** **General.** All concrete slabs supported on soil and used as floors for conditioned space or enclosed spaces connected or adjacent to a conditioned space shall be constructed in accordance with the provisions of Section F302 and Section F303.

**F303.2** **Slab** **edge** **detail.** Slabs and foundations shall be constructed using a slab edge detail that eliminates cracks that could connect the house interior to sub-slab soil and is consistent with other construction constraints such as terrain. Monolithic slab construction should be used where possible. Only the following slab edge detail options may be used:

 (1) Thickened edge monolithic — the sub-slab membrane shall extend beyond the outside face of the slab edge.

 (2) Slab poured into stem wall — where concrete blocks are used as slab forms, the sub-slab membrane shall extend horizontally at least 1 inch (25.4 mm) into the stem wall, but shall not extend upward along any vertical faces of the stem wall. The concrete slab shall be poured into the stem wall to completely fill its open volume to form a continuous and solid stem wall cap of minimum 8 inch (203 mm) thickness. Framed exterior walls shall be sealed or gasket to the slab.

 (3) Slab capping stem wall — where the floor slab is formed and placed to completely cover the stem wall, the sub-slab membrane shall extend horizontally beneath the slab to its outer edge. The supporting stem wall shall be capped with a solid masonry unit of at least 4 inch (102 mm) thickness beneath the membrane and the slab.

**F303.3** **Sealing of** **joints,** **penetrations** **and cracks in slabs.**

**F303.3.1 Contraction joints.** All contraction joints shall be cleaned and sealed against soil-gas entry by use of an approved sealant (see Section F303.6) applied according to the manufacturer’s instructions. (Note: most sealants require the concrete to be cured and dried.) For bottom-induced joints, inverted T-split ribbed waterstops at least 6 inches (152 mm) wide made of impermeable material may be formed into the slab and shall not require top-surface sealing for radon control.

**F303.3.2** **Horizontal** **joints.** Horizontal joints between two slabs of different elevations that are poured at different times shall provide horizontal contact between the two slabs that is at least 8 inches (203 mm) wide, or shall be sealed by an approved sealant (Section F303.6).

**F303.3.3 Vertical** **joints** **through** **slabs.** Vertical joints through slabs shall be formed with a recess of not less than 1/4 inch by 1/4 inch (6.4 by 6.4 mm) and sealed with an approved sealant.

**Exception:** Slab-edge vertical joints occurring in slab poured into stem wall construction [see Section F303.2(2)]. The sealant (see Section F303.6) shall be applied according to the manufacturer’s instructions.

(Note: most sealants require the concrete to be cured and dried.)

**F303.3.4 Penetrations.**

**F303.3.4.1** **Stake** **penetrations.** Any stake that extends through more than one-fourth the thickness of the slab shall be of a nonporous material resistant to decay, corrosion and rust, and shall be cast tightly against the slab, or sealed to the slab in accordance with Section F303.6. All stakes shall either be solid, or shall have the upper end tightly sealed by installation of an end cap designed to provide a gas-tight seal.

**F303.3.4.2 Work** **spaces.** Work spaces formed into a slab, such as beneath a shower or bath tub drain, shall be sealed gas tight. The exposed soil shall be compacted and then shall be fully covered with a solvent-based plastic roof cement or a foamed-in-place polyurethane sealant or other approved elastomeric material to a minimum depth of 1 inch (25.4 mm).

**F303.3.4.3** **Pipe** **penetrations.** Plastic pipes shall be in contact with the slab along the slab’s depth by casting the concrete tightly against the pipe. Where pipes are jacketed by sleeves they shall be sealed by one of the following methods:

 (1) Formation of a slot in the slab around the pipe and casting with asphalt or an approved sealant from the slab to a point above the sleeve, or

 (2) Seal the space between the sleeve and the pipe with an appropriate joint sealant (see Section F303.6).

 (3) Pipes and wiring penetrating the slab through chases or conduit shall be sealed by placing an approved sealant between the pipe or wiring and chase or conduit. Plastic sheath, foam or insulation material shall not be used alone around pipes or conduit for sealing purposes.

 (4) Where multiple pipes are ganged, block out a work space around the multiple pipes and seal as in Section F303.3.4.2.

**F303.3.5** **Cracks.** All slab cracks greater than 1/32 inch (0.8 mm) wide; all cracks that exhibit vertical displacement; all cracks that connect weakened zones in the slab such as vertical penetrations or reentrant corners; and, all cracks that cross changes in materials or planes in the structure, shall be cleaned and sealed against radon entry, prior to applying floor covering, with a flexible field-molded elastomeric sealant installed in accordance with Section F303.6. Cracks less than 1/32 inch (0.8 mm) in width that do not meet any of the above criteria may be left unsealed.

**F303.4 Concrete for slabs.**

**F303.4.1** **Mix** **design.** Mix designs for all concrete used in the construction of slab-on-grade floors shall specify a minimum design strength of 3,000 psi (20.7 MPa) at 28 days and a design slump not to exceed 4 inches (102 mm). On-site slumps shall not exceed 5 inches (127 mm), provided total water added to the mix including plant, transit and site added water does not exceed the following parameters:

 (1) For mixes using natural sands — 275 pounds per cubic yard [33 gallons (125 L)].

 (2) For mixes using manufactured sands — 292 pounds per cubic yard [35 gallons (132.5 L)].

**F303.4.2 Concrete placement.** For improved workability of concrete used in the construction of slab-on-grade floors, additional water and/or water-reducing admixtures shall be wed within the following constraints:

 (1) Slumps in excess of 5 inches (127 mm) shall be achieved through the use of mid-range or high-range water reducing admixtures. Water shall not be used in excess of the limitations.

 (2) Slumps of concrete containing mid-range or high range water reducing admixtures shall not exceed 8 inches (203 mm).

**F303.4.3** **Curing.** Concrete slabs shall be cured continuously after pouring according to one of the following procedures:

 (1) Moist curing by means of ponding, fog spray or wet burlap for at least 7 days.

 (2) Moist curing using impermeable cover sheet materials conforming with ASTM C l71 for at least 7 days.

 (3) Curing with liquid membrane forming compound according to manufacturer’s specifications and conforming with ASTM C 309.

Curing compounds shall be compatible with materials specified in Section F303.6.

**F303.4.4** **Loading.** Loading or use of the slab shall be delayed for a minimum of 48 hours after concrete placement. When the slab is used for material storage after the minimum 48-hour period, caution should be used to prevent impact loading.

**F303.4.5** **Slab reinforcement.** Floor slabs shall be reinforced by steel reinforcing bars at reentrant corners such as inside comers of an L-shaped slab. Reentrant corners shall have two pieces of #4 reinforcing bar 36 inches (914 mm) long placed diagonally to the comer, 12 inches (305 mm) apart, with the first bar placed 2 inches (51 mm) from the comer. All reinforcement shall be appropriately positioned in the upper third of the slab.

**F303.5** **Sealing** **walls.** Penetrations for electrical receptacles and switches, wiring, plumbing, etc. in the interior surface of the concrete block walls shall be sealed.

**F303.6 Approved** **sealant** **material.** Acceptable polyurethane, polysulfide and epoxy caulks and sealants shall conform with ASTM C 920-87, *Standard* *Specifications for Elastomeric Joint* *Sealants*, and ASTM C 1193-91, *Standard* *Guide* *for* *Use* *of Joint* *Sealants*. Sealant material and the method of application shall be compatible with curing compounds, admixtures and floor finishing materials; withstand light traffic; be impermeable to soil gas; and have an allowable extension and compression of at least 25 percent with 100 percent recovery. Sealants shall be applied to dried and cured concrete in accordance with manufacturers’ instructions. Backer rods may be used to support sealants in cracks and joints.

**F304 Slab-below-grade construction.**

**F304.1** **General.** For the purposes of this standard, slab-below-grade construction is defined as any conditioned space with the finished floor below finished grade at any point.

**F304.2** **Slab** **construction.** Slabs shall have a sub-slab membrane, conforming with Section F302 that extends to the slab perimeter, but does not vertically separate the slab from the foundation wall. The slab and membrane shall be placed in accordance with Section F303, or may use a floating slab design with all of the following conditions:

 (1) The stem wall is solid poured concrete.

 (2) The slab-wall joint is tooled and sealed with flowable polyurethane (according to Section F303.6).

(3) All other provisions of Section F303 are satisfied.

**F304.3 Sealing walls.**

**F304.3.1 Walls.** Walls surrounding slab-below-grade space shall be constructed from solid poured concrete, at least 8 inches (203 mm) thick, and shall be sealed with a continuous waterproofing coating applied to their outside surface from the top of the footing to finished grade. This coating shall completely seal any joint between the footing and the wall.

**F304.3.2** **Utility** **penetrations.** All utility penetrations through walls in partial or full contact with the soil shall be closed and sealed with an approved sealant material (see Section F303.6) on the interior and exterior faces of the wall.

**F304.4** **Sumps.** Any sump located in a habitable portion of a building, or in an enclosed space directly attached to a portion of a building, shall be covered by a lid. An air tight seal shall be formed between the sump and lid and at any wire or pipe penetrations.

**F305 Buildings with crawl spaces.**

**F305.1** **General.** For the purposes of this standard, buildings with crawl spaces include all buildings with floor supported above grade which do not meet the requirements of Section F306.

**F305.2** **Floor systems.** Reinforced concrete floors constructed over crawl spaces shall conform to all applicable provisions of Section F303. Wood-framed floors constructed over crawl spaces shall include an air infiltration barrier in compliance with Chapter 13 of the *Florida Building* *Code,* *Building*, current edition. All joints and penetrations through the floor, including plumbing pipes, conduits, chases, wiring, ductwork and floor-wall joints, shall be fully sealed with an approved caulk. Where large openings are created (such as at bathtub drains), sheet metal or other rigid materials shall be used in conjunction with sealants to close and seal the openings.

**F305.3** **Crawl** **space ventilation.**
Screened vents without closures shall be installed around the perimeter of the house to connect the crawl space with outdoor air.

**F305.3.1 Vent area.** The crawl space vents shall have a total area equal to either:

 (1) at least 1/150 of the area enclosed by the crawl space if the crawl space is exposed to bare soil; or

 (2) at least 1/300 of the area enclosed by the crawl space if the crawl space is completely covered by a sub-structure membrane.

**F305.3.2 Ventilation** **obstructions.** The crawl space shall not contain structures that restrict ventilation in the crawl space. If freeze protection is provided for plumbing in the crawl space, the protection shall not restrict air ventilation in the crawl space.

**F305.4** **Sealing** **walls and** **doors.** Penetrations from the crawl space into wall cavities shall be fully sealed with an approved caulk or sealant. When a door is located between the crawl space and the conditioned space, it shall be fully weatherstripped or gasketed.

**F305.5** **Closing** **and** **sealing** **other** **paths.** Any openings that connect a crawl space and the closed space between floor or ceiling joists, wall studs, or any other cavity adjoining conditioned space shall be closed and sealed.

**F305.6** **Soil** **connection.** Foundation walls and piers or other intermediate supports that intersect the floor plane shall be solid across the entire horizontal section at a point above the ground plane.

**F306 Buildings with combination floor systems.**

**F306.1** **Floor system construction.** Where slab-on-grade, slab below-grade, crawl space or elevated building construction are combined in one structure, the provisions for each construction type shall be met.

**F306.2 Walls.** A wall located between a crawl space and conditioned space shall be designed and constructed in compliance with Chapter 13 of the *Florida* *Building* *Code, Building*, current, and the provisions of the applicable Sections F303 through F305 of this standard.

**F307 Space conditioning systems.**

**F307.1 Equipment enclosures.**

**F307.1.1** **Crawl** **spaces.** Return ducts, return plenums and air handlers shall not be located in crawl spaces. Crawl spaces shall not be used as supply or return plenums.

**F307.1.2 Condensate drains, piping and wiring chases.** Condensate drain pipe joints shall be sealed (chemical weld, soldered, etc.) gas tight and shall terminate outside the building perimeter at a height of at least 6 inches (152 mm) above the finished grade ground level. Chases through which the condensate and refrigerant lines run shall not terminate in the return sections of the air distribution system. Where chase lines terminate within the house or garage, they shall be sealed.

**F307.2 Air distribution systems.**

**F307.2.1** **Sealing.** All ducts and plenums shall be made air tight, constructed and installed in accordance with the current edition Chapter 13 of the *Florida* *Building* *Code, Building*. Where rigid fibrous glass ductboard is used, the seal must be on the foil air barrier side of the ductboard.

**F307.2.2** **Return** **plenums and** **ducts.** Return air shall be separated from any floor that is in contact with the soil or a crawl space, by a plenum or duct fabricated in compliance with Section F307.2.1 and all local codes. Construction of the return plenum or duct shall provide a continuous air barrier that completely separates the depressurized plenum or duct from adjacent building components including but not limited to floors, walls, chases, enclosures, etc. The support platform shall not be used as a return plenum. Where the support platform provides a protective enclosure for a duct, one side shall have a removable panel or door to provide access for inspection and/or repair of the duct and duct-to-air handler connection. Ducts shall carry the return air from the return grills or return plenums to the air handler and shall have a positive air-tight seal to the air handler. A closet shall not be used as a return plenum.

**F307.2.3** **Return** **grille** **connection.** The return pathway from the return grille shall be a part of the return duct or plenum and shall have a continuous air barrier along its boundary. Where the return pathway passes through a wall cavity, the cavity shall be sealed around the duct in all directions to prevent the leakage of air into the return air stream.

**F307.2.4** **Location** **of** **ducts and** **plenums.** Supply and return ducts shall not be located below concrete slab-on-grade floors, and return ducts and plenums shall not be located in crawl spaces.

**F307.3 Exhaust fans.**

**F307.3.1** **Bathroom** **fans.** Bathroom exhaust fans shall be controlled by an independent separate switch. Manually operated timers should be used as applicable.

**F307.3.2** **Attic** **fans.** If used, attic exhaust fans shall be installed with unobstructed vent and intake areas in accordance with the minimum areas prescribed by their manufacturer. In no case shall effective open vent area be less than the minimum areas prescribed by the manufacturer.